Draft Environmental Assessment for the Gila-North Gila Transmission Line Rebuild and Upgrade Project

(DOE/EA-1948)




Prepared for

Western Area Power Administration

U.S. Department of Energy
Western Area Power Administration,
Desert Southwest Region

Cooperating Agencies

U.S. Department of the Interior, Bureau of Reclamation

U.S. Bureau of Reclamation,
Yuma Area Office

U.S. Army Corps of Engineers,
Los Angeles District

Prepared by

Aspen Environmental Group

December 2013

DRAFT

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Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

December 18, 2013

SUBJECT: **Notice of Availability of a Draft Environmental Assessment for Public Comment and Notice of Floodplain and Wetland Action for Western's Gila to North Gila Transmission Line Rebuild and Upgrade Project, Yuma County, Arizona (DOE/EA-1948)**

Dear Interested Party:

Western Area Power Administration (Western) invites you to review and comment on the Environmental Assessment (EA) for the Gila-North Gila Transmission Line Rebuild and Upgrade Project located east of Yuma, Yuma County, Arizona. The document tracking number is DOE/EA-1948. Western prepared this document in compliance with the National Environmental Policy Act, National Historic Preservation Act's Section 106 process, and Executive Orders 11988 – Floodplain Management and 11990 - Protection of Wetlands. Western's partner in this project, Arizona Public Service (APS), intends to use this document to amend their Certificate of Environmental Compatibility from the Arizona Corporation Commission. Western is seeking comments from Federal, State and local agencies, Indian Tribes, and other individuals or organizations interested in or affected by this project.

The EA can be accessed online at the Western's Desert Southwest Region website or the U.S Department of Energy's website:

http://www.wapa.gov/dsw/environment/GilaToNorthGilaRebuild.htm

http://energy.gov/nepa/nepa-documents/environmental-assessments-ea

Review copies are available at the Yuma County Library located at 2951 South 21st Drive, Yuma, Arizona 85364. Printed copies can also be obtained upon request from Western.

Western would like to know of any comments you have on the Draft EA. Comments can be provided in writing, by phone, by fax, or via email. All comments received or post-marked before or on Tuesday, January 21, 2014 will be considered.

Mail: Western Area Power Administration
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Please make your comments as specific as possible. Western will consider your comments while preparing a final EA and making a decision on our involvement in the project. Comments received, including names and addresses, could be subject to release under the Freedom of Information Act. Individuals may request that we withhold their name and/or home address, which we will honor to the extent allowable by law. If you wish us to withhold your name or home address, you must state this prominently at the beginning of your comments.

Supplementary Information

Western proposes to re-build and upgrade two, parallel 4.8 mile-long transmission lines located between the existing Gila and North Gila substations and take land actions in support of portions of APS' construction of the state-certified North Gila to Orchard 230-kilovolt (kV) Transmission Line Project. Western's reconstruction action involves the wood pole Gila-North Gila 69-kV Transmission Line, which would be added to steel structures associated with APS' new transmission line, and a portion of Western's wood-pole Gila-Knob 161-kV Transmission Line, which would be upgraded to 230-kV and re-built on steel structures. Western's land action entails acquiring up to an additional 50 feet adjacent to (west of) the existing Gila-Knob Transmission Line right-of-way (ROW), relinquishing a portion of the Gila-North Gila Transmission Line ROW for APS, and granting APS the right for their new transmission line to cross Western's Gila Substation. This project will increase the reliability and safety of the bulk electric system by replacing wood structures with steel ones, moving away from the 161-kV standard which is no longer commonly used, and efficiently using existing transmission line ROW.

We look forward to receiving your comments on this project.

Sincerely,

for

Linda Marianito
Environmental Manager

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Acronyms and Abbreviations

ACC	Arizona Corporation Commission
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AIRFA	American Indian Religious Freedom Act
ALERT	Automated Local Evaluation in Real Time
APS	Arizona Public Service Company
ASHS	Arizona State Highway System
AZRHP	Arizona Register of Historic Places
BLM	Bureau of Land Management
CEC	Certificate of Environmental Compatibility
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DOE	Department of Energy
DSW	Desert Southwest
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	electric fields and magnetic fields
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPO	Federal Preservation Officer
GHG	Greenhouse gas
HSHS	Historic State Highway System
Hz	Hertz
KOP	Key Observation Point
kV	kilovolt
LCRPA	Lower Colorado River Planning Area
LDCA	Laguna Division Conservation Area
LSD	Logan Simpson Design Inc.
m	meter
mG	milliGauss
IO	isolated occurrence
NAAQS	National Ambient Air Quality Standards
NEAP	Natural Events Action Plan
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code

NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NHPA	National Historic Preservation Act
NWP	Nationwide Permit
OAQPS	Office of Air Quality Planning and Standards
OSHA	Occupational Safety and Health Administration
PM_{10}	particulate matter less than 10 microns in aerodynamic diameter
Reclamation	U.S. Bureau of Reclamation
RMP	Resources Management Plan
ROW	right-of-way
SIP	State Implementation Plan
SRI	Statistical Research, Inc.
SWPPP	Stormwater Pollution Prevention Plan
TCP	traditional cultural property
TDS	total dissolved solids
TLV	Threshold Limit Value
TMDL	Total Maximum Daily Load
USBR	U.S. Bureau of Reclamation
VRM	Visual Resource Management
Western	Western Area Power Administration
YAWNS	Yuma Area Water Management System

Executive Summary

Project Location

The Gila to North Gila Transmission Line Rebuild and Upgrade Project (Project) is located in Yuma County, Arizona, on Bureau of Reclamation and private lands within the City of Yuma and unincorporated Yuma County.

Project Participants

Western Area Power Administration (Western), a federal power marketing administration under the U.S. Department of Energy, is the lead federal agency for this Project pursuant to the National Environmental Policy Act. Arizona Public Service (APS), an electric utility company, is a Project proponent. The Bureau of Reclamation and the U.S. Army Corps of Engineers are cooperating agencies given their land management or permitting responsibilities.

Purpose and Need

The purpose of the Proposed Action is to increase the reliability and safety of the bulk electric system and maximize use of existing right-of-way (ROW). The Proposed Action is needed because the Gila-Knob 161-kV and Gila–North Gila 69-kV wood structures have degraded due to weathering, rot, and normal aging. The sub-standard condition of the wood structures makes them unsafe for crews to climb to perform maintenance activities. Further, the 161-kV standard is no longer a commonly used standard voltage, which poses challenges for acquiring and replacing parts. Unplanned outages due to equipment failure are a risk. Above-normal maintenance costs and efforts are likely. Rebuilding the transmission lines following good utility practices would alleviate these conditions.

Proposed Action and Alternatives

Western proposes to rebuild and upgrade two, parallel, 4.8-mile-long transmission lines located between Gila and North Gila substations and take land actions in support of portions of APS' North Gila–Orchard segment of its North Gila–Orchard-Yucca 230-kV Transmission Line Project. Western's rebuild action involves a portion of the wood-pole Gila-Knob 161-kV transmission line, which would be upgraded to 230-kV and rebuilt on steel structures, as well as the double-circuit, Gila–North Gila 69-kV transmission line, which would be rebuilt on steel structures associated with the new APS North Gila–Orchard 230-kV transmission line segment. Western's land action entails acquiring up to an additional 50 feet of ROW adjacent to the existing Gila-Knob ROW, transferring a portion of the Gila–North Gila ROW to APS, and granting APS the right for its transmission lines to cross Western's Gila Substation.

The Proposed Action is divided into two phases based on timing of activities:

- **Phase I**. The first phase includes co-locating the Gila–North Gila 69-kV circuit on the new structures for the APS North Gila–Orchard 230-kV transmission line segment, relinquishing by Western a portion of the Gila–North Gila ROW and acquiring this portion by APS, and grant-

ing APS the right for its transmission lines to cross Western's Gila Substation. Construction and land actions would occur in 2015.

- **Phase II.** The second phase includes rebuilding and upgrading the Gila-Knob transmission line from 161-kV to 230-kV. It would be implemented when APS requires additional 69-kV capacity between Gila and North Gila substations and requests that Western remove their Gila–North Gila 69-kV conductor from APS' North Gila–Orchard 230-kV structures.

APS' North Gila–Orchard–Yucca 230-kV Transmission Line Project was approved by the Arizona Corporation Commission (ACC) in February 2012. The North Gila–Orchard transmission line segment of the APS project includes a new 12.8-mile-long double-circuit 230-kV transmission line extending from the existing APS North Gila Substation to the proposed Orchard Substation. As stated above, the Gila–North Gila 69-kV transmission line would be placed on these structures, below the 230-kV conductors, between the North Gila and Gila substations. Although the North Gila–Orchard segment, as approved by the ACC, may proceed irrespective of Western's federal Proposed Action, that project is considered in this Environmental Assessment and APS will use the analysis herein to support an amendment to their Certificate of Environmental Compatibility.

Alternatives

The Certificated Route Alternative was evaluated. Under this alternative, Western would not issue APS the right for their North Gila–Orchard 230-kV transmission line to cross Western's Gila Substation. Therefore, APS would build the route that was approved by the ACC, which would extend an additional 0.5 mile eastward around the Gila Substation and a date farm. Otherwise, this alternative includes all other components of the Proposed Action.

Additionally, the No Action Alternative was evaluated. Under this alternative, Western would continue to operate and maintain the existing Gila–North Gila 69-kV and Gila-Knob 161-kV transmission lines as they currently exist. APS would acquire 100 feet of new ROW east of the existing Western Gila–North Gila 69-kV transmission line and construct the new North-Gila Orchard 230-kV transmission line. Western would not issue APS the right for their North Gila–Orchard transmission line to cross Western's Gila Substation. Therefore, APS would build the route that was approved by the ACC around the Gila Substation and a date farm.

Several alternatives were considered, but not further evaluated due to technical infeasibility or increased environmental impact or because they did not meet the Project purpose and need. These include the West of Gila Substation Alternative, the San Luis Rio Colorado Alternative, Existing Infrastructure Alternative, and the Canyon Avenue Alternative.

Summary of Environmental Consequences

The following resource areas were considered, but not further evaluated because there would be no adverse effects: climate change, socioeconomics and environmental justice, vegetation, traffic and transportation, intentional destructive acts, and geology, soils, mineral resources, and hazardous materials and solid waste.

Following is a summary of the environmental consequences resulting from the Proposed Action and alternatives for each resource area.

Aesthetics and Visual Resources. During construction, public views of equipment and land scars from vegetation clearing may introduce short-term, minor visual contrast impacts. Once constructed, the installation of APS' new 230-kV transmission towers and conductor would result in minor visual contrast impacts in viewsheds with low to moderate visual quality. The Proposed Action would increase overall industrial character of the existing utility corridor from public view observation points over existing conditions. Cumulative impacts would create minor visual contrast impacts in viewsheds with low to moderate visual quality. The Certificated Route Alternative would result in similar impacts to those described for the Proposed Action, with the exception of the KOP 2 viewshed where impacts would be reduced. The No Action Alternative would introduce minor visual contrast with the addition of APS' North Gila–Orchard 230-kV transmission line segment adjacent to the existing Western ROWs. Under the No Action Alternative, the North Gila–Orchard 230-kV transmission line segment would follow the Certificated Route Alternative alignment. Therefore, negligible visual contrast would occur at KOP 2.

Agriculture. Under the Proposed Action, temporary disruptions to agricultural activities would be minimized with implementation of Resource Protection Measures. Permanent disturbances from structures associated with the Proposed Action would convert a negligible amount of prime and unique farmland. The Certificated Route Alternative would create a box to the northeast of the Gila Substation, within which would be a "no fly" zone for aerial chemical application including a 10-acre portion of a farm and the majority of the date farm, resulting in greater economic cost for the farmer of the 10-acre parcel when compared to the Proposed Action. Impacts associated with the No Action Alternative would be greater than that for the action alternatives; however, impacts to agriculture would still be less than 0.001 percent of the available prime farmland and would be located primarily adjacent to existing infrastructure. Under each of the alternatives, impacts to agriculture would not be cumulatively considerable.

Air Quality. Air quality impacts from the Proposed Action would be negligible and include minor and temporary air emissions from construction vehicles and equipment exhaust as well as fugitive dust generated during construction. Impacts to air quality for the Certificated Route Alternative are expected to be the same as those for the Proposed Action. Impacts associated with the No Action Alternative would be less than those for the Proposed Action. Cumulative impacts to air quality from periodic transmission line maintenance would be negligible.

Land Use. Under the Proposed Action, existing land uses (primarily agriculture) would continue within the ROW. In regard to conflicts with applicable plans and regulations, Western and APS have preemptive jurisdiction over city and county land use regulations; therefore, under Western's and APS' authority, transmission lines are acceptable uses within the existing ROW. For any ground disturbance outside of the existing ROW, Western would obtain the required Special Use or Temporary Use Permits from the applicable agencies with jurisdiction over the affected land(s). For safety issues associated with flight operations at the Barry Goldwater Air Force Range, implementation of Resource Protection Measures would avoid impacts. Construction activities may temporarily disrupt existing adjacent land uses due to nuisances, such as noise and visual disturbances from equipment and vehicles, and also due to the potential for construction activities to restrict access to surrounding land uses. The potential for disruptions to existing land uses under the Certificated Route Alternative would be greater than under the

Proposed Action. Under the No Action Alternative, three transmission lines in a 235-foot ROW would result in a higher density of transmission lines along the Project route and a greater potential for land use disruptions. For each of the alternatives, the contribution to cumulative land use impacts would be negligible.

Recreation. The Proposed Action would not directly affect recreational resources or activities. For recreational facilities in the surrounding area, indirect impacts (visual and noise disturbances) during the construction period would be temporary and would not be concentrated in one area for an extended period of time. The Certificated Route Alternative would result in greater potential for indirect impacts to affect a larger number of recreational resources in comparison to the Proposed Action. Under the No Action Alternative, the indirect impacts during the construction period would be similar to impacts under the Proposed Action. Cumulative impacts would be minimal.

Cultural Resources and Native American Consultation. No direct impacts would occur to historic properties or the Juan Bautista de Anza Trail from the Proposed Action. Negligible indirect impacts could occur to the integrity of historic properties, particularly setting and feeling, due to construction-related activities and the presence of the new APS North Gila–Orchard transmission line segment. Indirect impacts would occur to the viewshed of the Juan Bautista de Anza Trail, as Project components can be seen from 3 to 5 miles away. Cumulative impacts to historic properties and the Juan Bautista de Anza Trail from the Proposed Action would be long-term, but negligible, as the Project area is already heavily urbanized/industrialized. Impacts to historic properties and the Juan Bautista de Anza Trail under the Certificated Route Alternative and the No Action Alternative are similar to the Proposed Action. No TCPs or sacred sites have been identified to date; Native American consultation is ongoing and any pertinent results will be reported in the Final EA.

Wildlife. Permanent direct impacts to wildlife from the Proposed Action include injury to or mortality of animals during construction activities. Short-term displacement may occur during vegetation clearing and ground disturbance activities. Impacts to habitat would be in locations where there are extensive similar habitats in the surrounding area for wildlife use. Operation and maintenance of the Proposed Action would cause occasional adverse, short-term impacts to common wildlife. With implementation of Resource Protection Measures, the Proposed Action would have negligible impacts to wildlife and may result in a decreased bird electrocution and collision risk. The Certificated Route Alternative would result in similar impacts to those described for the Proposed Action. The No Action Alternative would be comparable to the impacts of the Proposed Action, except bird electrocution and collision risk would remain unchanged. Cumulative impacts from each alternative to wildlife would be negligible because the past, present, and future projects are spread out over a large geographic area, are short-term, and the project areas are predominately in human land uses (e.g., agriculture).

Special-status Species. Two federally listed endangered species, southwestern willow flycatcher and Yuma clapper rail, may occur in or near the Project area. One species proposed for federal listing, yellow-billed cuckoo, may also occur in or near the Project area. Direct adverse impacts to listed species would not occur. Short-term impacts to a small amount of foraging habitat for listed birds at the Gila River crossing would be negligible. Noise and disturbance may cause

special-status species to temporarily avoid work areas, but these impacts would be negligible because of extensive available habitat in the surrounding area. With implementation of Resource Protection Measures, the Project may affect but would not adversely affect southwestern willow flycatcher, Yuma clapper rail, or yellow-billed cuckoo. The Project would not affect designated critical habitat for either federally listed species. The Proposed Action may have direct, long-term impacts to flat-tailed horned lizard by vehicle strike or other injury by construction equipment. Suitable habitat for several non-listed special-status species is present in the Project area. With implementation of Resource Protection Measures, impacts to these species would be minimal. Cumulative impacts of the Proposed Action in combination with past, present and future projects would be negligible because the actions are spread over a large geographic area, are short-term, and the project areas are predominantly in human land uses (e.g., agriculture). The Certificated Route Alternative would result similar impacts to special-status species as the Proposed Action. Overall, impacts to special-status species and habitats from the No Action Alternative would be similar to the impacts of the Proposed Action.

Public Health and Safety. Potential adverse effects to public health and safety created by the Proposed Action include fire hazards from downed transmission lines and annoying or nuisance shocks caused when a person comes into contact with an ungrounded object within an electric field. Potential fire hazards would be minimized by designing the Project in accordance with National Electric Safety Code (NESC) requirements and by installing overhead fiber optic ground wire. A variety of measures would be implemented to reduce the potential for nuisance shocks including designing the transmission line with proper ground clearance, properly grounding conductive objects within and at the edge of the ROW, and following proper grounding standards and practices. The Proposed Action is not expected to result in serious injuries to workers or create worker health hazards beyond regulatory limits. The Proposed Action would not result in any adverse public health and safety effects from electric and magnetic field (EMF) exposure. Potential impacts to public health and safety under the Certificated Route Alternative are the same as those described for the Proposed Action. No cumulative impacts to public health and safety are expected to occur from the Proposed Action or Certificated Route Alternative. Impacts to public health and safety under the No Action Alternative could occur from the deterioration of existing wooden transmission line structures, but would otherwise be the same as those described under the action alternatives.

Noise and Sensitive Receptors. Temporary and audible, moderate increases in noise would occur during construction of the Proposed Action. Implosive sleeving would result in an instantaneous and brief increase in noise, which could be minimized by proper construction planning. There would be no noticeable increase in noise above the existing ambient levels during operation and maintenance of the Proposed Action. Impacts to noise and sensitive receptors under the Certificated Route Alternative would be similar to those under the Proposed Action; however, the area of the alignment near the Gila Substation would be approximately 200 feet farther from a retail and dining area associated with a date farm, which would create a minor reduction in noise during construction. Noise impacts associated with the No Action Alternative would be less than those described for the action alternatives because the existing structures would not be removed. Past, present, and reasonably foreseeable future projects identified in Table 2.6-1

do not overlap with the region of influence for noise; therefore, cumulative noise impacts to sensitive receptors would not occur from the Proposed Action or alternatives.

Water Resources and Floodplains. The Proposed Action would not modify the floodwater or substantially alter the Gila River floodplain, diverting floodwaters to areas previously outside the 100-year floodplain. The Proposed Action would result in short-term and minor impacts during soil-disturbing construction activities with the potential to cause erosion and sedimentation. The Proposed Action could result in short-term impacts to groundwater resulting from ground excavations, geotechnical borings, and dust suppression activities. Potential impacts to drainages from the Proposed Action would be negligible such as they would not substantially alter the area's existing drainage patterns. Compliance with Western's Construction Standards and all water quality laws and regulations, preparation of a Stormwater Pollution Prevention Plan, and implementation of Best Management Practices would avoid and minimize impacts to water resources. The Proposed Action would span potentially jurisdictional federal "waters of the U.S.," including wetlands, that occur within and adjacent to the Gila River. However, if the rebuilt Gila-Knob structures are constructed in the same location as the existing Gila-Knob structures, Phase II of the Proposed Action would result in permanent impacts to approximately 0.04 acre of jurisdictional waters of the U.S. and 0.04 acre of jurisdictional wetlands. These impacts would require an individual permit (to comply with Section 404 of the Clean Water Act) from the U.S. Army Corps of Engineers. Impacts under the Certificated Route Alternative are the same as the Proposed Action. Under the No Action Alternative, water resources impacts would be less than those described for the Proposed Action, because there would not be excavations to remove the Gila–North Gila structures. The Proposed Action and alternatives would not result in cumulative impacts to water resources and floodplains.

Chapter 1
Introduction: Purpose and Need for Action

1.1 Project Background

Western Area Power Administration (Western) is one of four power marketing administrations within the U.S. Department of Energy (DOE). Western operates within a 15-state region of the central and western United States, and delivers power from 57 power plants to a service area that covers approximately 1.3 million square miles and is divided into four regions. The Desert Southwest region (DSW) is based in Phoenix, Arizona, and operates transmission lines and facilities in Arizona, California, and Nevada.

Western DSW owns, operates, and maintains the existing Gila–Knob 161-kilovolt (kV) transmission line, owns and operates the Gila–North Gila 69-kV transmission line (Arizona Public Service Company (APS) is responsible for maintenance), and owns, operates, and maintains the Gila–Sonora 69-kV transmission line in Yuma County, Arizona. These transmission line segments extend 4.8 miles between APS' existing North Gila Substation and Western's existing Gila Substation. The Gila-Knob and Gila–North Gila transmission lines were built in 1943 and 1984, respectively, on wooden H-frame structures. Over time, these structures have weathered and degraded and are now a reliability and safety concern. In August 2013, a storm blew through the Project area and destroyed 17 Gila–North Gila wooden H-frame structures in agricultural land; these were replaced with 33 light-duty steel poles. The Gila–Knob structures only sustained minor reparable damage, but the aging wood poles remain a concern; further, 161-kV is becoming obsolete and therefore difficult to service.

In 2012, the Arizona Corporation Commission (ACC) issued a Certificate of Environmental Compatibility to APS approving the North Gila to TS8 (now known as Orchard) to Yucca 230-kV Transmission Line Project. This Environmental Assessment (EA) refers to the North Gila—Orchard transmission line segment, which will begin at the North Gila Substation and terminate at APS' new Orchard Substation. This new 230-kV transmission line will overlap Western's existing Gila–North Gila right-of-way (ROW) between the Gila and North Gila substations.

The proposed Gila–North Gila Transmission Line Rebuild and Upgrade Project would upgrade Western's Gila-Knob transmission line from 161-kV to 230-kV on steel structures and relocate Western's Gila–North Gila 69-kV transmission line onto the new APS North Gila–Orchard transmission line structures. Additional components of the Proposed Action and alternatives are described in Chapter 2.

Typically, Western's Proposed Action would be analyzed under a Categorical Exclusion pursuant to the National Environmental Policy Act (NEPA) and DOE Implementing Regulations (Part 1021, Subpart D, Appendix B4.13) which states that a Categorical Exclusion may be applied to "upgrading or rebuilding approximately 20 miles in length or less of existing electric powerlines, which may involve minor relocations of small segments of the powerlines." Although Western's Proposed Action may be categorically excluded, Western determined that an EA is warranted because of heightened public interest in two recent projects (APS' North Gila–Orchard–Yucca

230-kV Transmission Line Project and North Branch Resources' proposed San Luis Rio Colorado Project), which involved Western's Gila–Knob and Gila–North Gila ROWs and because of the potential for impacts to floodplains or wetlands. Preparation of an EA allows opportunity for public review and consideration of alternatives.

APS will use the information in this EA to support their application to the ACC for an amendment to the Certificate of Environmental Compatibility for the North Gila–Orchard–Yucca 230-kV Transmission Line Project.

1.2 Purpose and Need

Western's mission is to "market and deliver clean, renewable, reliable, cost-based Federal hydroelectric power and related services" pursuant to its statutory authority under The Energy Reorganization Act (§7152(a)) and the Federal Power Act (§824j). To this end, the purpose of the Proposed Action is to:

- increase the reliability and safety of the bulk electric system; and
- maximize use of existing ROW.

The Proposed Action is needed because Western's Gila–Knob 161-kV and Gila–North Gila 69-kV wood structures have degraded due to weathering, rot, and normal aging. The sub-standard condition of the wood structures makes them unsafe for crews to climb to perform maintenance activities. Further, the 161-kV standard is no longer commonly used, which poses challenges for acquiring and replacing parts. Unplanned outages due to equipment failure are a risk. Above-normal maintenance costs and efforts are likely. Rebuilding the transmission lines following good utility practices would alleviate these conditions.

Several public comments on the Certificate of Environmental Compatibility for the APS North Gila–Orchard 230-kV Transmission Line Project requested that Western and APS co-locate transmission facilities to minimize visual and agricultural impacts. Western proposes to co-locate its Gila–North Gila facilities with APS in response to these comments and in conformance with FERC Order 1000, which requires collaborative planning among transmission providers.

1.3 Cooperating Agencies

The Bureau of Reclamation (Reclamation) and the U.S. Army Corps of Engineers (Corps) are cooperating agencies in preparing the EA for this Project.

The Project passes through Bureau of Reclamation Withdrawn land. To construct and operate the Project, an Authorization to cross its Withdrawn land must be issued to Western by Reclamation.

A permit under section 404 of the Clean Water Act is required from the Corps if there are impacts to federally jurisdictional wetlands or waters of the U.S.

In support of these actions, Reclamation and the Corps have participated as cooperating agencies by meeting with Western, reviewing technical reports, and providing input into the scope and content of the environmental analysis. Refer to Chapter 5 for additional information on agency coordination for this Project.

1.5 Public Involvement

Western notified stakeholders of the Project and solicited their comments through a scoping letter dated January 16, 2013 and newspaper advertisements (refer to Appendix D). Stakeholders notified included federal, tribal, state, and local governments, other interested organizations, and landowners within and near the Project area. A public scoping meeting was held on February 7, 2013 in Yuma, Arizona. More than 80 comments were received on the Project from federal agencies (U.S. Fish and Wildlife Service, Air Force), state agencies (Arizona Department of Environmental Quality, Arizona Department of Transportation), local agencies (Yuma Irrigation District, Yuma County Flood Control District), tribes, various organizations, and several individuals. Primary topics included:

- Impacts to cultural resources (Redondo Ruin)
- Impacts to biological resources associated with the Gila River
- Compliance with water resources regulations
- Concerns about public health effects (e.g., electric and magnetic fields and fire hazards)

Refer to Chapter 5 and Appendix F for information on tribal consultation and Appendix E for copies of agency correspondence.

1.6 Decisions Needed

This EA, which is the responsibility of Western, is a concise public document that serves to:

- provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI);
- aid Western's compliance with NEPA when no EIS is necessary; and
- facilitate preparation of an EIS if one is necessary (40 CFR § 1508.9).

Based on the findings contained in this EA, weighing how each alternative meets the purpose and need, Western will determine whether the proposed Gila to North Gila Transmission Line Rebuild and Upgrade Project requires an EIS or if a FONSI can be prepared. Should Western decide to prepare a FONSI, the document will present supporting rationale for that decision.

Chapter 2
Proposed Action and Alternatives

2.1 Proposed Action Description

Western proposes to rebuild and upgrade two, parallel, 4.8-mile-long transmission lines located between Gila and North Gila substations and take land actions in support of portions of APS' construction of a new, 12.8-mile-long, 230-kV transmission line between the existing North Gila Substation and the proposed Orchard Substation in Yuma County, Arizona. Western's reconstruction action involves the double-circuit, Gila–North Gila 69-kV transmission line, which would be rebuilt as an underbuild[1] on steel structures associated with the new APS North Gila–Orchard 230-kV transmission line segment, as well as a portion of the wood-pole Gila–Knob 161-kV transmission line, which would be upgraded to 230-kV and rebuilt on steel structures. Western's land action entails acquiring up to an additional 50 feet of ROW adjacent to the existing Gila–Knob ROW; relinquishing a portion of the Gila–North Gila ROW, which would be acquired by APS; and granting APS the right for their new transmission line to cross Western's Gila Substation. The Proposed Action is divided into two phases, as described in Section 2.1.3.

The Proposed Action is located in Yuma County, Arizona on Bureau of Reclamation and private lands within the City of Yuma and unincorporated Yuma County. An overview of the Gila to North Gila Transmission Line Rebuild and Upgrade Project (Project) is illustrated in Figure 2-1. The Proposed Action is illustrated in Figure 2-3. The existing configuration of transmission lines in the Project area is illustrated in Figure 2-2; existing ROW and tower configuration are illustrated in Figure 2-6. The Project, including the existing configuration, Proposed Action, and alternatives, is summarized in Table 2.1-1.

Table 2.1-1. Project Summary

Transmission Line	Ownership	Circuit Type	Structure Type	ROW Width
Existing Configuration				
Gila–North Gila	Western	69-kV, double	wood H-frame	35 feet
Gila-Knob	Western	161-kV, single	wood H-frame	100 feet
Gila-Sonora	Western	69-kV, double	wood pole	70-80 feet
Proposed Action and Certificated Route Alternative				
North Gila-Orchard	APS	230-kV, double 69-kV, double underbuild	steel monopole	100 feet
Gila–North Gila	Western	69-kV, single	wood pole[1]	35 feet
			underbuild[2]	N/A
Gila-Knob	Western	230-kV, double	steel monopole	150 feet
Gila-Sonora	Western	69-kV, single	wood pole	70-80 feet
No Action Alternative				
North Gila-Orchard	APS	230-kV, double 69-kV, double underbuild	steel monopole	100 feet

[1] Underbuild: to place a lower voltage transmission line underneath a higher voltage transmission line on a single structure

Table 2.1-1. Project Summary

Transmission Line	Ownership	Circuit Type	Structure Type	ROW Width
Gila–North Gila	Western	69-kV, double	wood H-frame	35 feet
Gila-Knob	Western	161-kV, single	wood H-frame	100 feet
Gila-Sonora	Western	69-kV, single	wood pole	70-80 feet

1 - Between North Gila Substation and structure 4-5 or 3-8, up to 1.1 miles (refer to Figure 2-3)
2 - Underbuild on Gila-Knob between structure 4-5 or 3-8 and Gila Substation (refer to Figure 2-3)

2.1.1 APS North Gila–Orchard Transmission Line

On February 2, 2012, the ACC issued a Certificate of Environmental Compatibility (CEC) to APS approving the North Gila to Orchard (formerly known as TS8) to Yucca 230-kV Transmission Line Project. Project planning began in 2010 and APS submitted its application to the ACC in November 2011. The Project is described in detail in the CEC Application (APS 2011), which is incorporated by reference.

The North Gila–Orchard segment of the APS project includes a new 12.8-mile-long double-circuit 230-kV transmission line extending from the existing North Gila Substation to the proposed Orchard Substation. Where it is adjacent to the Gila–North Gila transmission line (approximately 3.7 miles), the North Gila–Orchard 230-kV structures would temporarily support Western's Gila–North Gila 69-kV conductor as an underbuild should Western move forward with its Proposed Action. Subsequent to relocating the conductor, the Gila–North Gila wood poles would be removed and recycled. APS would claim the abandoned 35-foot-wide Gila–North Gila ROW and acquire 65 feet of new ROW to the east, thereby attaining a total APS ROW width of 100 feet (refer to Figure 2-7).

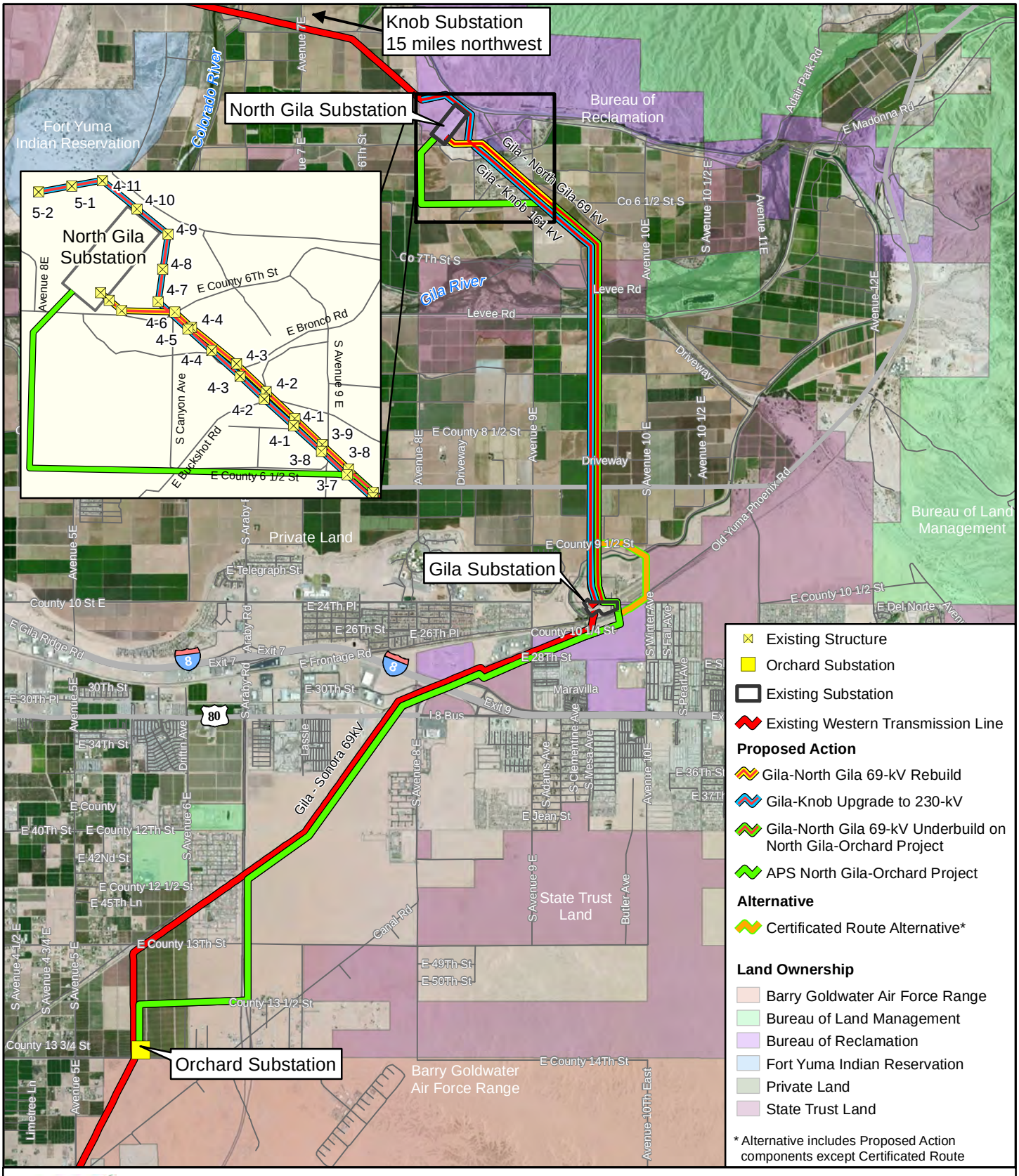
Although the APS project, as approved by the ACC, may proceed irrespective of Western's federal Proposed Action, the North Gila-Orchard segment of the APS project is considered in this Environmental Assessment because part of Western's Proposed Action relies on the APS project being constructed. Additionally, APS will use the analysis herein to support an amendment to its CEC. An amendment is necessary because APS is proposing to change the route from around the Gila Substation (refer to Section 2.3) to across the Gila Substation.

2.1.2 Western's Federal Action

In October 2011, APS approached Western about co-locating APS and Western circuits on the same transmission line structures between North Gila and Gila substations. Subsequently, Western identified the following federal action.

Gila–North Gila 69-kV Rebuild

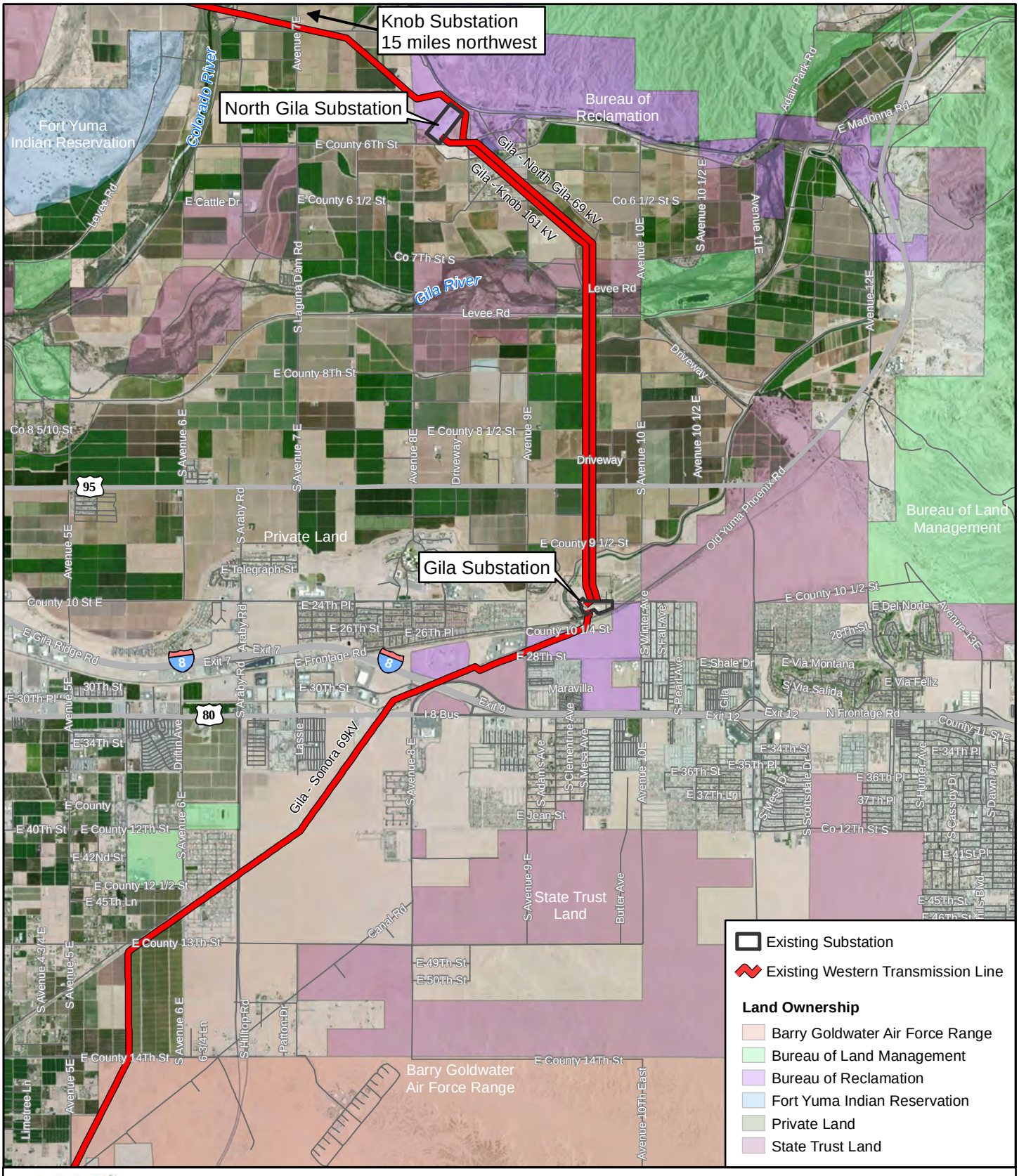
Starting at the North Gila Substation and extending approximately 0.4 mile southeast to where Western's Gila–North Gila ROW joins the Gila–Knob ROW (North Gila Substation to Gila–North Gila structure 4-5; refer to Figure 2-3), Western would replace the existing Gila–North Gila wood pole structures with new wooden structures.



1:75,000
1 in = 6,250 feet

0 1 2 Miles

Figure 2-1
Project Overview

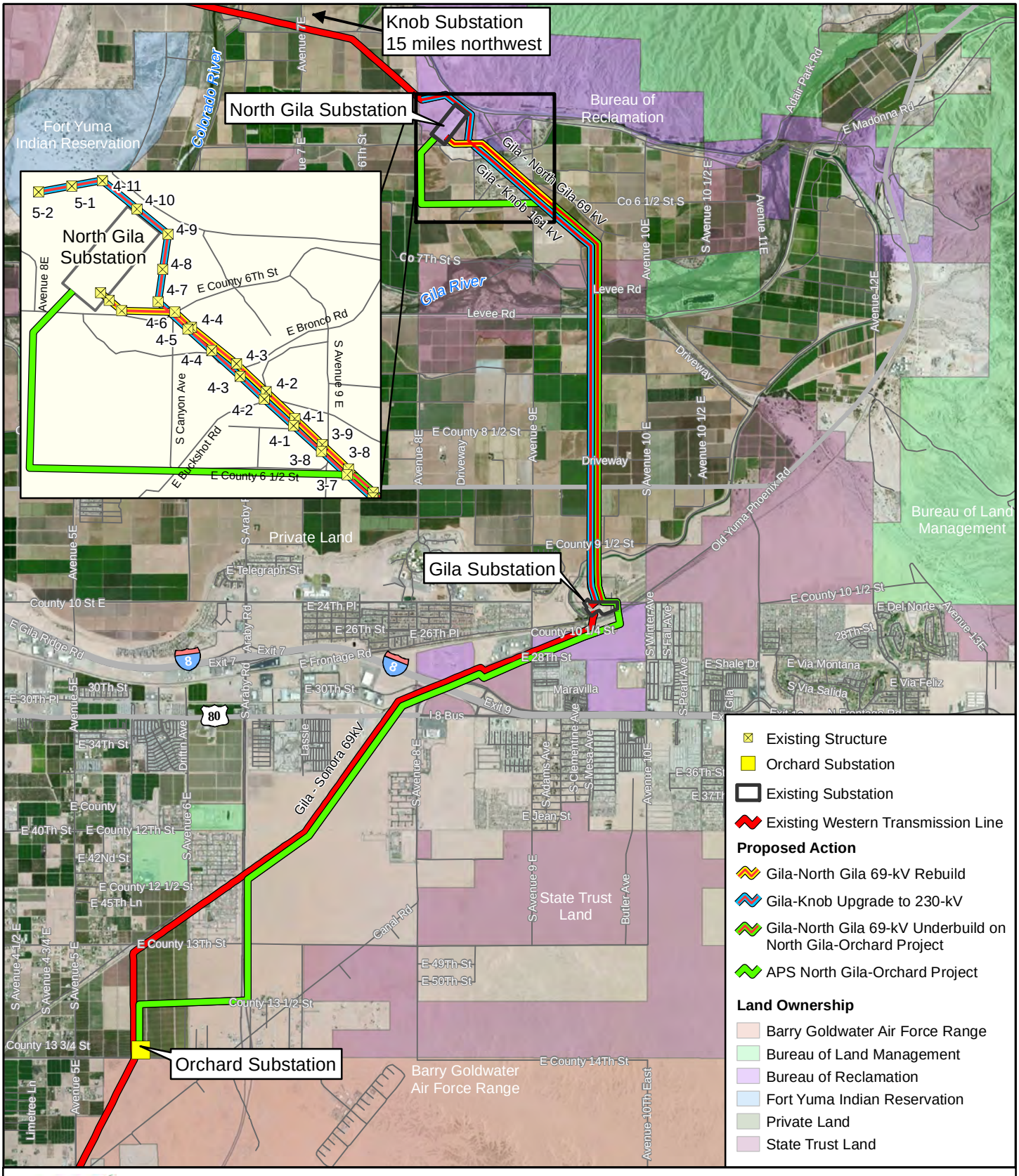


Western AREA POWER ADMINISTRATION

1:75,000
1 in = 6,250 feet

0 1 2 Miles

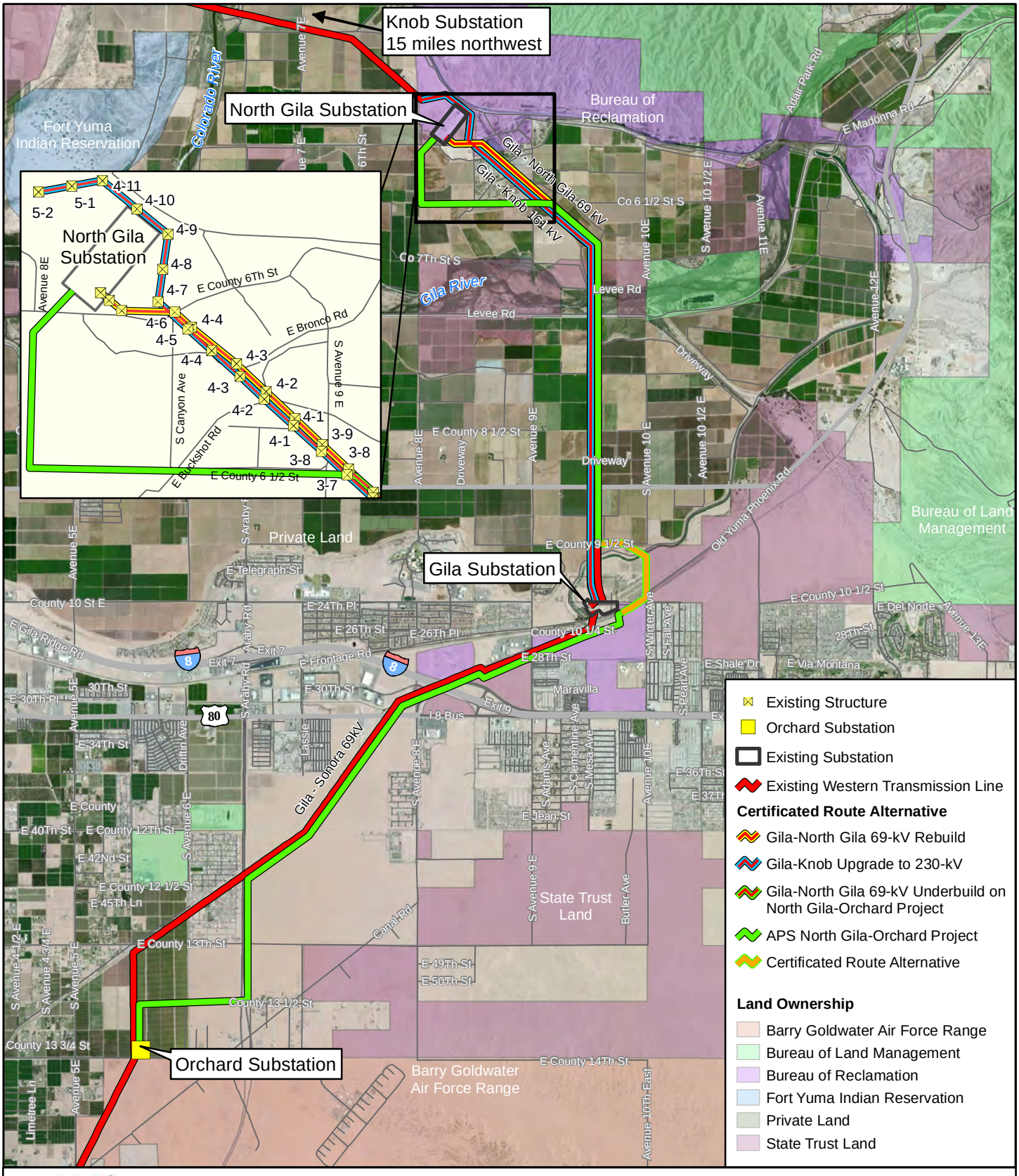
Figure 2-2
Existing Configuration



1:75,000
1 in = 6,250 feet

0 1 2 Miles

Figure 2-3
Proposed Action



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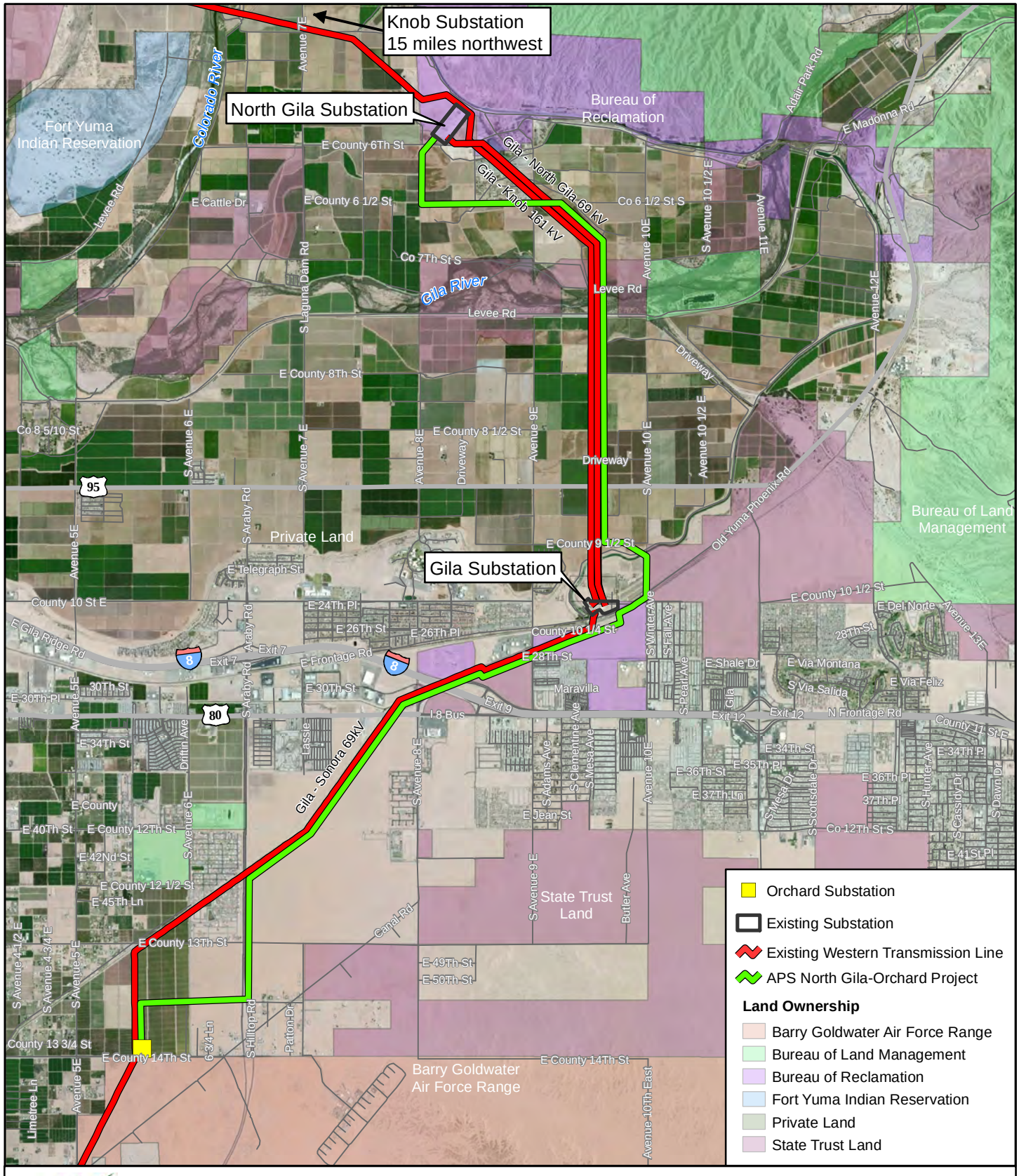
1 in = 6,250 feet

0 1 2 Miles

Figure 2-4
Certificated Route Alternative



1:75,000
1 in = 6,250 feet

0 1 2 Miles

Figure 2-5
No Action Alternative

For the 0.7-mile segment where the Gila–North Gila and Gila–Knob lines are adjacent to where they meet APS' North Gila–Orchard ROW (Gila–North Gila structures 4-5 to 3-8; refer to Figure 2-3), Western would either replace the conductor on the existing Gila–North Gila wood poles or rebuild the Gila-Knob transmission line on steel monopoles and place the Gila–North Gila 69-kV circuit as an underbuild on the new Gila–Knob structures.

In addition, Western proposes to issue APS the right to cross Western's Gila Substation with its North Gila–Orchard 230-kV transmission line as well as relinquish a 35-foot-wide portion of its Gila–North Gila ROW that would be acquired by APS (refer to Figure 2-7).

Gila–Knob 230-kV Upgrade

Western proposes to upgrade a 4.8-mile segment of its Gila–Knob transmission line between structure 5-2 and the Gila Substation. The existing Gila–Knob 161-kV wood structures, conductor, and associated infrastructure would be removed and the line would be rebuilt as single-circuit 230-kV on steel monopoles that would be capable of supporting two, 230-kV circuits with a single-circuit 69-kV underbuild (refer to Figure 2-8). Western would install new conductor, new line attachment assemblies, and two overhead ground wires for lightning protection and communications. Western may substitute one of the overhead ground wires with a fiber optic line used for command and control of the bulk electric system.

The transmission line would be designed to meet or exceed the requirements of the National Electrical Safety Code (NESC), U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) Standards, and Western's Power Systems Safety Manual, policies for protection of landowners, property, wildlife, and the public. Table 2.1-2 presents a summary of the proposed structure types and other design characteristics of Western's proposed Gila–Knob 230-kV upgrade.

Table 2.1-2. Proposed Gila–Knob 230-kV Structure Design Characteristics

Feature	Description
Structure type	Monopole (tubular steel) structures
Structure height	125 to 140 feet
Span length	800 to 1,100 feet
Total number of structures	25, or approximately 5 structures per mile (actual number will be determined during final engineering based on span length)
Conductor	795 ACSS, Drake. 26 strands of Aluminum with 7 strands of steel in core, 1.108 inch diameter complete cable
Structure foundations	Direct-embedded steel monopoles w/concrete backfill

To ensure enough space for Western to conduct maintenance work, Western proposes to expand its existing 100-foot-wide Gila–Knob ROW (refer to Figure 2-8). Between the North Gila Substation and the intersection with APS' North Gila–Orchard transmission line, Western proposes to expand its ROW up to 25 feet to the west. Where Western ROW is adjacent to APS ROW, Western would expand its Gila–Knob ROW up to 50 feet to the west.

Gila–Sonora 69-kV Encroachment

Along Western's Gila–Sonora 69-kV ROW south of the Gila Substation (refer to Figure 2-3), Western proposes not to object to APS encroaching on a 25-foot-wide portion of its 70- to 80-foot-wide ROW for its North Gila–Orchard 230-kV transmission line. Western would issue a license agreement to APS for this approximately 2.5-mile-long segment where Western and

APS' ROWs would overlap. The corridor available for transmission lines is constrained in this location due to existing buildings and infrastructure. Western requires 75 feet between the two transmission line centerlines so that it can safely and reliably operate and maintain the Gila-Sonora transmission line.

2.1.3 Timing

The Proposed Action is divided into two phases based on timing of activities.

Phase I. The first phase of the Proposed Action is the Gila–North Gila 69-kV Rebuild and the Gila-Sonora 69-kV Encroachment, as described above. It would be competed concurrently with construction of APS' North Gila–Orchard 230-kV Transmission Line Project. APS would construct the segment of their 230-kV line between the Orchard substation and the Gila substation from January to May 2015, and the segment between the Gila Substation and the North Gila Substation from June to October 2015. Phase I is shown in Figure 2-7.

Phase II. The second phase of the Proposed Action is the Gila-Knob 230-kV Upgrade, as described above. It would be implemented when APS requests that Western remove their Gila–North Gila 69-kV conductor from APS' North Gila–Orchard 230-kV structures. This request would be made when APS eventually expands its 69-kV system and needs the underbuild space on the North Gila–Orchard 230-kV structures. If funds are available, Western may implement this phase without APS' request. Phase II is shown in Figure 2-8.

2.1.4 Project Implementation

The following description of project implementation applies to both Western's federal Action and APS' North-Gila-Orchard transmission line, unless differences are noted.

2.1.4.1 Pre-Construction

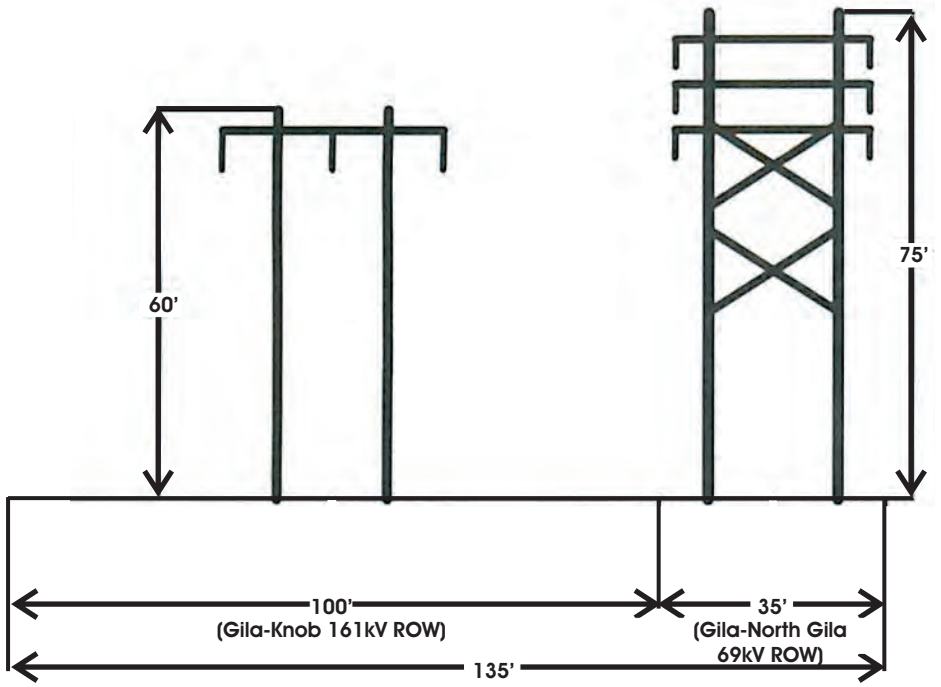
APS would acquire new ROW prior to construction of its North Gila–Orchard transmission line. Other proposed pre-construction land actions include Western granting APS the right to cross Western's Gila Substation with its North Gila–Orchard transmission line and issuing a license agreement to APS for the 2.5 miles of shared ROW along the Gila–Sonora transmission line. In addition, Western would expand its Gila–Knob ROW prior to upgrading the transmission line to 230-kV.

Because a high groundwater table occurs in the Gila Valley, geotechnical borings would be excavated for some proposed structure footings. Geotechnical borings would occur at one test hole per mile, and one at every point of intersection (change of direction), for a total of 6 or 7 borings between the Gila and North Gila substations.

2.1.4.2 Construction

Ground Disturbance

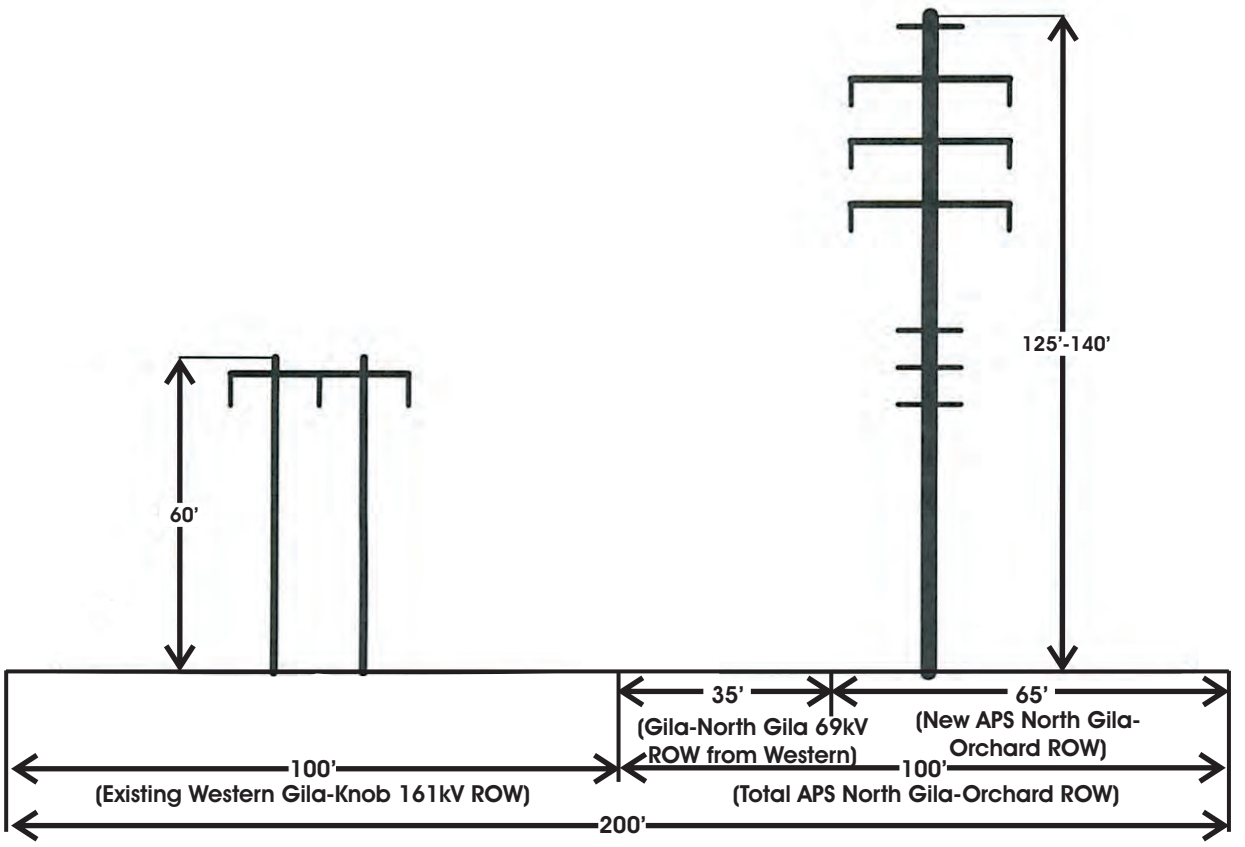
Ground disturbance from construction activities would occur as a result of removing existing structures, grading areas and drilling holes for new structure placement, improving existing access roads for vehicle and equipment access, and installing/removing conductor and over-



Facing North

Figure 2-6
Existing Right-of-Way

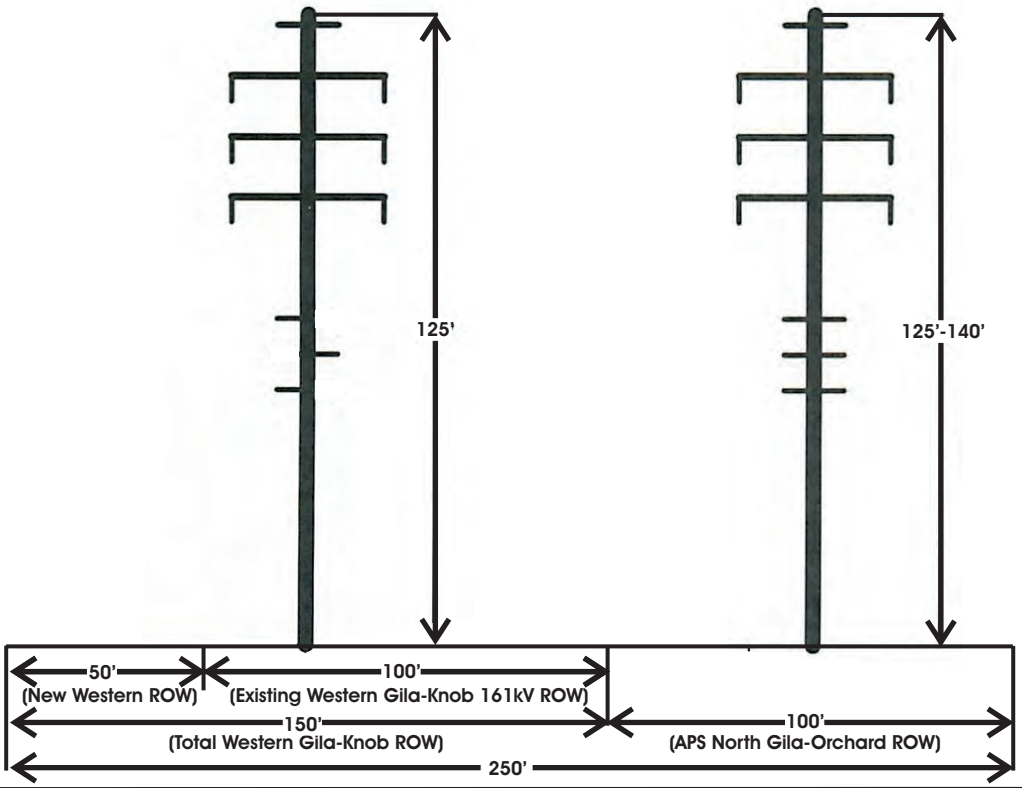
Source: DSW, 2012.



Facing North

Figure 2-7
Proposed Action: Phase I

Source: DSW, 2012.

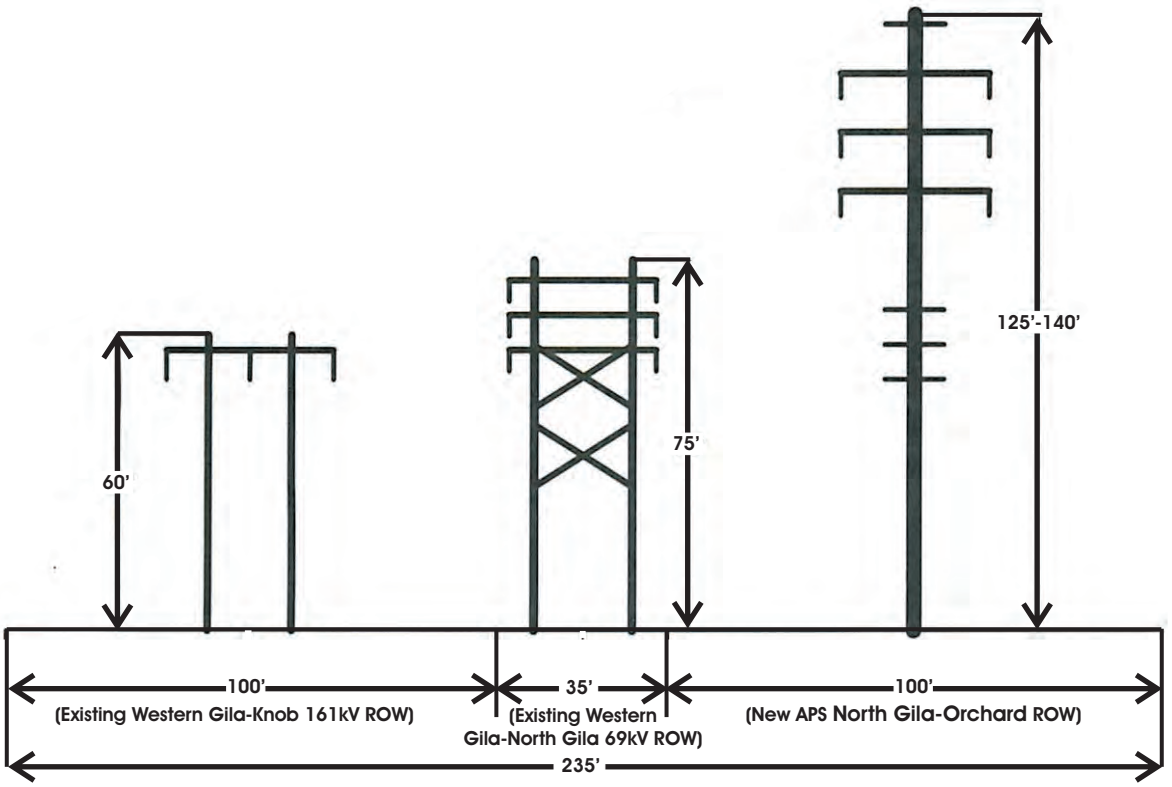


Facing North

Figure 2-8

Proposed Action: Phase II

Source: DSW, 2012.



Facing North

Figure 2-9

No Action Alternative

Source: DSW, 2012.

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head ground wire. These activities would be conducted within existing transmission line ROWs. However, short-term disturbance outside ROWs would be required for wire pulling and tensioning sites.

Conductor pulling and tensioning sites (pull sites) would be approximately 100 feet wide by 400 feet long. Any pull sites that may occur outside the existing ROW would require Special Use or Temporary Use Permits, which would be acquired in consultation with the land owner(s).

Temporary disturbance areas for structure installation would be approximately 100 feet in diameter. Permanent disturbance required for foundation footprints would be approximately three to six feet in diameter. Excavation up to 30 feet deep would be required to install the foundations. At structures within the Gila River floodplain, reuse of existing island riprap (around structures) or concrete abutment would be utilized to the maximum extent feasible. As such, floodplain structure foundations will have a larger permanent footprint diameter than structures outside of the floodplain. For all structure foundations, Best Management Practices will be used and floodplain structure foundations will be in compliance with U.S. Army Corps of Engineers requirements.

Existing access roads for Western's Gila–North Gila and Gila-Knob transmission lines would require improvements to be passable for construction and maintenance vehicles, as some may no longer be useable due to vegetation overgrowth and erosion. Any access road improvements that may occur outside the existing ROW would require Special Use or Temporary Use Permits, which would be acquired in consultation with the applicable land owner(s). Improving existing access roads would involve brush clearing, minor grading, and the installation of corrugated metal pipes to maintain storm water flows within any ephemeral wash areas. In the area between Levee Road to East County 9½ Street South, vegetation would be cleared at existing and new tower locations and to create temporary access to all work areas (refer to Figure 2-1 for this location).

For existing access roads needing repair, surface material lost or worn away would be replaced and the road would be graded and shaped. Watering could be required to control dust and to retain fine surface rock. Access road repair work would be confined to within 10 feet of either side of the existing access road.

No new access roads would be required to access Western's transmission line support structures. If necessary, overland access off existing access roads would occur using rubber tire vehicles.

Construction Equipment and Workforce

Construction equipment would include various rubber tire vehicles or tracked equipment ranging in size from a pickup truck to a crane, including but not limited to: auger rig, backhoe, grader, front-end loader, tensioning equipment (drum rollers), delivery trucks, boom (bucket) truck, and a small excavator. A helicopter may be used for conductor stringing.

Construction of Phases I and II would require a total of approximately 10 to 15 construction workers, who would not all be on the job site at the same time. These workers include 2 to 3 drillers, 6 to 9 linemen, and 2 to 3 ground workers.

Construction Staging

Equipment and worker staging for Western's federal action would occur within the eastern section of Gila Substation, where there is an existing Western storage yard. A dedicated assembly/ staging area would be established at this location, which would be used to store and assemble new and removed structures, to store other materials delivered by truck transport (conductor, insulators, etc.), to stage construction worker/service vehicles and other construction equipment.

Electrical Outages

The Gila–North Gila 69-kV and Gila–Knob 161-kV transmission lines would be de-energized between the North Gila and Gila substations to accommodate construction of Phases I and II, respectively. Electrical service to Western's customers would be rerouted through alternate paths to maintain service during these temporary outages. Near the end of Phase I, Western would take the Gila–North Gila transmission line out of service for approximately 3 weeks to build the last 0.5 mile of Gila–North Gila into the North Gila Substation and connect into the Gila Substation. For Phase II, Western would take the Gila–Knob transmission line out of service for approximately 4 to 5 months.

Existing Infrastructure Removal

Prior to removing the existing Gila–North Gila and Gila–Knob wood structures, the existing conductor would be wound onto spools, hauled away by truck, and recycled. Then, the existing structures would be removed. Removal could include total excavation or cutting off the poles approximately two feet below ground surface. Once removed, the existing structures (where practicable) shall be recycled, transferred to the public for some uses or disposed of a landfill following Western's Construction Standards 13 (provided in Appendix A). Excavations would be backfilled with native material.

Structure Foundations

To install foundations, the structure location would be leveled with tracked or rubber-tire equipment. Then, the structure foundations would be excavated with an earth auger. Structure foundations would be concrete and the pole structures secured with anchor bolts or concrete backfill. A concrete truck would be parked as close to the structures as feasible to provide concrete for foundations. Any excess excavated material would be used as backfill or removed from the site.

New Structure Assembly and Erection

The steel, monopole structures, conductor, overhead ground wire, insulators and other hardware would be delivered by truck to the Gila Substation and assembled within the designated construction staging area. Monopole structures would be assembled in this area and trucked to each location. Most monopoles are in three or four pieces that must be pulled together with the aid of a hydraulic jack. The entire pole is framed on the ground complete with crossarms, insulators, and line hardware or these components are installed after the pole is erected. Next, the pole is set in the hole with a crane while concrete is placed around the base. Then, each structure is held in place with a crane or guy wire for 72 hours.

Conductor Stringing

To install conductor on APS' North Gila–Orchard 230-kV structures as well as the Gila–North Gila 69-kV underbuild and Gila–Knob 230-kV upgrade, stringing sheaves or travelers (pulleys) would be attached on the crossarms of each structure to the bottom of the insulator strings. A sock line (rope or lightweight wire) would be strung from structure to structure through the stringing sheaves. This may be completed using a helicopter. A larger-diameter pulling line would then be attached to the end of the sock line and pulled back through the sheaves, stringing from structure to structure between pull site locations.

Using powered pulling equipment at one end and powered braking or tensioning equipment at the other end establishes the proper tension for crews to permanently "clip" conductors and ground wires onto new structure hardware, thereby maintaining the proper ground clearance for the conductors. Once conductor and ground wire are clipped in, the stringing sheaves would then be removed and the new conductor would be connected to the new porcelain insulators hanging from the crossarms. Ground wire is installed last and would be attached to the top of the structures using a pulling technique similar to that used for the conductors. One of the ground wires would be used as a lightning arrestor, or shield wire. The other has a fiber optic core and would be used for communications.

In some cases, individual conductor segments must be connected (spliced) together to form a continuous line, using a mechanical device or implosive method. APS would use implosive sleeving on its North Gila–Orchard 230-kV transmission line; Western may also use this technique on the Gila–Knob 230-kV transmission line.

Disturbance Area Restoration

Restoration would be completed at disturbance areas within the ROW following construction and cleanup of each construction phase. Disturbed surfaces would be restored to the original contour. All disturbed soil, other than surfaces intended for permanent access roads, would be seeded with native species free of invasive seed. Where necessary, water diversions (i.e., waterbars) would be constructed along access roads to control surface water drainage and erosion.

2.1.4.3 Operation and Maintenance

Western must comply with North American Electric Reliability Council orders regarding transmission line reliability which includes standards and requirements for maintenance and vegetation management. Transmission line operation and maintenance activities would include:

- **Vegetation management** would ensure that vegetation does not interfere with human safety, transmission line conductors, structures, other hardware, or impede access to the transmission line for maintenance crews. In general, vegetation management would be performed using a variety of methods including manual methods (hand-controlled, powered, or non-powered tools such as chainsaws and clippers), chemical methods (herbicides) and mechanical methods (such as heavy-duty mowers). Western will follow the guidelines for these methods presented in *Western Area Power Administration Integrated Vegetation Management Guidance Manual* (Western 2011).

- **Access road maintenance** would ensure that access roads are in appropriate condition for all-weather access to transmission lines and structures by maintenance and inspection crews. Access road maintenance could include grading, surfacing, erosion-control measures, installing low water crossings, and constructing water diversions such as rolling drain dips (shallow dip followed by a hump, along with an earthen berm at the edge of one side of the road to provide cross-drainage) and water bars (a ridge that directs water off the road) on existing access roads. A grader would be the primary equipment type used to conduct this work.
- **Transmission line and associated structure, hardware, and equipment maintenance** would include equipment and system maintenance and upgrades, routine aerial and ground patrols of transmission lines and ROWs, and transmission system repairs, as needed.

2.2 Resource Protection Measures

Resource protection measures specific to the Proposed Action and alternatives are presented in Table 2.2-1 and are considered part of the Project. If Western hires a construction contractor, then Western's *Construction Standards 13 – Environmental Quality Protection* (Western's Construction Standards 13) will be implemented as part of Western's Federal Action. Western's Construction Standards 13 are presented in Appendix A. Table 2.2-1 includes the parties responsible for implementation of and compliance with measures, the portion of the Project that is affected in regards to its federal or non-federal status, and the timing in which the measures would be implemented.

Table 2.2-1. Resource Protection Measures

ID	Measure	Responsible Party(ies)	Federal/APS	Timing
AG-1	Coordinate construction activities with landowners, including notification of construction schedule and planned activities.	APS and Western	Federal and APS	Pre-construction
AQ-1	Minimize land disturbance.	APS and Western	Federal and APS	Construction
AQ-2	Suppress dust on unpaved access roads through wetting or use of watering trucks.	APS and Western	Federal and APS	Construction
AQ-3	Cover trucks when hauling soil.	APS and Western	Federal and APS	Construction and reclamation
AQ-4	Minimize soil track-out washing or cleaning truck wheels before leaving construction site.	APS and Western	Federal and APS	Construction
AQ-5	Stabilize the surface of soil piles with water or palliative.	APS and Western	Federal and APS	Construction
AQ-6	Create windbreaks in areas highly susceptible to fugitive dust.	APS and Western	Federal and APS	Construction
AQ-7	Revegetate any disturbed land not used.	APS and Western	Federal and APS	Reclamation
AQ-8	Remove unused material.	APS and Western	Federal and APS	Reclamation
CUL-1	Avoid performing construction, operation, and maintenance activities near the berms of the Main Drain (AZ X:6:39), A Canal (AZ X:6:82), B Canal (AZ X:6:83), and the Gila Gravity Main Canal (AZ X: 7:20).	APS and Western	Federal and APS	Construction, operation, and maintenance

Table 2.2-1. Resource Protection Measures

ID	Measure	Responsible Party(ies)	Federal/APS	Timing
CUL-2	In the event of archaeological discoveries or discoveries of human remains on federal land during construction, and operation and maintenance of the Project, these activities must cease in the immediate vicinity of the discovery and Western's Federal Preservation Officer (FPO) must be notified immediately. If human remains are found on federal lands, the federal land-managing agency must also be notified immediately, followed by written notification of the discovery of human remains to the agency with 24 hours. Western's FPO, and the federal land managing agency's archaeologist, will consult with the Arizona State Historic Preservation Office and tribes to determine the appropriate course of action.	Western	Federal	Construction, operation and maintenance
CUL-3	If any archaeological site, historical site or an object that is at least fifty years old is discovered on state, county or municipal land during construction, and operation and maintenance of the Project, Applicant or its representative in charge shall promptly report the discovery to the Director of the Arizona State Museum, and in consultation with the Director, shall immediately take all reasonable steps to secure and maintain the preservation of the discovery as required by A.R.S. § 41-844.	APS and ACC	APS	Construction, operation and maintenance
CUL-4	If human remains and/or funerary objects are encountered on state, county or municipal land during construction, and operation and maintenance of the Project, Applicant shall cease work on the affected area of the Project and notify the Director of the Arizona State Museum as required by A.R.S. §41-844.	APS and ACC	APS	Construction, operation and maintenance
BIO-1	Limit disturbance area. At all work areas, limit the mechanical disturbance of previously undisturbed desert shrubland habitat (including soils).	APS and Western	Federal and APS	Construction
BIO-2	Pre-construction clearance surveys. Western will assign a qualified biologist to the Project, to conduct pre-construction clearance surveys for burrowing owls (year-around), nesting birds (at work sites where Project activities are scheduled from March 1 through September 15), and special-status reptiles. The biologist may perform monitoring on-site during construction activities as needed, to ensure minimization of impacts to special-status species and other biological resources. The biologist's responsibilities will include, but will not be limited to (1) inspection of locations of special-status reptiles or active bird nests that were located during the pre-construction survey (see below); (2) monitoring potential activity of these species in the Project area; and (3) regular inspection of the work areas, and other areas related to Project activities, for those species. The biologist will be authorized by Western to temporarily halt construction activity if needed to prevent potential harm to these species. The work supervisor will coordinate with the biologist on planned or ongoing activities and any specific preconstruction survey or monitoring requirements for each activity in those areas.	APS and Western	Federal and APS	Construction: year-round (burrowing owl) Mar 1 –Sep 15 (nesting birds and special-status reptiles)
BIO-3	Gila River crossing. No work will take place at the Gila River crossing between March 1 and September 15, during the nesting season for southwestern willow flycatcher, Yuma clapper rail, and western yellow-billed cuckoo. Any vegetation management at the Gila River crossing will be scheduled to avoid the bird nesting season (March 1 through September 15) and vegetation cutting or clearing will avoid marsh habitat, and will be limited to only removing trees that may be tall enough to cause safety issues relative to the transmission line conductors.	APS and Western	Federal and APS	Construction: Mar 1 – Sep 15

Table 2.2-1. Resource Protection Measures

ID	Measure	Responsible Party(ies)	Federal/APS	Timing
BIO-4	Migratory nesting birds. Project activities conducted during the breeding season, March 1 through September 15, will take place only after a qualified biologist has surveyed the work area for active bird nests. Preconstruction surveys will be conducted no more than 7 days in advance of any ground- or vegetation-disturbing activities in any location. Project activities may not disturb an active bird nest. If an active bird nest is located on or adjacent to the site, the qualified biologist will designate and flag an appropriate buffer area around the nest where activities will not be permitted. The buffer area will be based on the bird species and nature of Project activity. Project activities outside of the breeding season would require no nesting bird surveys.	APS and Western	Federal and APS	Construction, operation and maintenance: Mar 1 – Sep 15
BIO-5	Yuma sand fields. All work in native habitats, south of East 32nd Street that takes place between February 15 and November 15 will be surveyed by a qualified biologist prior to any ground disturbing activities to minimize impacts to flat-tailed horned lizards. If flat-tailed horned lizards are present, the qualified biologist will attempt to move them out of harm's way; if they cannot be moved, Project schedule or activities will be modified as feasible to avoid direct impacts to these species. This measure will not apply to Phase II due to absence of suitable habitat within work areas to be affected by Phase II.	APS	APS	Construction: Feb 15 – Nov 15
BIO-6	Worker training. Western will conduct employee training to ensure that all workers on the Project site (including contractors) are aware of all applicable Resource Protection Measures for biological resources. Specifically, workers will be required to (1) limit all activities to approved work areas; (2) report any bird nest observation in the work areas and access routes to the supervisor or on-site biologist; (3) avoid contact with any wildlife that may approach a work area and be aware of potential venomous reptile bites from carelessness or unnecessary harassment; (4) pick up and properly dispose of any food, trash or construction refuse; and (5) report any spilled materials (oil, fuel, solvent, engine coolant, raw concrete, or other material potentially hazardous to wildlife), to the supervisor or on-site biologist. During the training the instructor will briefly discuss special-status species that may occur in the work areas, their habitats, and requirements to avoid or minimize impacts. In addition, all workers will be informed of civil and criminal penalties for violations of the federal Endangered Species Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act.	APS and Western	Federal and APS	Construction
BIO-7	Animals. No pets will be permitted on the work site. Workers will not be permitted to feed, harm, approach, harass, or handle wildlife at any time, except to move animals out of harm's way, and only as directed by a supervisor. This condition will not exempt workers, including the biologist, from any safety policies with regard to venomous reptiles.	APS and Western	Federal and APS	Construction, operation and maintenance
BIO-8	Conform to APLIC design guidelines. In order to minimize any potential electrocution hazard for golden eagles or other large birds, energized and ground conductors and hardware will be separated by 60 inches or more, or will be covered.	APS and Western	Federal and APS	Pre-construction (project design)

Table 2.2-1. Resource Protection Measures

ID	Measure	Responsible Party(ies)	Federal/APS	Timing
BIO-9	Trash, refuse, concrete, and other materials. All trash and food materials will be properly contained within vehicles or closed refuse bins while on the site, and will regularly be removed from the site (at least on a weekly basis) for proper disposal. All construction refuse will be removed from each work site upon completion of construction. No raw cement, concrete or washings thereof, asphalt, paint, oil, solvents, or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, shall be disposed of on-site or allowed to spill onto soil. Cleanup of any spilled material shall begin immediately.	APS and Western	Federal and APS	Construction
BIO-10	Minimize standing water. Within desert shrubland habitat, water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards, to prevent the formation of puddles, which could attract wildlife to construction sites. The qualified biologist shall patrol these areas to ensure water does not puddle and shall take appropriate action to reduce water application where necessary.	APS and Western	Federal and APS	Construction
BIO-11	Speed limit. To minimize potential impacts to special-status wildlife, no vehicles will be permitted to exceed 25 mph while traveling on access roads.	APS and Western	Federal and APS	Construction, operation and maintenance
LU-1	Notify the Barry Goldwater Air Force Range of changed conditions	APS	APS	Pre-construction

2.3 Certificated Route Alternative

The Certificated Route is the route approved by the ACC for this portion of APS' North Gila–Orchard 230-kV Transmission Line Project. As shown in Figure 2-4, the Certificated Route Alternative would increase the overall length of the APS North Gila–Orchard 230-kV transmission line by 0.5 mile (to a total of 13.3 miles) by extending the route eastward around the Gila Substation and a date farm.

Under this alternative, Western would not issue APS the right to cross Western's Gila Substation with its North Gila–Orchard 230-kV transmission line segment and APS would not apply to ACC for a CEC amendment. However, the remainder of Western's Federal Action would still occur (as described in Section 2.1.2). Under this alternative, Western's Gila–North Gila 69-kV line would leave the APS structures north of Gila Substation and follow the existing Gila–North Gila ROW south to the Gila Substation, or it could follow the alternative route around Gila Substation, on the new North Gila–Orchard 230-kV transmission line, to a point just south of Gila Substation and return to the Gila Substation from there (refer to Figure 2-4).

Under this alternative, the pre-construction, construction, and operation and maintenance activities would be implemented (refer to Section 2.1.4), and the resource protection measures would be applied (refer to Section 2.2).

2.4 No Action Alternative

The No Action Alternative provides a baseline against which impacts of the other analyzed alternatives can be compared; it is illustrated in Figure 2-5. Under the No Action Alternative, APS

would acquire 100 feet of new ROW east of the existing Western Gila–North Gila 69-kV transmission line and construct the new North Gila–Orchard 230-kV transmission line segment. Western would continue to operate and maintain the existing Gila–North Gila 69-kV and Gila-Knob 161-kV transmission lines as they currently exist, with aging wood structures and existing transmission capacities. The ROW and tower configuration of the No Action Alternative are illustrated in Figure 2-9.

2.5 Alternatives Considered but not Further Evaluated

West of Gila Substation Alternative

An alternative route for the North Gila–Orchard Transmission Line along the west side of Gila Substation was considered. It was determined that this alternative would not meet the Project's purpose and need because it would decrease reliability and safety of the bulk electric system. Construction and maintenance workers could not safely work on a transmission line in this location because of the sloping terrain and proximity to existing facilities, such as the pumping plant, main irrigation canal, microwave tower, control room and switchyard. Reliability of a transmission line situated in this location would be compromised by proximity to other electrical equipment and limited access for maintenance workers. In addition, a transmission line in this location may interfere with future equipment upgrades and additions within Gila Substation.

San Luis Rio Colorado Alternative

In 2007, Western considered upgrading its transmission lines between the Gila and North Gila substations in conjunction with North Branch Resources' San Luis Rio Colorado Project, a proposed new 500-kV transmission line that would extend from the San Luis Rio Colorado Power Center in Mexico, interconnect to Gila Substation, and terminate at the North Gila Substation. However, in 2009, North Branch failed to meet criteria that would allow Western to continue its participation in the Project and subsequently was removed from Western's Generator Interconnection Queue. Since there is no active application, Western did not consider it as an alternative.

Existing Structures Alternative

Under this alternative, Western would upgrade the existing Gila-Knob 161-kV conductor to 230-kV without replacing the existing structures. However, the existing Gila-Knob wood structures are not capable of supporting 230-kV conductor and this alternative is technically infeasible.

Canyon Avenue Alternative

Under this alternative, APS' Gila–North Gila 69-kV circuit would be built on standalone structures between the North Gila Substation, along Canyon Avenue to East County 6½ Street, where it would be underbuilt on the North Gila–Orchard 230-kV structures with Western's Gila–North Gila 69-kV circuit. The Canyon Avenue alternative is a shorter route to the reach the 69-kV bays in the North Gila Substation in comparison to continuing as an underbuild on the North-Gila Orchard structures to the southeast end of the substation, as is proposed. The Canyon Avenue

alternative was dropped from consideration because it would increase the Project's footprint and impacts to landowners in comparison to the Proposed Action. While putting the 69-kV transmission line on the 230-kV structures entering the North Gila Substation from the southeast is longer, it does not require a separate route because the North Gila to Orchard 230-kV structures have been engineered to support an underbuild.

2.6 Past, Present, and Reasonably Foreseeable Future Actions

Cumulative impacts are defined by the CEQ (40 CFR §1508.7) as "… the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions." To determine the cumulative effects in the analysis area, a review was completed of known past, present, and reasonably foreseeable future proposed projects in the vicinity of the Project area and an analysis made of their short- and long-term incremental effects on the local environment. Past projects were considered to be those completed within the last 10 years. Because planned projects are not always carried to completion, the window for future reasonably foreseeable projects was projected only for those projects anticipated to have on-site impacts within 5 years.

Table 2.6-1 lists the past, present, and reasonably foreseeable future actions that may have impacts that could be combined with the impacts of the Proposed Action to result in cumulative effects.

Table 2.6-1. Past, Present and Reasonably Foreseeable Future Actions that Occur in the Project Area

Project Name	Project Description	Status/ Schedule	Project Location
Laguna Reservoir Restoration Project U.S. Bureau of Reclamation (USBR), Yuma Area Office	A sediment removal project that will restore the Laguna Reservoir to design capacity. The existing reservoir size is 400 acre-feet which will be restored to 1500 acre-feet, as designed.	Project in progress, to be complete in 2014	Immediately upstream of Laguna Dam, about 5 miles north of the North Gila Substation
MSCP Laguna Division Conservation Area (LDCA) USBR, Yuma Area Office	Restoration of native vegetation. LDCA will replace large saltcedar stands with a mosaic of open water, marsh, riparian and upland habitat, restoring over 1,200 acres of native vegetation along several former river meanders.	Project in progress, scheduled for completion in 2016	Between Imperial and Laguna Dams and between Mittry Lake and the Colorado River, about 5 miles north of the North Gila Substation
Yuma Expressway Project Arizona Department of Transportation	Preliminary assessment and feasibility study of a corridor around the Marine Corps Air Station.	Under review, final report expected February 2014.	The general alignment would be County 14 Street and Avenue D connecting to SR195 to the east and to Interstate 8 to the west crossing the Colorado River
Interstate 8 (I-8)/ Araby Road Traffic Interchange Reconstruction Arizona Department of Transportation	Replacement of three signalized intersections on Araby Road with two roundabout intersections, installing 5-foot-wide sidewalks on Araby Road from Union Pacific Railroad to northern project terminus, four retaining walls, guardrail, new detention basins, and relocating a gas line and water line, and other activities.	Under review, construction is anticipated to begin in early 2016 and last 6 months	At the intersection of I-8 and Araby Road, about 0.8 miles west of the Proposed Action

Table 2.6-1. Past, Present and Reasonably Foreseeable Future Actions that Occur in the Project Area

Project Name	Project Description	Status/ Schedule	Project Location
US 95/Ave 8-1/2E Roundabout Arizona Department of Transportation	Improve current stop-controlled intersection by constructing a roundabout to improve safety, primarily for bicycles and motorists traveling to/from Arizona Western College. Project intends to avoid Bureau of Reclamation's water collection facilities and wells on north side of highway by expanding to the south.	Project is funded with construction expected to start March 2016 and last 7 months	At the intersection of US 95 with Avenue 8½ E and extends about 0.25 mile in either direction.
US 95 from Ave 9E to Aberdeen Road at Yuma Proving Grounds Arizona Department of Transportation	Improve current two-lane highway to 5-lane and 4-lane divided highway in 4 phases. First phase is a 5-lane highway (match existing width of paved highway) with a roundabout at Fortuna Road to replace current traffic signals and bridge over Fortuna Wash and irrigation district's East Main Canal.	Only the bridge over Fortuna Wash is funded. Construction expected to start March 2015 and last 8 months.	Overall project extends from Avenue 9 E to past Fortuna Wash (mileposts 31.86–34.95), but the bridge-only portion extends only about 0.25 mile either side of the wash.
Gila Substation Upgrade Western Area Power Administration	Rebuild the 161-kV substation components to 230-kV standards, reuse the existing 161-kV transformers, rebuild the 69-kV, 34.5-kV, and 4.16-kV substation components	2013–2016	Gila Substation
Gila–Gila Valley Transmission Line Rebuild Western Area Power Administration	Replace the transmission line structures and conductors of approximately 4.9 miles of the existing Gila–Gila Valley transmission line and add an overhead ground wire	2013–2017	Gila Substation to Gila Valley
Gila-Sonora 69-kV Rebuild Western Area Power Administration	Rebuild the Gila-Sonora 69-kV transmission line	2013–2017	Gila Substation to Sonora Substation, adjacent to Proposed Action near Gila Substation
Communication System Maintenance Western Area Power Administration	Radio replacement at Black Mountain to Blythe, Telegraph to Wellton, Yuma Office to Laguna	2015	Near Gold Mine Tab in Imperial County, CA
Hassayampa–North Gila No. 2 500-kV Transmission Line APS	Construction and operation of a new 115-mile 500-kV transmission line	Construction in progress; in-service 2015	Generally follows existing Hassayampa–North Gila No. 1 transmission line
Foothill–North Gila Rebuild APS	Rebuild 12 miles of the Foothill–North Gila 69-kV transmission line	2016	From Foothills Substation near I-8 South Frontage Rd and Ave 12E to North Gila Substation near County 6th Street and Ave 8E
Araby-Foothill Rebuild APS	Rebuild 2 miles of the Araby-Foothill 69-kV transmission line	2016	From Araby Substation near County 11th Street and Ave 8E to Foothills line near County 11th Street and Mesa Ave
Araby-Gila Rebuild APS	Rebuild 2.5 miles of the Araby-Gila 69-kV transmission line	2016	From Araby Substation near County 11th Street and Ave 8E to Gila Substation near Araby Blaisdell Road and Ave 9½ E Alignment

Table 2.6-1. Past, Present and Reasonably Foreseeable Future Actions that Occur in the Project Area

Project Name	Project Description	Status/ Schedule	Project Location
Araby–Redondo Tap Rebuild APS	Rebuild 3.5 miles of the Araby-Redondo Tap 69-kV transmission line	2016	From Araby Substation near County 11th Street and Ave 8E to Redondo Substation near County 10th Street and Ave 8E
Orchard–Marine Air Base Rebuild APS	Rebuild 5 miles of the Orchard–Marine Air Base 69-kV transmission line	2016	From future Orchard Substation near County 14th Street and Ave 5½ E Alignment to Marine Air Base Substation near County 11½ Street and Ave 3E
Orchard-Araby Rebuild APS	Rebuild 5 miles of the Orchard-Araby 69-kV transmission line	2016	From future Orchard Substation near County 14th Street and Ave 5½ E Alignment to Araby Substation near County 11th Street and Ave 8E
Orchard-Waldrip Rebuild APS	Rebuild 5 miles of the Orchard-Waldrip 69-kV transmission line	2016	From future Orchard Substation near County 14th Street and Ave 5½ E Alignment to Waldrip Substation near County 14½ Street to Ave 1E

Chapter 3
Affected Environment and Environmental Consequences

The Affected Environment and Environmental Consequences chapter describes the existing conditions and analyzes potential impacts to the natural, human, and cultural environment resulting from the Proposed Action and alternatives. Certain issue areas were not further evaluated because they are not present in the Project area or no measurable impacts would occur; these are presented in Section 3.2. Through internal and external scoping, Western and the cooperating agencies identified several issues of concern, which are evaluated in detail in Sections 3.3 through 3.13.

The term *Project area* refers to the combined right-of-way of all transmission lines and temporary construction areas in the Proposed Action, Certificated Route Alternative, and the No Action Alternative.

3.1 Approach to Impact Analysis

The potential impacts of the Proposed Action and alternatives are described in terms of their type, context, duration, and intensity. These terms are defined as follows:

- Type describes the impact as beneficial or adverse, direct or indirect.
  - Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
  - Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.
  - Direct: An effect on a resource by an action at the same place and time. For example, soil compaction from construction traffic is a direct impact on soils.
  - Indirect: An effect from an action that occurs later or perhaps at a different place and often to a different resource, but is still reasonably foreseeable.
  - Cumulative: Impacts to resources that are added to existing impacts from other actions.
- Context describes the area (site-specific) or location (local or regional) in which the impact will occur.
- Duration is the length of time an effect will occur.
  - Short-term impacts generally occur during construction or for a limited time thereafter, generally less than two years, by the end of which the resources recover their pre-construction conditions.
  - Long-term impacts last beyond the construction period, and the resources may not regain their pre-construction conditions for a longer period of time.

Intensity reflects the amount of impact on each resource as a result of the Project. The levels of intensity are defined as follows:

- Negligible: Impact at the lowest levels of detection with barely measurable consequences.
- Minor: Impact is measurable or perceptible, with little loss of resource integrity and changes are small, localized, and of little consequence.
- Moderate: Impact is measurable and perceptible and would alter the resource but not modify overall resource integrity, or the impact could be mitigated successfully in the short-term.
- Major: Impacts would be substantial, highly noticeable, and long-term.

3.2 Resources Considered but not Further Evaluated

3.2.1 Climate Change

Greenhouse gases (GHGs), including carbon dioxide (CO_2), methane, nitrous oxide, and fluorinated gases, are associated with climate change. In 2011, CO_2 emissions represented approximately 84 percent of all GHG emissions in the U.S. (EPA 2013a). CO_2 is generated whenever a carbon-based fuel, such as coal, wood, natural gas, or fuel oil is burned. Sources include automobile and truck exhaust, industrial combustion sources and residential heating sources. In 2011, transportation (including cars, trucks, ships, trains, and planes) accounted for 28 percent of the GHG emissions (EPA 2013b). In 2010, passenger cars, alone, were estimated to travel more than 2 million miles and represented 43 percent of the transportation emissions (EPA 2012). By comparison, during Project construction, less than 15 trucks or pieces of industrial equipment would be operated per day on discreet portions of the 12.8-mile-long Project. During operation, the transmission lines would not generate GHGs. Construction of the Project is temporary and, given the small workforce, would represent a negligible source of GHGs. Therefore, climate change is not further evaluated.

3.2.2 Socioeconomics and Environmental Justice

Socioeconomics

The city of Yuma contains a large portion of the overall County population, housing, and employment. Construction of the Project would require a total of 10 to 15 construction workers who would not be on the job site at the same time. The city of Yuma contains a large construction workforce in comparison to the construction employment need. Should any of these workers travel from outside the city of Yuma area and wish to temporarily relocate during construction, ample short-term rental housing is available. As such, no adverse impacts to population, housing demand, or changes to existing employment patterns would occur. Furthermore, no residences or businesses would be relocated or displaced by the Project. Once constructed, existing Western and APS personnel would maintain the Project.

Construction could result in a nominal short-term increase in the local economy as workers purchase food, supplies, from area businesses and possibly from short-term housing rent. However, due to the small number of construction workers, any influence on the city of Yuma employment sectors or the regional economy would be negligible.

Environmental Justice

The Project area is within and immediately proximate to eight U.S. Census Tracts. Of these Census Tracts, the area within and immediately adjacent to the Project contains four Census Tracts where minority and/or low-income populations exceed 50 percent. However, because the Proposed Action and its alternatives do not result in significantly adverse and unavoidable environmental impacts, no adverse impact would disproportionately burden minority or low-income populations. Furthermore, due to the linear nature of the Project, any environmental impact to adjacent populations would be similar or identical across the entire route. As such, no environmental impact would be disproportionate.

3.2.3 Vegetation

The Project includes upgrades of existing transmission infrastructure crossing primarily agricultural land and construction of a segment of new transmission line (North Gila–Orchard) located primarily adjacent to existing transmission infrastructure and the A Canal. The North Gila–Orchard transmission line alignment is adjacent to undeveloped areas between the Gila Substation and Old Highway 80, as well as an approximately 0.5-mile segment located between Old Highway 80 and Orchard Substation; these areas are heavily disturbed from frequent off-road vehicle use along the A Canal. Native vegetation, where present, is extremely sparse and composed primarily of creosote bush, a commonly occurring desert plant. The Project would have no discernible impact on native vegetation given that the alignment crosses primarily agricultural land and is adjacent to existing infrastructure for the majority of its length. Therefore, vegetation is not further evaluated. Agriculture is discussed in Section 3.4.

3.2.4 Traffic and Transportation

The Project area is accessed easily via Interstate 8, U.S. Highway 95, State Route 195 (locally known as Araby Road or the Area Service Highway), and existing local roads. Transportation of construction materials to the construction staging area would occur via the existing paved road network. During construction, less than 15 people would travel to and from the construction site on a daily basis; this limited amount would use existing transportation routes and would have no discernible impact on traffic flow rates. During operation, traffic would be limited to occasional access for routine maintenance of the transmission lines or in response to a major outage. Impacts to traffic and transportation would be negligible and temporary. Therefore, traffic and transportation are not further evaluated.

3.2.5 Intentional Destructive Acts

The Project presents an unlikely target for an act of terrorism or sabotage, with an extremely low probability of attack. The Project is adjacent to or is replacing similar existing infrastructure that has been in operation for 70 years, has not previously been the subject of an intentional destructive act, and is not a unique facility; therefore, intentional destructive acts are not further evaluated.

3.2.6 Geology, Soils, and Mineral Resources

For the majority of its length, the Project is located partially within or adjacent to previously disturbed infrastructure corridors. There is no known unique geology, soil, or mineral resources within the Project alignment; therefore, these resources are not further evaluated. Prime and unique farmland is evaluated in Section 3.4, Agriculture.

3.2.7 Hazardous Materials and Solid Waste

Project construction would not release any hazardous materials, hazardous substances, or oil at or above reportable quantities. No hazardous wastes would be generated except for a small volume of rags contaminated with oil or grease, which would be transported off-site for disposal at an approved waste management facility. Existing wooden H-frame poles would be removed from the site and recycled. Therefore, hazardous materials and solid waste are not further evaluated.

3.3 Aesthetics and Visual Resources

3.3.1 Proposed Action

Aesthetics and visual resources refer to the components of the environment as perceived through the visual sense only. Because a person's reaction and attachment to a given visual resource are subjective, visual changes inherently affect viewers differently. Accordingly, aesthetics and visual resource analysis is a systematic process to logically assess visible change in the physical environment and the anticipated viewer response to that change. The following describes the existing landscape character of the Project area, existing views of the area from two on-the-ground vantage points (key observation points), the visual characteristics of the Proposed Action, and the landscape changes that would be associated with the construction and operation of the Proposed Action (as seen from the two vantage points).

The analysis of aesthetics and visual resources utilizes resource-specific qualitative and quantitative terminology. The following defines terms used within this analysis:

- **Key Observation Point (KOP)**: One or a series of points on a transportation corridor or at a public/private use area, where the view of a proposed activity would be most revealing or sensitive.
- **Viewshed**: The landscape that can be directly seen under favorable atmospheric conditions, from a KOP or along a transportation corridor.
  - Foreground View: 0–1 mile.
  - Middleground View: 1–3 miles.
  - Background View: 3–5 miles.
- **Visual Quality**: The relative worth of the overall impression or appeal of an area created by the physical features of the landscape, such as natural features (landforms, vegetation, water, color, adjacent scenery and scarcity), and built features (roads, buildings, railroads, agricultural patterns, and utility lines). These features create the distinguishable form, line, color, and texture of the landscape composition that can be judged for scenic quality using criteria such as contrast.

  Within this analysis, visual quality at KOPs and viewsheds are discussed and qualitatively rated as follows:

  - High: Where the valued natural landscape character is intact with only minute if any visual deviations. The existing natural landscape character is expressed at the highest possible level.
  - Moderate: Where the valued natural landscape character appears slightly altered. Noticeable deviations must remain visually subordinate to the natural landscape character being viewed.
  - Low: Where the valued natural landscape character appears moderately to heavily altered. Visual deviations (human-made structures) primarily dominate the valued landscape character being viewed with their attributes such as size, shape, color, edge effect and pattern having overwhelmed the natural landscape being viewed.

- **Visual Contrast**: Opposition or unlikeness of different forms, lines, colors, or textures in a landscape. Generally, increased visual contrast within foreground distances would be more noticeable to viewers than increased visual contrast within middle-ground and background view distances.

3.3.1.1 Affected Environment

Key Observation Points

Due to the relatively flat topography of the Project route, visibility of the transmission line ROW and existing infrastructure is greatest at foreground views. Key receptors with exposure to the Proposed Action would include motorists on Interstate 8 and a small number of rural residences located near the ROW between Gila and North Gila substations. KOPs 1 and 2 represent these locations, respectively. Figures 3.3-1 (KOP 1) and 3.3-3 (KOP 2) display the location of these KOPs and their representative viewsheds. Both KOPs 1 and 2 are the same for all alternatives.

Key Observation Point 1 (KOP 1) – View Looking West-Northwest from Interstate 8

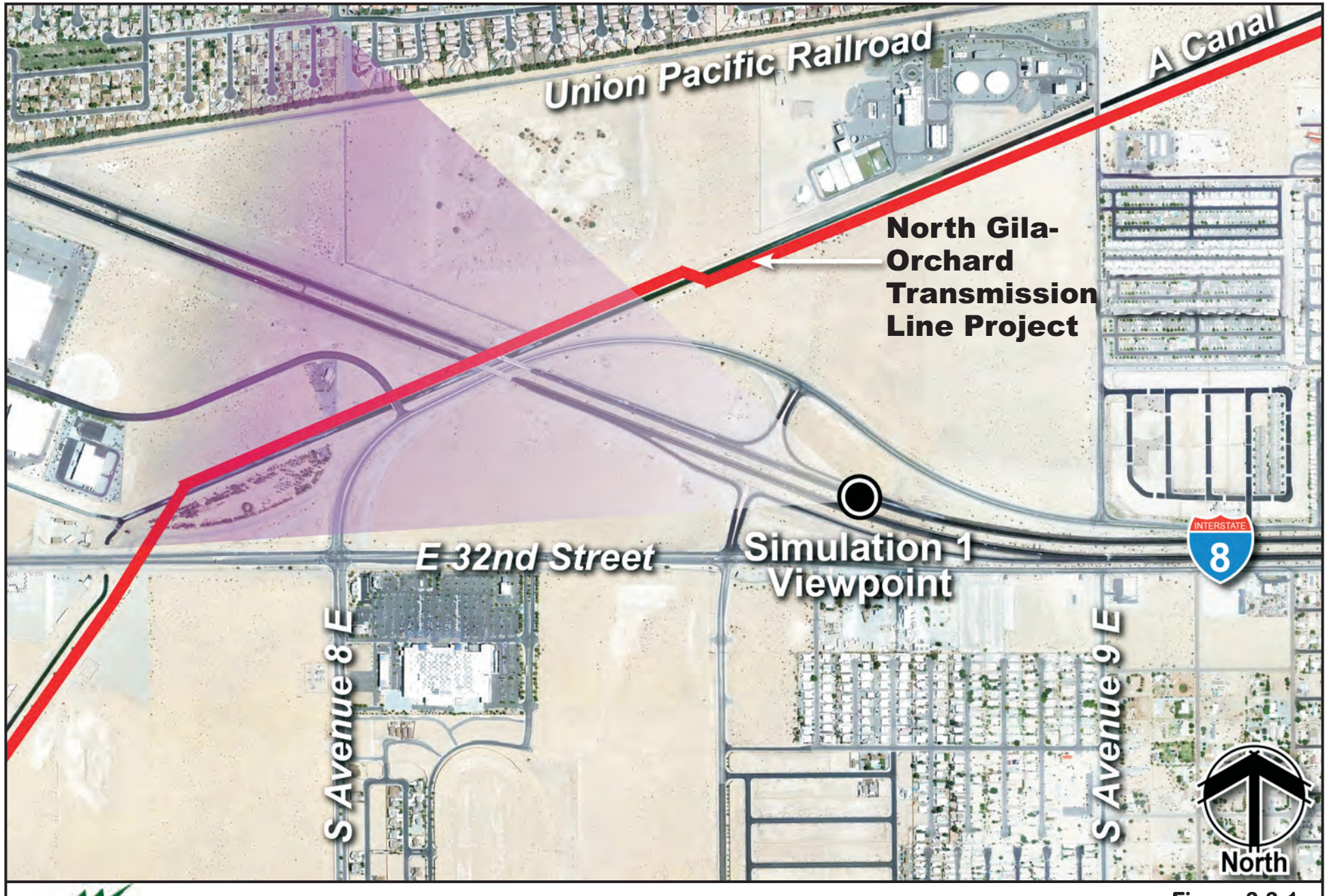
KOP 1 is adapted from APS' North Gila to TS8 (renamed to Orchard) to Yucca 230-kV Transmission Line Project Application (APS 2011) as part of the Proposed Action Phase I. Figure 3.3-2 depicts existing conditions at KOP 1. As shown, this KOP is along Interstate 8 at a distance of 2,000 feet (0.4 mile) from the nearest point of the APS North Gila–Orchard route.

The visual quality of the KOP 1 viewshed is low. Travelers on Interstate 8 westbound at this location are provided panoramic views across a broad, flat desert basin with few distinctive natural features. However, the KOP 1 viewshed shows a representative view of the existing transmission corridor, with the viewshed encompassing a number of existing transmission structures from one transmission line. From the KOP 1 viewshed, in addition to existing transmission infrastructure, Interstate 8 dominates the foreground viewshed, with highway commercial signage and portions of both residential (north) and commercial (south) uses are visible in the middle-ground along both sides of Interstate 8.

Key Observation Point 2 (KOP 2) – View looking southwest from rural-residential lot northeast of Gila Substation

Figure 3.3-4 depicts existing conditions at KOP 2. As shown, the KOP 2 viewshed is from a rural residence located on East County 10th Street north of Araby Blaisdell Road and northeast of Gila Substation. Viewing distance to the transmission corridor centerline is approximately 1,000 feet.

The visual quality of the KOP 2 viewshed is low to moderate. Foreground views show portions of desert landscape and a horizontal landform similar to a berm or small hill. However, the highly modified viewshed contains two existing transmission lines (Gila–North Gila 69-kV and Gila-Knob 161-kV) and is dominated by views of Gila Substation forming an industrial view obscuring any scenic or intact natural views of the small natural berms visible in the middle-ground from KOP 2. As shown, additional transmission infrastructure is also visible on these slopes. Simple vertical forms of existing transmission infrastructure and the associated abundance of horizontal waveforms of conductor punctuate the KOP 2 existing viewshed. The



Source: EPG and APS, 2011.

Figure 3.3-1

KOP 1 - Location and Viewshed

Existing Conditions

Simulation

Source: EPG and APS, 2011.

Figure 3.3-2
KOP 1 -
Phase I Existing Conditions and Simulation

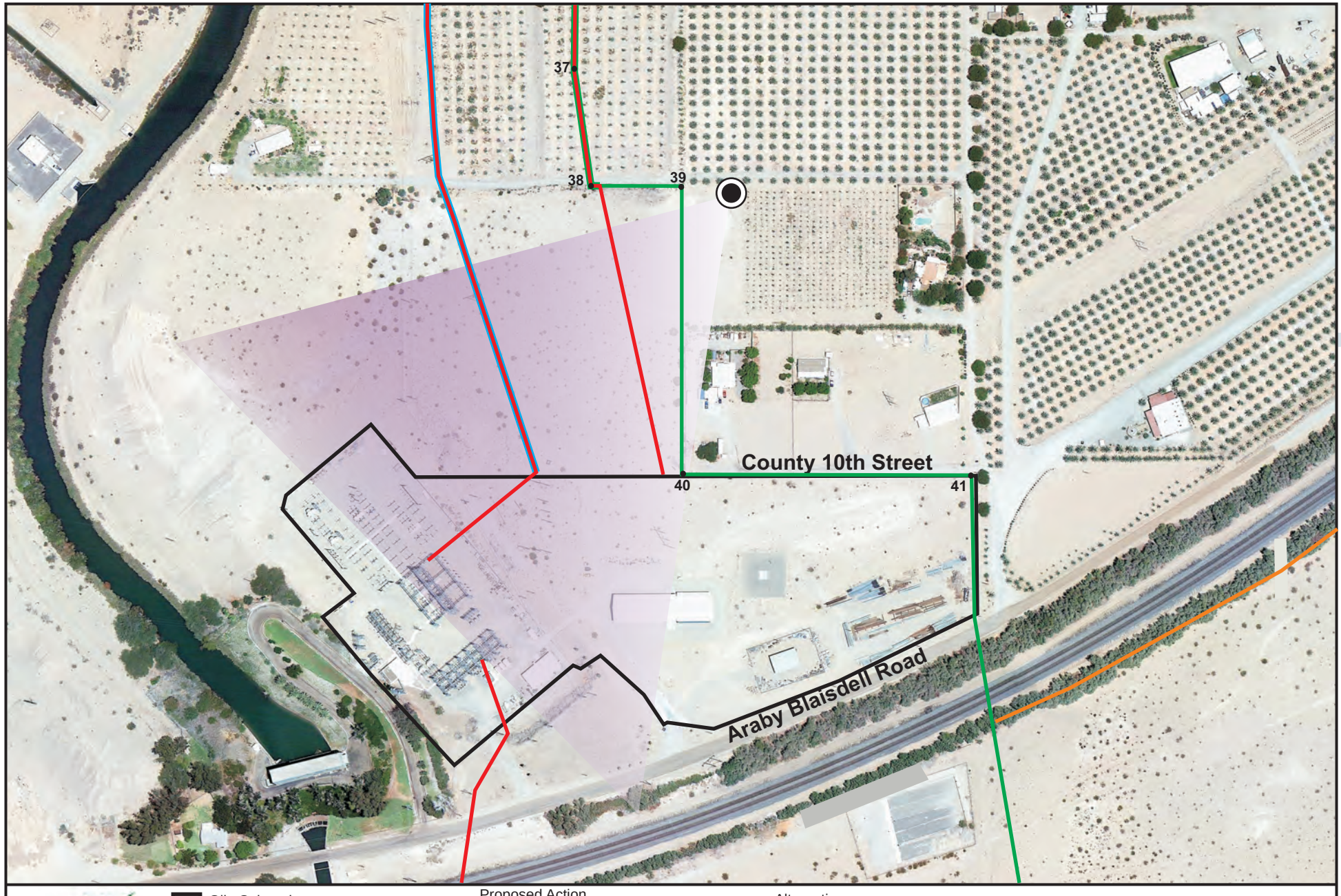


Figure 3.3-3
KOP 2-
Location and Viewshed

Existing Conditions

Simulation

Western AREA POWER ADMINISTRATION

Figure 3.3-4
KOP 2 -
Phase I Existing Conditions and Simulation

low horizontal forms of the distant hills provide some visual interest, though they are partially obscured by the existing infrastructure in the foreground. Other existing man-made visual features include rooftops from residential development to the south and northeast.

Adjacent Federal Land Management Agency Regulations

Bureau of Reclamation – Visual Resource Management System

As shown in Figure 2-1, the northernmost section of the Project route is located immediately adjacent to Bureau of Reclamation (Reclamation) lands. With respect to scenic values or visual resources of public lands under Reclamation jurisdiction, no applicable plans or regulations were identified beyond the use of photography to document resource conditions in NEPA documents (USBR 2003).

Bureau of Land Management – Visual Resource Management System

The nearest Bureau of Land Management (BLM) lands are located approximately 1.4 miles east and north of the Project area (refer to Figure 2-1). By law, the BLM is responsible for ensuring that the scenic values of public lands under its jurisdiction are considered that may have adverse visual impacts. BLM accomplishes this through its Visual Resource Management (VRM) system (BLM 2010). BLM's VRM system provides a way to identify and evaluate scenic values to determine the appropriate levels of management.

BLM lands nearest to the Proposed Action area are categorized by the Yuma Field Office as VRM Class II and Class III, which are described as follows (BLM 2010):

- **Class II Objective**: To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.
- **Class III Objective**: To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

3.3.1.2 Environmental Consequences

Significance Criteria

Visual impacts would be significant if:

- Views to the Project area resulted in major visual contrast in sensitive or visually unique areas in proximity to high sensitivity viewers.

Impacts

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Construction impacts on visual resources for Phase I of the Proposed Action would be short-term in duration and result from the presence and visual intrusion of construction activities and equipment at work locations within the Proposed Action route and within the eastern section of Gila Substation (dedicated assembly/staging area). Construction impacts on visual resources would also result from vegetation clearance along existing access roads. Vehicles, heavy equipment, Project components, and workers would be visible during access road clearing, structure

erection, conductor stringing, and site/ROW cleanup and restoration. Equipment would be used at all staging areas, transmission structure construction sites, and conductor pull locations. Vegetation clearing would occur at these locations, as necessary, as well as all necessary access roads.

Construction equipment and activities would primarily be limited to viewers in close proximity to the construction sites including rural residents and travelers on public roads. View durations from these vantage points would vary depending on location and type of work activity. Views of construction activities would range from momentary to extended views when work areas and activities remain in the field of view of travelers and residents. However, Phase I construction activities would be transient and for a limited duration as construction progresses in a linear fashion along the route. As a result, affected viewers would be aware of the temporary and short-term nature of construction activities, which could decrease their sensitivity.

Vegetation clearance and minor land-scarring from temporary staging areas outside of Gila Substation (primarily pull sites), clearing existing access roads, and at transmission structure locations may be longer lasting due to the arid environment where vegetation recruitment and growth are slow. Vegetation removal is a short-term impact as regrowth would occur. Views of linear land scars or cleared access roads may introduce a temporary visual change and contrast by causing unnatural non-vegetative lines and soil color contrast from newly exposed soils. However, this might only be evident in areas with thick vegetation, which is limited to near proposed structures and access roads north of East County 7½ Street. Furthermore, at these locations, access road clearance and ground disturbance at structure locations would not occur at locations that are highly visible by the general public. While these activities may create a short-term increase to the contrast with respect to the surrounding landscape, they would diminish over time as weathering and vegetation growth occurs.

Long-term visual change would result from operation of the Proposed Action associated with the removal of one existing transmission line (Gila–North Gila 69-kV) and the construction of one new transmission line (APS North Gila–Orchard 230-kV), which includes new 230-kV steel structures and conductor and Western's Gila–North Gila 69-kV underbuild conductor.

Figure 3.3-2 depicts a visual simulation of Phase I activities from KOP 1, which has a baseline visual quality of low. As shown, the new 230-kV structures and conductor would be visible from Interstate 8 and add one transmission line to this utility corridor. However, this additional transmission line would result in a negligible to minor visual contrast. This is due to the extensive existing industrial character of the KOP 1 viewshed as part of the Interstate 8 corridor. Due to existing infrastructure within the KOP 1 viewshed, travelers along Interstate 8 anticipate transmission infrastructure as it converges on and then crosses the highway, creating an existing industrial character to the predominantly open horizon. Furthermore, motorists on Interstate 8 are travelling at speeds that make any singular view short-term. While the new structures and conductor associated with Phase I would skyline (extend above the horizon line), they would not cause view blockage of background sky or distant topography as this viewshed is flat. As a result, visual contrast is minor and Phase I components would appear co-dominant with the existing highway and transmission infrastructure within the corridor. Existing transmission infrastructure and the Interstate 8 transportation corridor substantially influence the viewing

experience and viewer expectations at KOP 1. In summary, the long-term visual contrast of Phase I is negligible to minor at KOP 1 in the context of the existing landscape's visual sensitivity. Upon completion of Phase I, the KOP 1 viewshed visual quality will remain low.

Figure 3.3-4 depicts a visual simulation of Phase I activities from KOP 2. As shown, one existing transmission line (Gila–North Gila 69-kV) would be removed and one new transmission line would be constructed (APS North Gila–Orchard 230-kV). Phase I would remove aged Gila–North Gila 69-kV wood H-frame structures and associated conductor from the KOP 2 viewshed, which would be replaced by new APS North Gila–Orchard 230-kV steel monopoles. Phase I activities at KOP 2 would also show new insulators and other ancillary equipment such as conductor wire (including Gila–North Gila 69-kV underbuild), overhead ground wire, and hardware that initially would be more visible than the existing equipment due to the new (more reflective) surfaces (as shown in Figure 3.3-4). However, the increased visibility of these features would be short-term and diminish over time as weathering of the transmission line components turn to a less reflective condition.

As identified earlier, the existing visual quality of the KOP 2 viewshed is low to moderate. As shown in the simulation for KOP 2, the new structures and conductor would cause a moderate increase in visual contrast resulting from transmission structure prominence and industrial character. Foreground views of the APS North Gila–Orchard 230-kV monopole structures would be at the edge or out of the primary cone of vision at this KOP. However, due to the increased height and color/material of new 230-kV transmission structures and conductor thickness, Phase I features would appear more dominant in comparison to both removed Gila–North Gila 69-kV aged wood poles and conductor and other existing background transmission infrastructure and distant landscape features (primarily the horizontal form of the basin floor). However, visual contrast from view blockage of background sky and small hills from Phase I activities would be minor because structures are vertical with minimal bulk, spaced at the edge or out of the primary cone of vision at this KOP, and conductor appears as narrow horizontal waveforms only slightly above the horizon. In summary, the long-term visual contrast of Phase I is minor at KOP 2 in the context of the existing landscape's visual sensitivity. Upon completion of Phase I, the long-term KOP 2 viewshed visual quality will remain low to moderate.

Table 2.6-1 lists past, present, and future projects that may cumulatively contribute to visual changes at KOPs 1 and 2, as well as overall changes to viewsheds of the Proposed Action area. The majority of these projects include additional transmission rebuild work within existing Western and APS ROWs in the Yuma area, as well as within Gila Substation. Depending upon certain site-specific features (height, color, location, etc.), these projects will cumulatively intensify the industrial character of the existing utility corridor by increasing the amount and appearance of infrastructure. Also, Arizona Department of Transportation actions identified in Table 2.6-1 will cumulatively increase the appearance of roadways and the roadway network within the KOP 1 viewshed. While these cumulative actions would intensify and increase the overall visual prominence of transmission infrastructure within the Western/APS corridor and industrial character of Interstate 8 viewsheds, long-term cumulative visual quality along the Proposed Action corridor (including KOPs 1 and 2) is low to moderate given the existing industrial nature of the corridor. The cumulative change to visual contrast is minor, as cumulative

development would occur adjacent to existing and similar infrastructure that appears throughout viewsheds of the area.

Phase II – Gila-Knob Rebuild and Upgrade

Construction of Phase II would have similar or identical short-term visual impacts as those discussed above for Phase I, but would only occur north of the Gila Substation and primarily along the Gila-Knob 161-kV line. Equipment would be used at all staging areas, transmission structure construction sites, and conductor pull locations. Vegetation clearing would occur at these locations, as necessary, as well as all necessary access roads.

The primary visual change resulting from operation of the Proposed Action Phase II would be replacing the existing Gila-Knob 161-kV wood structures, conductor, and associated infrastructure with a single-circuit 230-kV line on steel monopoles that would be capable of supporting two 230-kV circuits with a single-circuit 69-kV underbuild. Therefore, one transmission line would be removed and another constructed in its place. Figure 3.3-5 depicts a visual simulation of Phase II buildout from KOP 2.

Because Phase II activities would occur north of Gila Substation, no activities would occur within the KOP 1 viewshed. Therefore, the focus of this Phase II analysis is at KOP 2. Upon completion of Phase I, the KOP 2 viewshed visual quality is low to moderate. As shown, Phase II will remove the existing wood poles and conductor of the Gila-Knob 161-kV line and replace with new Gila–North Gila 230-kV steel structures that would be of identical height/material/color to APS North Gila–Orchard 230-kV structures, with only slight differences regarding underbuild spacing. Phase II activities from KOP 2 would also show new Gila-Knob 230-kV conductor (including the movement of the Gila–North Gila 69-kV underbuild from the APS North Gila–Orchard 230-kV to the new Gila-Knob structures) and other ancillary equipment such as insulators, overhead ground wire, and hardware that would initially be more visible due to their newer (more reflective) surface. However, the increased visibility of these components would be short-term and diminish over time as weathering produces a less reflective surface.

As shown in the Figure 3.3-5, new structures and conductor associated with Phase II would have a minor visual contrast impact when adding structure prominence and industrial character to the KOP 2 viewshed. However, Phase II structures would blend in with the similar Phase I structures and features as they would be partially set back from this KOP location. Due to the increased height of new Phase II transmission structures and conductor thickness over existing Gila-Knob 161-kV infrastructure, Phase II features would appear co-dominant with Phase I structures in comparison to other existing background transmission infrastructure and non-natural landscape features.

Due to extensive views of existing transmission infrastructure (including Gila Substation) within the KOP 2 viewshed, the visual contrast of Phase II only is minor. View blockage of background sky and background small hills would be increased cumulatively when Phase II is combined with Phase I, but this overall cumulative visual contrast is moderate. In summary, the long-term visual contrast of Phase II (and completion of the Proposed Action) is moderate at KOP 2 in the context of the existing landscape's visual sensitivity. Upon completion of Phase II, the long-term

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Figure 3.2-5

KOP 2 - Phase II Simulation

KOP 2 viewshed visual quality will remain low to moderate. Short-term and long-term Proposed Action Phase II activities at KOP 2 are not an adverse visual impact.

Because the past, present, and future projects identified in Table 2.6-1 are assumed to be constructed prior to Phase II actions, these cumulative projects would be part of the existing visual environment at the time of Phase II activities and are, therefore, addressed cumulatively for the Proposed Action under Phase I.

Other Federal Land Management Agencies Visual or Scenic Quality Criteria

As discussed above in Section 3.3.1.1, there are no Reclamation resource management and planning guidelines regulations or polices applicable to the Proposed Action. The topography surrounding the Project area is mostly flat and extends over a large area. When considering this against views from the nearest BLM lands (approximately 1.4 miles), it is unlikely existing or Proposed Action (Phases I and II) transmission line infrastructure is prominently visible and likely blends with other adjacent transmission infrastructure and other man-made structures/ landforms into the background. Because the Proposed Action does not include any work areas on or visible from adjacent BLM lands, BLM standards and practices in relation to visual resource management would not be applicable. As such, the visual resources analysis is limited to public viewsheds provided at KOPs 1 and 2, as described above.

3.3.2 Certificated Route Alternative

Construction of the Certificated Route Alternative would have similar or identical short-term visual impacts as those discussed above for the Proposed Action, but would be slightly reduced within the KOP 2 viewshed. However, these moderate short-term visual contrast impacts would occur at new viewsheds of the Certificated Route Alternative alignment.

Under this alternative, Phase I actions described above would still occur; however, APS' North Gila–Orchard transmission line would be routed around the Gila Substation to the east. Under this alternative, the visual quality and visual contrast at KOP 1 would be identical to that described above for Phase I of the Proposed Action for Phase I. The Certificated Route Alternative has no change to the APS North Gila–Orchard transmission line segment at KOP 1.

Under this alternative, the APS structures would not be visible from the KOP 2 viewshed. As such, negligible visual contrast would occur at KOP 2 during Phase I. As stated in Section 3.2.3, the conductor and related Gila–North Gila 69-kV structures may or may not be removed within the KOP 2 viewshed as part of Phase I. If the Gila–North Gila 69-kV conductor is not included as an underbuild on the APS structures under the Certificated Route Alternative, visual quality at KOP 2 would remain as baseline conditions. Under baseline conditions, the existing visual quality of the KOP 2 viewshed is low to moderate.

If the Gila–North Gila 69-kV conductor is included as an underbuild on the APS structures under the Certificated Route Alternative under Phase I, Gila–North Gila 69-kV conductor and structures would be removed from the KOP 2 viewshed. This would be a negligible or beneficial long-term visual impact at KOP 2. Due to the reduced industrial character of the KOP 2 viewshed, visual quality at KOP 2 would remain low to moderate.

Under the Certificated Route Alternative, during Phase II, the Gila-Knob 161-kV wood structures, conductor, and associated infrastructure would be removed and replaced with a single-circuit 230-kV line on steel monopoles that would be capable of supporting two 230-kV circuits with a single-circuit 69-kV underbuild. However, the APS North Gila–Orchard transmission line infrastructure would not be visible from KOP 2. While the new Gila-Knob 230-kV line would result in minor visual contrast similar to that described above for the Proposed Action Phase II, it would not have the APS North Gila–Orchard transmission line segment cumulatively contributing to visual contrast within the KOP 2 viewshed.

In summary, the Certificated Route Alternative would result in minor long-term visual contrast at KOP 2. The long-term visual quality of this viewshed would remain low to moderate. However, in comparison to the Proposed Action, the Certificated Route Alternative would result in less adverse visual contrast impacts at KOP 2 due to the APS North Gila–Orchard transmission line segment not being visible in this viewshed.

Because the Certificated Route Alternative would only result in a 0.5-mile additional length as part of the reroute of the North Gila–Orchard transmission line, the cumulative impacts of past, present, and future projects (as identified in Table 2.6-1) would be similar or identical to that described above for the Proposed Action under Phase I.

3.3.3 No Action Alternative

Under the No Action Alternative, Western's Gila–North Gila 69-kV and Gila-Knob 161-kV lines would remain in place. APS' North Gila–Orchard transmission line would follow the Certificated Route Alternative. Therefore, under the No Action Alternative, the visual quality and visual contrast at KOP 1 would be identical to that described above for Phase I of the Proposed Action. Because the addition of this new APS North Gila–Orchard transmission line would follow the Certificated Route Alternative, it would not be visible in the KOP 2 viewshed. No visual quality change would occur at KOP 2 as baseline visual conditions would occur under the No Project Alternative. Western's Gila–North Gila and Gila-Knob wood structures would be maintained and mature vegetation would continue to be removed in the future within both the Western and APS ROW to ensure maintenance access. In summary, the No Action Alternative would result in identical visual quality conditions as baseline and have negligible short-term or long-term visual contrast.

Under the No Action Alternative, the past, present, and future projects identified in Table 2.6-1 are assumed to be constructed and would become part of the existing visual environment. However, the No Action Alternative would result in no change to visual quality conditions over baseline (which includes the development of these past, present, and future projects) and would have negligible visual contrast.

3.4 Agriculture

3.4.1 Proposed Action

3.4.1.1 Affected Environment

The Project is located in the Gila Valley of Yuma County, which is one of the most agriculturally productive counties in the United States. According to the 2007 Census of Agriculture, there were 452 farms and a total of 210,480 acres of farmland in Yuma County (USDA 2007).

Most soils in the Gila Valley, including the Project area, are actively used for agriculture, and are designated as Prime and Unique Farmlands (under the Farmland Protection Act; 7 USC 4201) due to their physical and chemical characteristics. Prime and unique farmland is defined as follows (7 USC 4201):

> *Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary. Prime farmland includes land that possesses the above characteristics but is being used currently to produce livestock and timber. It does not include land already in or committed to urban development or water storage.*
>
> *Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops, as determined by the Secretary. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Examples of such crops include citrus, tree nuts, olives, cranberries, fruits, and vegetables.*

The Gila River separates the Gila Valley between the Gila Substation and the North Gila Substation into the South Gila Valley and the North Gila Valley. Gila Substation is located on a terrace above the South Gila Valley. The Yuma Irrigation District services South Gila Valley water needs and includes approximately 10,600 acres, of which 9,659 acres are under agricultural production (Yuma Area Ag Council 2013). North Gila Substation is located on a terrace above the North Gila Valley. The North Gila Irrigation District services approximately 6,320 acres of contracted water needs in the North Gila Valley, including about 5,000 acres of produce (Yuma Area Ag Council 2013).

Between the Gila and Orchard substations, the Project is located within the Yuma Mesa Irrigation District, which includes 28,800 irrigable acres (Yuma Area Ag Council 2013). Within the Yuma Mesa Irrigation District, the Project would cross approximately one mile of citrus orchards as it enters the Orchard Substation from the north and approximately two miles of new agriculture located east of Araby Road, located partially within the existing transmission line ROW.

Farming activities take place year around in the Project area, with produce production occurring during the cooler months between September and April. The agricultural fields that are

row-irrigated are nearly all aligned parallel to the existing transmission lines between Gila Substation and North Gila Substation. Farming practices in the Project area include a combination of ground and aerial chemical application.

3.4.1.2 Environmental Consequences

Significance Criteria

Impacts to agriculture would be significant if:

- Loss of prime or unique farmlands attributable to the Project is a major contribution to the downward trend in the region; or
- The Project causes unsafe conditions for agricultural activities.

Impacts

Resource protection measures will be implemented as part of the Proposed Action. The resource protection measures applicable to agriculture are summarized below with full text of the measures presented in Table 2.2-1.

- AG-1 requires coordination with affected landowners.

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Phase I would require expanded and new ROW easements, which would traverse agricultural lands. Although agricultural activities would continue within the expanded ROW and new easements, the Project would temporarily disrupt agricultural activities during construction and operation and would result in permanent loss of farmland within the footprint of the proposed tubular steel poles, as described below and summarized in Table 3.4-1.

Within the North Gila Irrigation District, between North Gila Substation and the Gila River, the portion of the North Gila–Orchard transmission line with the Gila–North Gila underbuild would use taller structures with a greater span length than the existing transmission line, which would result in a negligible reduction of the number of obstacles within agricultural areas from 9 (i.e., existing number of structures) to 6 (i.e., number of proposed structures). Also within the North Gila Irrigation District, immediately south of the North Gila Substation, the North Gila–Orchard transmission line would require 10 new single-pole structures in agriculture fields that do not have existing transmission structures. Within the North Gila Irrigation District, the estimated 16 new structures within agricultural fields would permanently impact approximately 0.042 acres of available farmland (i.e., 0.0007 percent of the 6,320 acres that are available in the North Gila Irrigation District). The Proposed Action would directly convert a negligible amount of prime and unique farmland to non-agricultural use within the North Gila Irrigation District.

Construction within the Gila Valley, between Gila and North Gila substations, would be targeted for the warmer part of the year (e.g., June to October) to minimize disruption during the peak agricultural production season.

The Project would be approximately 50 to 65 feet taller than the existing transmission lines; however, it would be located within a transmission corridor that is an existing obstacle for

aerial chemical application in the area. Since aerial applicators are familiar with and presently working around the existing transmission lines, the Project would have a negligible effect on the risk to safety for the aerial applicators and their operational practices.

A date farm is located immediately northeast of the Gila Substation, and would be traversed by the Proposed Action. A retail store and dining area are associated with the date farm. The retail store was constructed adjacent to the Gila Substation and within 150 feet of the existing Gila-Knob 161-kV transmission line. At present, the date palms are short enough to remain in the ROW (except at structure locations); however, with future growth, the trees would need to be removed or relocated. Accordingly, the ROW could be used as a nursery for the early growth stages of the trees.

Temporary disruptions to agricultural activities described above would be minimized with implementation of Resource Protection Measure AG-1, which requires coordination with landowners.

Within the Yuma Mesa Irrigation District, between Gila Substation and Orchard Substation, construction of the North Gila–Orchard transmission line would require approximately 11 poles in the agriculture located east of Araby Road, adjacent to existing transmission structures and the A Canal. Land located south of Gila Substation and east of Araby Road recently transitioned from vacant land use to agriculture; these crops will require several growing seasons before they become productive and therefore production would not be affected by construction activities.

The Project would also require approximately 5 poles within the citrus orchard north of the Orchard Substation, which would require removal of dozens of mature trees, and removal of approximately 15 acres of citrus trees for construction of the Orchard Substation. Within the Yuma Mesa Irrigation District, the estimated 16 new structures within agricultural fields and 15 acres for the substation would permanently impact approximately 15.042 acres of available farmland (i.e., 0.05 percent of the 28,800 acres that are available in the Yuma Mesa Irrigation District). The Proposed Action would convert a negligible amount of prime and unique farmland to non-agricultural use within the Yuma Mesa Irrigation District. Near the Orchard Substation, the proposed construction schedule does not conflict with typical harvesting timeframes for citrus (i.e., between late fall and winter).

Table 3.4-1. Agriculture Impacts Summary

Location (Irrigation District; Total Acreage)	Description of Impacts	Temporary Impact[1] (acres)	Permanent Impact	
			Acres[2]	Percent[3]
North Gila Irrigation District; 6,320 acres	Remove 9 existing structures and replace with 6 new structures (specific to Gila–North Gila transmission line). Add 10 new structures (specific to North Gila–Orchard transmission line).	2.9	0.042	0.0007
Yuma Irrigation District; 10,600 acres	Remove 37 existing structures and replace with 18 new structures (specific to Gila–North Gila transmission line).	3.2	0.047	0.0004
Yuma Mesa Irrigation District; 28,800 acres	Add 16 new structures (specific to North Gila–Orchard transmission line). Remove15 acres of citrus for Orchard Substation.	17.9	15.042	0.05

Table 3.4-1. Agriculture Impacts Summary

Location (Irrigation District; Total Acreage)	Description of Impacts	Temporary Impact[1] (acres)	Permanent Impact	
			Acres[2]	Percent[3]
Total agricultural area; 45,270 acres	Remove 46 existing structures and replace with 24 new structures (specific to Gila–North Gila transmission line). Add 26 new structures (specific to North Gila–Orchard transmission line). Remove 15 acres of citrus for Orchard Substation.	24	15.131	0.0003

1 - Temporary impact calculations account only for impacts associated with construction of the new structures and substation (i.e., does not include calculations for removal of existing structures). Accordingly, the temporary impact would be slightly greater due to disturbance associated with existing structure removal locations. Given the low amount of temporary acreage impacts, the inclusion of acreage for existing structure removal would have a negligible effect on the outcome of the impact analysis.

2 - Permanent impact calculations account only for impacts associated with the new structures and substation and do not include calculations for reclamation of existing structure locations. Accordingly, the permanent impact would be slightly less than shown because values do not account for reclamation of existing structure locations to agricultural use. Given the low amount of permanent acreage impacts, the inclusion of reclaimed acreage would have a negligible effect on the outcome of the impact analysis.

3 - Permanent impact represented as percentage of available agricultural land within irrigation district converted to non-agricultural use by the Project. Values are conservative in that they do not reflect the reclamation of land used for existing structures to agricultural use.

Western and APS would use the existing access road, with improvements, and would not likely need to create new access roads in agriculture fields. Short spurs to structure locations may be needed in some areas, potentially through agricultural land, but with fewer structures required, other existing spurs would be abandoned and could be recovered for agricultural purposes.

The past, present, and reasonably foreseeable future projects listed in Table 2.6-1 that are located in agricultural areas would also result in loss of farmland and temporary disruptions to agricultural activities. Most of the projects are maintenance of existing transmission lines, which may result in minor loss of farmland if tower footprints are expanded or new access roads created. Project activities would be coordinated with landowners to minimize disruption. In combination with Phase I of the Proposed Action, cumulative impacts to agriculture are negligible.

Phase II – Gila-Knob Rebuild and Upgrade

Under Phase II, Western proposes to upgrade a 4.8-mile segment from structure 5/2 to the Gila Substation, a portion of which would require an expansion of the existing ROW into agricultural lands. Phase II would traverse agricultural lands, but agricultural activities would continue within the expanded ROW. Within the Gila Valley, Phase II would replace 32 H-frame structures (6 within the North Gila Irrigation District and 26 within the Yuma Irrigation District) with 18 to 24 steel monopole structures, depending on span length. Temporary disruptions to agricultural activities and loss of farmland would be similar as described for the Proposed Action. Impacts associated with construction of the new structures would temporarily impact 3.2 to 4.3 acres, and permanently impact 0.047 to 0.06 acres of farmland (i.e., approximately 0.0002 percent of the 16,920 acres available in the North Gila and Yuma irrigation districts). Phase II would involve the reconstruction of an existing line and would have a negligible effect on the net acreage of permanent disturbance in agricultural land because existing structure locations would be reclaimed for agricultural use. Implementation of Resource Protection Measure AG-1 would minimize temporary disruption. Cumulative impacts under Phase II would be similar to Phase I. The past, present,

and reasonably foreseeable future projects in Table 2.6-1 are not expected to occur at the same time as Phase II and, therefore, would result in negligible cumulative effect to agricultural activities.

3.4.2 Certificated Route Alternative

Under the Certificated Route Alternative, the overall length of the APS North Gila–Orchard 230-kV transmission line would increase 0.5 mile by extending eastward around Gila Substation and a date farm. The affected environment and environmental consequences for the Certificated Route Alternative are similar to the Proposed Action, except near the Gila Substation.

The Certificated Route Alternative alignment would be approximately 400 feet away from the date farm retail store and outdoor dining patio area, which is approximately 200 feet farther than the Proposed Action. This additional distance would not change the impacts to date farm operations as discussed under the Proposed Action. Additionally, the Certificated Route Alternative would be located on the north, east, and south sides of the date farm; whereas, the Proposed Action would be located on the west side and a portion of the south side of the date farm. This alternative would create a box to the northeast of the Gila Substation, within which would be a "no fly" zone for aerial chemical application – this boxed in area includes approximately 10 acres of crops and the majority of the date farm. This alignment would result in an economic impact to the farmer of the 10 acres because it would cost more to spray the 10 acres with a ground rig when compared to the existing cost of aerial chemical application that would continue to be used with the Proposed Action.

Cumulative impacts under the Certificated Route Alternative would be the same as the Proposed Action.

3.4.3 No Action Alternative

Under the No Action Alternative, Western's two existing transmission lines would remain in place and APS would construct the new, separate North Gila–Orchard 230-kV transmission line. Impacts associated with the North Gila–Orchard transmission alignment would be similar to those described for the Certificated Route Alternative because the 230-kV alignment would follow that route to the east of Gila Substation and around the date farm.

Construction of a new, separate North Gila–Orchard 230-kV transmission line would result in three separate transmission alignments, as compared to two transmission alignments in the action alternatives, within the Gila Valley. Further, within the Gila Valley, the No Action Alternative would result in a total of 109 structures within agricultural areas, as compared with 63 total transmission structures that would result from either of the action alternatives. Unlike the action alternatives, where a portion of the permanent impacts associated with new structures would be off-set by removal of existing structures and reclamation of the land for agricultural use, under the No Action Alternative, the permanent ground disturbance would be in addition to the existing ground disturbance. Given the large acreage of farmland (45, 270 acres) the permanent agricultural land disturbance for the No Action Alternative (15.131 acres) would be approximately 0.0003 percent of the available prime and unique farmland. Therefore, impacts to agriculture would be negligible.

Although the impacts associated with the No Action Alternative would be greater than that for the action alternatives (due to an increased number of obstacles in agricultural fields), aerial applicators are familiar with and presently working around the existing transmission lines. Therefore, the No Action Alternative would have a negligible effect on the risk to safety for the aerial applicators and their operational practices.

The past, present, and reasonably foreseeable future projects in Table 2.6-1 are not expected to occur at the same time as the No Action Alternative and, therefore, would result in negligible cumulative effect to agricultural activities.

3.5 Air Quality

3.5.1 Proposed Action

3.5.1.1 Affected Environment

Air quality is determined by the concentration of various pollutants in the atmosphere. The EPA Office of Air Quality Planning and Standards has established National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for six pollutants considered harmful to public health and the environment. These criteria pollutants include: sulfur dioxide, carbon monoxide, ozone, lead, particulate matter less than ten microns in aerodynamic diameter (PM_{10}), particulate matter less than 2.5 microns in diameter, and nitrogen dioxide. NAAQS places limits on acceptable ambient concentrations of these pollutants. Based on the concentration of criteria pollutants, areas of Arizona are designated as one of the following:

- Non-attainment – areas in which ambient pollutant concentration exceed federal or state standards;
- Attainment – areas meeting federal or state standards; or,
- Unclassifiable – areas where no information is available to determine if standards are met.

EPA is further authorized to classify these areas according to their degree of severity (e.g., primary, moderate, or serious).

The Arizona Department of Environmental Quality (ADEQ) regulates Yuma County at the state level. Areas having a non-attainment designation require a State Implementation Plan. The Project is located within the area designated as the Yuma PM_{10} Non-attainment Area, which encompasses approximately 456 square miles in the Lower Colorado River Valley in southwestern Yuma County. Monitoring data has demonstrated compliance with the NAAQS since 1990, with periodic exceedances in 2002, 2008, and 2009. According to the ADEQ (ADEQ 2013):

> *Yuma was designated a Moderate PM_{10} nonattainment area by operation of law in the 1990 [Clean Air Act Amendments]. A [State Implementation Plan] revision was submitted in 1991, and a supplement was submitted in 1994 adopting a range of PM_{10} control measures and demonstrating attainment with the NAAQS. The U.S. EPA took no action on these plans. An exceedance of the PM_{10} standard occurred on August 18, 2002, which was flagged as a natural exceptional event. ADEQ developed and submitted a Natural Events Action Plan (NEAP) to the U.S. EPA on February 17, 2004, pursuant to the U.S. EPA's Natural Events Policy, in effect at that time, and submitted a NEAP Implementation Report to the U.S. EPA [on] February 17, 2005 with a maintenance plan due 18 months thereafter. In compliance with this requirement, ADEQ developed and submitted the Yuma PM_{10} Maintenance Plan to the U.S. EPA. Exceptional Event Rule documentation for 2008 and 2009 exceedances is in development.*

The Yuma PM_{10} Maintenance Plan will allow the area encompassing the Project to be considered for re-designation by the EPA to attainment for PM_{10}.

3.5.1.2 Environmental Consequences

Significance Criteria

Impacts to air quality would be significant if:

- Predicted concentrations of criteria pollutants would exceed state and/or Federal ambient air quality standards;
- Project emissions would result in a declaration of non-attainment in a specific area for one or more criteria pollutants, or would cumulatively contribute to a net increase in any criteria pollution that would result in non-attainment of the area; or
- Project emissions would result in a substantial increase of any criteria pollutant for which the project region is in non-attainment under an applicable local, state or Federal ambient air quality standard.

Impacts

Resource protection measures will be implemented as part of the Proposed Action. The resource protection measures applicable to air quality are summarized below with full text of the measures presented in Table 2.2-1.

- AQ-1 requires minimization of land disturbance.
- AQ-2 requires dust suppression on unpaved access roads through wetting or use of watering trucks.
- AQ-3 requires covering of trucks when hauling soil.
- AQ-4 requires minimization of soil track-out.
- AQ-5 requires stabilization of the surface of soil piles with water or palliative.
- AQ-6 requires creation of windbreaks in areas highly susceptible to fugitive dust.
- AQ-7 requires revegetation of disturbed land not used for the Project.
- AQ-8 requires removal of unused material.

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Air quality impacts from Project operations and emissions from vehicle traffic related to periodic transmission line maintenance would have a negligible impact because it would typically require one or two trucks for a short duration of time (i.e., the time it would take to drive and inspect the transmission line) and are not further discussed.

Sources of air pollution that would occur during construction include combustion pollutants from equipment exhaust and fugitive dust from disturbed soils becoming airborne. Construction activities associated with the transmission line would be concentrated around structure sites, temporary construction and maintenance pads, staging areas, pulling sites, and access roads along the proposed alignment. During Project construction, less than 15 trucks or pieces of industrial equipment would be operated per day on discreet portions of the 12.8-mile-long Project. Short-term and temporary air emissions from construction vehicle and equipment exhaust would be generated in the immediate vicinity of construction activities.

The Yuma area is subject to intermittent, strong wind storms that can cause loose soils to become airborne, thereby creating a dust storm. Dust control measures from Western's Construction Standards, Standard 13, Environmental Quality Protection item 13.13 and measures recommended by ADEQ (refer to Table 2.2-1, Resource Protection Measures AQ-1 through 8) would be employed, as needed, to minimize the fugitive dust generated during construction and reduce the potential to contribute to fugitive dust or naturally-occurring dust storms. Given the small construction force and temporary nature of construction combined with implementation of the above measures, the Project would not exceed state or Federal air quality standards, would not result in a declaration of non-attainment in a specific area for one or more criteria pollutants or cumulatively contribute to a net increase in any criteria pollution that would result in non-attainment of the area, nor result in a substantial increase of any criteria pollutant for which the Project region is in non-attainment under an applicable local, state or Federal ambient air quality standard. The Proposed Action would result in a negligible impact on air quality.

The past, present, and reasonably foreseeable future projects identified in Table 2.6-1 are located within the Yuma PM_{10} Non-attainment Area. The majority of these projects are maintenance of existing facilities or transmission line rebuilds and upgrades, less than five miles in length, which would individually result in fewer impacts than those described for the Project. Air quality impacts associated with these projects would occur during construction; individually, tailpipe emissions and fugitive dust from these projects are anticipated to have a negligible impact on air quality. Each project would be responsible for implementing dust control measures during construction, pursuant to ADEQ requirements and agency or utility BMPs. The Project's localized and temporary construction emissions would not contribute to a violation of air quality standards in combination with other past, present, and reasonably foreseeable projects in the Yuma PM_{10} Non-attainment Area.

Phase II – Gila-Knob Rebuild and Upgrade

Phase II occurs within the same air basin as Phase I, so the affected environments are the same. The environmental consequences would be similar to those described for Phase I; however, construction of Phase II would generate fewer tailpipe emissions and fugitive dust because it would occur in discrete locations along 4.8 miles of construction, compared with 12.8 miles for Phase I.

3.5.2 Certificated Route Alternative

Under the Certificated Route Alternative, the overall length of the APS North Gila–Orchard 230-kV transmission line would increase by 0.5 mile by extending eastward around Gila Substation and a date farm. This diversion and increased length of the APS portion of the Project would not introduce any impacts to air quality that differ from those described for the Proposed Action.

3.5.3 No Action Alternative

Impacts associated with the No Action Alternative would be less than those described for the action alternatives because the existing structures would not be removed, thereby reducing ground disturbance, and construction would take less time, thereby reducing tailpipe emissions and the potential to generate fugitive dust. APS would be responsible for minimizing fugitive dust.

3.6 Land Use

3.6.1 Proposed Action

3.6.1.1 Affected Environment

Land ownership immediately adjacent to the Project area includes private lands within unincorporated Yuma County and the City of Yuma, and land managed by Reclamation and the Arizona State Land Department. Figure 2-1 depicts the land ownership within the Project area. Generally, land uses adjacent and surrounding Project components include, public lands, a military range, agriculture, residences, and recreation facilities. Specific land uses of note are as follows:

- Along the northern segments of the Proposed Action, from North Gila Substation to Gila Substation, the ROW is surrounded by agricultural land and rural residences. Refer to Section 3.4 (Agriculture) for a detailed discussion of the affected environment for agricultural resources.
- The Yuma Lakes RV Resort is immediately southeast of the North Gila Substation and includes opportunities for camping, a stocked lake for fishing, water sports, and tennis (CRA 2013).
- The Gila River separates the Gila Valley between the North Gila Substation and the Gila Substation. Public access for fishing is allowed with a fishing permit at the Gila River.
- Immediately adjacent to the Gila Substation, there is a date farm with a retail store and dining area.
- Along the southern segments of the ROW from the Gila Substation to the Orchard Substation, the surrounding land uses include medium-density residential developments, RV and camping parks, Reclamation and the Arizona State Land Department land, and agricultural fields.
- The Barry Goldwater Air Force Range is adjacent to the southern boundary of the Orchard Substation.

3.6.1.2 Environmental Consequences

Significance Criteria

Land use impacts would be significant if:

- The Project is not compatible with land use plans or regulations adopted by local, state, or federal agencies
- The Project precludes an existing or permitted land use, or create a disturbance that would diminish the function of a particular land use;
- The Project results in nuisance impacts attributable to incompatible land uses; or

Prior land uses could not be restored to pre-construction use activities (for areas disturbed and not containing permanent structures).

Impacts

Resource protection measures will be implemented as part of the Proposed Action. The resource protection measure applicable to land use is summarized below and also included in Table 2.2-1.

- LU-1 requires that APS notify personnel at the Barry Goldwater Air Force Range about the construction activities, the new tower heights, and discuss the potential need for safety measures such as marker balls along the transmission line route.

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

The existing Western ROW is 135 feet wide. Under Phase I, Western would allow APS to use 35 feet of the existing ROW for the North Gila–Orchard segment of the APS project, and APS would acquire 65 feet of new ROW, which would result in a total of a 200-foot ROW. Western and APS have preemptive jurisdiction over city and county land use regulations. Therefore, under Western's and APS' authority, transmission lines are acceptable uses within the existing 200-foot ROW. In addition, for any ground disturbance outside of the existing ROW, Western would obtain the required Special Use or Temporary Use Permits from the applicable agencies with jurisdiction over the affected land(s). With acquisition of applicable permits, there would be no conflict with plans and regulations applicable to lands adjacent to the ROW.

The existing land uses consist of agricultural activities, residences, recreational resources, and the Barry Goldwater Air Force Range. The Project would traverse agricultural land uses, which would be allowed to continue within the ROW that would be established by Western and APS. As discussed in the Agriculture analysis (Section 3.4), overall the Project would reduce agricultural impacts along portions of the underbuild by replacing existing H-frame structures (i.e., two poles) with fewer single-pole structures; and the agricultural areas would be disturbed temporarily during construction, for no more than a few days at each pole location, and would be available for continued agricultural use upon completion of the Project. The Orchard Substation would be adjacent to the boundary of the Barry Goldwater Air Force Range. The Project's new towers would be approximately 50 to 65 feet taller than the existing transmission lines. Flight operations at the range include aircraft use of restricted airspace for air-to-air and air-to-ground training. Increasing the height of the transmission line towers is a safety issue for flight operations and the surrounding land uses. Therefore, for safety purposes, Resource Protection Measure LU-1 requires that APS notify personnel at the Barry Goldwater Air Force Range about the construction activities, the new tower heights, and discuss the potential need for safety measures such as marker balls along the transmission line route.

Construction may disrupt existing adjacent land uses due to nuisances such as noise and visual disturbances from equipment and vehicles, and also due to the potential for construction activities to restrict access to surrounding land uses. However, the construction period is expected to occur over a period of approximately 18 months along the 4.8-mile route for no more than a few days at each pole location. As such, it is unlikely that visual and noise disturbances, and access restrictions would be at any given location along the route for an extended period of time. Refer to Sections 3.3 and 3.12 for a detailed analysis of the intensity of impacts associated with aesthetics and noise, respectively.

As stated in Section 2.1.4 (Proposed Action), restoration would be completed at disturbance areas within the ROW following construction and cleanup of each construction phase; and disturbed surfaces would be restored to the original contour. However, the Project would include new transmission structures within agricultural fields, which would not be restored to pre-construction use activities. As discussed in Section 3.4, this conversion is negligible given the farm-

land in the North Gila Irrigation District, Yuma Irrigation District, and Yuma Mesa Irrigation District.

Based on the projects listed in Table 2.6-1, APS and Western have numerous present and future transmission projects that are linked to the North Gila, Gila and Orchard Substations. Cumulative impacts to surrounding land uses may include visual or noise disruptions (refer to Sections 3.3 and 3.12, respectively), and delayed access during the construction period. However, these impacts would be temporary and they would occur over several miles of transmission line ROWs for no more than a few days at each pole location so they would not be concentrated in one location. As such, the Proposed Action's contribution to cumulative impacts would be negligible.

Phase II – Gila-Knob Rebuild and Upgrade

For the rebuild and upgrades under Phase II, Western would expand their ROW 50 feet to the west for 4.8 miles from structure 5/2 to the Gila Substation, which would result in a 250-foot ROW. The expansion of the ROW would traverse agricultural lands. The analysis for this impact is discussed in Section 3.4 (Agriculture), which includes Resource Protection Measure AG-1 requiring coordination with affected landowners. No other non-agricultural land uses would be affected. Similar to Phase I, Western would have preemptive jurisdiction over local land use regulations, and agricultural activities would be allowed to continue within the new ROW established by Western.

The cumulative impacts associated with Phase II of the Proposed Action would be the same as discussed under Phase I.

3.6.2 Certificated Route Alternative

Under the Certificated Route Alternative, the overall length of the APS North Gila–Orchard 230-kV transmission line would increase 0.5-mile by extending eastward around Gila Substation and a date farm. This diversion and increased length of the APS portion of the Project would traverse, or be adjacent to, private agricultural lands, and Arizona State Land Department and Reclamation lands, which would require widening of an established ROW and a new easement through private, state and federal lands. Therefore, the potential for disruptions to existing land uses under this alternative would be greater than under the Proposed Action.

3.6.3 No Action Alternative

Under the No Action Alternative, APS would construct the new North Gila–Orchard transmission line, but Western would not proceed with the proposed rebuild of and upgrades to the existing Gila–North Gila and Gila-Knob transmission lines, and the expansion of the Western ROW required for the Proposed Action would not occur. There would be no land use impacts from the existing Western ROWs; impacts of the APS North Gila–Orchard transmission line are the same as the Proposed Action. Under the No Action Alternative, three transmission lines in a 235-foot ROW would result in a higher density of transmission lines along the Project route and a greater potential for land use (visual) disruptions (refer to Section 3.3, Aesthetics and Visual Resources).

3.7 Recreation

3.7.1 Proposed Action

3.7.1.1 Affected Environment

Existing recreation data was collected through review of online websites and maps. The study area analyzed for recreation includes land approximately within 0.5 mile on either side of the Project area. The following recreational resources were identified:

- The Yuma Lakes RV Resort is adjacent to the southern boundary of the North Gila Substation which includes opportunities for camping, a stocked lake for fishing, water sports, and tennis.
- The Gila River separates the Gila Valley between the North Gila Substation and the Gila Substation. Public access for fishing is allowed with a fishing permit at the Gila River.
- Recreation facilities south of Gila Substation include numerous RV and camping parks south of Araby Blaisdell Road and along E 32nd Street.
- Ocotillo Park, a community park just north of the Barry Goldwater Air Force Range on S Ave 6E, approximately 0.2 mile from the North Gila–Orchard transmission line ROW.

3.7.1.2 Environmental Consequences

Significance Criteria

Recreation impacts would be significant if:

- The Project conflicts with established recreational areas; or
- The Project results in decreased accessibility to areas established, designated or planned for recreation.

Impacts

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

The Proposed Action would not directly affect recreational resources or activities. However, during the construction period, activities at the North Gila Substation and the transmission line upgrades along the route may be disruptive to campers and recreational fishing at the Yuma Lakes RV Resort and Gila River. In addition, south of Gila Substation, the Desert Paradise RV and Camping Resort is approximately 0.08 mile south of the ROW. Indirect effects to these resources may result from visual and noise disturbances during construction. Sections 3.3 and 3.12 provide detailed analyses of the intensity of visual and noise impacts, respectively. The construction period is expected to occur for no more than a few days at each pole location over a period of approximately 18 months along the 12.8-mile route. Therefore, indirect impacts to surrounding recreational facilities would be temporary, would not be concentrated in one area for an extended period of time. Indirect impacts to recreation would be negligible.

Based on the past, present and future projects listed in Table 2.6-1, APS and Western have nine current and future transmission projects that interconnect with the North Gila, Gila and

Orchard substations. Cumulative impacts similar to the indirect impacts discussed above may affect recreational resources is this area of Yuma County. Impacts from these projects would also be temporary at each pole location and they would occur over several miles of transmission line ROWs, so it is unlikely that activities associated with multiple projects would be concentrated in one location at any given time. Therefore, the Proposed Action's contribution to cumulative impacts would be negligible.

Phase II – Gila-Knob Rebuild and Upgrade

Direct, indirect and cumulative impacts to recreational resources under Phase II would be the same as the impacts discussed under Phase I regarding the Yuma Lakes RV Resort and Gila River. The recreational resources south of Gila Substation would not be affected by the activities associated with Phase II.

3.7.2 Certificated Route Alternative

Under the Certificated Route Alternative, the overall length of the APS North Gila–Orchard 230-kV transmission line would increase 0.5 mile by extending eastward around Gila Substation and a date farm. This diversion and increased length of the APS portion of the Project would be immediately adjacent to the Desert Paradise RV and Camping Resort located at S Ave 9E and 28th Street, which would result in greater potential for visual and noise disturbance to affect a larger number of recreational resources in comparison to the Proposed Action.

3.7.3 No Action Alternative

Under the No Action Alternative, Western would not proceed with the proposed rebuild and upgrades to the existing Gila–North Gila and Gila-Knob transmission lines, but APS would construct the new North Gila–Orchard transmission line. As such, the visual and noise disturbances during the construction period associated with the Proposed Action would be similar under the No Action Alternative, and the contribution to cumulative impacts would be negligible.

3.8 Cultural Resources and Native American Religious Consultation

Information presented in this section was compiled from *A Line Through the Sand: A Class I Overview and Class III Cultural Resource Inventory of the Proposed San Luis Rio Colorado Project Transmission Line Corridor, Yuma County, Arizona* (Graves et al., 2013) prepared by Statistical Research, Inc. (SRI) and *Class III Cultural Resources Inventory for the Western Area Power Administration's Gila–North Gila Transmission Line Rebuild Project, in Conjunction with the Arizona Public Service Company's North Gila–Orchard Construction Project, Yuma, Yuma County, Arizona* (Davis 2013) prepared by Logan Simpson Design Inc. (LSD).

The Project area is defined as the 12.8-mile proposed action transmission line right-of-way and 0.5-mile Certificated Route Alternative transmission line right-of-way plus a 25-foot buffer on either side of both the Proposed Action and Certificated Route Alternative transmission alignments The Project area also includes numerous pull sites to be used for stringing conductor during construction (see Figure 1 in Davis 2013).

Methods

To comply with NHPA Section 106, SRI archaeologists conducted a cultural resources study consisting of a detailed Class I records review and intensive Class III pedestrian survey. LSD archaeologists conducted a Class III pedestrian survey as an update to the previous Class III pedestrian survey conducted by SRI. These studies were done in support of the EA and Western's compliance with the NHPA.

Records Search and Archival Research

The Class I inventory is a summary of literature, records, and other documents that provides an informed basis for understanding the nature of the cultural resources of the Project area. A Class I inventory of approximately 95% of the current Project area was conducted by SRI in May and June of 2006 (Graves et al. 2013).

Pedestrian Survey

Cultural resources surveys of the existing and proposed new ROW and temporary easements along portions of the Gila–North Gila transmission line were conducted in December 2006 and January and April of 2007 by archaeologists from SRI, and in May 2013 by archaeologists from LSD. A total of 73.80 acres were surveyed and included land owned by the Bureau of Reclamation, private lands within the City of Yuma, and unincorporated Yuma County lands. Fieldwork consisted of walking parallel transects spaced no more than 15 meters apart and mapping and recording artifacts and features with a Trimble GPS unit. A total of 76.31 acres were not surveyed due to landowner restrictions, fumigated fields, or dense agricultural vegetation. These areas were noted during the pedestrian survey, and their locations mapped in GIS.

Archaeological sites were defined according to criteria established by Arizona State Museum (ASM 1993). A site contains the physical remains of past human activity that is at least 50 years old and consists of at least one of the following:

- 30 or more artifacts of a single type within an area 15 meters in diameter, except when all artifacts appear to have originated from a single source
- 20 or more artifacts of two or more types within an area 15 meters in diameter
- One or more features in temporal association with any number of artifacts
- Two or more temporally associated features without any artifacts

Resources may also be recorded at the discretion of the archaeologist even if they do not meet the minimum requirements. Artifacts or features that do not meet any of these criteria are considered isolated occurrences (IOs). IOs are recorded and described, but they do not qualify as sites.

3.8.1 Proposed Action

3.8.1.1 Affected Environment

Background

Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic. Prehistoric archaeological resources are associated with the human occupation and use of the Project area prior to prolonged European contact. In the Project area, the prehistoric period began over 12,000 years ago and extended up to the beginning of the eighteenth century, with the establishment of the first Spanish missions (Gilpin and Phillips n.d.: 10). Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. The following prehistoric, ethnographic, and historical background provides the context for the evaluation of the NRHP eligibility and impacts under NEPA of any identified cultural resources within the Project area.

Prehistory

Human populations have occupied the lower Colorado River Valley for at least 12,000 years (Schiffer and McGuire 1982: 4). However, little is known about the prehistory of the region. In part, this is the result of natural processes which have buried or eroded many sites. Human action through agricultural development and levee construction has also played a part in this destruction. The culture-historical chronological sequence for the lower Colorado River Valley consists of three periods, based on a general evolutionary sequence hallmarked primarily by different artifact types: Paleo-Indian (9000-5000 BC), Archaic (5000 cal. BC to cal. AD 700), and Patayan (cal. AD 700 to late 1700s) (Schaefer and Laylander 2007: 252; Waters 1982: 284). Prehistoric resources located in the Project area include three artifact scatters, sites AZ X:7:11, AZ X:7:40, and AZ X:7:41. The exact date of these prehistoric resources is unknown.

The cultural traditions of the following Archaic period are characterized by several phases, or traditions, that exhibit widespread similarities and represent the lifeways of hunters and gatherers in arid environments and simple technological features common to such economies.

Archaic-period toolkits consisted primarily of wooden tools, and lithic tools used to create wooden implements (McGuire 1982a: 177, 178).

Toward the end of the Archaic period, possibly in response to increasing aridity in the region, the subsistence-settlement pattern of mobile hunting and gathering became less viable, leading to an adoption of agriculture and a more sedentary residential pattern along major drainages (McGuire 1982a: 179). The adoption of pottery and use of floodplain agriculture between A.D. 500 and 750 characterizes the beginning of the Patayan Tradition in the Lower Colorado River Valley. In addition to the use of ceramics, the Patayan Tradition is also marked by the continued use of wooden tools, as well as manos, metates, and bone awls (Rogers 1945: 173-174).

Ethnography

The Project area was likely part of Yuman territory (McGuire 1982b: 68). The closest group within the Project area was the Quechan (Yumas) who occupied the area around the Gila-Colorado confluence (McGuire 1982b: 68). The eighteenth-century Yumans practiced a mixed subsistence strategy, including agriculture, hunting, and gathering. They engaged in endemic warfare and gained control of large swathes of the lower Colorado River, before being subdued by the U.S. Army in 1859 (McGuire 1982b: 69-71). In response to the reduction in number of tribal members due to warfare, disease, and starvation, the U.S. government established the Yuma Indian reservation in 1883 (McGuire 1982b: 71). The Yuma Indian reservation (now called the Fort Yuma Indian reservation) is located approximately three miles east of the North Gila Substation. There are no ethnographic resources located in the Project area.

History

The historic period of the lower Colorado River Valley can be broken into three periods: the Spanish Period (1540-1820), the Mexican Period (1821-1848), and the American period (1848-present). Historic-period resources located within the Project area include canal, railroad, and road segments, historic trails, structures, and a transmission line. These resources are associated with four main historic themes: Spanish Exploration (1774-1776), Early American Exploration and Growth of the Region (1846-1880s), Water Control (1904-1950s), and Automotive Transportation (1912-1960s).

Spanish Exploration (1774-1776). The first organized Spanish overland expedition to California was led by Juan Bautista de Anza, captain of the Spanish presidio at Tubac. Between 1775 and 1776, Anza and over 240 men, women, and children, along with approximately 1000 head of cattle, journeyed from Nogales, Arizona, to the San Francisco Bay area of California to establish a settlement (NPS 2013a). In southwestern Arizona, his route followed the Gila River to the Yuma Crossing. Anza's expedition opened up what is now California to Spanish colonists and began the missionization process along the California coast. A portion of the Juan Bautista de Anza National Historic Trail crosses through the Project area just south of the North Gila Substation (NPS 2013b).

Early American Exploration and Growth of the Region (1846-1880s). The first Americans to explore the region were trappers traveling individually and in groups down the Gila River from New Mexico in search of beaver pelts. The Gila Trail was a complex of trails that followed Native American and Spanish travel routes and was at different times referred to as the Gila Trail,

Kearny Trail, and Butterfield Overland Stage Route. Portions of this trail cross through the Project area along U.S. 95 approximately 2.5 miles north of Gila Substation (AGA 2013). The Gila Trail was established by trappers and followed the Gila River to the Colorado River. Colonel Stephen Kearny and the Army of the West chose this trail on their way to California in 1846. Discovery of gold in California in 1848 turned what had been a military route into a migrant trail. In 1858, transportation routes were greatly improved when stagecoaches began carrying mail from San Antonio to San Diego along the Butterfield Overland Stage Route. In Arizona, the Butterfield Overland Stage Route follows along the route of the original Gila Trail, paralleling the Gila River. The entire Butterfield Overland Stage Route is currently being proposed as a National Historic Trail (NPS 2013c). The Southern Pacific Railroad, which extended from San Francisco to New Orleans, was the first major railroad to cross through the territories of Arizona and New Mexico. In 1877, construction crews had reached the California side of the Colorado River at what is today the city of Yuma. A section of the Southern Pacific Railroad Mainline, AZ Z:2:40, crosses through the Project area just south of the Gila Substation.

The livestock industry has been important in the region since the 1870s. Many of the early herds existed primarily to support the miners, military installations, and Native American reservations. In 1860, José María Redondo established the Redondo Ranch or San Ysidro Hacienda, which was the first non-Native American irrigated farm in Arizona. Redondo hired Yaquis from Mexico to work his farmlands and constructed over 27 miles of irrigation canals to water his fields. Redondo grew a variety of crops on his ranch and raised numerous livestock. The Redondo Ranch is located in the Project area approximately 0.19 mile south of the North Gila Substation. As transportation improved and population increased, so too did demand for cultivated goods, making irrigation agriculture profitable. Homesteading was widespread along the Gila River between 1920 and 1940 and continued in the area from 1947 to 1957 under the Bureau of Reclamation's Gila and Yuma irrigation projects.

Water Control (1904-1957). To encourage development of the arid West and provide water to areas otherwise unfit for cultivation, Congress passed the Reclamation Act in 1902. The Reclamation Act also created the Reclamation Service (later - Bureau of Reclamation) to assist in the creation of various irrigation and agricultural programs. The Yuma Project, authorized in 1904, was the first of these programs. Several levees were constructed along the Colorado River, and in 1909, the Laguna Dam became the first major device to harness the power of the Colorado River. In addition to the dam and levees, the Yuma Project involved the construction of 10 primary canals, 218 miles of laterals, one power plant, two pumping plants, and a 930-foot siphon across the Colorado River. Site AZ X:6:39 (Main Drain) was constructed ca. 1930s as part of the Yuma Project and is located in the Project area 0.15 mile south of the Gila River.

The Gila Project was constructed between 1936 and 1940 under the Boulder Canyon Act of 1928, and was a significant modification and expansion of the earlier Yuma Project. The Gila Gravity Main Canal and its associated features were constructed between 1936 and 1939. Associated features of the Gila Gravity Main Canal include an inverted siphon crossing of the Gila River, the A and B distribution canals, and several pumping plants. The Gila Gravity Main Canal, AZ X:7:20, is located in the Project area directly to the west and north of Gila Substation. The A (AZ X:6:82) and B (AZ X:6:83) distribution canals are also located in the Project area and run along a portion of the proposed APS Gila–North Orchard transmission line.

Following passage of the Boulder Canyon Act of 1928, Congress passed the River and Harbors Act of 1935, which authorized the construction of the Parker Dam Power Project and later Davis Dam Project. The Parker Dam Power Project and Davis Dam Project were combined into the Parker-Davis Project in 1954 (Linenberger 1997: 9-10). Construction of the Parker Dam began in 1936 and was completed in 1938 (Linenberger 1997: 14, 17). The Gila-Knob (GLA-KNB) 161-kV transmission line (AZ X:7:42) and the Gila Substation (AZ X:7:195) were constructed in the 1940s as part of the Parker-Davis Project and to help power Gila Project facilities. Both of these resources are located within the Project area.

Automotive Transportation (1912-1960s). As automobile traffic in the state of Arizona increased following Ford's invention of the Model T in 1907, it became clear that there was a scarcity of decent, paved roads. In 1912, the mileage of unpaved wagon roads in the state outnumbered that of paved roads (Keane and Bruder 2004: 13-14). In 1912, the State Legislature passed the first state road law, which directed the new State Highway Engineer to designate 1500 miles of roads and highways as a system of state highways and allotted $250,000 to the counties for road construction (Keane and Bruder 2004: 44). In 1921 the Federal Highway Act was passed and required each state to designate a state highway system made up of no more than 7 percent of all rural roads within the state (Keane and Bruder 2004: 21). This prompted a flurry of road-building and paving activities throughout the state. The Arizona Historic State Highway System was designated by the Federal Highway Administration and Arizona Department of Transportation and consists of a network of roadways developed between 1912 and 1955. A segment of U.S. 95, site AZ L:7:30, is located between Avenue 9E and Avenue 10E and extends for approximately 1.25 miles within the Project area.

Cultural Resources Identified

A total of 13 cultural resources are present within the Proposed Action area, all of which are previously recorded historic and prehistoric resources (Table 3.8.1). These include canals, transmission lines, road segments, structures, and prehistoric artifact scatters. Five of these resources have been determined eligible for the NRHP/AZRHP by SHPO and are therefore considered historic properties under NHPA. Out of these five historic properties, one was recommended as a non-contributing element to the property's eligibility by LSD. One cultural resource was determined not eligible by SHPO for the NRHP/AZRHP and was therefore not considered an historic property under the NHPA. Four resources were recommended not eligible for the NRHP/AZRHP by SRI and LSD. One resource, the Redondo Ranch/San Ysidro Hacienda, is listed on the NRHP and considered an historic property under the NHPA. The Juan Bautista de Anza Trail, was designated as a National Historic Trail by the Secretary of the Interior, in 1968 (16 U.SC. 1241 §5a 17 et seq.). The entire Butterfield Overland Stage Route is being proposed as a National Historic Trail (NPS 2013c). Though both trails pass through the Project area along the Gila River valley, no extant evidence of them was found during pedestrian survey (Graves et al. 2013: 2.14).

Cultural resources identified in the Project area are listed and described below (Table 3.8-1).

Table 3.8-1. Cultural Resources Identified in the Project Area

ASM Site/ Structure No.	Description	Land Status	NRHP Eligibility	Location within Project Area
AZ X:6:39	Canal – Main Drain; constructed ca. 1930s as part of the Yuma Project. The segment within the Project area is approximately 0.70 linear mile.	Reclamation	Determined eligible under Criterion A by Reclamation with SHPO concurrence. Segment in Project area recommended contributing element by LSD.	Proposed Action area Phase I and Phase II
AZ X:6:82	Canal – A Canal; constructed ca. 1941-1942 as part of the Gila Project. Two segments of the canal are within the Project area: 1) Northernmost section, approximately 1.70 linear miles, 2) Southernmost section, approximately 1.75 linear miles	Reclamation	Determined eligible under Criterion A by Reclamation with SHPO concurrence. Segments in Project area recommended contributing elements by SRI.	Proposed Action area Phase I
AZ X:6:83	Canal – B Canal; constructed ca. 1941-1942 as part of the Gila Project (AZ DOT 2005: 70). The segment within the Project area is approximately 0.10 linear mile.	Private	Determined eligible by AZDOT under Criterion A with SHPO concurrence.	Proposed Action area Phase I
AZ X:7:11	Prehistoric artifact scatter – contains 400 artifacts (primarily quartzite flakes) and one chipping station.	ASLD and Private	Recommended not eligible by LSD.	Proposed Action area Phase I
AZ X:7:20	Canal – Gila Gravity Main Canal; constructed ca. 1936-1939 as part of the Gila Project. The segment within the Project area is approximately 1.25 linear miles.	Reclamation	Determined eligible under Criterion A and C by Reclamation with SHPO concurrence. Segment in Project area recommended contributing element by SRI.	Proposed Action area Phase I and Phase II, Certificated Route Alternative
AZ L:7:30	Road – Paved, four-lane road. Historic alignment of US 95, incorporated into Arizona State Highway System ca. early 1960s. The segment within the Project area is approximately 0.10 linear mile.	AZDOT	Determined eligible under Criterion D by AZDOT with SHPO concurrence. Segment in Project area recommended non-contributing element due to its age (ca. 1960s) and lack of integrity of setting, feeling, and association, by LSD.	Proposed Action area Phase I and Phase II
AZ X:7:40	Prehistoric artifact scatter – contains 30 artifacts (primarily quartzite flakes).	Reclamation	Recommended not eligible by LSD.	Proposed Action area Phase I
AZ X:7:41	Prehistoric artifact scatter – contains approximately 600 flaked-stone artifacts.	ASLD and Private	Recommended not eligible by LSD.	Proposed Action area Phase I
AZ X:7:42	Transmission line – GLA-KNB 161-kV transmission line; runs between the Gila Substation to the Pilot-Knob Substation in California. Constructed in 1943. Wooden poles, primarily two-pole, H-frame structures. The segment within the Project area is approximately 5.0 linear miles.	Western	Determined not eligible by Western with SHPO concurrence.	Proposed Action area Phase I

Table 3.8-1. Cultural Resources Identified in the Project Area

ASM Site/ Structure No.	Description	Land Status	NRHP Eligibility	Location within Project Area
AZ X:7:195	Structure – Gila Substation; measures 500 x 300 ft., constructed ca. 1942-1943 as part of the Parker-Davis Project. Contains 161-kV circuit breakers and transformers, warehouse, relay house, and oil house.	Western	Recommended not eligible by SRI.	Proposed Action area Phase I
AZ X:7:5	Structure – Redondo Ranch/San Ysidro Hacienda Site, constructed ca. 1860s by José María Redondo. Consists of ruins of the main portion of the hacienda and some standing adobe-brick walls.	ASLD	Listed on NRHP.	Proposed Action area Phase I
AZ Z:2:40	Railroad – Southern Pacific Railroad mainline, constructed ca. 1879. Two tracks, set on a wide berm of gravel, cinder, and slag. The segment within the Project area is approximately 0.50 linear mile.	Reclamation, ASLD, Private	Determined eligible by Reclamation with SHPO concurrence. Segment in Project area recommended non-contributing element by SRI due to its continued use and likely modification since original construction.	Certificated Route Alternative
Gila Trail/ Kearny Trail/ Butterfield Overland Stage Route	Trails – Historic complex of trails, parallel the Gila River and pass through the Project area along U.S. 95 approximately 2.5 miles north of Gila Substation.	Reclamation, ASLD, Private	Entire Butterfield Overland Stage Route proposed as a National Historic Trail	Proposed Action area Phase I
Juan Bautista de Anza Trail	Trail – Historic trail dating from 1775-1776, associated with Juan Bautista de Anza.	Private, ASLD	Designated as a National Historic Trail by the Secretary of the Interior.	Proposed Action area Phase I

3.8.1.2 Environmental Consequences

Significance Criteria

Impacts to cultural resources and Native American religious concerns would be significant if:

- The Project results in damage to, alteration to, or loss of, a site of archaeological, Tribal or historical value that is listed, or eligible for listing, on the National Register of Historic Places (NRHP).
- The Project results in adverse impacts to NRHP-eligible properties that cannot be satisfactorily mitigated as determined through consultation with the State Historic Preservation Office and other interested parties.
- The Project results in loss or degradation of a traditional cultural property (TCP) or sacred site, or if the property or site is made inaccessible for future use.
- Any human remains are disturbed.

Impacts

The following section analyzes the direct, indirect, and cumulative impacts that could occur to historic properties from Phases I and II of the Proposed Action. The resource protection mea-

sures applicable to cultural resources are summarized below with full text of the measures presented in Section 2.2. The approach to impact assessment described above and the resource protection measures presented below are also applicable to the Certificated Route and No Action alternatives, as appropriate.

- CUL-1 requires avoiding construction, and operation and maintenance activities near the berms of the Main Drain (AZ X:6:39), A Canal (AZ X:6:82), B Canal (AZ X:6:83), and the Gila Gravity Main Canal (AZ X: 7:20).
- CUL-2 requires that in the event that archaeological resources or human remains are discovered on federal land during construction, and operation and maintenance of the Project, all activities must cease in the immediate vicinity of the discovery, federal land-managing agency(ies) are immediately notified if human remains are found on federal land, and the Arizona SHPO and tribes are consulted with to determine the appropriate course of action.
- CUL-3 requires that in the event than any archaeological resource that is at least fifty years old is discovered on state, county or municipal land during construction, and operation and maintenance of the Project, the Applicant or Applicant's representative will immediately inform the Director of the Arizona State Museum, and in consultation with the Director, take immediate action to manage the preservation of the discovery as required by A.R.S. §41-844.

CUL-4 requires that if human remains and/or funerary objects are encountered on state, county or municipal land during construction, and operation and maintenance of the Project, the Applicant shall cease work on the affected area and notify the Director of the Arizona State Museum as required by A.R.S. §41-844.CUL-3 and CUL-4 are taken from APS's *Application for Certification of Environmental Compatibility* (2011) with minor modifications for consistency with Arizona Revised Statute 41-844.

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Construction. No direct impacts would occur to historic properties in Phase I of the Proposed Action area from construction, because construction activities near the berms of the Main Drain, A and B Canals, and the Gila Gravity Main Canal, will be avoided with implementation of CUL-1. Indirect impacts to historic properties from construction activities include changes to the integrity, particularly setting and feeling, due to the presence of construction workers and vehicles, heavy equipment, and project components. Indirect impacts to historic properties would occur in close proximity to the construction sites and would be short-term and negligible as Phase I construction activities would occur for a limited duration in a linear fashion along the route.

No extant remains of the Juan Bautista de Anza Trail have been identified in Phase I of the Proposed Action area; therefore, direct impacts would not occur to this trail from construction activities. However, Historic Campsite 39 "Beach of the Colorado River," is located roughly 3.8 miles northeast of the Gila–North Gila 69-kV transmission line (NPS 2013b) and is within the background viewshed of the project (3 to 5 miles), as defined in Section 3.3 Aesthetics and Visual Resources. Therefore, indirect impacts to the Juan Bautista de Anza Trail would occur, including changes to the viewshed from project components, structure erection, and conductor stringing. Indirect impacts to the Juan Bautista de Anza Trail would be short-term and negligible

because Phase I construction activities would occur for a limited duration as construction progresses in a linear fashion along the route.

Table 2.6-1 lists past, present, and reasonably foreseeable future actions that may cumulatively contribute to changes in the setting and feeling of historic properties and to the viewshed of the Juan Bautista de Anza Trail. The majority of these actions include additional transmission line rebuild work within existing Western and APS ROWs in the Yuma area, as well as within Gila Substation. In addition, the Hassayampa–North Gila No. 2 500-kV Transmission Line is being constructed and will begin service in 2015. Cumulative impacts to historic properties and to the Juan Bautista de Anza Trail from Phase I construction activities would be short-term and negligible as these resources are located in an already heavily urbanized/industrialized area traversed by transmission lines. Cumulative impacts would be minimized through implementation of measures to protect historic resources, prehistoric resources, and sites important to Native American heritage. These include CUL-2 through 4, which ensure that measures will be taken to protect cultural resources and human remains accidentally discovered during construction, and operation and maintenance, and that the appropriate authorities are notified of the discovery.

Operation and Maintenance. No direct impacts would occur to historic properties in Phase I of the Proposed Action area from operation and maintenance activities such as pole replacement and line restringing, because ground disturbance near the berms of the Main Drain, A and B Canals, and the Gila Gravity Main Canal, will be avoided with implementation of CUL-1. Long-term indirect impacts to historic properties, particularly setting and feeling, would occur as the presence of the new APS North Gila-Orchard transmission line would increase the industrial character of the area. However, these would be negligible and would occur within the existing Gila–North Gila ROW, an area with extensive existing transmission infrastructure and other man-made elements.

No direct impacts would occur to the Juan Bautista de Anza Trail in Phase I of the Proposed Action area from operation and maintenance activities because no extant remains of the Juan Bautista de Anza Trail have been identified in Phase I of the Proposed Action area. However, long-term indirect impacts to the viewshed of the Juan Bautista de Anza Trail would occur as the presence of the new APS North Gila-Orchard transmission line would increase the industrial character of the area and would be visible from 3 to 5 miles away. However, these would be negligible as this is an area with extensive existing transmission infrastructure and other man-made elements. In addition, the visibility of reflective components of the new line (steel poles, insulators, wire) would diminish over time as weathering made them less reflective. Past, present, and reasonably foreseeable future actions that may cumulatively contribute to changes to the setting and feeling of historic properties and to the viewshed of the Juan Bautista de Anza Trail include additional transmission line work and maintenance within the existing Western and APS ROWs in the Yuma area, as well as future maintenance of the North Gila, Gila, and Orchard Substations. These actions would increase the urbanized/industrialized nature of the area; however, they would have long-term but negligible impacts on historic properties, as they would take place within an existing utility right-of-way. Cumulative impacts from operation and maintenance would be minimized through implementation of measures to protect historic resources, prehistoric resources, and sites important to Native American heritage. These include CUL-2 through 4, which ensure that measures will be taken to protect cultural resources

and human remains accidentally discovered during construction, and operation and maintenance, and that the appropriate authorities are notified of the discovery.

Phase II Gila-Knob Rebuild and Upgrade

Construction. No direct impacts would occur to historic properties in Phase II of the Proposed Action area from construction because construction activities near the berms of the Main Drain and Gila Gravity Main Canal will be avoided with implementation of CUL-1. Construction of Phase II of the Proposed Action would have similar indirect impacts to historic properties as those described above for Phase I. Because the past, present, and reasonably foreseeable future actions identified in Table 2.6-1 are assumed to be constructed prior to Phase II actions, these actions are addressed cumulatively for the Proposed Action under Phase I.

Operation and Maintenance. No direct impacts would occur to historic properties in Phase II of the Proposed Action area from operation and maintenance activities such as pole replacement and line restringing, because ground disturbance near the berms of the Main Drain and Gila Gravity Main Canal will be avoided with implementation of CUL-1. Long-term indirect impacts to historic properties, particularly setting and feeling, would occur as the replacement of the existing Gila-Knob 161-kV wood structures with steel monopoles would cause a noticeable increase in structure prominence and industrial character. However, these would be negligible as the Phase II structures would blend in with the similar Phase I structures and would take place within an existing utility right-of-way. Cumulative impacts to historic properties from operation and maintenance of Phase II of the Proposed Action are similar to those described for Phase I and can be minimized through measures designed to protect historic resources, prehistoric resources, and sites important to Native American heritage. These include CUL-2 through 4, which ensure that measures will be taken to protect cultural resources and human remains accidentally discovered during construction, and operation and maintenance, and that the appropriate authorities are notified of the discovery.

3.8.2 Certificated Route Alternative

Construction. No direct impacts would occur to historic properties from construction of the Certificated Route Alternative, because construction activities near the berm of the Gila Gravity Main Canal will be avoided through implementation of CUL-1. Construction of the Certificated Route Alternative would have similar indirect impacts to historic properties as those described above for Phases I and II of the Proposed Action. Because the Certificated Route Alternative would only result in a slight reroute of the North Gila–Orchard transmission line, the cumulative impacts of past, present, and reasonably foreseeable future actions (as identified in Table 2.6-1) to historic properties would be similar to that described above for the Proposed Action under Phase I. Cumulative impacts would be minimized through implementation of measures to protect historic resources, prehistoric resources, and sites important to Native American heritage. These include CUL-2 through 4, which ensure that measures will be taken to protect cultural resources and human remains accidentally discovered during construction, and operation and maintenance, and that the appropriate authorities are notified of the discovery.

Operation and Maintenance. No direct impacts would occur to historic properties in the Certificated Route Alternative from operation and maintenance activities such as pole replace-

ment and line restringing, because ground disturbance near the berm of the Gila Gravity Main Canal will be avoided with implementation of CUL-1. Indirect impacts to historic properties are similar to those described above for Phase I of the Proposed Action. Cumulative impacts from operation and maintenance of the Certificated Route Alternative would be similar to those described above for Phase I of the Proposed Action, and would be minimized through implementation of measures to protect historic resources, prehistoric resources, and sites important to Native American heritage. These include CUL-2 through 4, which ensure that measures will be taken to protect cultural resources and human remains accidentally discovered during construction, and operation and maintenance, and that the appropriate authorities are notified of the discovery.

3.8.3 No Action Alternative

Construction. No direct impacts to historic properties would occur from construction of APS' North Gila-Orchard transmission line, because construction activities near the berms of the Main Drain, A and B Canals, and the Gila Gravity Main Canal, will be avoided with implementation of CUL-1. Indirect impacts to historic properties from construction are similar to those described above for Phases I and II of the Proposed Action.

No direct impacts to the Juan Bautista de Anza Trail would occur from construction of APS' North Gila–Orchard transmission line as no extant remains of the trail were identified in the Project area. Indirect impacts to the Juan Bautista de Anza Trail are similar to those described for Phase I of the Proposed Action.

Cumulative impacts to historic properties and the Juan Bautista de Anza Trail from construction of APS' North Gila–Orchard transmission line are similar to those described above for Phase I of the Proposed Action. Cumulative impacts would be minimized through implementation of measures to protect historic resources, prehistoric resources, and sites important to Native American heritage. These include CUL-3 and 4, which ensure that measures will be taken to protect cultural resources and human remains accidentally discovered during construction, and operation and maintenance, and that the appropriate authorities are notified of the discovery.

Operation and Maintenance. No direct impacts would occur to historic properties from construction of the North Gila-Orchard transmission line from operation and maintenance activities such as pole replacement and line restringing, because ground disturbance near the berms of the Main Drain, A and B Canals, and the Gila Gravity Main Canal, will be avoided with implementation of CUL-1. Indirect impacts to historic properties are similar to those described above for Phases I and II of the Proposed Action.

No direct impacts to the Juan Bautista de Anza Trail would occur from operation and maintenance of APS' North Gila–Orchard transmission line as no extant remains of the trail were identified in the Project area. Indirect impacts to the Juan Bautista de Anza Trail are similar to those described in Phase I of the Proposed Action, but minor rather than negligible, as the continued presence of Western's Gila–North Gila 69-kV and Gila-Knob 161-kV transmission lines combined with the new APS North Gila-Orchard 230-kV transmission line would add to the prominence of transmission line infrastructure in the background viewshed.

Cumulative impacts to historic properties and the Juan Bautista de Anza Trail from operation and maintenance of APS' North Gila–Orchard transmission line would be similar to those described above for Phase I of the Proposed Action. Cumulative impacts would be minimized through implementation of measures to protect historic resources, prehistoric resources, and sites important to Native American heritage. These include CUL-3 and 4, which ensure that measures will be taken to protect cultural resources and human remains accidentally discovered during construction, and operation and maintenance, and that the appropriate authorities are notified of the discovery.

3.8.4 Native American Consultation

Section 106 specifies that as the lead federal agency, it is Western's responsibility to ensure that consultation occurs with interested tribes to identify properties of special significance to them in the Project area. This responsibility is reinforced by the AIRFA, directing federal agencies to minimize interference with the free exercise of Native religion, and accommodate access to and use of important religious sites. Properties identified through the Tribal consultation process may include traditional cultural properties (TCP), sacred landscape or landscape elements, and traditional use areas important for Native American cultural and religious practices.

No TCPs, sacred landscapes or landscape elements, or traditional use areas, have been identified. The culturally sensitive nature of these properties often precludes tribes from revealing this information. However, consultation is ongoing with the Tribes listed in Appendix F. A summary of Western's consultation efforts will be provided in the Final EA.

3.9 Wildlife

Aspen's biologists visited the Project area on February 28 and March 1, 2013 to evaluate biological resources. The field visit included reconnaissance-level surveys for plants and animals within the Project area and a habitat assessment for special-status species. Biologists looked specifically for bird nests, including burrowing owl burrows, in the Project area. The Biological Evaluation (BE; provided in Appendix B) includes a list of all plant and animal species identified in the field.

3.9.1 Proposed Action

3.9.1.1 Affected Environment

Aspen's biologists observed twenty species of wildlife during the survey, none of which were special-status species. Wildlife habitats in the Project area consist largely of agricultural fields, which provide foraging habitat for a number of common wildlife species, such as mourning dove (*Zenaida macroura*), common raven (*Corvus corax*), European starling (*Sturnus vulgaris*), great-tailed grackle (*Quiscalus mexicanus*), and house finch (*Carpodacus mexicanus*). There are several natural areas in the Project area with creosote bush scrub and riparian scrub that provide habitat for many wildlife species, such as turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), Gambel's quail (*Callipepla gambelii*), and white-winged dove (*Zenaida asiatica*).

The northern portion of the Project area is located within the Gila River Valley and it crosses the Gila River. The Gila River crossing includes a large area of natural riparian and marsh habitats that potentially support many common wildlife species and several special-status species (special-status species are addressed in Section 3.10). The southern portion of the Project area crosses through the Yuma sand fields. These sands fields provide habitat for wildlife such as sidewinders (*Crotalus cerastes*) and flat-tailed horned lizards (*Phrynosoma mcallii*). All vegetation types in the Project area are described in further detail in the BE (see Appendix B).

3.9.1.2 Environmental Consequences

Significance Criteria

Wildlife impacts would be significant if:

- The Project results in local loss of wildlife habitat (as compared to total available resources within the area) or habitat productivity;
- The Project interferes with nesting or breeding periods of any species; or
- The Project reduces the range of occurrence of any wildlife species.

Impacts

Resource protection measures will be implemented as part of the Proposed Action. The resource protection measures applicable to biological resources are summarized below with full text of the measures presented in Table 2.2-1.

- BIO-1 limits mechanical disturbance of desert shrubland habitat to the extent practicable.
- BIO-2 requires pre-construction clearance surveys for special-status reptiles (February 15 through November 15), burrowing owl (year-around), and other native nesting birds (March 1 through September 15).
- BIO-3 requires that all no work take place between March 1 and September 15 at the Gila River crossing to avoid potential impacts to nesting birds, limits vegetation cutting or clearing to trees that may cause transmission line safety hazards, and avoid clearing in marsh habitat.
- BIO-4 requires either a pre-construction nesting bird survey during the nesting season (March 1 through September 15) or avoidance of construction activities during the nesting season.
- BIO-5 requires work in the Yuma sand fields to take place outside of the reptile activity period (February 15 and November 15) or pre-construction survey to move reptiles out of harm's way.
- BIO-6 requires training to inform workers of all applicable resource protection measures protecting biological resources.
- BIO-7 prohibits pets from the Project area. Domestic animals can injure or kill native wildlife, and can introduce disease.
- BIO-8 requires that the new transmission lines conform to APLIC design guidelines.
- BIO-9 requires containment of all trash, refuse, concrete, and other materials in the work site and properly disposed of off the site.
- BIO-10 requires prevention of ponding or standing water in the Project area.
- BIO-11 requires a 25 mph speed limit in the Project area.

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Construction of the Proposed Action would have direct, long-term permanent impacts and adverse, short-term temporary impacts to common wildlife. Direct, long-term permanent impacts to wildlife would be limited to animals being injured or killed during construction activities. Vegetation clearing and ground disturbance activities are likely to result in adverse, short-term, temporary displacement of reptiles, small mammals, and birds. Most of the species likely to be displaced, injured, or killed are common and widely distributed. Temporary impacts to habitat would be in locations where there are extensive similar habitats in the surrounding area that wildlife will be able to utilize when moving away from the Project area. Operation of the Proposed Action would cause occasional adverse, short-term impacts to common wildlife.

Construction of the Orchard Substation would result in the direct, long-term, and permanent loss of approximately 15 acres of citrus groves. At each new structure there would be a direct, long-term permanent impact from the structure foundations and an additional short-term and adverse impact area around the base that would be maintained for future access. Most of the impacts from new structures, conductor pulling, and tensioning sites would be adverse and short-term. Construction noise and disturbance (e.g., vehicles, compressors, welders, generators, helicopters, and implosive sleeving) may cause wildlife to temporarily leave the area but these impacts would

be for short-term and there is extensive habitat in the surrounding area that wildlife will be able to utilize.

Migratory birds, including active nests, are protected under the federal Migratory Bird Treaty Act. During Aspen's survey, one active red-tailed hawk nest was observed in a communication tower within the Gila Substation. Construction will be scheduled outside of the breeding season (Resource Protection Measure BIO-2), pre-construction surveys will be conducted and appropriate nest avoidance measures will be implemented (Resource Protection Measure BIO-4) to avoid any impacts to migratory birds. If undetected by surveys, project activities may disturb nesting birds, or may remove nests on transmission line structures or in adjacent habitats (if present). Project activities may inadvertently damage nests of ground-nesting species (e.g., killdeer) that might nest in construction sites or staging areas, or damage active burrows of burrowing owls.

Some power lines present collision or electrocution risk to native birds. Songbirds and waterfowl have a lower potential for collisions than larger birds, such as raptors. Songbirds and waterfowl tend to fly under power lines, while larger species generally fly over lines and risk colliding with higher static lines (APLIC 2012). Large raptors are susceptible to electrocution on power lines because of their large size and proclivity to perch on tall structures. Agricultural lands are productive foraging areas for birds because of abundant insects and seeds. Riparian habitats and areas of open water are highly productive areas that provide many resources to birds. Power lines located near these habitats with high avian use, such are those in portions of the Project area, may pose greater exposure to collisions for some bird species (APLIC 2012).

Structure design is a major factor in causing or preventing raptor electrocutions. Electrocution occurs when a perching bird simultaneously contacts two energized or grounded conductors or an energized conductor and grounded hardware. This happens most frequently when a bird attempts to perch on a structure with insufficient clearance between the conductors or grounds. The majority of raptor electrocutions are caused by distribution lines and relatively small transmission lines, energized at voltage levels between 1-kV and 69-kV. Higher voltage transmission lines are built with wider spacing between the conductors and grounds, and present reduced threat of electrocution. Electrocution can occur when horizontal separation is less than the wrist-to-wrist (flesh-to-flesh) distance of a bird's wingspan or where vertical separation is less than a bird's length from head to foot.

The largest bird that is likely to come in contact with the Project transmission lines is the golden eagle (wingspan to 7.5 feet; wrist-to-wrist length of 3.5 feet; height to 2.2 feet). The Avian Power Line Interaction Committee (APLIC 2006) guidelines recommend 60-inch separations between energized conductors or hardware and grounded conductors or hardware to protect eagles and other birds of the area (e.g., red-tailed hawk, turkey vulture) from electrocution.

Construction of the APS North Gila–Orchard transmission line would result in approximately 3.9 additional miles of transmission line and 20 additional structures in areas with no existing lines. It would also add approximately 4.6 miles of transmission line and approximately 25 new structures parallel to existing transmission lines. The Proposed Action would conform to APLIC design guidelines to minimize the potential electrocution risk (see Resource Protection Measure BIO-8). The proposed location of the new transmission line adjacent to the existing lines minimizes the

collision risk. The 3.9 miles of additional lines would be in areas with relatively low avian use so impacts to birds from collision with the new lines would be negligible.

Table 2.6-1 lists past, present, and reasonably foreseeable future actions that may cumulatively impact wildlife in the Project area. The majority of these past, present and future projects are transmission rebuild work within the existing Western and APS ROWs, and within Gila Substation. Most of these past, present and future projects will be in areas with existing development or infrastructure and will have similar impacts to wildlife as described above. Cumulative impacts of Phase I and these activities would be negligible because the actions are spread out over a large geographic area, are short-duration, and the Project areas are predominantly in human land uses (e.g., agriculture) with low potential to support wildlife species.

Phase II – Gila-Knob Rebuild and Upgrade

Phase II of the Proposed Action would have direct, long-term and short-term impacts to wildlife. Vegetation clearing and ground disturbance activities are likely to result in adverse, short-term displacement of reptiles, small mammals, and birds. Direct, long-term impacts will result if wildlife are injured or killed during these activities. Most of the species likely to be impacted are common and widely distributed. Impacts to wildlife habitat would be short-term and there are extensive similar habitats in the surrounding area that wildlife will be able to utilize. The primary difference of Phase II is that it would not increase the number of transmission lines or structures along the Project alignment therefore resulting in less direct loss of wildlife and habitat.

Operation of Phase II would decrease overall bird collision and electrocution risk. The Gila-Knob conductor diameter would be increased when upgrading from 161-kV to 230-kV; larger conductor is more visible to flying birds. Increased spacing between towers would decrease the number of perch sites for large birds, and the increased spacing between conductors would reduce electrocution hazard by reducing potential for large birds to bridge the space between two conductors. Furthermore, Gila-Knob would be designed to confirm to APLIC guidelines, pursuant to Resource Protection Measure BIO-8 to minimize electrocution risk. As with Phase I, the transmission line would be placed in areas that have existing transmission lines and would not introduce substantial new collision risks.

Cumulative impacts of Phase II and other past, present, and reasonably foreseeable project activities would have minimal impacts because the actions are spread out over a large geographic area, the durations of these projects will not significantly overlap with Phase II, and the land use areas are already largely impacted by human disturbances.

3.9.2 Certificated Route Alternative

The wildlife habitat and species present within Certificated Route Alternative are similar to those within the Proposed Action alignment. The Certificated Route Alternative would increase the length of the transmission line by approximately 0.5 mile but would reduce the number of turning structures. Therefore, there would be a negligible difference in the amount of habitat loss between the Proposed Action and the Certificated Route Alternative. The Certificated Route Alternative would result in similar impacts to those described for the Proposed Action,

including wildlife injury and mortality from construction and bird electrocution and collision during operation.

3.9.3 No Action Alternative

Under the No Action Alternative, the APS North Gila–Orchard Line would be built adjacent to the two existing Western lines. Both existing lines would remain unchanged. The No Action Alternative would result in new structures and conductor, ground-disturbance, and vegetation clearing along the new APS transmission corridor, instead of the existing Western corridor. Overall impacts to wildlife and habitat of the No Action Alternative would be similar to the impacts of the proposed project with the exception of bird electrocution and collision risk which would not be reduced.

The Proposed Action includes combining Western's 161-kV and 69-kV lines into a single 230-kV line, which would reduce the risk of bird collision in comparison with existing conditions, and may reduce risk of bird electrocution due to conformance with APLIC guidelines. The No Action Alternative would leave the two existing, lower voltage transmission lines, in place and would not reduce the risk of bird collision or electrocution.

3.10 Special-status Species

Aspen's biologists reviewed the Arizona On-line Environmental Review Tool (Arizona Game and Fish Department, AGFD 2013a), Arizona Ecological Service's List of Endangered and Threatened Species of Yuma County (USFWS 2013a), and the Arizona Rare Plant Field Guide (Arizona Rare Plant Committee 2001) to identify all federally listed endangered or threatened species, as well as species that are candidates or proposed for listing, that are known from the Project vicinity.

Aspen's biologists visited the Project area on February 28 and March 1, 2013 to evaluate biological resources. The field visit included reconnaissance-level surveys for plants and animals and a habitat assessment for special-status species. No special-status species were observed but several have potential to occur in the Project area and are addressed further in the following subsections. Refer also to the Biological Evaluation prepared for this Project in Appendix B.

3.10.1 Proposed Action

3.10.1.1 Affected Environment

The Gila River crossing includes a large area of natural riparian and marsh habitats that may provide habitat for three special-status species: southwestern willow flycatcher (*Empidonax traillii extimus*), Yuma clapper rail (*Rallus longirostris yumaensis*), and yellow-billed cuckoo (*Coccyzus americanus*). The Yuma sand fields in the southern portion of the Project area provide habitat for flat-tailed horned lizards (*Phrynosoma mcallii*), also a special-status species.

Listed Threatened or Endangered Species

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Life History: The southwestern willow flycatcher is listed as endangered under the federal Endangered Species Act (ESA). It is a small migratory bird of riparian habitats. It nests in dense riparian forests, woodlands, or shrublands, usually near surface water or saturated soils. The vegetation canopy in these suitable nesting habitats is usually at least three meters tall (Sogge et al. 2010). Southwestern willow flycatchers establish nesting territories, build nests, and forage in mosaics of relatively dense trees and shrubs, near or adjacent to surface water or underlain by saturated soil (Sogge et al. 2010).). At lower elevations, such as the throughout the Colorado River Valley, the preferred nesting habitat is mature cottonwood (*Populus fremontii)* and willow (*Salix gooddingii)* forest along still or slow-flowing watercourses; they also may nest in tamarisk thickets (Suckling et al. 1992, AGFD 2013b).

The southwestern willow flycatcher is insectivorous, foraging on flying insects in habitat surrounding its nest sites, including riparian habitats that may be unsuitable for nesting. It typically forages along the external edges or internal openings within suitable habitat patches, or at the top of the canopy where it sallies for flying insects (Sogge et al. 2010). Its breeding season is late April through September. The primary threats are loss and degradation of riparian habitats, and nest parasitism by brown-headed cowbirds. Human disturbances at nesting sites may result in nest abandonment.

The USFWS designated critical habitat for the southwestern willow flycatcher in 2005 and revised the critical habitat designation in 2013 (USFWS 2005; 2013b). The Project area is not within critical habitat, and the nearest critical habitat is the Bill Williams Management Unit more than 100 miles to the north of the Project area (USFWS 2013b).

Survey Results: Aspen biologists did not observe southwestern willow flycatcher during field surveys, but did not conduct focused surveys for this species. Southwestern willow flycatchers were documented on four separate occasions during the 2011 breeding season near Gila Monster Pond, roughly 0.4 miles downstream of the Gila River crossing (Ebird.org 2013a), and several were documented at Fortuna Pond, roughly 0.8 mile upstream of the Gila River crossing in June 2011 (Ebird.org 2013b).

Habitat Evaluation and Suitability: Riparian habitat at the Gila River crossing is the only suitable habitat for southwestern willow flycatcher within the Project area. It is a dense, nearly impenetrable mosaic of multi-aged riparian scrub that provides suitable nesting habitat for southern willow flycatcher. Within this riparian scrub habitat there are several patches of taller riparian vegetation reaching nearly twenty feet. These patches of taller vegetation match the descriptions of southwestern willow flycatcher nesting habitat in Sogge et al. (2010) and provide the best nesting habitat within the Project area. The riparian habitat at the Gila River crossing is suitable as foraging habitat for southwestern willow flycatcher. Aerial imagery indicates that the riparian vegetation extends several miles both upstream and downstream of the Gila River crossing. Southwestern willow flycatchers have a moderate potential to nest in the Project area and are likely to migrate through the Project area seasonally.

Yuma clapper rail (Rallus longirostris yumaensis)

Life History: The Yuma clapper rail is listed as endangered under the federal ESA. It is an extremely secretive bird that is not frequently encountered. It nests along the Colorado and Gila Rivers in freshwater marshes typically dominated by cattail and bulrush, generally in backwaters or impoundments behind small dams (USFWS 2009). It is not migratory, but may disperse from nesting areas after breeding, and may be found within its range year-around. Yuma clapper rail habitat is typically a mosaic of vegetated areas interspersed with shallow (less than 12 inches) open water (USFWS 2009). It requires large patches of marsh habitat. Outside of the breeding season its home range averages from 17 to 20 acres, but during nesting season the home ranges are reduced to 0.29 to 9.5 acres (USFWS 2009). In addition to marsh habitat, Yuma clapper rail requires a band of riparian vegetation to provide cover on the higher ground along the fringes of the marsh (Eddleman 1989, USFWS 2009). The USFWS has not designated critical habitat for Yuma clapper rail.

Survey Results: Aspen biologists did not observe Yuma clapper rail during field surveys, but did not conduct focused surveys for it. Yuma clapper rails were documented on four separate occasions during the 2011 breeding season near Gila Monster Pond, roughly 0.4 miles downstream of the Gila River crossing (Ebird.org 2013a) and one was observed in July 2011 at Fortuna Pond, roughly 0.8 miles upstream of the Gila River crossing (Ebird.org 2013b).

Habitat Evaluation and Suitability: Marsh habitat at the Gila River crossing is the only potentially suitable Yuma clapper rail habitat within the Project area. The marsh vegetation is approximately

ten feet wide and extends both upstream and downstream of the Gila River crossing. Aerial imagery indicates that this habitat is partially contiguous to adjacent marsh habitat extending at least several hundred feet upstream and downstream. The river at the Gila River crossing appears to be relatively deep but shallower sand bar areas were observed during our field surveys and are clearly visible on aerial imagery. The adjacent band of riparian vegetation is dense and extensive, as described above. Due to its narrow width, the marsh habitat at the Gila River crossing has low or minimal potential to support nesting Yuma clapper rails. However, it is contiguous with habitat upstream and downstream, and Yuma clapper rails occur in the vicinity. This habitat may serve as foraging or dispersal habitat outside the nesting season, or as foraging habitat during nesting season if Yuma clapper rails nest nearby.

Species Proposed for Listing as Threatened or Endangered

Yellow-billed cuckoo (*Coccyzus americanus*)

Life History: The yellow-billed cuckoo is proposed for listing as threatened under the federal ESA. It nests in large blocks of cottonwood-willow woodland with an understory of dense vegetation, especially near water (AGFD 2013b). In the desert Southwest, nesting habitat is invariably riparian woodlands, particularly those with an intact (i.e., ungrazed) understory. This species also occasionally nests in prune, English walnut, and almond orchards (Laymon 1998) and other riparian-associated woodlands including tamarisk (Wiggins 2005, AGFD 2013b). It forages primarily on flying insects by gleaning or sallying (Laymon 1998). It typically forages in the canopy of cottonwood woodlands and in the dense understory vegetation (Laymon 1998).

Survey Results: Aspen biologists did not observe yellow-billed cuckoo during field surveys, but did not conduct focused surveys for this species. Yellow-billed cuckoos have been documented within five miles of the Project area along the Colorado River, just upstream of the confluence with the Gila River (LCRMSCP 2012). Based on a review of aerial imagery and field observations, suitable nesting habitat is present near Gila Monster Pond, roughly 0.4 miles downstream of the Gila River crossing and along the Gila River roughly 0.25 miles upstream of the Gila River crossing.

Habitat Evaluation and Suitability: The Sonoran Riparian Deciduous Forest and Woodland at the Gila River crossing is relatively young by comparison with typical yellow-billed cuckoo nesting habitat. The vegetation within at the Gila River crossing, including the Sonoran Riparian Scrubland and the Sonoran Riparian Deciduous Forest and Woodland has minimal potential to support nesting or foraging yellow-billed cuckoos because it lacks a mature overstory of cottonwoods. Yellow-billed cuckoos may nest in the mature cottonwood habitat upstream and downstream of the Gila River crossing and likely migrate seasonally through the Project area at the Gila River crossing.

Species Protected Under the Federal Bald and Golden Eagle Protection Act

Under the federal Bald and Golden Eagle Protection Act, the USFWS regulates activities that may take bald or golden eagles. Take is defined as “pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, and disturbing” bald or golden eagles, and as activities causing: “(1) injury to an eagle, (2) a decrease in its productivity, by

substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (USFWS 2007).

Bald eagle (Haliaeetus leucocephalus)

Bald eagles are year-around residents throughout most of their range in central Arizona. In recent years they have expanded their breeding range in Arizona and in 2012 they nested at the Bill Williams National Wildlife Refuge, Topock Marsh, and Alamo Lake, all more than 100 miles north of the Project area (AGFD 2013b). Bald eagles are seen regularly in the Colorado River Valley during winter. The Project area is not within nesting habitat or foraging areas associated with potential nest sites. However, bald eagles forage more widely during winter. Potential upland foraging habitat is present throughout the Project area, and bald eagles may also forage in aquatic habitat at the Gila River crossing.

Golden eagle (Aquila chrysaetos)

Golden eagles are year-around residents throughout most of their range in the western United States. In the Southwest, they are more common during winter months. They breed from late January through August (Pagel et al. 2010). In the desert, they generally nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs or large trees as cover. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to eggs or young at their nests.

The nearest known golden eagle nest site is 40 miles north northwest of the Project area, in the vicinity of Palo Verde Peak (Bloom 2012). No suitable nesting habitat was observed in the immediate vicinity of the Project area but suitable nesting habitat is present within 15 miles, near Muggings' Peak, east of the Project alignment. Due to the distance from known or suitable nest sites, nesting golden eagles are unlikely to forage in the Project vicinity. Wintering golden eagles, or unmated golden eagles in nesting season, are likely to forage occasionally in the Project vicinity.

Other Special-Status Species

Flat-tailed horned lizard (*Phrynosoma mcallii*)

The flat-tailed horned lizard is managed according to an interagency conservation plan (Flat-tailed Horned Lizard Interagency Coordinating Committee; ICC 2003) to prevent the need for future listing as threatened or endangered. It is known from eastern California, western Yuma County, Arizona, and south into Mexico. Its range in Arizona is restricted to the southwestern corner of the state, essentially west of the Gila Mountains and south of Interstate 8 (AGFD 2013b, ICC 2003). It occupies sand dunes, sand fields, sandy washes, and creosote bush scrub with sandy or gravelly soils. In Arizona it has been correlated with the presence of big galleta grass which may be an important vegetation component of its habitat (Rorabaugh et al. 1987). It hibernates from mid-November through mid-February (Muth and Fisher 1992) at an average depth of 6 cm (Grant 2005). Urbanization decreases flat-tailed horn lizard populations due to vehicle route proliferation, increased OHV use, the spread of non-native vegetation that stabilizes sand fields, and increased predation from common ravens, American kestrels, domestic dogs

and domestic cats (Bolster and Nicol 1989; Barrows 2002; ICC 2003). Hibernating flat-tailed horned lizards are protected from OHV crushing by overlying sand (Grant 2005). Roads reduce flat-tailed horned lizard populations within 0.10 to 0.15 miles of the road and function as a partial barrier to movement (Young and Young 2000; Barrows 2002; ICC 2003).

The Project area is near the northern margin of the flat-tailed horned lizard range (ICC 2003). The nearest known occupied habitat is on the Barry M. Goldwater Air Force Range, within one mile south-southeast of the Project area (ICC 2003). The ICC designates a series of management areas where Project activities are regulated to avoid or mitigate potential impacts to flat-tailed horned lizards, but the Project area is outside these management areas. The southern terminus of the Project area is within 0.5 mile of the nearest designated management area (the Yuma Desert Management Area; ICC 2003).

Flat-tailed horned lizards were not detected during Aspen's reconnaissance-level survey of the Project area. However, suitable sandy habitat, covered by Creosotebush-Big Galleta Scrub, is present in intermittent patches on the southern portion of the Project area between the Gila and Orchard substations. Flat-tailed horned lizards have been documented at numerous locations in the immediate vicinity of the Project area (AGFD 2013b). Some of this habitat has been fragmented by highway construction, recent land use conversion to agriculture, and residential development (Brennan and Holycross 2006). In addition, much of this habitat is partially isolated from more extensive habitat areas, roughly 0.5 mile to the south and east, by residential development and paved roads. This suitable habitat within the Project area is not on federal land and is not subject to mitigation or conservation policies of the ICC.

3.10.1.2 Environmental Consequences

Significance Criteria

Impacts to special-status species would be significant if:

- The Project jeopardizes the continued existence of a federally-listed species.
- The Project results in loss of individuals of a population of species that would result in a lowering a species status (e.g., from threatened to endangered);
- The Project adversely modifies Critical Habitat to the degree it would no longer support the species for which it was designated;
- The Project modifies habitat used by special status species for resting, nesting, feeding or escape cover;
- The Project results in loss to any population of sensitive wildlife that would jeopardize the continued existence of that population; or
- The Project results in loss to any population of animals that would result in the species being listed or proposed for listing as endangered or threatened.

Impacts

Project impacts to common wildlife and habitat described in Section 3.9 also apply to special-status species. These impacts include habitat loss; wildlife displacement, injury or mortality;

and risk of transmission line collision or electrocution. Resource protection measures will be implemented as part of the Proposed Action. The resource protection measures applicable to special-status species are summarized below with full text of the measures presented in Table 2.2-1.

- BIO-1 limits mechanical disturbance of desert shrubland habitat to the extent practicable.
- BIO-2 requires pre-construction clearance surveys for special-status reptiles (February 15 through November 15), burrowing owl (year-around), and other native nesting birds (March 1 through September 15).
- BIO-3 requires that all no work take place between March 1 and September 15 at the Gila River crossing to avoid potential impacts to nesting birds, limits vegetation cutting or clearing to trees that may cause transmission line safety hazards, and avoid clearing in marsh habitat.
- BIO-4 requires either a pre-construction nesting bird survey during the nesting season (March 1 through September 15) or avoidance of construction activities during the nesting season.
- BIO-5 requires work in the Yuma sand fields to take place outside of the reptile activity period (February 15 and November 15) or pre-construction survey to move reptiles out of harm's way.
- BIO-6 requires training to inform workers of all applicable resource protection measures protecting biological resources.
- BIO-7 prohibits pets from the Project area. Domestic animals can injure or kill native wildlife, and can introduce disease.
- BIO-8 requires that the new transmission lines conform to APLIC design guidelines.
- BIO-9 requires containment of all trash, refuse, concrete, and other materials in the work site and properly disposed of off the site.
- BIO-10 requires prevention of ponding or standing water in the Project area.
- BIO-11 requires a 25 mph speed limit in the Project area.

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Listed Threatened or Endangered Species

Southwestern willow flycatcher (*Empidonax traillii extimus*). The Proposed Action would not directly impact southwestern willow flycatcher because it would avoid construction activities and vegetation management at the Gila River crossing during the nesting season (see Resource Protection Measure BIO-3). The Proposed Action may have an adverse short-term impact on a small amount of foraging habitat at the Gila River crossing but this impact would be negligible because the habitat affected is proportionally minimal compared with extensive foraging habitat available upstream and downstream of the Gila River crossing.

Construction noise and disturbance (e.g., vehicles, compressors, welders, generators, helicopters, implosive sleeving) that would occur outside of the Gila River crossing would not impact nesting or foraging southwestern willow flycatchers or their habitat because of the distance between

these activities and the suitable habitat. Risk of collision or electrocution is described in Section 3.9, and would be negligible for southwestern willow flycatcher.

Yuma clapper rail (*Rallus longirostris yumaensis*). The Proposed Action would not directly impact Yuma clapper rail because it avoids all Project activities at the Gila River crossing during the nesting season (see Resource Protection Measure BIO-3). In addition, the Project will avoid all impacts to marsh habitat along the Gila River. Project activities that occur outside of the nesting season at the Gila River crossing could have adverse short-term impacts to Yuma clapper rail foraging or dispersal activities. However, there is extensive foraging and dispersal habitat available upstream and downstream of the Project alignment, and any Yuma clapper rails present during Project activities would be able to move away from the disturbance.

Construction noise and disturbance that occurs outside of the Gila River crossing during the nesting season would not impact nesting or foraging Yuma clapper rail or their habitat because of the distance between these activities and the suitable habitat. Risk of collision or electrocution is described in Section 3.9, and would be negligible for Yuma clapper rail.

Species Proposed for Listing as Threatened or Endangered

Yellow-billed cuckoo (*Coccyzus americanus*). The Proposed Action would not have direct impacts to yellow-billed cuckoo or its habitat because it avoids all Project activities at the Gila River crossing during the nesting season (see Resource Protection Measure BIO-3). The Proposed Action may have a short-term adverse impact on a small amount of foraging habitat at the Gila River crossing but this impact would be negligible because the habitat affected is proportionally minimal compared with extensive foraging habitat available upstream and downstream of the Gila River crossing.

Construction noise and disturbance that occurs outside of the Gila River crossing during the nesting season would not impact yellow-billed cuckoo or their habitat because of the distance between these activities and the suitable habitat. Risk of collision or electrocution is described in Section 3.9, and would be negligible for yellow-billed cuckoo.

Species Protected Under the Federal Bald and Golden Eagle Protection Act

Project construction would not have direct, short-term or long-term impacts to nesting bald or golden eagles. The Project may have short-term and long-term impact a limited amount of foraging habitat but these impacts would be negligible because the habitat affected is proportionally minimal compared with extensive foraging habitat available in the Project vicinity. Construction noise and disturbance may cause wintering bald eagles and golden eagles to temporarily leave the area but these impacts would be for a short duration and there is extensive habitat in the surrounding area that they will be able to utilize, and these impacts would therefore be negligible.

Risk of collision or electrocution for bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) would be reduced as described for other bird species in Section 3.9. The Proposed Action would conform to APLIC design guidelines to minimize the potential electrocution risk (see Resource Protection Measure BIO-8). The new transmission lines will be located adjacent to the existing lines which will minimize the potential risk of collision.

Other Special-Status Species

Flat-tailed horned lizard (*Phrynosoma mcallii*). The Proposed Action may have direct, long-term impact flat-tailed horned lizards by vehicle strike or other damage by construction equipment. The impacts to hibernating flat-tailed horned lizards would be negligible due to their hibernating depths, which enable them to withstand some vehicle traffic. Impacts to flat-tailed horned lizards during the activity season would be reduced by requiring a pre-construction survey of sandy habitats and subsequent relocation of any flat-tailed horned lizards from the Project area (see Resource Protection Measure BIO-5). The Proposed Action would have short-term impacts on an undetermined amount of suitable habitat. Sandy habitat at project work sites would recover to pre-construction conditions without additional restoration measures. Indirect impacts such as noise and disturbance could cause flat-tailed horned lizards to temporarily avoid the work areas but these impacts would be short-term and negligible. Overall the Project would not result in a trend toward federal listing or loss of population viability. Operation of the Proposed Action would result in similar impacts to those described above for the construction of the Project and would not result in a trend toward federal listing or loss of population viability.

Phase II – Gila-Knob Rebuild and Upgrade

Phase II of the Proposed Action would have similar impacts to special-status species as described above for Phase I, with the exception that flat-tailed horned lizard would not be affected by Phase II because of lack of suitable sand field habitat in the Phase II project area.

Table 2.6-1 lists past, present, and reasonably foreseeable future actions that may cumulatively impact special-status species in the Project area. The majority of these past, present and future projects are transmission rebuild work within existing Western and APS ROWs that may have similar short-term impacts to special-status wildlife as the Proposed Action. Most of these past, present and future projects will be in areas that do not support suitable habitat for special-status species. Cumulative impacts of the Proposed Action and these activities would have negligible impacts to special-status species because the actions are spread out over a large geographic area, of a short-term duration, will not significantly overlap with Phase II, and the Project areas are predominantly in human land uses (e.g., agriculture) with low potential to support special-status species.

3.10.2 Certificated Route Alternative

The Certificated Route Alternative would result in no impacts to special-status species beyond those described above for the Proposed Action. Project activities for the Certificated Route Alternative would be the same as the Proposed Action at the Gila River crossing and in the Yuma sand fields. The only difference in the alignment from the Proposed Action would be in areas that do not provide habitat for special-status species.

3.10.3 No Action Alternative

Under the No Action Alternative the APS North Gila–Orchard Line would be built adjacent to the two existing Western lines. Both existing lines would remain unchanged. The No Action Alternative would result in new structures and conductor, ground-disturbance, and vegetation clearing along the new transmission corridor, instead of the existing Western ROW. Overall

impacts to special-status species and habitats of the No Action Alternative would be comparable to the impacts of the Proposed Action above but would not reduce the risk of collision or electrocution to eagles.

The Proposed Action includes combining Western's 161-kV and 69-kV lines into a single 230-kV line, which would reduce the risk of collision to eagles would be reduced by comparison with existing conditions, and may reduce risk of electrocution due to conformance with APLIC guidelines. The No Action Alternative would leave the existing transmission lines in place, and therefore would not reduce risks of eagle collision or electrocution.

3.11 Public Health and Safety

3.11.1 Proposed Action

3.11.1.1 Affected Environment

Public Services and Safety

Within the Project area, public safety services are provided by the Yuma Fire Department, Yuma Police Department, and Yuma County Sheriff's Office. Yuma Regional Medical Center is a 406-bed local acute care hospital and is located approximately nine miles to the west of the Project. Land use close to the Project consists primarily of agriculture, open desert, residential development, and commercial development (along the Interstate 8 corridor). Development of a trailer park within Yuma Lakes, on the south side of Redondo Pond, has resulted in encroachment on the existing transmission lines in the Project area.

Electric and Magnetic Fields

Both current and voltage are required to transmit electrical energy over a transmission line. The current, a flow of electrical charge measured in amperes, creates a magnetic field. The voltage, the force or pressure that causes the current to flow measured in units of volts or kV, creates an electric field. Electric fields and magnetic fields considered together are referred to as "EMF." Both fields occur together whenever electricity flows, hence the general practice of considering both as EMF exposure. Transmission lines, like all electrical devices and equipment, produce EMFs. Electric field strength is usually constant with a given voltage; while magnetic field strength can vary depending on the electrical load, design of the transmission line, and configuration and height of conductors. Both the magnetic field and the electric field decrease rapidly, or attenuate, with distance depending on the source.

Over the past 25 years, research has not proven that power frequency EMF exposure causes adverse health effects (NIEHS 2002). Regardless, some non-governmental organizations have set advisory limits as a precautionary measure, based on the knowledge that high field levels (more than 1,000 times the EMF found in typical environments) may induce currents in cells or nerve stimulation. The International Commission on Non-Ionizing Radiation Protection has established a continuous, magnetic field exposure limit of 0.833 Gauss (833 mG [milliGauss]) and a continuous electric field exposure limit of 4.2 kilovolts per meter (kV/m) for members of the general public. The American Council of Governmental Industrial Hygienists publishes Threshold Limit Values (TLVs) for various physical agents. The TLV for occupational exposure to 60 Hertz (Hz) magnetic fields has been set as 10 Gauss (10,000 mG) and 25 kV/m for electric fields.

Transmission lines operate at a power frequency of 60 Hz. In the home, power frequency fields (60 Hz) are associated with electrical appliances. The fields are greatest closest to the surface of the cord and appliance and drop rapidly in just a short distance. Table 3.11-1 shows typical magnetic fields from common household electrical devices.

Figure 3.11-1 illustrates typical electric and magnetic field values at 1 meter (3.3 ft) above ground for various distances from power lines (similar data for 69-kV lines is not available). The figure is for general information.

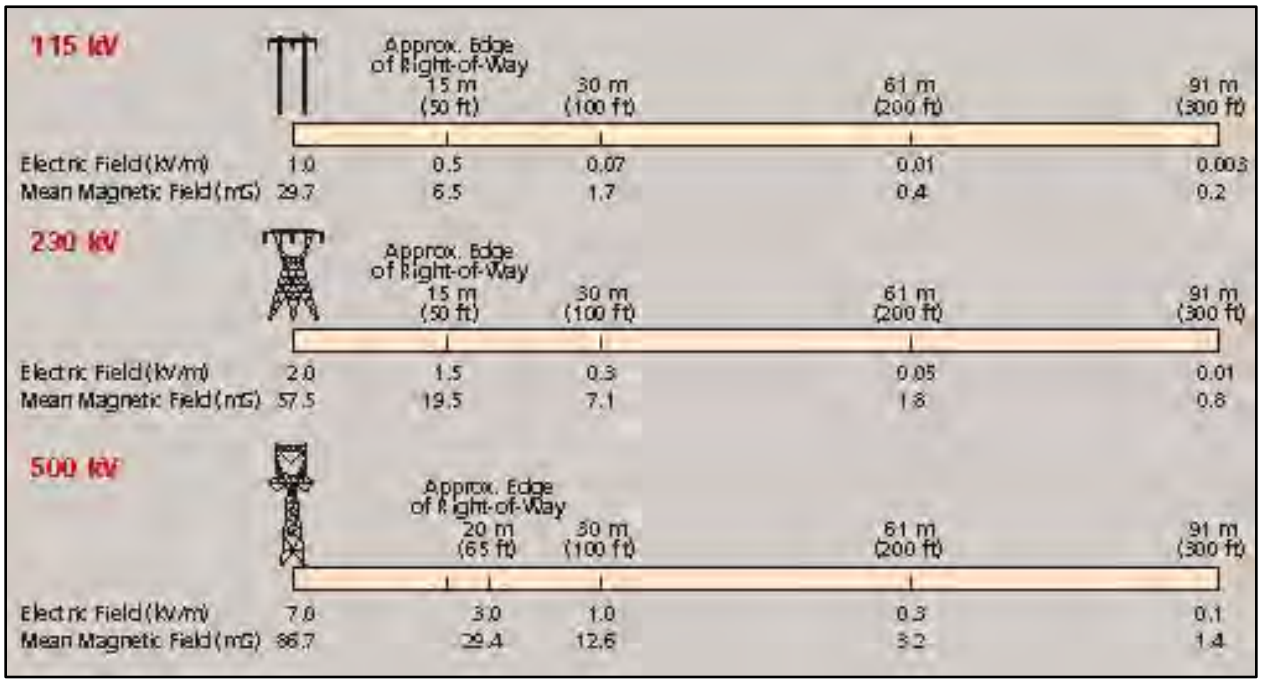
Table 3.11-1. Typical 60 Hertz Magnetic Field Values from Common Electrical Devices

Appliance	Magnetic Field 6 Inches from Device (mG)	Magnetic Field 2 Feet from Device (mG)
Washing machine	20	1
Vacuum cleaner	300	10
Electric oven	9	—
Dishwasher	20	4
Microwave oven	200	10
Hair dryer	300	—
Computer desktop	14	2
Fluorescent light	40	2

Source: NIEHS 2002

Sources of existing EMF in the vicinity of the Project area include existing transmission lines, distribution feeds to homes and businesses, commercial wiring and equipment, and common household wiring and appliances for residences and communities in the area. EMF field levels in homes and businesses vary widely with wiring configurations, the types of equipment and appliances in use, and proximity to these sources.

Figure 3.11-1. Typical EMF Levels for Power Transmission Lines



Source: NIEHS 2002

Sources of existing EMF in the vicinity of the Project area include existing transmission lines, distribution feeds to homes and businesses, commercial wiring and equipment, and common household wiring and appliances for residences and communities in the area. EMF field levels in homes and businesses vary widely with wiring configurations, the types of equipment and appliances in use, and proximity to these sources.

3.11.1.2 Environmental Consequences

Significance Criteria

Impacts to public health and safety would be significant if:

- The Project increases health and safety risks to area residents and the general public;
- The Project increases health and safety risk to construction and maintenance workers;
- The Project exposes utility workers to EMF levels beyond the typical levels experienced by utility workers; or
- The Project results in a magnetic field level at the edge of the ROW that is higher than recommended guidelines[1] and poses a plausible risk to human health.

Impacts

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Public Health and Safety

The Proposed Action would create potential fire hazards if a transmission line came in contact with vegetation or other structures or if the structure was struck by lightning. To reduce or avoid fire hazards, the Project would be designed, constructed, and maintained in accordance with NESC requirements, which establish clearances from other man-made and natural structures as well as tree-trimming requirements. Western and APS would maintain their respective portions of the transmission line ROW in accordance with existing regulations, accepted industry practices, standard good practices that include fire protection. Potential adverse effects associated with lightning strikes would be further minimized by installing overhead fiber optic ground wire, which shields the conductors and reduces the risk of fire during a storm. If a fire were to occur, local public services would be available to extinguish the fire.

Existing and proposed development within Yuma Lakes is encroaching upon the existing transmission line as it approaches North Gila Substation. Due to proximity, rebuilding the existing structures within the Yuma Lakes would temporarily disrupt the encroaching RV courts during construction. However, replacing the older structures with newer structures would increase the stability and safety of the transmission line, thereby improving the safety of these nearby residents during operation. The Proposed Action would result in a minor beneficial impact to public health and safety.

Worker Health and Safety

Maintenance and repair work would be localized, minimizing the potential for serious injuries to workers or the public. Western's and APS' linemen are trained and experienced with transmission line operations and maintenance. Western's comprehensive safety program includes an

[1] *Recommended guidelines vary as follows:* 833 mG recommended by the International Commission on Non-Ionizing Radiation; and 1,000 mG recommended by the American Conference of Governmental Industrial Hygienist. Presently there are no United States Federal or State of Arizona standards for exposure to power-frequency [60-Hz] electric and magnetic fields.

annual update of its Power System Safety Manual that provides direction and guidance for prevention of accidents that may result in personal injury, illness, property damage, or work interruption. During construction, work would be performed according to standard health and safety practices, and OSHA policies and procedures. In addition, the installation of polymer insulators, which remain intact after being shot, reduces maintenance and electrical problems. Therefore, the Proposed Action would not result in serious injuries to workers or create worker health hazards beyond limits set by health and safety regulatory agencies or that endangers human life and/or property. Impacts to worker health and safety would be negligible.

Electric and Magnetic Fields

Electric Fields. Electric fields cause voltages or currents to be induced on otherwise un-energized conductive objects. An annoying or nuisance shock can occur when an object comes into contact with an energized ungrounded object. The shock is created by the release of electric charge from an ungrounded object with a build-up of electrical charge (i.e., large vehicles, structures with metal ungrounded roofs, fences that parallel the ROW). When a person comes into contact with these ungrounded conductive objects, a spark discharge may occur. Transmission line electric fields can also induce voltages and currents on people who are in the transmission line ROW. When the individual comes in contact with a grounded object, a short-circuit current will flow. This short-circuit current, or spark discharge, may be described as an annoying or nuisance shock and can be characterized as similar to a person walking on carpet during a dry weather period and building a negative voltage charge. The spark discharge can be felt by some people as a tingling sensation, vibrating sensation, or annoying or nuisance shock, but it is not dangerous.

The expected electric field one meter high at the edge of the North Gila–Orchard ROW for a single-circuit and double-circuit 230-kV transmission line would be less than 0.6 kV/m and 0.4 kV/m, respectively (the double-circuit field strength is lower due to field cancelling as a result of operating two transmission lines) (APS 2011). These values demonstrate that 230-kV transmission line design practices with proper ground clearance result in acceptable electric field values on and at the edge of the ROW, which minimize electric field induction. In addition, properly grounding conductive objects within and at the edge of the ROW would reduce annoying and nuisance shocks and be in full compliance with applicable codes. Potential shock hazards are the same as for the existing transmission lines. In addition, grounding standards and practices would be implemented on the transmission line and conductive objects within, crossing, or parallel to the ROW in accordance with Western's and APS' engineering, design, and operating standards. The purpose is to ensure the safety of the general public and to meet or exceed the provisions of the NESC, latest edition.

Magnetic Fields. Magnetic fields cause voltages or currents to be induced on conductive objects that have a considerable length parallel to and in close proximity to the magnetic field source. Unlike electric fields, magnetic fields do not induce voltages on people that contribute to annoying or nuisance shocking.

The expected magnetic field one meter high at the edge of the North Gila–Orchard ROW for a single-circuit and double-circuit 230-kV transmission line would be less than 14 mG and 8 mG, respectively (the double-circuit field strength is lower due to field cancelling as a result of operating two transmission lines) (APS 2011). During normal operation, magnetic fields at the edge

of the ROW would be well below the recommended guidelines of the International Commission on Non-Ionizing Radiation and the American Conference of Governmental Industrial Hygienist.

The existing transmission lines have no documented adverse public health and safety effects from EMF exposure. The Project would be compliant with NESC guidance. Western's and APS' engineering, design, and operating standards on 230-kV lines, proper grounding standards and practices would be implemented on the transmission line and conductive objects within, crossing, or parallel to the ROW. The electric and magnetic fields at the edge of the ROW are anticipated to be well below the recommended guidelines of the International Commission on Non-Ionizing Radiation and the American Conference of Governmental Industrial Hygienist. The Project would result in a negligible impact because it would not expose the public or workers to unusual or higher than usual levels of EMF.

The Proposed Action would not result in a cumulative impact to public health and safety because the Gila Substation upgrade would occur within the fence line of the existing Gila Substation and would not pose a risk to public health and safety; and, the remaining past, present, and reasonably foreseeable future projects identified in Table 2.6-1 do not directly overlap with the region of influence for public health and safety (i.e., the Project area).

Phase II – Gila-Knob Rebuild and Upgrade

Under Phase II, Western proposes to upgrade existing transmission to 230-kV for a 4.8-mile segment, which is located predominantly adjacent to Phase I. Accordingly, the Phase II affected environment and impacts would be the same as those identified for Phase I.

3.11.2 Certificated Route Alternative

Under the Certificated Route Alternative, the overall length of the APS North Gila–Orchard 230-kV transmission line would increase by 0.5 mile by extending eastward around Gila Substation and a date farm. This diversion and increased length of the APS portion of the Project would not introduce any impacts to public health and safety that differ from those described for the Proposed Action, except for the creation of a no-fly zone for aerial chemical application associated with agricultural activities (as discussed in Section 3.4, Agriculture).

3.11.3 No Action Alternative

Under the No Action Alternative, the existing, old H-frame structures would not be rebuilt or replaced with new structures; their continued deterioration could pose a risk to public health and safety. Otherwise, public health and worker safety impacts associated with the No Action Alternative would be similar to those described for the action alternatives because they would occur during construction of the APS North Gila–Orchard 230-kV transmission line. There would be the same number of transmission circuits (although in a different configuration), so EMF exposure under the No Action Alternative would be similar as the action alternatives.

3.12 Noise and Sensitive Receptors

3.12.1 Proposed Action

3.12.1.1 Affected Environment

Noise is defined generally as unpleasant, unexpected or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to noise is annoyance. An individual's response to noise is influenced by the type of noise, perceived importance of the noise, appropriateness in the setting, time of day, type of activity during which the noise occurs and the sensitivity of the individual.

Intensity of sound is measured in units of decibels (dB) on a logarithmic scale. The A-weighted decibel (dBA) measures sound in a manner similar to the response of the human ear, so that more weight is given to the frequencies that people hear more easily. Typical ranges of common sounds include approximately 60 to 90 dBA for an automobile at a distance of 50 feet, approximately 76 to 89 dBA for a heavy truck at a distance of 50 feet, approximately 80 to 110 dBA for the driver of a motorcycle, and approximately 103 to 115 dBA for the operator of a chainsaw (EPA 1978).

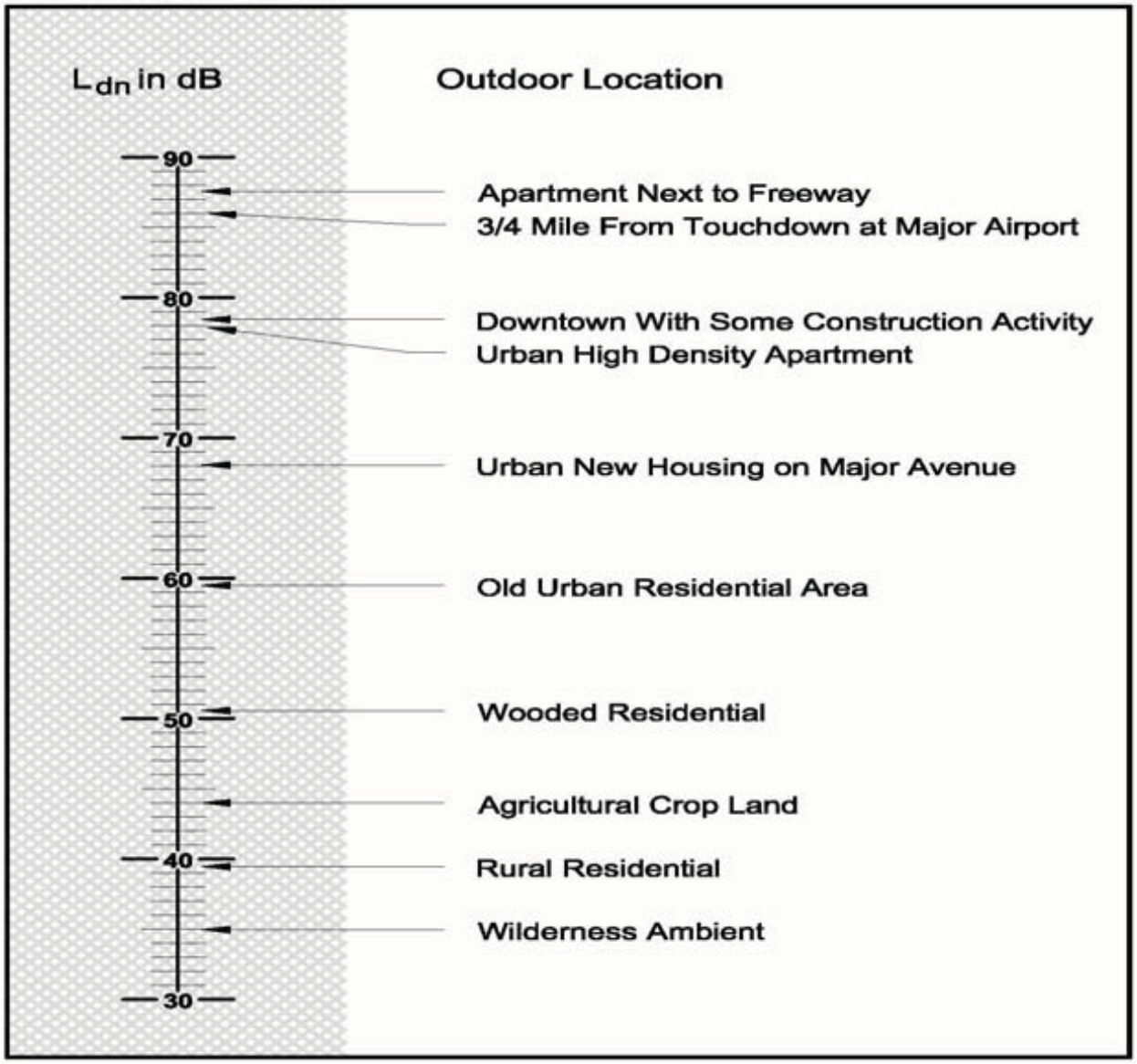
The L_{dn} is the A-weighted average sound level for a 24-hour period. It is calculated by adding a 10 dB "penalty" to sound levels in the night (10 p.m. to 7 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. Sound levels typical of outdoor areas using the L_{dn} are listed in Figure 3.12-1. These typical outdoor noise levels are presented because ambient noise monitoring was not conducted as part of this analysis.

Land use between Gila and North Gila substations is primarily agriculture. Noise sources include agricultural activities, crop-dusting, vehicular traffic on U.S. Highway 95, and military aircraft operations. Sensitive noise receptors along this segment of the Project include residences, particularly those in the Yuma Lakes RV Resort, which are approximately 100 feet from the edge of the ROW. Based on Figure 3.12-1, typical day-night average outdoor noise levels for rural residential and agricultural areas range from 39 dBA to 44 dBA.

Land use varies near the proposed transmission line route between the northern boundary of the BMGR and the Gila Substation among open, public, agriculture, residential, and commercial land uses. Noise sources include military and civilian aircraft operations, residential and commercial development construction activities, vehicular traffic on Interstate 8 and other main roads, and the Union Pacific Railroad. Sensitive noise receptors along this segment of the Project include the residential development just west of Araby Road (also known as the "Area Service Highway") and north of East County 13th Street. Peak noise levels for existing conditions in this area were modeled in 2002 and ranged from 57 dBA to 67 dBA (ADOT 2005), prior to construction and use of the Area Service Highway.

Portions of the proposed transmission line corridor parallel existing transmission lines. Corona-generated audible noise (60 Hz-cycle hum) is associated with transmission lines and is generally characterized as a cracking or hissing noise. Corona is a luminous discharge due to ionization of

Figure 3.12-1. Typical Outdoor Sound Levels



Source: EPA 1978

the air surrounding a conductor and is caused by a voltage gradient, which exceeds the break-down strength of air. It is a function of the voltage gradient at the conductor surface. This voltage gradient is controlled by engineering design and is a function of voltage, phase spacing, height of conductors above ground, phase geometry, and meteorological conditions. In particular, irregularities on the surface of the conductor such as nicks, scratches, contamination, insects, and water droplets increase the amount of corona discharge. Consequently, during periods of rain and foul weather, corona discharges increase.

3.12.1.2 Environmental Consequences

Significance Criteria

Impacts to noise would be significant if:

- The Project exposes persons to or generate noise in excess of EPA recommendations; or
- The Project results in a substantial permanent increase in ambient noise or vibration levels above levels existing without the Project[2] near sensitive receptors such as residences, hospitals or schools, within the project vicinity.

Impacts

Resource protection measures will be implemented as part of the Proposed Action. The resource protection measures applicable to noise are summarized below with full text of the measures presented in Table 2.2-1.

- AG-1 requires coordination with affected landowners.

In 1974, the EPA identified safe noise levels that could be used to protect public health and welfare, including prevention of hearing damage, sleep disturbance, and communication disruption. Outdoor L_{dn} values of 55 dBA were identified as desirable to protect against activity interference and hearing loss in residential areas and at educational facilities. When annual averages of the daily level are considered over a period of 40 years, the EPA identified average noise levels equal to or less than 70 dBA as the level of environmental noise that will prevent any measurable hearing loss over the course of a lifetime. The significance of estimated potential noise levels at the nearest residence was assessed by comparing them with the EPA noise guideline (EPA 1974) and estimated background noise levels. A 3 dB increase in noise is considered barely noticeable to humans, a 5 dB increase would typically result in a noticeable community response, and a 10 dB increase is considered a doubling of the sound and is generally considered to be substantial. There are no noise codes applicable to transmission lines in Arizona.

Noise would result from transmission line construction, operation, and maintenance. During construction, noise would be generated by equipment and vehicles including cranes, trucks, and tractor graders. Typical noise levels for construction equipment are identified in Table 3.12-1.

Table 3.12-1. Typical Construction Equipment Noise Levels

Equipment Type	Noise Level at 50 ft (dB)
Backhoe	80
Front-End Loader	80
Concrete Truck/Mixer	85
Crane	85
Flat-bed Truck	84
Grader	85

Source: FHWA 2006

When determining noise, decibels are not additive in a linear fashion. For example, the introduction of 10 dB of sound into an ambient 40 dB background would not be discernible because the addition is less than the background sound; the introduction of 40 dB of sound into an ambient 10 dB background would be perceived as 40 dB because the introduced sound is greater than the background; and the introduction of 40 dB of sound in an ambient 40 dB background would be perceived as 43 dB because the "doubling" of sound is perceived as a 3 dB increase.

[2] A 3 dB increase in noise is considered barely noticeable to humans, a 5 dB increase would typically result in a noticeable community response, and a 10 dB increase is considered a doubling of the sound and is generally considered to be substantial.

Conversely, moving farther from a noise emitting source reduces the sound perceived from that source in a nearly linear manner. As a conservative approach, noise levels would be reduced for receptors further removed from the noise source by approximately 6 dBA for each doubling of distance from the source (OSHA 2013).

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Construction. Typical uncontrolled noise 50 feet from a construction site (i.e., at the edge of the right of way) would be approximately 85 dBA, which would result in a temporary increase in ambient noise. In addition, implosive sleeving is a stationary source of noise that would occur during construction (conductor stringing). It would be intermittent and of short duration (less than a second). Peak noise level associated with typical implosive connector installation is approximately 118 to 122 dBA at 200 feet.

The nearest residence would be approximately 100 feet away from the construction activity; noise impacts would be greatest at this distance. At this distance, typical construction noise is estimated to be 79 dBA. This level is above the outdoor L_{dn} values of 55 dBA identified as desirable to protect against activity interference and hearing loss in residential areas, and above 70 dBA (the level of environmental noise that will prevent any measurable hearing loss over the course of a lifetime). Although construction noise would be a moderate impact, above EPA recommended levels, it would be temporary and audible for no more than a few days at each pole location. Implosive sleeving would result in an instantaneous and brief, noticeable increase in noise. The location of implosive sleeving is dependent on the length of the transmission lines provided by the manufacturer; it is also flexible in that, if properly planned, sleeving can be performed at a variable location and pulled into place to minimize noise exposure to a sensitive receptor. Coordination with landowners within the proposed easement would provide nearby residents with advance notice of construction and anticipated increase in noise, which would provide individuals an opportunity to vacate the area during hours of increased noise potential (Resource Protection Measure AG-1) and result in a minor noise impact.

Operation and Maintenance. During operation, audible noise would occur from corona discharge along the transmission line. The amount of audible noise is directly related to the amount of corona, which is affected by meteorological conditions (most notably rain). Transmission line audible noise is categorized into broadband high frequency sounds, which can be described as hissing or sputtering, and low frequency tones, which are best described as humming sounds.

The highest calculated audible noise levels for the transmission line design during foul weather (including rain) may reach 39.6 dBA at the edge of the ROW (50 feet from centerline) for a single-circuit 230-kV transmission line; this level increases slightly to 40.8 dBA for the double-circuit 230-kV line case (APS 2011). This noise level would occur during the infrequent occurrence of heavy rain, which would mask the noise associated with the corona. During fair weather the audible noise at the edge of the ROW would be reduced, with a maximum value of 12.5 dBA for the single-circuit case and 13.2 dBA for the double-circuit case (APS 2011). Fair-weather and foul-weather conditions fall within the typical range of ambient noise for rural/agricultural areas (39 to 44 dB) and are not anticipated to be discernible above background ambient noise levels. Due to the expected low audible noise levels, the line noise would normally be inaudible at the edge of the right-of-way. There would be no noticeable permanent increase in noise above

the existing ambient levels. Noise associated with the existing transmission lines, resulting from increased corona due to aging equipment and facilities, would be improved when the existing facilities are removed and replaced with new equipment. In general, noise generated during construction would be more perceptible than surrounding noises and occur over a period of a few days at each pole location; whereas, during operation, noise generated by the Project would be negligible because it would not be discernible above ambient background noise levels.

The region of influence for cumulative noise impacts includes residences located along the proposed transmission line corridors. The past, present, and reasonably foreseeable future projects identified in Table 2.6-1 do not overlap with the region of influence for noise; therefore, the Proposed Action would not contribute to cumulative noise impacts to sensitive receptors.

Phase II – Gila-Knob Rebuild and Upgrade

Under Phase II, Western proposes to upgrade existing transmission to 230-kV for a 4.8-mile segment, which is located predominantly adjacent to Phase I. Accordingly, the Phase II affected environment and impacts would be similar to those described for Phase I. However, the duration of Phase II construction impacts would be less because it would include only 4.8 miles of construction, compared with 12.8 miles for Phase I.

3.12.2 Certificated Route Alternative

Under the Certificated Route Alternative, the overall length of the APS North Gila–Orchard 230-kV transmission line would increase by 0.5 mile by extending eastward around Gila Substation and a date farm. The affected environment and environmental consequences for the Certificated Route Alternative are similar to the Proposed Action, except near the Gila Substation where the alignment would be approximately 200 feet farther from the retail and dining area associated with the date farm. This additional distance would create a minor reduction in noise during construction, as compared with the Proposed Action.

3.12.3 No Action Alternative

Noise impacts associated with the No Action Alternative would be less than those described for the action alternatives because the existing structures would not be removed, thereby reducing the amount and duration of construction activities. Otherwise, noise impacts associated with the No Action Alternative would be similar to those described for the action alternatives because they would occur during construction of the APS North Gila–Orchard 230-kV transmission line.

3.13 Water Resources and Floodplains

3.13.1 Proposed Action

3.13.1.1 Affected Environment

The Project is located within the Yuma Basin of the Lower Colorado River Planning Area (LCRPA), as defined by the Arizona Department of Water Resources (ADWR). The Yuma Basin is approximately 792 square miles in area and the LCRPA totals approximately 17,200 square miles. Primary geographic features in the Yuma basin include:

- The Colorado River on the western basin boundary,
- Yuma Desert in the southern portion of the basin,
- Tinajas Atlas Mountains and the Gila Mountains on the eastern basin boundary with the highest point in the basin at 2,694 feet, and
- The lowest point in the basin at 70 feet where the Colorado River enters Mexico at the southern international boundary (ADWR 2009).

The Yuma Basin is characterized by the most arid conditions in the Arizona. The highest average seasonal rainfall occurs in the summer, between July and September, with annual rates ranging between 3.89 inches and 2.63 inches. (ADWR 2009)

Floodways and Floodplains. The County and City of Yuma are participants in the National Flood Insurance Rate Program. Data on floodways and floodplains was collected from FEMA's Flood Insurance Rate Maps (FIRMs). There are no Automated Local Evaluation in Real Time (ALERT) stations, which collect surface water and flooding conditions, or USGS runoff contour data available for the Project vicinity (ADWR 2009).

Digital FIRMs were published by FEMA on August 28, 2008, and coordination between the Yuma County Flood Control District ("District"), U.S. Bureau of Reclamation, ADWR, and FEMA occurred to improve the accuracy of the maps (YCFCD 2009). In 2009, the UCBR certified the Colorado River Levees within Yuma County and FEMA was scheduled to release the Digital FIRM in 2011, with "Provisionally Accredited Levee" designations removed (YCFCD 2009). FEMA's index of "Historic Flood Maps" indicates that a series of FIRMs were adopted for Yuma County between 1976 and 1985, but more recent FIRMs are not currently available through FEMA. FEMA's Flood Map Update Schedule indicates that the updated Flood Hazard Area map for the City of Yuma will be effective in January of 2014 (FEMA 2013).

Drainages. In the Project area and immediate vicinity, the Gila River runs in a westerly direction between the Gila Substation and the North Gila Substation, converging with the Colorado River to the west (refer to Figure 2-1). The Colorado River runs in a southerly direction just over two miles to the west of North Gila Substation. The Gila and Colorado Rivers are the only two perennial (year-round) waterways in the Yuma Basin (ADWR 2009). A small reach of the Gila River is intermittent, along the eastern boundary of the Yuma Basin. There are numerous ephemeral drainages and drainage ditches which traverse its alignment. There are no major or minor springs located in the Yuma Basin.

Surface Water Quality. Due to its agricultural nature, surface waters in the Project area are likely affected by elevated concentrations of total dissolved solids (TDS) and nitrates, the most common water quality characteristics in agricultural areas. The Gila River is the most prominent surface water feature in the Project area; the water quality standard for boron and selenium was equaled or exceeded in one 28-mile reach of the Gila River, a portion of which extends into the Lower Gila Groundwater Basin. This reach is not part of the ADEQ Total Maximum Daily Load program to improve the quality of waters. (ADWR 2009)

Waters of the U.S. including Wetlands. An investigation of jurisdictional features within the Project area was conducted in February 2013; refer to Appendix C for the Preliminary Jurisdictional Delineation Report. The limits of USACE and ADEQ jurisdictions were delineated within the Project area (refer to Figure 3.13-1). According to the NRCS Hydric Soils List (NRCS 2013a and 2013b), no mapped hydric soils occur in the Project area. Two types of jurisdictional features were documented within the Project area: USACE non-wetland waters of the U.S. and wetland waters of the U.S. (Table 3.13-1 and Figure 3.13-1); both are associated with the Gila River.

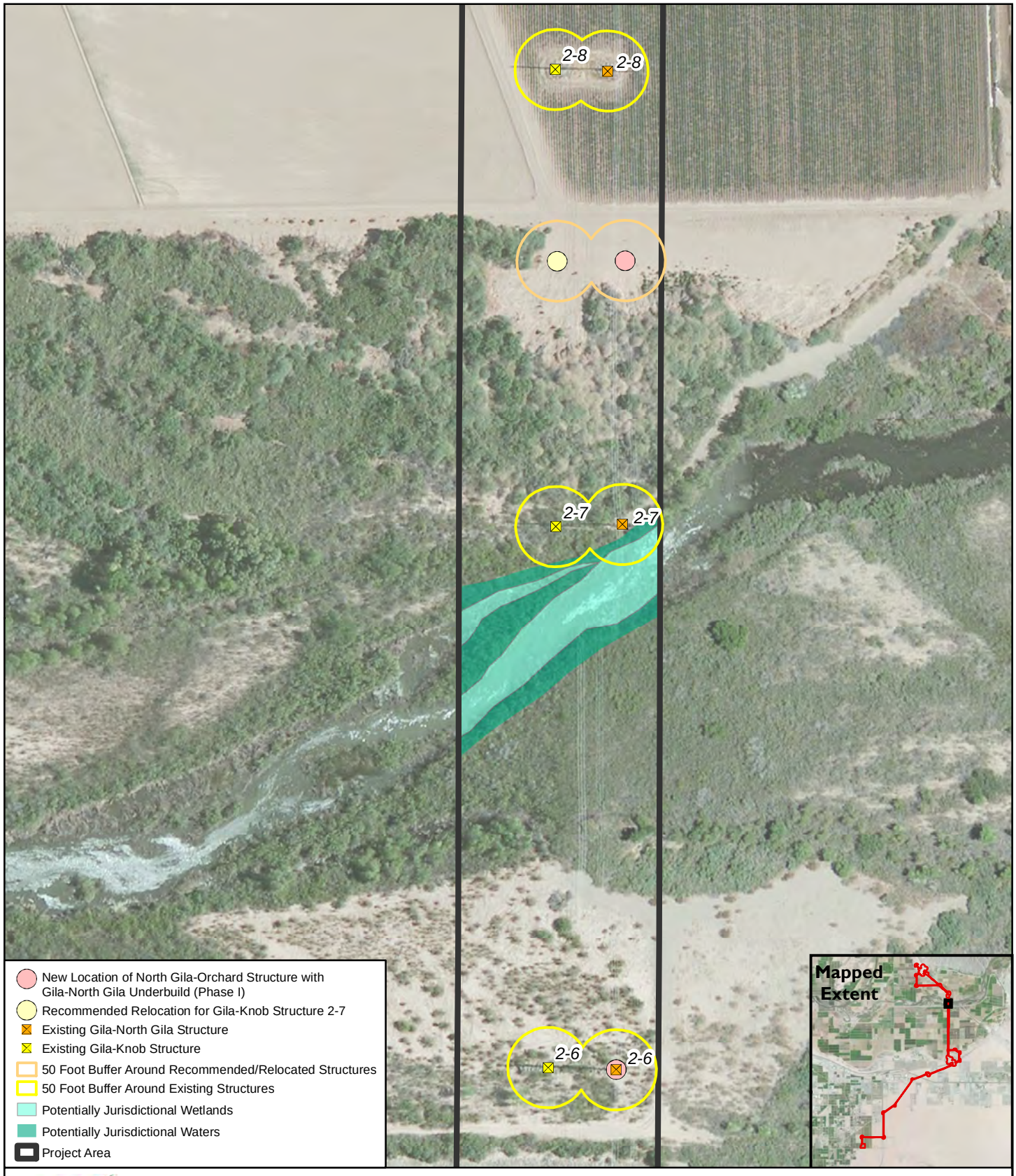
Based on assessment of hydrology, vegetation, and soils during the field surveys, approximately 0.48 acre of the Project alignments satisfies the criteria as wetlands pursuant to the USACE Wetland Delineation Manual (1987) and the Arid West Supplement (2008), with subsequent clarification memoranda and dependent on confirmation by the USACE. In addition to the wetlands, approximately 0.41 acres of the Project area meet the definition of waters of the United States as defined in 33 CFR Part 328. These non-wetland waters of the U.S. are adjacent to the mapped wetlands and the existing Gila–North Gila structure 2-7 on the north bank of the Gila River (refer to Figure 3.13-1).

Table 3.13-1. Acreage of Jurisdictional Wetlands and Non-wetland "Waters of the U.S." within the Project Area

	USACE/ADEQ Waters and Wetlands		
	Non-wetland "Waters of U.S."	Wetlands	Total
Acres within Project area	0.41 acres	0.48 acres	0.89 acres

Groundwater. Groundwater in the Yuma Basin is found in basin fill characterized by grains of varying sizes. Basin fill primarily consists of unconsolidated to moderately consolidated, well- to poorly-sorted beds of gravel, sand, silt, and clay deposited on alluvial fans, pediments, floodplains, and playas (USGS 1995). Groundwater flow direction is generally towards the Colorado River, west of the Project area, and south towards Mexico. The ADWR annually monitors 11 index wells in this basin, and has determined that the farthest depth to groundwater is 152 feet along the Mexican border, while the shallowest groundwater is found at just nine feet below the ground surface, east of Yuma (ADWR 2009). Depth to groundwater on the Barry Goldwater Air Force Range, located immediately south of Orchard Substation (southern terminus for the North Gila–Orchard transmission line) ranges from 24 feet to 663 feet (ADEQ 2011).

Groundwater levels in the Project area tend to fluctuate throughout the year, depending on rates of use and recharge. High groundwater levels can be problematic to the integrity of structures and utilities, and is managed by the U.S. Bureau of Reclamation using drain pumps.



Western Area Power Administration

1:2,000
1 in = 167 feet

0 200 400 Feet

Figure 3.13-1
Jurisdictional Features

Groundwater in the Yuma area is heavily used for crop irrigation on farms located outside of water districts. Many homes located outside of water districts also use the local groundwater for domestic purposes. Recharge to the local aquifer in the Project area primarily occurs through percolation of irrigation water, although some recharge also occurs as seepage from the Colorado River and from unlined irrigation channels in the area. Due to the arid conditions in this area, precipitation is a negligible contributor to groundwater recharge. (USBR 2012)

Wells, springs, and mine sites in the Yuma Basin have been tested for water quality; of all wells tested, the concentrations of certain water quality constituents in 103 wells were equal to or greater than drinking water standards for the respective constituents. Commonly exceeded constituents include arsenic, organics, lead, and total dissolved solids. Other constituents include antimony, beryllium, cadmium, thallium, and nitrate. (ADWR 2009)

3.13.1.2 Environmental Consequences

Significance Criteria

Impacts to water resources and floodplains would be significant if:

- Project activities modify the floodwater or substantially alter the floodplain, diverting floodwaters to areas previously outside the 100-year floodplain.
- Surface water is contaminated by storm water runoff from flash floods to levels above federal and state water quality standards.
- Project activities substantially alter the area's existing drainage pattern.
- The Project increases scouring during a flood event would result in structural or property damage.
- Surface water quality impacts occur that would violate Section 401 of the CWA or other applicable surface water regulations, including state-established standards for designated uses.
- Surface water quality degradation occurs which causes a long-term loss of human use or use by aquatic wildlife and plants.
- The Project results in unmitigated temporary or long-term loss of wetland habitat (direct impact).
- The Project results in indirect loss of wetlands or riparian areas, caused by degradation of water quality, diversion of water sources or erosion, and sedimentation resulting from altered drainage patterns.
- The Project results in substantial degradation or depletion of groundwater resources.
- The Project results in groundwater quality degradation that causes groundwater quality to exceed state or federal standards.

Impacts

Western's Construction Standards 13 will be implemented as part of the Proposed Action, if Western constructs the project or hires a contractor; those measures specific to water resources include Sections 13.1 (# 12), 13.2 (# 2), 13.10 (# 1), and 13.16 (#s 1 through 5). If APS constructs

the project, Western's Standard 13 would not apply, but APS would implement comparable standards to avoid or minimize potential water resources impacts.

Phase I – North Gila–Orchard Construction and Gila–North Gila Underbuild

Floodways and Floodplains. There are existing transmission towers located along the portion of the project alignment which have historically been mapped within FEMA-designated Flood Hazard Areas, and the Proposed Action would not alter existing potential for such structures to result in site-specific diversion of flood waters, including during large storm events. In addition, as is standard industry practice, transmission tower bases would be designed and installed to withstand environmental pressures including those associated with flooding. Therefore, the Proposed Action would not modify the floodwater, substantially alter the floodplain, or divert floodwaters to areas previously outside the 100-year floodplain, and long-term effects to floodways and floodplains would be negligible.

It is reasonably anticipated that industry standard best management practices would be applied to other projects in the area, to minimize or avoid potential water resources impacts. However, the Proposed Action would not result in direct adverse impacts to floodways and floodplains, and would therefore also not have the potential to combine with similar impacts of other projects, and no cumulative effects would occur.

Drainages. The Proposed Action would span the Gila River, as well as ephemeral drainages and drainage ditches which traverse its alignment. In compliance with Western Construction Standard 13 (Section 13.16 (Prevention of Water Pollution) Subsection 5 (Stream Crossings)) or comparable best management practices to be implemented if APS constructs the project, portions of the Proposed Action alignment which traverse surface drainages will occur in compliance with existing laws and regulations, including any applicable permitting requirements. In addition, as described in Section 2.1.4.2 (Construction: Ground Disturbance), improvements to existing access roads that would need to occur to accommodate the Proposed Action will include installation of corrugated metal pipes to maintain stormwater flows within any ephemeral wash areas. These improvements would have the potential to result in direct long-term effects to drainages, but would be site-specific and would not substantially alter the area's existing drainage patterns. Therefore, because potential impacts to drainages would be site-specific and would be implemented with the best management practices mentioned above, potential impacts would be minor, decreasing to negligible over the lifetime of the project. No other projects in the cumulative scenario would have the potential to result in impacts to drainages in the same location and context as the Proposed Action; therefore, the Proposed Action would not have the potential to combine with drainage impacts of other projects and cumulative impacts to drainages would not occur.

Surface Water Quality. Construction would include earth-disturbing activities and the use of hazardous or potentially hazardous materials such as vehicle and equipment fuels and lubricants that may be accidentally spilled or leaked. If left unattended, such spills or leaks could potentially migrate to surface water drainages, resulting in indirect adverse impacts to water quality. Additionally, disturbed soils could result in erosion and sedimentation in local waterways, also representing indirect adverse impacts. If such materials are spilled, leaked, or otherwise discharged directly into surface waters, direct adverse impacts to water quality could occur. Such effects

would be short-term, limited to the construction period and any period maintenance activities that include the use of potentially hazardous materials.

In compliance with Western Construction Standard 13 (Section 13.16 (Prevention of Water Pollution) Subsections 1 (General) and 2 (Permits)), or comparable best management practices if APS constructs the project, all water quality laws and regulations would be complied with, and required permits would be obtained prior to the onset on construction to ensure protection of surface water resources from water quality degradation. A project-specific Stormwater Pollution Prevention Plan (SWPPP) would be prepared for compliance with the National Pollution Discharge Elimination System (NPDES) under the federal Clean Water Act (CWA).

The Proposed Action would not result in significant water quality impacts that would violate Section 401 of the CWA or other applicable surface water regulations. Although construction-related activities would have the potential to result in short-term adverse water quality degradation, such effects would be minor, and would not occur such that long-term loss of human use or use by aquatic wildlife and plants would occur. Compliance with the aforementioned laws and regulations as well as implementation of the Western Construction Standards 13 (or comparable best management practices should APS construct the Project) would ensure that potential water quality impacts of the Proposed Action would not have the potential to combine with water quality impacts of other projects. Because similar water quality impacts of the Proposed Action and other actions within the Project area would not have the potential to combine in location or context, and no cumulative impacts to water quality would occur.

Waters of the U.S. including Wetlands. At the Gila River crossing, Phase I of the Proposed Action would relocate the existing Gila–North Gila 69-kV circuit as an underbuild on APS' North Gila–Orchard 230-kV structures and removing the existing Gila–North Gila structures. The first structure of the North Gila–Orchard transmission line north of the Gila River would be located approximately 360 feet north of the existing Western structures, within a disturbed area adjacent to the existing road (Figure 3.13-1), which would avoid direct impacts to jurisdictional waters/wetlands. The first structure south of the Gila River (corresponding to the Gila–North Gila structure 2-6) is expected to be in the current location of the existing Gila–North Gila structure 2-6, located no further north than this structure. This design would result in a total span of approximately 1,015 feet and avoid direct impacts to potentially jurisdictional features.

During the removal of Gila–North Gila structure 2-7, Western will remove the tower in such a manner as to avoid ground disturbing activities that could result in direct or indirect impacts to jurisdictional features, such as the placement of soil or other material within waters of the U.S. Western will accomplish this by implementing BMPs to ensure that no runoff, silt, pollutants, or other materials enter the active channel of the Gila River. Therefore, the project would completely avoid jurisdictional waters and wetlands, and would result in no direct or indirect adverse effects to such features. In avoiding impacts of the Proposed Action to the Gila River, the Proposed Action would not combine with the impacts of other projects to result in cumulative impacts to waters of the U.S.

Groundwater. Excavations up to 30 feet deep would be required to install new transmission structure foundations, introducing the potential to result in direct or indirect adverse effects to groundwater. As noted above, groundwater levels in the Project area can be very shallow,

and have been recorded in the vicinity of the city of Yuma at just nine feet below the ground surface. Shallow groundwater is known to result in structural integrity issues for building foundations by causing cracks and settling over time. In order to ensure the integrity of transmission structures installed and modified under the Proposed Action, the foundations would be designed to withstand subsurface conditions, including shallow groundwater, and BMPs would be implemented to avoid or minimize adverse effects to the structures.

Geotechnical borings would be excavated for some proposed structure footings, with six to seven borings conducted between the Gila and North Gila substations. Information collected during these pre-construction efforts would be used to appropriately design infrastructure foundations, as well as to identify areas where groundwater dewatering would be necessary. In accordance with Western Construction Standard 13 (Section 13.16 (Prevention of Water Pollution) Subsection 2 (Permits)) or comparable measure(s) implemented by APS, dewatering permits would be obtained where necessary; such permits would include standards to ensure that where shallow groundwater is encountered during construction, it would be appropriately removed and disposed of, typically by returning it to the subsurface or by discharging to surface drainages, depending on quality suitability. Potential adverse effects associated with dewatering would be short-term, limited to the construction period, and compliance with dewatering permits would ensure that potential adverse effects would be minor.

A short-term water supply would be required during construction for dust suppression, and possibly for concrete production. The construction water supply may be obtained from a local water agency and/or local groundwater resources. Compliance with existing laws and regulations would ensure that the Proposed Action would not substantially degrade or deplete groundwater resources, and compliance with Western Construction Standard 13 (or comparable APS standard) would ensure that groundwater quality degradation would not occur such that state or federal standards would be exceeded. Potential adverse effects of the project to groundwater associated with the required short-term water supply would be minor to negligible. Due to the short-term and minor to negligible potential of project-related effects on groundwater, the Proposed Action would not combine with impacts of other projects to result in cumulative groundwater impacts.

Phase II – Gila-Knob Rebuild and Upgrade

Floodways and Floodplains. Impacts to floodways and floodplains associated with Phase II of the Proposed Action would be the same as described above for Phase I because the entire area is located in the same floodplain. No cumulative impacts would occur.

Drainages. Phase II would traverse the same surface drainages as Phase I and construction activities would be similar; therefore potential impacts would be the same as described above for Phase I. No cumulative impacts would occur.

Surface Water Quality. Phase II would also result in soil-disturbing activities with the potential to cause erosion and sedimentation, as well as the use of hazardous or potentially hazardous materials associated with construction equipment and machinery; therefore, potential water quality impacts would be the same as described above for Phase I. No cumulative impacts would occur.

Waters of the U.S. including Wetlands. At the Gila River crossing, Phase II of the Proposed Action would remove the existing Gila-Knob 161-kV transmission line and rebuild it as a single-circuit 230-kV line on steel monopoles. Phase II removal or reconstruction activities could result in direct effects to waters of the U.S., depending on the actual limits of disturbance. Assuming that the rebuilt Gila-Knob structures are constructed in the same location as the existing Gila-Knob structures, Phase II would directly impact approximately 0.04 acres of jurisdictional waters of the U.S. and 0.04 acres of jurisdictional wetlands (refer to Table 3.13-2).

Table 3.13-2. Impacts to Waters and Wetlands within the Phase II Project Area

Drainage No.	Width* (feet)	Acreage of Jurisdictional Features within Project Impact Area		Drainage Type
		Phase II – Waters	Phase II – Wetlands	
1	184.15	0.04 acres	0.04 acres	Perennial Stream

*Average width of drainage within the surveyed area

To avoid adverse impacts to jurisdictional waters of the U.S. and/or wetlands, the first new Gila-Knob structure north of the Gila River should be relocated approximately 360 feet north of the existing Gila-Knob structure 2-7, within a disturbed area adjacent to the existing road (Figure 3.13-1). Additionally, the first structure south of the Gila River should be located no further north than the location of the existing Gila-Knob structure 2-6. This design would result in a total span of approximately 1,015 feet and avoid direct impacts to potentially jurisdictional features.

If the new structures are unable to be relocated as described above, then compliance with Sections 401 and 404 of the CWA would be required. Construction of the structures adjacent to the Gila River is anticipated to meet the conditions of USACE Nationwide Permit (NWP) No. 12 (Utility Line Activities), which would provide compliance with Section 404 of the CWA and conditional certification under Section 401 of the CWA by the Arizona Department of Environmental Quality. Under this circumstance, the Proposed Action would result in direct long-term effects to jurisdictional waters (due to the permanent placement of project features), but such effects would be minor due to compliance with the aforementioned CWA requirements.

During the removal of Gila-Knob structure 2-7, avoidance of ground disturbing activities (including placement of soil or other material) within waters of the U.S. and the implementation of BMPs to ensure that no runoff, silt, pollutants, or other materials enter the active channel of the Gila River, would avoid direct and indirect impacts to potentially jurisdictional features. Therefore, if new project structures are placed completely outside the limits of potentially jurisdictional features, as described above, no adverse impacts would occur; if features cannot be placed as recommended, direct effects to jurisdictional (or potentially jurisdictional) waters would be long-term but minor.

In avoiding impacts of the Project to jurisdictional features, or in complying with the CWA requirements to ensure that effects are minor, the Project would also avoid cumulative impacts associated with jurisdictional waters.

Groundwater. Impacts to groundwater resources associated with Phase II of the Project would be the same as described above for Phase I, because the environmental setting for groundwater is the same under both phases, and similar actions relative to groundwater would occur, such

as use of a water supply for dust suppression, and activities occurring in areas affected by shallow groundwater. No cumulative impacts would occur.

3.13.2 Certificated Route Alternative

Under the Certificated Route Alternative, the overall length of the APS North Gila–Orchard 230-kV transmission line would increase by 0.5 mile by extending eastward around Gila Substation and a date farm. This diversion and increased length of the APS portion of the Project would not introduce any impacts to water resources that differ from those described above.

3.13.3 No Action Alternative

Under the No Action Alternative, APS would construct the new North Gila–Orchard Transmission Line, and Western would continue to operate and maintain the existing Gila–North Gila and Gila-Knob lines under their present conditions. As such, potential water resources impacts associated with the North Gila–Orchard line would occur as described for Phase I, and overall water resources impacts would be less intense than those described for the Proposed Action, because there wouldn't be excavations to remove the Gila–North Gila structures.

Chapter 4
Applicable Law, Regulations, and Other Requirements

Table 4-1 summarizes applicable laws and regulations as they pertain to the Project.

Table 4-1. Summary of Applicable Federal Laws, Regulations, and Guidelines

Law / Regulation	Applicability
American Indian Religious Freedom Act of 1978 (42 USC 1996)	Archaeological resources and Tribal consultation
Antiquities Act of 1906 (16 USC 431 et seq.)	Archaeological resources and Tribal consultation
Archaeological Resources Protection Act, as amended (ARPA; 16 USC 470aa et seq.)	Archaeological resources and Tribal consultation
Arizona Revised Statute (41 USC 844)	Archaeological resources and Tribal consultation
Canal Act of 1890 (43 USC 945)	Federal canals
Clean Air Act, as amended (42 USC 7401 et seq.)	Air pollution prevention and control Emission levels of regulated pollutants
Clean Water Act (CWA; Sections 401, 402, 404; 33 USC 1251 et seq.)	Surface water quality; discharge or dredge or fill materials into jurisdictional waters of the U.S.
Consultation and Coordination with Indian Tribal Governments (EO 13175)	Tribal consultation
Endangered Species Act (ESA; 16 USC 1531 et seq.)	Threatened and endangered species, and critical habitat
Energy-related Projects (EO13212)	Energy-related projects
Environmental Justice (EO 12898)	Low income communities and minority communities
Federal Compliance with Pollution Control Standards (EO 12088)	Prevention, control, and abatement of environmental pollution
Floodplain Management (42 USC 4321; EO 11988)	Impacts to floodplains
Indian Sacred Sites (EO 13007)	Protection and preservation of Tribal religious practices
Migratory Bird Treaty Act (MBTA; 16 USC 703-711; EO 13186)	Protection of selected bird species
National Environmental Policy Act (NEPA) (42 USC 4321 et seq.; CEQ, 40 CFR 1500-1508)	Federal undertakings
National Historic Preservation (EO 11593)	Protection and enhancement of the cultural environment
National Historic Preservation Act of 1966, as amended (NHPA; 16 USC 470 et seq.; 36 CFR 800)	Historic and traditional cultural properties
National Trails System Act of 1968, as amended (NTSA; 16 U.S.C. 1241 et seq.)	Creation and protection of historic trails
Native American Graves Protection and Repatriation Act of 1990 (NAGPRA; 25 USC 3001-30013 et seq.; 43 CFR 10)	Archaeological resources and Tribal consultation

Table 4-1. Summary of Applicable Federal Laws, Regulations, and Guidelines

Law / Regulation	Applicability
Noise Control Act of 1972 (NCA; 42 USC 4901 et seq.)	Noise protection
Noxious Weeds and Invasive Species (EO 13112)	Management of noxious weeds
Occupational Safety and Health Act of 1970 (OSHA; 29 USC 651 et seq.)	Health and safety standards
Pollution Prevention Act of 1990 (PPA; 42 USC 13101 et seq.)	Reducing potential for pollution sources
Protection of Wetlands (42 USC 4321; EO 11990)	Impacts to wetlands
U.S. Department of Energy, NEPA implementing procedures (10 CFR 1021)	NEPA compliance for Department of Energy undertakings

CEQ – Council on Environmental Quality
CFR – Code of Federal Regulations
USC – United States Code
EO – Executive Order
et seq. – and the following
FR – Federal Register

Table 4-2 summarizes permits, licenses and entitlements required for the Project.

Table 4-2. Summary of Permits and Authorizations

Permitting Agency	Permit / Authorization
Arizona Corporation Commission	Certificate of Environmental Compatibility for the North Gila–Orchard Transmission Line
Arizona State Historic Preservation Office	Section 106 compliance; review and approve potential disturbance to cultural resources on State Trust Land
Arizona Department of Environmental Quality	Arizona Pollutant Discharge Elimination System Permit for construction activities
Arizona Department of Environmental Quality	Section 401 water quality certification
Arizona Department of Environmental Quality	Compliance with dust control measures and standards
Arizona Department of Transportation	Crossing permit to allow construction, operation, and maintenance of transmission lines across state highway right-of-way
Arizona State Land Department	Row-of-way permit for construction of transmission line on State Trust Land
Bureau of Reclamation	Easement or right-of-way use authorization for construction, operation, and maintenance of a transmission line across Reclamation-administered land
Federal Highway Administration	Permit to cross Federal Aid Highway; 4(f) compliance
U.S. Environmental Protection Agency	Section 404 permit for potential discharge of materials to waters of the U.S.
U.S. Environmental Protection Agency	Floodplain use permit
U.S. Fish and Wildlife Service	ESA compliance

Chapter 5
Consultation and Coordination

Western invited the U.S. Army Corps of Engineers and Bureau of Reclamation to be cooperating agencies for this Project. These agencies have been involved throughout the NEPA process, including scoping and EA development. Refer to Chapter 6 for a list of agency staff that contributed to and were consulted in the preparation of this EA. Appendix E presents copies of Western's official correspondence with affected agencies.

Consultation is ongoing with the Tribes listed in Appendix F. A summary of Western's consultation efforts will be provided in the Final EA.

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Chapter 7
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Appendix A

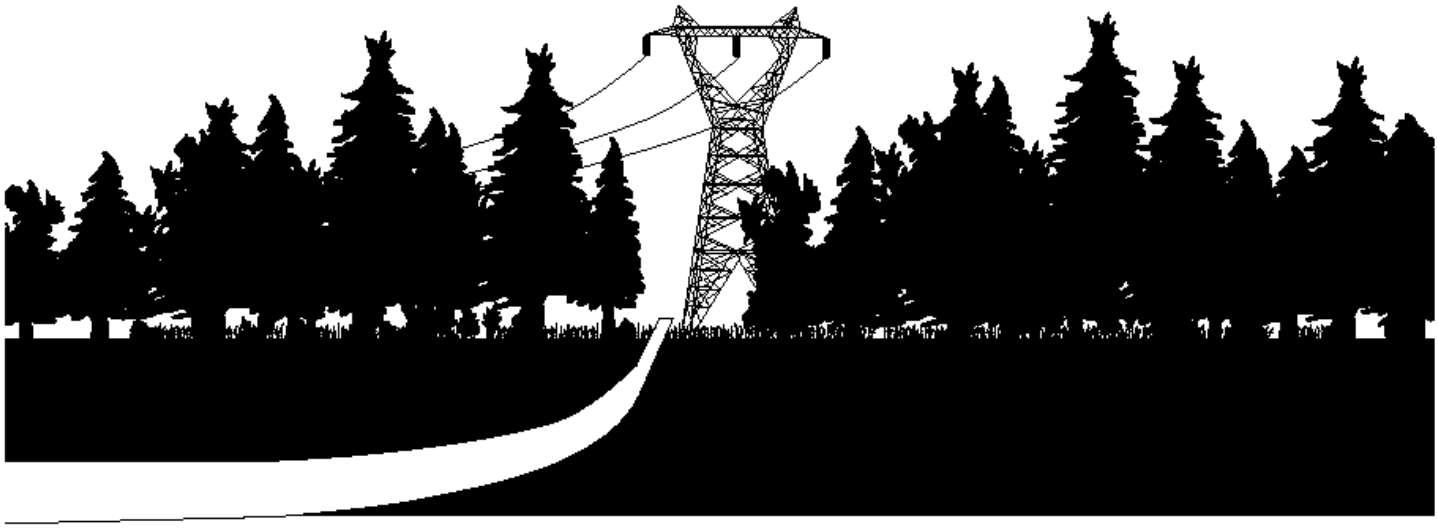
Western Area Power Administration Construction Standard 13

Western
AREA POWER
ADMINISTRATION

CONSTRUCTION STANDARDS

STANDARD 13

ENVIRONMENTAL QUALITY PROTECTION



July 2009

SAFETY
A HABIT TO LIVE BY

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

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STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

SECTION 13.1--CONTRACTOR FURNISHED DATA

1. RECYCLED MATERIALS QUANTITY REPORT: Submit quantities of recycled materials listed in Section 13.6, "Recycled Materials Quantities", to the COR prior to submittal of final invoice.

2. RECOVERED AND BIOBASED MATERIAL PRODUCTS REPORT: Provide the COR the following information for purchases of items listed in Section 13.7, "Use of Recovered and Biobased Material Products".

   (1) Quantity and cost of listed items with recovered or biobased material content and quantity and cost of listed items without recovered or biobased material content prior to submittal of final invoice.

   (2) Written justification of listed items if recovered material or biobased material products are not available: 1) competitively within a reasonable time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.

3. RECLAIMED REFRIGERANT RECEIPT: A receipt from the reclaimer stating that the refrigerant was reclaimed, the amount and type of refrigerant, and the date shall be submitted to the COR prior to submittal of final invoice in accordance with Section 13.8.5, “Refrigerants and Receipts”.

4. WASTE MATERIAL QUANTITY REPORT: Submit quantities of total project waste material disposal as listed below to the COR prior to submittal of final invoice in accordance with Section 13.8.8, “Waste Material Quantity Report”.

   (1) Unregulated Wastes (i.e., trash): Volume in cubic yards or weight in pounds.

   (2) Hazardous or Universal Wastes: Weight in pounds.

   (3) PCB Wastes: Weight in pounds.

   (4) Other regulated wastes (e.g., lead-based paint or asbestos): Weight in pounds (specify type of waste in report).

5. SPILL PREVENTION NOTIFICATION AND CLEANUP PLAN (Plan): Submit the Plan as described in Section 13.10.2, "Spill Prevention Notification and Cleanup Plan”, to the COR for review and comment 14 days prior to start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

6. TANKER OIL SPILL PREVENTION AND RESPONSE PLAN: Submit the Plan as described in Section 13.10.3, "Tanker Oil Spill Prevention and Response Plan”, to the COR for review and comment 14 days prior to start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

7. PESTICIDE USE PLAN: Submit a plan as described in Section 13.11.3, “Pesticide Use Plan”, to the COR for review and comment 14 days prior to the date of intended pesticide application. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Within seven days after application, submit a written report in accordance with Standard 2 – Sitework, Section 2.1.1_5, “Soil-Applied Herbicide”.

8. TREATED WOOD UTILITY POLES AND CROSSARMS RECYCLING - CONSUMER INFORMATION SHEET RECEIPT: Submit treated wood utility poles and crossarms - consumer information sheet receipts to the COR prior to submittal of final invoice (see 13.12, "Treated Wood Utility Poles and Crossarms Recycling or Disposal").

9. PREVENTION OF AIR POLLUTION: Submit a copy of permits, if required, as described in 13.13, "Prevention of Air Pollution" to the COR 14 days prior to the start of work.

10. ASBESTOS LICENSES OR CERTIFICATIONS: Submit a copy of licenses, certifications, Demolition and Renovation Notifications and Permits for asbestos work as described in 13.14, "Handling and Management of Asbestos Containing Material" to the COR 14 days prior to work. Submit copies of certificates of disposal and/or receipts for waste to the COR prior to submittal of final invoice.

11. LEAD PAINT NOTICES: Submit a copy of lead paint notices with contractor and recipient signatures as described in 13.15, "Material with Lead-based Paint" to the COR prior to submittal of final invoice. Submit copies of certificates of disposal and/or receipts for waste to the COR prior to submittal of final invoice.

12. WATER POLLUTION PERMITS: Submit copies of any water pollution permits as described in 13.16, "Prevention of Water Pollution" to the COR 14 days prior to start of work.

13. PCB TEST REPORT: Submit a PCB test report as described in 13.17, "Testing, Draining, Removal, and Disposal of Oil-filled Electrical Equipment", prior to draining, removal, or disposal of oil or oil-filled equipment that is designated for disposal.

14. OIL AND OIL-FILLED ELECTRICAL EQUIPMENT RECEIPT: Obtain and submit a receipt for oil and oil-filled equipment transported and disposed, recycled, or reprocessed as described in 13.17, "Testing, Draining, Removal, and Disposal of Oil-filled Electrical Equipment", to the COR prior to submittal of final invoice.

15. OSHA PCB TRAINING RECORDS: Submit employee training documentation records to the COR 14 days prior to the start of work as described in 13.18.1.

16. CLEANUP WORK MANAGEMENT PLAN: Submit a Cleanup Work Management Plan as described in 13.18, "Removal of Oil-contaminated Material" to the COR for review and comment 14 days prior to the start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

17. POST CLEANUP REPORT: Submit a Post-Cleanup Report as described in 13.18, "Removal of Oil-contaminated Material" to the COR prior to submittal of final invoice.

SECTION 13.2--ENVIRONMENTAL REQUIREMENTS

Comply with Federal, State, and local environmental laws and regulations. The sections in this Standard further specify the requirements.

SECTION 13.3--LANDSCAPE PRESERVATION

1. GENERAL: Preserve landscape features in accordance with the contract clause titled "Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements."

2. CONSTRUCTION ROADS: Location, alignment, and grade of construction roads shall be subject to the COR's approval. When no longer required, surfaces of construction roads shall be scarified to

facilitate natural revegetation, provide for proper drainage, and prevent erosion. If re-vegetation is required, use seed mixtures as recommended by Natural Resources Conservation Service or other land managing agency as appropriate.

3. CONSTRUCTION FACILITIES: Shop, office, and yard areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent and prevent impact on sensitive riparian areas and flood plains. Storage and construction buildings, including concrete footings and slabs, shall be removed from the site prior to contract completion. The area shall be re-graded as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion or transport of sediment and pollutants. If re-vegetation is required, use seed mixtures as recommended by Natural Resources Conservation Service or other land managing agency as appropriate.

SECTION 13.4--PRESERVATION OF CULTURAL AND PALEONTOLOGICAL RESOURCES

1. GENERAL: Do not remove or alter cultural artifacts or paleontological resources (fossils). Cultural artifacts may be of scientific or cultural importance and includes, but is not limited to bones, pottery, glass, projectile points (arrowheads), other stone or metal tools, historic buildings, and features. Paleontological resources can be of scientific importance and include mineralized animals and plants or trace fossils such as footprints. Both cultural and paleontological resources are protected by Federal Regulations during Federal construction projects. Contractor shall restrict all ground disturbing activities to areas that have been surveyed by Western for cultural or paleontological resources and as specified in accordance with Standard 1 – General Requirements, Sections 1.3.1 Rights-of-way and 1.3.2 Access to the Work and Haul Routes.

2. KNOWN CULTURAL OR PALEONTOLOGICAL SITES: Following issuance of notice to proceed, Western will provide drawings or maps showing sensitive areas located on or immediately adjacent to the transmission line right-of-way and/or facility. These areas shall be considered avoidance areas. Prior to any construction activity, the avoidance areas shall be marked on the ground in a manner approved by the COR. Instruct employees, subcontractors, and others that vehicular or equipment access to these areas is prohibited. If access is absolutely necessary, first obtain approval from the COR. Western will remove the markings during or following final cleanup. For some project work, Western will require an archaeological, paleontological or tribal monitor at or near cultural or paleontological site locations. The contractor, contractor's employees, and subcontractors shall work with the monitor to insure that sensitive areas are avoided. Where monitors are required, the monitor shall meet with the crew each morning to go over the day's work. The monitor will also conduct awareness training for all contractors prior to any work in the field. Untrained personnel shall not be allowed in the construction area. For sensitive areas requiring a monitor, the contractor may not access those areas without a monitor being present.

3. UNKNOWN CULTURAL OR PALEONTOLOGICAL SITES: On rare occasions cultural or paleontological sites may be discovered during excavation or other earth-moving activities.

   (1) Reporting: If evidence of a cultural or paleontological site is discovered, cease work in the area immediately and notify the COR of the location and nature of the findings. If a monitor is present, the monitor should also be notified. Stop all activities within a 200-foot radius of the discovery and do not proceed with work within that radius until directed to do so by the COR.

   (2) Care of Evidence: Protect the area. Do not remove, handle, alter, or damage artifacts or fossils uncovered during construction.

SECTION 13.5--NOXIOUS WEED CONTROL

Comply with Federal, State, and local noxious weed control regulations. Provide a "clean vehicle policy" while entering and leaving construction areas to prevent transport of noxious weed plants and/or seed. Transport only construction vehicles that are free of mud and vegetation debris to staging areas and the project right-of-way.

SECTION 13.6--RECYCLED MATERIALS QUANTITIES

1. GENERAL: Record quantities of material by category that is salvaged, recycled, reused, or reprocessed, including:

   (1) Transformers, Breakers: Weight without oil.

   (2) Aluminum Conductor – Steel Reinforced (ACSR): Weight in pounds or tons.

   (3) Steel: Weight in pounds or tons.

   (4) Aluminum: Weight in pounds or tons.

   (5) Copper: Weight in pounds or tons.

   (6) Other Metals: Weight in pounds or tons.

   (7) Oil: Gallons (separate by type - less than 2 ppm PCB, 2 to 50 ppm PCB, and 50 or greater ppm PCB).

   (8) Gravel, Asphalt, Or Concrete: Weight in pounds or tons.

   (9) Batteries: Weight in pounds.

   (10) Treated Wood Utility Poles and Crossarms: Weight in pounds.

   (11) Wood construction material: Weight in pounds.

   (12) Cardboard: Weight in pounds.

   (13) Porcelain Insulators: Weight in pounds.

2. RECYCLED MATERIAL QUANTITY REPORT: Submit quantities of recycled material by category to the COR prior to submittal of final invoice.

SECTION 13.7--USE OF RECOVERED MATERIAL AND BIOBASED MATERIAL PRODUCTS

1. RECOVERED MATERIAL PRODUCTS: If the products listed below or other products listed at http://www.epa.gov/epawaste/conserve/tools/cpg/products/index.htm are obtained as part of this project, purchase the items with the highest recovered material content possible unless recovered material products are not available: 1) competitively within a reasonable time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.

   Construction Products:

   - Building Insulation Products

- Carpet
- Carpet cushion
- Cement and concrete containing coal fly ash, ground granulated blast furnace slag, cenospheres, or silica fume
- Consolidated and reprocessed latex paint
- Floor Tiles
- Flowable fill
- Laminated Paperboard
- Modular threshold ramps
- Nonpressure pipe
- Patio Blocks
- Railroad grade crossing surfaces
- Roofing materials
- Shower and restroom dividers/partitions
- Structural Fiberboard

2. BIOBASED MATERIAL PRODUCTS: If the products listed at http://www.biobased.oce.usda.gov are obtained as part of this project, purchase the items with the highest biobased content possible and no less than the percent indicated for each product unless biobased material products are not available: 1) competitively within a reasonable time frame, 2) meeting reasonable performance standards as defined in the Standards or Project Specifications, or 3) at a reasonable price.
NOTE: Western exempts purchase of bio-based transformers rated above 1 MVA until May 13, 2011 for performance reasons.

3. RECOVERED MATERIAL AND BIOBASED MATERIAL PRODUCTS REPORT: Provide the COR the following information for purchases of those items listed above:

   Quantity and cost of listed items with recovered or biobased material content and quantity and cost of listed items without recovered or biobased material content prior to submittal of final invoice.

   Written justification of listed items if recovered material or biobased material products are not available: 1) competitively within a reasonable time frame; 2) meeting reasonable performance standards as defined in the Standards or Project Specifications; or 3) at a reasonable price.

SECTION 13.8--DISPOSAL OF WASTE MATERIAL

1. GENERAL: Dispose or recycle waste material in accordance with applicable Federal, State and local regulations and ordinances. In addition to the requirements of the Contract Clause “Cleaning Up”, remove all waste material from the construction site. No waste shall be left on Western property, right-of-way, or easement. Burning or burying of waste material is not permitted.

2. HAZARDOUS, UNIVERSAL, AND NON-HAZARDOUS WASTES: Manage hazardous, universal, and non-hazardous wastes in accordance with State and Federal regulations.

3. USED OIL: Used oil generated from the Contractor activities shall be managed in accordance with used oil regulations.

4. RECYCLABLE MATERIAL: Reduce wastes, including excess Western material, by recycling, reusing, or reprocessing. Examples of recycling, reusing, or reprocessing includes, but is not limited to, reprocessing of solvents; recycling cardboard; and salvaging scrap metals.

5. REFRIGERANTS AND RECEIPTS: Refrigerants from air conditioners, water coolers, refrigerators, ice machines and vehicles shall be reclaimed with certified equipment operated by certified technicians if the item is to be disposed. Refrigerants shall be reclaimed and not vented to the

atmosphere. A receipt from the reclaimer stating that the refrigerant was reclaimed, the amount and type of refrigerant, and the date shall be submitted to the COR prior to submittal of final invoice.

6. HALONS: Equipment containing halons that must be tested, maintained, serviced, repaired, or disposed must be handled according to EPA requirements and by technicians trained according to those requirements.

7. SULFUR HEXAFLUORIDE (SF6): SF6 shall be reclaimed and not vented to the atmosphere.

8. WASTE MATERIAL QUANTITY REPORT: Submit quantities of total project waste material disposal as listed below to the COR prior to submittal of final invoice.

   (1) Unregulated Wastes (i.e., trash): Volume in cubic yards or weight in pounds.

   (2) Hazardous or Universal Wastes: Weight in pounds.

   (3) PCB Wastes: Weight in pounds.

   (4) Other regulated wastes (e.g., lead-based paint or asbestos): Weight in pounds (specify type of waste in report).

SECTION 13.9--CONTRACTOR'S LIABILITY FOR REGULATED MATERIAL INCIDENTS

1. GENERAL: The Contractor is solely liable for all expenses related to spills, mishandling, or incidents of regulated material attributable to his actions or the actions of his subcontractors. This includes all response, investigation, cleanup, disposal, permitting, reporting, and requirements from applicable environmental regulation agencies.

2. SUPERVISION: The actions of the Contractor employees, agents, and subcontractors shall be properly managed at all times on Western property or while transporting Western's (or previously owned by Western) regulated material and equipment.

SECTION 13.10--POLLUTANT SPILL PREVENTION, NOTIFICATION, AND CLEANUP

1. GENERAL: Provide measures to prevent spills of pollutants and respond appropriately if a spill occurs. A pollutant includes any hazardous or non-hazardous substance that when spilled, will contaminate soil, surface water, or ground water. This includes any solvent, fuel, oil, paint, pesticide, engine coolants, and similar substances.

2. SPILL PREVENTION NOTIFICATION AND CLEANUP PLAN (Plan): Provide the Plan to the COR for review and comment 14 days prior to start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Include the following in the Plan:

   (1) Spill Prevention measures. Describe the work practices or precautions that will be used at the job site to prevent spills. These may include engineered or manufactured techniques such as installation of berms around fuel and oil tanks; Storage of fuels, paints, and other substances in spill proof containers; and management techniques such as requiring workers to handle material in certain ways.

   (2) Notification. Most States and the Environmental Protection Agency require by regulation, that anyone who spills certain types of pollutants in certain quantities notify them of the spill within a specific time period. Some of these agencies require written follow up reports and cleanup

reports. Include in the Plan, the types of spills for which notification would be made, the agencies notified, the information the agency requires during the notification, and the telephone numbers for notification.

(3) Employee Awareness Training. Describe employee awareness training procedures that will be implemented to ensure personnel are knowledgeable about the contents of the Plan and the need for notification.

(4) Commitment of Manpower, Equipment and Material. Identify the arrangements made to respond to spills, including the commitment of manpower, equipment and material.

(5) If applicable, address all requirements of 40CFR112 pertaining to Spill Prevention, Control and Countermeasures Plans.

3. TANKER OIL SPILL PREVENTION AND RESPONSE PLAN: Provide a Tanker Oil Spill Prevention and Response Plan as required by the Department of Transportation if oil tankers with volume of 3,500 gallons or more are used as part of the project. Submit the Tanker Oil Spill Prevention and Response Plan to the COR for review and comment 14 days prior to start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations.

SECTION 13.11--PESTICIDES

1. GENERAL: The term “pesticide” includes herbicides, insecticides, rodenticides and fungicides. Pesticides shall only be used in accordance with their labeling and applied by appropriately certified applicators.

2. ENVIRONMENTAL PROTECTION AGENCY REGISTRATION: Use EPA registered pesticides that are approved for the intended use.

3. PESTICIDE USE PLAN: Provide a pesticide use plan that contains: 1) a description of the pesticide to be used, 2) where it is to be applied, 3) the application rate, 4) a copy of the label, and 5) a copy of required applicator certifications. Submit the pesticide use plan to the COR for review and comment 14 days prior to the date of intended application. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. Within seven days after application, submit a written final report to the COR, including the pesticide applicators report, in accordance with Standard 2 – Sitework, Section 2.1.1_5. “Soil-Applied Herbicide, (4) Final Report”.

SECTION 13.12--TREATED WOOD UTILITY POLES AND CROSSARMS RECYCLING OR DISPOSAL

Whenever practicable, treated wood utility poles and crossarms removed during the project shall be recycled or transferred to the public for some uses. Treated wood utility poles and crossarms transferred to a recycler, landfill, or the public shall be accompanied by a written consumer information sheet for treated wood as provided by Western. Obtain a receipt, part of the consumer information sheet, from the recipient indicating that they have received, read, and understand the consumer information sheet. Treated wood products transferred to right-of-way landowners shall be moved off the right-of-way. Treated wood product scrap, poles, and crossarms that cannot be donated or reused shall be properly disposed in a landfill that accepts treated wood and has signed Western’s consumer information sheet receipt. Submit treated wood utility poles and crossarms consumer information receipts to the COR prior to submittal of final invoice.

STANDARD 13 - ENVIRONMENTAL QUALITY PROTECTION

SECTION 13.13--PREVENTION OF AIR POLLUTION

1. GENERAL: Ensure that construction activities and the operation of equipment are undertaken to reduce the emission of air pollutants. Submit a copy of permits for construction activities, if required (e.g., "non-attainment" areas, state implementation plans, or Class I air-sheds), from Federal, State, or local agencies to the COR 14 days prior to the start of work.

2. MACHINERY AIR EMISSIONS: The Contractor and subcontractor machinery shall have, and shall use the air emissions control devices required by Federal, State or Local Regulation or ordinance.

3. DUST ABATEMENT: Dust shall be controlled. Oil shall not be used as a dust suppressant. Dust suppressants shall be approved by the COR prior to use.

SECTION 13.14--HANDLING AND MANAGEMENT OF ASBESTOS CONTAINING MATERIAL

1. GENERAL: Obtain the appropriate Federal, State, Tribal or local licenses or certifications prior to disturbing any regulated asbestos-containing material. If a building or portion of a building will be demolished or renovated, obtain an Asbestos Notice of and Permit for Demolition and Renovation from the State or Tribal Department of Environmental Quality, Division of Air Quality (or equivalent). The building(s) shall be inspected by a State-Certified or Tribal accepted Asbestos Building Inspector. The inspector shall certify the presence and condition of asbestos, or non-presence of asbestos, on site as directed on the State or Tribal Demolition and Renovation Notice/Permit. The inspections shall be performed and notifications shall be submitted whether asbestos is present or not. Submit a copy of licenses, certifications, Demolition and Renovation Notifications and Permits for asbestos work to the COR 14 days prior to work. Ensure: 1) worker and public safety requirements are fully implemented and 2) proper handling, transportation, and disposal of asbestos containing material.

2. TRANSPORTATION OF ASBESTOS WASTE: Comply with Department of Transportation, Environmental Protection Agency, and State and Local requirements when transporting asbestos wastes.

3. CERTIFICATES OF DISPOSAL AND RECEIPTS: Obtain certificates of disposal for waste if the waste is a hazardous waste or receipts if the waste is a non-hazardous waste. Submit copies to the COR prior to submittal of final invoice.

SECTION 13.15--MATERIAL WITH LEAD-BASED PAINT

1. GENERAL: Comply with all applicable Federal, State and local regulations concerning work with lead-based paint, disposal of material painted with lead-based paint, and management of these materials. OSHA and General Industry Standards apply to worker safety and right-to-know issues. Federal EPA and State agencies regulate waste disposal and air quality issues.

2. TRANSFER OF PROPERTY: If lead-based paint containing equipment or material is to be given away or sold for reuse, scrap, or reclaiming, the contractor shall provide a written notice to the recipient of the material stating that the material contains lead-based paint and the Hazardous Waste regulations may apply to the waste or the paint in some circumstances. The new owner must also be notified that they may be responsible for compliance with OSHA requirements if the material is to be cut, sanded, abraded, or stripped of paint. Submit a copy of lead paint notices with contractor and recipient signatures to the COR prior to submittal of final invoice.

3. CERTIFICATES OF DISPOSAL AND RECEIPTS: Obtain certificates of disposal for waste if the waste is a hazardous waste or receipts if the waste is a non-hazardous waste. Submit copies to the COR prior to submittal of final invoice.

SECTION 13.16--PREVENTION OF WATER POLLUTION

1. GENERAL: Ensure that surface and ground water is protected from pollution caused by construction activities and comply with applicable regulations and requirements. Ensure that streams, waterways and other courses are not obstructed or impaired unless the appropriate Federal, State or local permits have been obtained.

2. PERMITS: Ensure that:

   (1) A National Pollutant Discharge Elimination System (NPDES) permit is obtained from the US Environmental Protection Agency or State as appropriate if the disturbed construction area equals 1 acre or more. Disturbed areas include staging, parking, fueling, stockpiling, and any other construction related activities. Refer to www.epa.gov/npdes/stormwater for directions and forms.

   (2) A dewatering permit is obtained from the appropriate agency if required for construction dewatering activities.

   (3) Copies of permits and plans, approved by the appropriate regulating agencies, are submitted to the COR 14 days prior to start of work.

3. EXCAVATED MATERIAL AND OTHER CONTAMINANT SOURCES: Control runoff from excavated areas and piles of excavated material, construction material or wastes (to include truck washing and concrete wastes), and chemical products such as oil, grease, solvents, fuels, pesticides, and pole treatment compounds. Excavated material or other construction material shall not be stockpiled or deposited near or on streambanks, lake shorelines, ditches, irrigation canals, or other areas where run-off could impact the environment.

4. MANAGEMENT OF WASTE CONCRETE OR WASHING OF CONCRETE TRUCKS: Do not permit the washing of concrete trucks or disposal of excess concrete in any ditch, canal, stream, or other surface water. Concrete wastes shall be disposed in accordance with all Federal, State, and local regulations. Concrete wastes shall not be disposed of on any Western property, right-of-way, or easement; or on any streets, roads, or property without the owner's consent.

5. STREAM CROSSINGS: Crossing of any stream or other waterway shall be done in compliance with Federal, State, and local regulations. Crossing of some waterways may be prohibited by landowners, Federal or State agencies or require permits.

SECTION 13.17--TESTING, DRAINING, REMOVAL, AND DISPOSAL OF OIL-FILLED ELECTRICAL EQUIPMENT

1. SAMPLING AND TESTING OF INSULATING OIL FOR PCB CONTENT: Sample and analyze the oil of electrical equipment (which includes storage tanks) for PCB's. Use analytical methods approved by EPA and applicable State regulations. Decontaminate sampling equipment according to documented good laboratory practices (these can be contractor developed or EPA standards). Use only laboratories approved by Western. The COR will furnish a list of approved laboratories.

2. PCB TEST REPORT: Provide PCB test reports that contain the information below for disposing of oil-filled electrical equipment. Submit the PCB test report prior to draining, removal, or disposal of oil or oil-filled equipment that is designated for disposal.

   - Name and address of the laboratory
   - Description of the electrical equipment (e.g. transformer, breaker)

- Serial number for the electrical equipment.
- Date sampled
- Date tested
- PCB contents in parts per million (ppm)
- Unique identification number of container into which the oil was drained (i.e., number of drum, tank, tanker, etc.)

3. OIL CONTAINING PCB: Comply with the Federal regulations pertaining to PCBs found at Title 40, Part 761 of the U.S. Code of Federal Regulations (40 CFR 761).

4. REMOVAL AND DISPOSAL OF INSULATING OIL AND OIL-FILLED ELECTRICAL EQUIPMENT: Once the PCB content of the oil has been identified from laboratory results, the oil shall be transported and disposed, recycled, or reprocessed according to 40 CFR 761 (if applicable), Resource Conservation and Recovery Act (RCRA) "used oil", and other applicable regulations. Used oil may be transported only by EPA-registered used oil transporters. The oil must be stored in containers that are labeled "Used Oil." Use only transporters and disposal sites approved by Western.

5. OIL AND OIL-FILLED ELECTRICAL EQUIPMENT RECEIPT: Obtain and submit a receipt for oil and oil-filled equipment transported and disposed, recycled, or reprocessed to the COR prior to submittal of final invoice.

SECTION 13.18--REMOVAL OF OIL-CONTAMINATED MATERIAL

1. GENERAL: Removing oil-contaminated material includes excavating, stockpiling, testing, transporting, cleaning, and disposing of these material. Personnel working with PCBs shall be trained in accordance with OSHA requirements. Submit employee training documentation records to the COR 14 days prior to the start of work.

2. CLEANUP WORK MANAGEMENT PLAN: Provide a Cleanup Work Management Plan that has been approved by applicable Federal, State, or Local environmental regulation agencies. Submit the plan to the COR for review and comment 14 days prior to the start of work. Review of the plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State, and Local regulations. The plan shall address on-site excavation of contaminated soil and debris and include the following:

   - Identification of contaminants and areas to be excavated
   - Method of excavation
   - Level of personnel/subcontractor training
   - Safety and health provisions
   - Sampling requirements including quality control, laboratory to be used
   - Management of excavated soils and debris
   - Disposal methods, including transportation to disposal

3. EXCAVATION AND CLEANUP: Comply with the requirements of Title 40, Part 761 of the U.S. Code of Federal Regulations (40 CFR 761).

4. TEMPORARY STOCKPILING: Excavated material, stockpiled on site during construction, shall be stored on heavy plastic and covered to prevent wind and rain erosion at a location designated by the COR.

5. SAMPLING AND TESTING: Sample contaminated debris and areas of excavation to ensure that contamination is removed. Use personnel with experience in sampling and, in particular, with

experience in PCB cleanup if PCBs are involved. Use analytical methods approved by EPA and applicable State regulations.

6. TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL: The Contractor shall be responsible and liable for the proper loading, transportation, and disposal of contaminated material according to Federal, State, and local requirements. Use only transporters and disposal sites approved by Western.

7. POST CLEANUP REPORT: Provide a Post-Cleanup Report that describes the cleanup of contaminated soils and debris. Submit the report to the COR prior to submittal of final invoice. The report shall contain the following information:

   - Site map showing the areas cleaned
   - Description of the operations involved in excavating, storing, sampling, and testing, and disposal
   - Sampling and analysis results including 1) Name and address of the laboratory, 2) sample locations, 3) sample dates, 4) analysis dates, 5) contents of contaminant (e.g. PCB or total petroleum hydrocarbons) in parts per million (ppm)
   - Certification by the Contractor that the cleanup requirements were met
   - Copies of any manifests, bills of lading, and disposal certificates
   - Copies of correspondence with regulatory agencies that support completion of the cleanup

SECTION 13.19—CONSERVATION OF NATURAL RESOURCES

1. GENERAL: Federal law prohibits the “take” of endangered, threatened, proposed or candidate wildlife and plants, and destruction or adverse modification of designated Critical Habitat. Federal law also prohibits the “take” of birds protected by the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. “Take” means to pursue, hunt, shoot, wound, kill, trap, capture or collect a protected animal or any part thereof, or attempt to do any of those things without a permit from U.S. Fish and Wildlife Service. The Contractor will take precautions to avoid harming other wildlife species. Contractor shall restrict all ground disturbing activities to areas that have been surveyed by Western for natural resources and as specified in accordance with Standard 1 – General Requirements, Sections 1.3.1 Rights-of-way and 1.3.2 Access to the Work and Haul Routes.

2. KNOWN OCCURRENCE OF PROTECTED SPECIES OR HABITAT: Following issuance of the notice to proceed, and prior to the start of construction, Western will provide training to all contractor and subcontractor personnel and others involved in the construction activity if there is a known occurrence of protected species or habitat in the construction area. Untrained personnel shall not be allowed in the construction area. Western will provide drawings or maps showing sensitive areas located on or immediately adjacent to the transmission line right-of-way and/or facility. These sensitive areas shall be considered avoidance areas. Prior to any construction activity, the avoidance areas shall be marked on the ground by Western. If access is absolutely necessary, the contractor shall first obtain written permission from the COR, noting that a Western and/or other Federal or state government or tribal agency biologist may be required to accompany personnel and equipment. Ground markings shall be maintained through the duration of the contract. Western will remove the markings during or following final inspection of the project.

3. UNKNOWN OCCURRENCE OF PROTECTED SPECIES OR HABITAT: If evidence of a protected species is found in the project area, the contractor shall immediately notify the COR and provide the location and nature of the findings. The contractor shall stop all activity within 200 feet of the protected species or habitat and not proceed until directed to do so by the COR.

Appendix B

Biological Evaluation

Biological Evaluation

Gila–North Gila Transmission Line Rebuild and Upgrade Project

Prepared for:

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Blanket Purchase Agreement No.: DE-AB65-11WG90286
Task Order No.: 1118-024AG Task 3

May 1, 2013

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Executive Summary

This Biological Evaluation describes biological resources located in the vicinity of the proposed Gila–North Gila Transmission Line Rebuild and Upgrade Project and evaluates potential Project impacts to those resources. The Project location is in Yuma County, Arizona. Two federally listed endangered species, southwestern willow flycatcher and Yuma clapper rail, may occur at or near the Project crossing over the Gila River. Conservation Measures to avoid impacts to these species and their habitats are recommended, including avoidance of Project activities (including vegetation management) at the Gila River crossing during nesting season, and limiting vegetation management at the Gila River crossing to topping of trees that may interfere with transmission lines. With implementation of these Conservation Measures, neither Phase I nor Phase II of the Project would affect southwestern willow flycatcher and Yuma clapper rail. In addition, yellow-billed cuckoos have a minimal likelihood (a candidate for federal listing) of occurring in the same area of the Gila River crossing. With implementation of Conservation Measures, neither Phase I nor Phase II of the Project would affect yellow-billed cuckoo or result in a trend toward federal listing of the species. Suitable habitat for one special-status reptile, the flat-tailed horned lizard, is present in the southern portion of the Phase I Project alignment. Conservation Measures to minimize impacts to this species are provided, including pre-construction clearance surveys to locate and remove them from work areas. Native migratory birds may be found nesting within the Project area. Conservation Measures are included to avoid impacts to active nests. With implementation of recommended Conservation Measures, Project activities would not affect listed or candidate species, and would avoid or minimize potential impacts to other special-status biological resources.

Introduction

This Biological Evaluation was prepared at the direction of Western Area Power Administration Desert Southwest Region (Western) to describe the biological resources located in the vicinity of the proposed Gila–North Gila Transmission Line Rebuild and Upgrade Project (Project), and to evaluate any potential Project impacts to those resources. Aspen biologists reviewed available information on biological resources of the surrounding area and visited the Project alignment to evaluate biological resources and assess habitat suitability for special-status species. This report addresses the potential for occurrence of federally listed threatened or endangered species, as well as species that have been proposed for listing or identified as candidates for listing under the federal Endangered Species Act (ESA), and other special-status plants and animals of the Project vicinity. In addition, this report describes potential Project impacts to those species, and recommends measures to mitigate impacts. This report will support Western's review of the Project under the ESA and the National Environmental Policy Act (NEPA).

Project Description

Western proposes to rebuild and upgrade the existing 4.8 mile Gila–North Gila 69-kilovolt (kV) transmission line and the existing Gila-Knob 161-kV transmission line segment between the Gila and North Gila Substations. Western also proposes to expand its right-of-way (ROW) and grant Arizona Power Service Company (APS) the right to cross Western's Gila Substation with its North Gila–Orchard 230-kV Transmission Line Project.

The Proposed Action is located in Yuma County, Arizona (Figure 1; all figures are included in Attachment 1). The Proposed Action is located on public lands managed by the Bureau of Reclamation (BOR) and the Arizona State Land Department (ASLD), and on private lands. The Gila–North Gila 69-kV relocation would begin at the North Gila Substation and end at the Gila Substation. The Gila-Knob 161-kV rebuild would begin north of the North Gila Substation at Structure 5-2 and end at the Gila Substation interconnection.

The Proposed Action would be completed in conjunction with APS because it involves temporary relocation of Western's existing Gila–North Gila 69-kV circuit to APS's new North Gila–Orchard 230-kV Transmission Line Project structures as an underbuild. Temporary relocation of the existing Gila–North Gila 69-kV circuit would occur concurrently with construction of the APS North Gila–Orchard 230-kV Transmission Line Project. At a later date, Western would rebuild the existing Gila-Knob 161-kV line to 230-kV on new steel structures and permanently move the Gila–North Gila 69-kV conductor from APS structures to the new Gila-Knob structures as an underbuild. An overview of the Proposed Action, including APS's Project, is illustrated in Figure 1.

The Proposed Action is divided into two phases based on timing of activities; each phase is described below.

Phase I would begin in early 2015 and comprises the following:

- Constructing APS's North Gila–Orchard 230-kV Transmission Line Project;
- Relocating the existing Gila–North Gila 69-kV circuit as an underbuild on APS's North Gila–Orchard 230-kV structures where APS and Western ROW are adjacent;
- Dismantling, removing, and recycling the Gila–North Gila wood poles that no longer support the 69-kV circuit;

- Where Western ROW is not adjacent to APS ROW (Gila–North Gila structures 3-8 to 4-5; Figure 1), replacing the conductor on the existing Gila–North Gila wood poles or rebuilding the Gila-Knob line on steel monopoles and placing the Gila–North Gila 69-kV circuit as an underbuild on the new Gila-Knob structures;
- Where Western's Gila–North Gila ROW deviates from the Gila-Knob ROW to enter the North Gila Substation (Gila–North Gila Structure 4-5 to North Gila Substation; Figure 1), replacing the existing Gila–North Gila wood pole structures with new structures; and
- Transferring a portion of the Gila–North Gila ROW to APS and issuing APS the right to cross Western's Gila Substation with its North Gila–Orchard 230-kV Transmission Line Project.
- Issuing a license agreement to APS where APS's North Gila-Orchard 230-kV transmission line ROW would overlap Western's Gila-Sonora 69-kV ROW for an 2.5 mile segment south of the Gila Substation.

Phase II (Full Build-out). Phase II would be implemented when APS requests that Western remove the Gila–North Gila conductors from APS's North Gila–Orchard 230-kV structures.

Phase II comprises the following:

- Acquiring up to an additional 50 feet of ROW adjacent to (west of) the existing Gila-Knob ROW; and
- Removing the existing Gila-Knob 161-kV wood structures, conductor, and associated infrastructure and rebuilding it as a single-circuit 230-kV line on steel monopoles that would be capable of supporting two 230-kV circuits with a single-circuit 69-kV underbuild.

Construction

Ground disturbance from construction activities would occur as a result of removing existing structures, grading areas and drilling holes for new structure placement, improving existing access roads for vehicle and equipment access, and installing/removing conductor and overhead ground wire. These activities would be conducted within Western's existing Gila–North Gila 69-kV and Gila-Knob 161-kV transmission line ROWs and APS's North Gila–Orchard ROW. However, short-term disturbance outside these ROWs would be required for wire pulling and tensioning sites.

Conductor pulling and tensioning sites would be approximately 100 feet wide by 400 feet long within the ROW between structures. At turning structures (where the transmission line turns), conductor pulling and tensioning sites would be approximately 100 feet wide by 300 feet long and may be located partially outside of the ROW. Any conductor pulling or tensioning sites that may occur outside the ROW would require Special Use or Temporary Use Permits, which would be acquired in consultation with the land owner(s).

Temporary disturbance areas for structure installation would be approximately 100 feet in diameter; permanent disturbance required for foundation footprints would be approximately three to six feet in diameter. Excavation up to 30 feet deep would be required to install the foundations. At structures within the Gila River floodplain, reuse of existing island rip/rap around structures or concrete abutment would be utilized to the maximum extent feasible.

Vegetation clearing between structures would not be needed for stringing conductor. The conductor and ground wire would be installed under controlled tension, using powered pulling equipment at one end and powered braking or tensioning equipment at the other end. This keeps the conductor and

ground wire off the ground to avoid damage to both the conductors and underlying vegetation. Western and APS may also use helicopters to string conductor and implosive sleeving to join conductor segments.

No new access roads would be required. If necessary, overland access off existing access roads would occur using rubber tire vehicles. Existing access roads would require improvements to be passable for construction and maintenance vehicles, as some may no longer be useable due to vegetation overgrowth and erosion. Improving existing access roads would involve brush clearing, minor grading, and the installation of corrugated metal pipes to maintain stormwater flows within any ephemeral wash areas. In the area between Levee Road to East County 9th Street South, vegetation would be cleared at existing and new tower locations and to create temporary access to all work areas (refer to Figure 1 for this location).

For existing damaged access roads or roads with existing drainage and erosion problems, surface material lost or worn away would be replaced, then graded and shaped to return the road surface, turnouts, and shoulders to their original condition, or better. Watering could be required to control dust and to retain fine surface rock. Access road repair work would be confined to within 10 feet of either side of the existing access road width.

Restoration would be completed within the ROW following construction and cleanup of each construction phase. Disturbed surfaces would be restored to the original contour. All disturbed soil, other than surfaces intended for permanent access roads, would be seeded with native species free of invasive seed. Where necessary, water diversions (i.e., waterbars) would be constructed along the access roads to control surface water drainage and erosion.

Project activities could use any or all of the following equipment: helicopter, motor grader, bucket truck, bulldozer, backhoe, dozer, front end loader, tractor trailer, crane, flatbed truck, truck or backhoe-mounted auger, crew truck, pickup truck, air compressor, hydro lift, mixer truck, puller, tensioner, reel-stringing trailers, material trucks, and tractor/harrow/disc.

Operation and Maintenance

Western would inspect the Gila–North Gila 69-kV underbuild and the Gila-Knob 230-kV transmission line on a regular basis for maintenance needs. Operation and maintenance activities would include:

- **Vegetation management** would ensure that vegetation does not interfere with human safety, transmission line conductors, structures, other hardware, or impede access to the transmission line for maintenance crews. In general, vegetation maintenance would be performed using a variety of methods including manual methods (hand-controlled, powered, or non-powered tools such as chainsaws and clippers) and mechanical methods (such as heavy-duty mowers).
- **Access road maintenance** would include activities to ensure that access roads are in appropriate condition for all-weather access to transmission lines and structures by maintenance and inspection crews. Access road maintenance could include grading, surfacing, erosion-control measures, installing low water crossings, and constructing water diversions such as rolling drain dips (shallow dip followed by a hump, along with an earthen berm at the edge of one side of the road to provide cross-drainage) and water bars (a ridge that directs water off the road) on existing access roads. A grader would be the primary equipment type used to conduct this work.
- **Transmission line and associated structure, hardware, and equipment maintenance.** This category of activities would include equipment and system maintenance and upgrades, routine aerial and ground patrols of transmission lines and ROWs, and transmission system repairs, as needed.

Certificated Route Alternative

The Certificated Route Alternative is the route approved by the Arizona Corporation Commission for this portion of APS's North Gila–Orchard 230-kV Transmission Line Project. This route would increase the overall length of the North Gila–Orchard 230-kV transmission line by 0.5 mile (to a total of 13.3 miles) by extending eastward around Gila Substation and a date farm (Figure 1).

Methods

Prior to field surveys, Aspen biologist Justin M. Wood reviewed the Arizona On-line Environmental Review Tool (Arizona Game and Fish Department, AGFD 2013a), Arizona Ecological Service's List of Endangered and Threatened Species of Yuma County (USFWS 2013a), and the Arizona Rare Plant Field Guide (Arizona Rare Plant Committee 2001) to identify all federally listed endangered or threatened species as well as candidate species for listing that are known from the Project vicinity.

Aspen biologists Justin Wood and Jared Varonin visited the Project site on February 28 and March 1, 2013 to evaluate biological resources. The site visit included mapping and describing vegetation and habitat, and assessing habitat suitability for special-status species. The Project ROW varies from 100 to 250 feet depending on the location along the alignment (Figure 1). The survey area included the Project ROW, up to a 500 foot radius around each turning structure, and the Gila, North Gila and Orchard substations (Figure 1). All plant and animal species observed in the field were identified and recorded in field notes. Samples of selected plants that were unrecognizable in the field were collected for later identification. They were identified using keys, descriptions, and illustrations in Kearney and Peebles (1951), and applicable volumes of the Flora of North America (FNA 1993+). All species observed in the Project area are listed in Attachment 1.

A reconnaissance-level survey was conducted for special-status species. Biologists Wood and Varonin checked all structures for bird nests and searched for burrowing owl burrows. Following the field visit, Wood digitized vegetation and land use types within the survey area (Figures 2A through 2C) using 1-meter pixel aerial imagery. The minimum mapping unit was approximately 0.10 acre (4,356 square feet). Vegetation was mapped according to the nomenclature and descriptions of Brown (1994). Mapped vegetation boundaries are accurate within roughly 10 feet. Vegetation was mapped within the entire survey area.

Land Use, Vegetation, and Habitat

The Project area is located east of the downtown center of Yuma, Arizona. Elevation of the Project alignment ranges from approximately 155 to 225 feet. The alignment is shown on the Fortuna and Yuma East USGS 7.5 minute topographic quads. A portion of the Project alignment, between the Gila and North Gila substations, is within Reach 6 of the Lower Colorado River Multi-Species Conservation Program area (LCRMSCP 2012). Vegetation in the survey area is a largely agricultural but several natural areas with creosote bush scrub and riparian scrub as also present. The northern portion of the alignment is located within the Gila River Valley and the southern portion is located on the Yuma sand fields. All land uses and vegetation types present in the survey area are described below and the names match those provided in Brown (1994).

- **Creosotebush-White Bursage Scrub**. This vegetation is characterized by two dominant species, creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Other species noted include Schoot's dalea (*Psorothamnus schottii*), burrobrush (*Hymenoclea salsola*) and brittlebush (*Encelia*

farinosa). This vegetation type is found primarily at the northern end of the Project alignment on low rolling hills in the vicinity of the North Gila Substation (Photo 1). This vegetation matches the Creosotebush-White Bursage Series in the Lower Colorado River Valley Subdivision of Sonoran Desertscrub (Brown 1994).

- **Creosotebush-Big Galleta Scrub**. This vegetation is similar to creosote bush scrub described above but grows in fine sandy soils, typical of stabilized sand fields (Photo 2). Creosote bush, dyebush (*Psorothamnus emoryi*), big galleta (*Pleuraphis rigida*), white bursage, and California croton (*Croton californicus*) were the dominant species, along with numerous annual wildflowers. This vegetation matches Creosotebush-Big Galleta Scrub in the Lower Colorado River Valley Subdivision of Sonoran Desertscrub (Brown 1994).
- **Sonoran Riparian Scrubland**. This vegetation is found along the Gila River within the historic flood plain. Within the Project alignment this vegetation is characterized by the presence tamarisk (*Tamarix* sp.), honey mesquite (*Prosopis glandulosa*), big saltbush (*Atriplex lentiformis* ssp. *lentiformis*), and arrowweed (*Pluchea sericea*). This vegetation matches the description of Sonoran Riparian Shrubland (Brown 1994).
- **Sonoran Riparian Deciduous Forest and Woodlands**. This vegetation is found along the Gila River within the historic floodplain, in areas that have not been recently scoured and are in close proximity to ground water. Within the Project alignment a young stand of this vegetation is present along an old secondary channel of the river just south of the current river channel. It is characterized by Fremont cottonwoods (*Populus fremontii*) and willows (*Salix* spp.) that are growing among species listed above for Sonoran Riparian Scrubland. This vegetation matches the description of Sonoran Riparian Deciduous Forest and Woodlands (Brown 1994).
- **Saltbush Scrub**. This vegetation is also found within the historic flood plain of the Gila River. Within the Project alignment it is distinguished from Sonoran Riparian Scrub vegetation by the abundance of dense monotypic stands of big saltbush. This vegetation matches the description of Sonoran Riparian Shrubland (Brown 1994).
- **Freshwater Marsh**. This vegetation is characterized by cattails (*Typha* spp.) which form dense stands of herbaceous vegetation. Within the survey area a single area of marsh vegetation was mapped along the southern margin of the Gila River. During the survey, this vegetation was observed in a roughly ten foot wide band along the river, but the width of marsh vegetation can vary significantly based on river level (at lower river level, the belt of marsh vegetation would be wider). In addition to cattails, western goldentop (*Euthamia occidentalis*) and other herbaceous species were present. This vegetation matches descriptions of Sonoran Interior Marshlands and Submergent Communities in Tropical-subtropical Wetlands (Brown 1994).
- **Agricultural.** The portions of the survey area that are in use for crop production, as orchards, or that have recently been tilled for future plant production are mapped as agricultural. The agricultural lands in the northern portion of the alignment were planted with lettuce, spinach, radishes, and grain crops (i.e., wheat and barley) during our field survey. Agricultural lands in the portion of the Project area near the Orchard Substation are lemon orchards. In the southern portion of the Project area, south of Interstate 8, 1.8 miles of the alignment has been cleared and is being converted from Creosotebush-Big Galleta Scrub to agricultural uses. During our site visit, construction of the new irrigation canals and access roads was underway and a portion of these new fields had been planted with grain crops. In the vicinity of the Gila Substation there are several date farms, which are mapped as agriculture.
- **Developed.** Portions of the Project alignment are within or adjacent to human-dominated land uses, including residential lands, dirt roads, paved highways, irrigation facilities, and Union Pacific Railroad

tracks (formerly Southern Pacific). Vegetation (if present) is dominated by native and non-native ruderal (weedy) species. The railroad tracks cross the Project area just south of the Gila Substation.

- **Tamarisk Scrub**. This vegetation is characterized by tamarisk as the dominant species. It was mapped at two locations: windrows parallel to the railroad tracks, and the Gila River floodplain. The windrows are densely vegetated and are dominated by non-native five-stamen tamarisk (*Tamarix chinensis*) and oleander (*Nerium oleander*). Tamarisk Scrub within the Gila River floodplain is sparse, also dominated by five-stamen tamarisk and possibly other tamarisk species. This vegetation matches the description of Sonoran Riparian Shrubland (Brown 1994).
- **Open Water**. Open water is mapped where the alignment crosses the Gila River, Yuma Lake, and the numerous irrigation canals.

Species Identification

Aspen biologist Justin M. Wood reviewed the Arizona On-line Environmental Review Tool (Arizona Game and Fish Department, AGFD 2013a), Arizona Ecological Service's List of Endangered and Threatened Species of Yuma County (USFWS 2013a), the Arizona Rare Plant Field Guide (Arizona Rare Plant Committee 2001) to identify special-status species of the Project vicinity. All special-status species identified by this literature review are included in Table 1. Table 2 evaluates Project impacts to those species that may occur in the Project area and provides a rationale for exclusion of those species that are not discussed further in the report.

Table 1. Special-status Species of Southwest Yuma County

Species Name	Habitat Requirements	Activity Season	Conservation Status	Potential to Occur
FEDERALLY LISTED AND CANDIDATE SPECIES				
Desert tortoise – Sonoran population *Gopherus agassizii* (*Xerobates agassizi*)	Sonoran desert scrub on rocky substrates; Colorado River through southwestern Arizona and Sonora, Mexico	Spring–Summer	Fed ESA: **Cand.** AZ: SC	None; outside known range, poor habitat, and isolated from occupied habitat by irrigation canals
Lesser long-nosed bat *Leptonycteris curasoae yerbabuenae*	South-central Arizona, to southern New Mexico and through arid Mexico, incl. Baja Calif.; migratory (winters in Mexico); feeds on fruit and nectar of agaves and columnar cacti; roosts in caves and mines	Spring–Summer	Fed ESA: **END** AZ: SC	None; no suitable roosting habitat or food plants present

Table 1. Special-status Species of Southwest Yuma County

Species Name	Habitat Requirements	Activity Season	Conservation Status	Potential to Occur
Razorback sucker *Xyrauchen texanus*	Colorado River from the Mexico border north through much of the upper watershed; riverine and lake habitats	Year-around	Fed ESA: **END** AZ: SC	None; historically suitable habitat but now considered extirpated from lower Colorado and Gila Rivers (ADGF 2013b)
Sonoran pronghorn antelope *Antilocapra americana sonoriensis*	Desert scrub, primarily in creosote bush-white bursage vegetation in broad desert valleys of southern Arizona and northern Sonora, Mexico.	Year-around	Fed ESA: **END** AZ: SC	None; within historic range but now limited to very few locations, including within the Barry M. Goldwater Gunnery Range over 25 miles to the east (ADGF 2013b).
Southwestern willow flycatcher *Empidonax traillii extimus*	Breeds in dense riparian forests & shrublands, esp. in willows; scattered locations in Arizona, California, and N Baja; near sea level to about 8000 ft. elev; winters in Central America	Summer	Fed ESA: **END** AZ: SC	Moderate; marginally suitable habitat at Gila River crossing; known from the Project vicinity
Sprague's pipit *Anthus spragueii*	Breeds in N-central US and Canada; winters below 5,000 ft. elev., Mexico, Texas, SE Arizona grasslands; occasionally observed elsewhere	Winter	Fed ESA: **Cand.** AZ: SC	Minimal; no suitable wintering habitat
Yellow-billed cuckoo *Coccyzus americanus*	Large patches of riparian forest and woodland, usually near surface water; historically common in floodplain habitats	Spring–Summer	Fed ESA: **Cand.** AZ: SC	Minimal; no suitable habitat at Gila River crossing; known from the Project vicinity
Yuma clapper rail *Rallus longirostris yumaensis*	Marshlands along the lower Colorado River and tributaries in Arizona, California, Nevada, and Utah	Spring–Summer	Fed ESA: **END** AZ: SC	Moderate; marginally suitable habitat at Gila River crossing; known from the Project vicinity
OTHER SPECIAL-STATUS SPECIES				

Table 1. Special-status Species of Southwest Yuma County

Species Name	Habitat Requirements	Activity Season	Conservation Status	Potential to Occur
Bald eagle *Haliaeetus leucocephalus*	Breeds in large trees, usually near major rivers or lakes; winters more widely; scattered distribution in North America including resident Sonoran Desert population	Year-around	Fed: **BGEPA** AZ: none	Minimal (infrequent foraging only); potential foraging habitat present throughout
Flat-tailed horned lizard *Phrynosoma mcallii*	Sandy desert washes, flats, and dunes; SW Arizona, SE Calif., and adjacent Sonora and Baja Calif, (Mexico)	Warm seasons	Fed: none, managed by ICC AZ: SC	Moderate; suitable habitat present in remaining sandy desert shrubland substrates, S portion of alignment
Golden eagle *Aquila chrysaetos*	Nests in remote trees and cliffs; forages over shrublands and grass-lands; breeds throughout western North America, winters to east coast	Year-around	Fed: **BGEPA** AZ: none	Moderate (infrequent foraging only); suitable habitat present throughout

General References (wildlife): American Ornithologists Union 1998; 1999; Gannon 2003; Harvey et al. 2011; Moyle 2002; Rosenberg et al. 1991; Brennan and Holycross 2006; Stebbins 2003; Wilson and Ruff 1999.

Conservation Status
Federal designations: (federal Endangered Species Act, US Fish and Wildlife Service).
END: Federally listed, endangered.
THR: Federally listed, threatened.
Cand.: Candidate, Sufficient data are available to support federal listing, but not yet listed.
Federal designations: (federal Bald and Golden Eagle Protection Act, US Fish and Wildlife Service).
BGEPA: Bald and Golden Eagle Protection Act.
Arizona designations: (Arizona Dept. of Game and Fish)
SC: Arizona Wildlife of Special Concern. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines
***Arizona designations*: (**Arizona Department of Agriculture)
HS: Highly Safeguarded. No collection allowed.
SR: Salvage Restricted. Collection only with permit.
ER: Export Restricted. Transport out of State prohibited.
SA: Salvage Assessed. Permits required to remove live trees.
HR: Harvest Restricted. Permits required to move plant or byproducts.

Definitions of occurrence probability
None = No suitable habitat on the site, or well outside the species known elevation or geographic ranges.
Minimal = Site is within the known range of the species and habitat on the site is a type occasionally used.
Moderate = Habitat is a type often utilized by the species and the site is within the known range of the species.
High = Observed on the site by qualified biologists or very likely present during at least a portion of the year.

Table 2. Special-status Species Potentially Occurring in Project Area

Species Name	Conservation Status	Potential for Occurrence
FEDERALLY LISTED AND CANDIDATE SPECIES		
Southwestern willow flycatcher *Empidonax traillii extimus*	Fed ESA: **END**	Moderate. See text in Special-Status Species Evaluations section.
Sprague's pipit *Anthus spragueii*	Fed ESA: **Cand.**	Minimal; margin of geographic range, and only marginal wintering habitat present in survey area; several wintering records from the Yuma area, but wintering habitat primarily is grasslands and pastures; rarely fallow cropland (USFWS 2010a); impacts to wintering habitat would be negligible and Sprague's pipit, if present, would be expected to move slightly away from Project work sites; the Project would not result in a trend towards federal listing.
Yellow-billed cuckoo Coccyzus americanus	Fed ESA: **Cand.**	Minimal. See text in Special-Status Species Evaluations section.
Yuma clapper rail *Rallus longirostris yumaensis*	Fed ESA: **END**	Moderate. See text in Special-Status Species Evaluations section.
OTHER SPECIAL-STATUS SPECIES		
Bald eagle *Haliaeetus leucocephalus*	Fed: **BGEPA** AZ: SC	Minimal. See text in Special-Status Species Evaluation section.
Flat-tailed horned lizard *Phrynosoma mcallii*	Fed: none, managed by ICC AZ: SC	Moderate. See text in Special-Status Species Evaluations section.
Golden eagle *Aquila chrysaetos*	Fed: **BGEPA** AZ: none	Moderate. See text in Special-Status Species Evaluations section.

Special-Status Species Evaluations

Listed Threatened or Endangered Species

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Life History: The southwestern willow flycatcher is listed as endangered under the federal ESA. It is a small migratory bird of riparian habitats. It nests in dense riparian forests, woodlands, or shrublands, usually near surface water or saturated soils. The vegetation canopy in these suitable nesting habitats is usually at least three meters tall (Sogge et al. 2010). It establishes nesting territories, builds nests, and forages where mosaics of relatively dense and expansive growths of trees and shrubs are established, near or adjacent to surface water or underlain by saturated soil (Sogge et al. 2010). Southwestern willow flycatcher nesting habitat can persist on intermittent (ephemeral) streams where riparian vegetation is

present (USFWS 2002). At lower elevations, its preferred nesting habitat is mature cottonwood (*Populus fremontii)* and willow (*Salix gooddingii)* forest along still or slow-flowing watercourses; they also may be found in tamarisk thickets (Suckling et al. 1992, ADGF 2013c).

The southwestern willow flycatcher is insectivorous, foraging on flying insects in habitat surrounding its nest sites, including riparian habitats that may be unsuitable for nesting. It typically forages along the external edges or internal openings within suitable habitat patchs, or at the top of the canopy where it sallies for flying insects (Sogge et al. 2010). Its breeding season is late April through September. The primary threats are loss and degradation of riparian habitats, and nest parasitism by brown-headed cowbirds. Human disturbances at nesting sites may result in nest abandonment.

The USFWS designated critical habitat for the southwestern willow flycatcher in 2005 and revised the critical habitat designation in 2013 (USFWS 2005; 2013b). The Project area is not within critical habitat, and the nearest critical habitat is the Bill Williams Management Unit more than 100 miles to the north of the Project (USFWS 2013b).

Survey Results: Aspen biologists did not observe southwestern willow flycatcher during field surveys, but did not conduct focused surveys for this species. Southwestern willow flycatchers were documented on four separate occasions during the 2011 breeding season near Gila Monster Pond, roughly 0.4 miles downstream of the survey area (Ebird.org 2013a), and several were documented at Fortuna Pond, roughly 0.8 miles upstream of the survey area in June 2011 (Ebird.org 2013b).

Habitat Evaluation and Suitability: Riparian habitat along the Gila River within the Project area is primarily dense and nearly impenetrable riparian scrub that lacks a significant overhead canopy (Photo 3). However there are several patches of taller riparian vegetation within the Project area. Its height varies considerably, averaging approximately fifteen to twenty feet. These areas are mapped as Sonoran Riparian Deciduous Forest and Woodland and Sonoran Riparian Scrubland (Figure 2A). They match the descriptions of nesting habitat in Sogge et al. (2010) and are suitable as foraging habitat for any southwestern willow flycatchers that may nest nearby. Aerial imagery indicates that the riparian vegetation extends several miles both upstream and downstream of the Project area.

Analysis and Determination of Effects: Project activities within or adjacent to the Gila River crossing could affect southwestern willow flycatcher or its habitat. The Project, including both Phases I and II, may require some vegetation clearing along the existing access road to the two structures directly north of the Gila River (Photo 5). If Project construction takes place during nesting season, and if southwestern willow flycatchers are present in the vicinity during construction, then noise and disturbance (e.g., vehicles, compressors, welders, generators, helicopters, implosive sleeving) could cause nest abandonment or altered behavior and subsequent nest failure. In addition, vegetation management activities at the Gila River crossing could degrade nesting or foraging habitat and, if conducted during nesting season and flycatchers are present, could result in nest abandonment or injury or mortality of southwestern willow flycatcher eggs or nestlings. Conservation Measures below would avoid impacts to southwestern willow flycatcher by avoiding construction activity at the Gila River crossing within the nesting season, and by avoiding vegetation management activities that would damage or degrade suitable nesting or foraging habitat.

Cumulative effects are those effects of future nonfederal actions that are reasonably certain to occur in the Project area. Nonfederal actions that may be planned in the Project vicinity could contribute to cumulative effects to southwestern willow flycatcher. However, the proposed Project with the implementation of Conservation Measures described herein would not affect southwestern willow flycatcher and, therefore, would not contribute to any cumulative effects.

With implementation of Conservation Measures (below), the Project will not affect the southwestern willow flycatcher or its habitat.

Yuma clapper rail (*Rallus longirostris yumaensis*)

Life History: The Yuma clapper rail is listed as endangered under the federal ESA. It is an extremely secretive bird that is not frequently encountered. It nests along the Colorado and Gila Rivers in freshwater marshes typically dominated by cattail and bulrush, generally in backwaters or impoundments behind small dams (USFWS 2009). It is not migratory, but may disperse from nesting areas after breeding, and may be found within its range year-around. Yuma clapper rail habitat is typically a mosaic of vegetated areas interspersed with shallow (less than 12 inches) open water (USFWS 2009). It requires large patches of marsh habitat. Outside of the breeding season its home range averages from 17 to 20 acres, but during nesting the home ranges are reduced to 0.29 to 9.5 acres (USFWS 2009). In addition to marsh habitat it requires a band of riparian vegetation to provide cover on the higher ground along the fringes of the marsh (Eddleman 1989, USFWS 2009). The USFWS has not designated critical habitat for Yuma clapper rail.

Survey Results: Aspen biologists did not observe Yuma clapper rail during field surveys, but did not conduct focused surveys for this species. Yuma clapper rails were documented on four separate occasions during the 2011 breeding season near Gila Monster Pond, roughly 0.4 miles downstream of the survey area (Ebird.org 2013a) and one was observed in July 2011 at Fortuna Pond, roughly 0.8 miles upstream of the survey area (Ebird.org 2013b).

Habitat Evaluation and Suitability: There is a small band of freshwater marsh habitat in the Project area along the margin of the Gila River (Photo 4). The marsh vegetation is approximately ten feet wide and extends both upstream and downstream of the project area. Aerial imagery indicates that this habitat is partially contiguous to adjacent marsh habitat extending at least several hundred feet upstream and downstream. The river within the survey area appears to be relatively deep but shallower sand bar areas were observed during our field surveys and are clearly visible on aerial imagery of the Project area. The adjacent band of riparian vegetation is dense and extensive, as described above. Due to its narrow width, the marsh habitat at the Gila River crossing has low or minimal potential to support nesting Yuma clapper rails. It is however contiguous with habitat upstream and downstream, and Yuma clapper rails occur in the vicinity. This habitat may serve as foraging or dispersal habitat outside the nesting season, or as foraging habitat during nesting season if Yuma clapper rails nest nearby.

Analysis and Determination of Effects: Project activities within or adjacent to the Gila River crossing could affect Yuma clapper rail or its habitat. The Project, including both Phases I and II, may require some vegetation clearing along the existing access road to the two structures directly north of the Gila River. If Project construction takes place during nesting season, and if Yuma clapper rails are present in the vicinity during construction, then noise and disturbance (e.g., vehicles, compressors, welders, generators, helicopters, implosive sleeving) could cause nest abandonment or altered behavior and subsequent nest failure. In addition, vegetation management activities at the Gila River crossing could degrade nesting or foraging habitat and, if conducted during nesting season, could result in nest abandonment or injury or mortality of Yuma clapper rail eggs or nestlings. Conservation Measures below would avoid nesting season impacts to Yuma clapper rail by avoiding construction activity at the Gila River crossing within the nesting season restricting certain vegetation management activities.

Project-related noise and other construction activities at the Gila River crossing outside the nesting season could affect Yuma clapper rail foraging or dispersal habitat suitability. However, there is an extensive swath of similar foraging and dispersal habitat available upstream and downstream of the

Project alignment, and any Yuma clapper rails present in the vicinity during Project activities would be able to move away from the disturbance.

Nonfederal actions that may be planned in the Project vicinity could contribute to cumulative effects to Yuma clapper rails. However, the proposed Project with the implementation of Conservation Measures described herein would not affect Yuma clapper rails and, therefore, would not contribute to any cumulative effects.

With implementation of Conservation Measures (below) there would be no direct Project effects to Yuma clapper rail or its habitat. Potential effects of noise and disturbance outside the breeding season may cause insignificant and discountable effects to wintering or dispersing clapper rails.

Candidate Species for Listing as Threatened or Endangered

Yellow-billed cuckoo (*Coccyzus americanus*)

Life History: The yellow-billed cuckoo is proposed for listing under the federal ESA. It nests in mature cottonwood-willow stands with an understory of dense vegetation, especially near water (ADGF 2013b). In the desert Southwest, nesting habitat is invariably riparian woodlands, particularly those with an intact (i.e., ungrazed) understory. This species also occasionally nests in prune, English walnut, and almond orchards (Laymon 1998) and other riparian-associated woodlands including tamarisk (Wiggins 2005, ADGF 2013b). It forages primarily on flying insects by gleaning or sallying (Laymon 1998). They typically forage in the canopy of cottonwood woodlands and in the dense understory vegetation (Laymon 1998).

Survey Results: Aspen biologists did not observe yellow-billed cuckoo during field surveys, but did not conduct focused surveys for this species. Yellow-billed cuckoos have been documented within five miles of the Project area along the Colorado River, just upstream of the confluence with the Gila River (LCRMSCP 2012). Based on a review of aerial imagery and observations while in the field suitable nesting habitat is present near Gila Monster Pond, roughly 0.4 miles downstream of the Project area and along the Gila River roughly 0.25 miles upstream of the Project area.

Habitat Evaluation and Suitability: The Sonoran Riparian Deciduous Forest and Woodland at the Gila River crossing is relatively young by comparison with typical nesting habitat. The vegetation within the Project area, including the Sonoran Riparian Scrubland and the Sonoran Riparian Deciduous Forest and Woodland has minimal potential to support nesting or foraging yellow-billed cuckoos because it lacks a mature over story of cottonwoods (Photo 3). Yellow-billed cuckoos may nest in the mature cottonwood habitat upstream and downstream of the Project area and likely migrate through the Project area seasonally.

Analysis and Determination of Effects: Project activities within or adjacent to the Gila River crossing are not expected to affect yellow-billed cuckoos. Conservation Measures below would avoid impacts to migrating birds by avoiding construction activity at the Gila River crossing within the nesting season, and by avoiding vegetation management activities that would damage or degrade the riparian habitat.

Nonfederal actions that may be planned in the Project vicinity could contribute to cumulative effects to yellow-billed cuckoo. However, the proposed Project with the implementation of Conservation Measures described herein would not affect yellow-billed cuckoo and, therefore, would not contribute to any cumulative effects.

With implementation of Conservation Measures (below), the Project will not affect the yellow-billed cuckoo or its habitat.

Species Protected Under the Federal Bald and Golden Eagle Protection Act

Under the federal Bald and Golden Eagle Protection Act, the USFWS regulates activities that may take bald or golden eagles. Take is defined as "pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, and disturbing" bald or golden eagles, and as activities causing: "(1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (USFWS 2007).

Bald eagle (*Haliaeetus leucocephalus*)

Bald eagles are year-around residents throughout most of their range in central Arizona. In recent years they have expanded their breeding range in Arizona and in 2012 they nested at the Bill Williams National Wildlife Refuge, Topock Marsh, and Alamo Lake all more than 100 miles north of the Project area (ADGF 2012). Bald eagles are seen regularly in the Colorado River Valley during winter. The Project will not affect nesting bald eagles or foraging habitat within foraging range of potential nest sites. However, bald eagles forage more widely during winter. Potential upland foraging habitat is present throughout the survey area, and aquatic habitat at the Gila River crossing could serve as bald eagle foraging habitat. Project construction would not cause long-term adverse effects to winter foraging habitat but may temporarily cause bald eagles to avoid work areas due to noise and other construction activities. Any effects to foraging behavior would be negligible and temporary.

Golden eagle (*Aquila chrysaetos*)

Golden eagles are year-around residents throughout most of their range in the western United States. In the Southwest, they are more common during winter months. They breed from late January through August (Pagel et al. 2010). In the desert, they generally nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs or large trees as cover. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to eggs or young at their nests.

The nearest known golden eagle nest site is 40 miles north northwest of the Project area, in the vicinity of Palo Verde Peak (Bloom 2012). No suitable nesting habitat was observed in the immediate vicinity of the Project area but suitable nesting habitat is present within 15 miles, near Muggings' Peak, east of the Project alignment. Due to the distance from known or suitable nest sites, nesting golden eagles are unlikely to forage in the Project vicinity. Wintering golden eagles, or unmated golden eagles in nesting season, are likely to forage occasionally in the Project vicinity. The proposed Project activities may cause these golden eagles to avoid work areas due to noise and other construction activities. Any effects to foraging behavior would be negligible and temporary.

Species Protected Under the Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) prohibits take of any migratory bird, including active nests, except as permitted by regulation (e.g., waterfowl or upland game bird hunting). The MBTA broadly defines "migratory bird" as "any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle" and thus applies to most native

bird species. Most of these species have no other special conservation status as defined in Tables 1 and 2.

Some power lines present collision or electrocution risk to native birds, including some special-status birds. Songbirds and waterfowl have a lower potential for collisions than larger birds, such as raptors. Songbirds and waterfowl tend to fly under power lines, while larger species generally fly over lines and risk colliding with higher static lines (APLIC 2012). Large raptors including golden eagles, bald eagle, red-tailed hawks, prairie falcons, and other large aerial perching birds such as turkey vultures, are susceptible to electrocution on power lines because of their large size and proclivity to perch on tall structures. Structure design is a major factor in causing or preventing raptor electrocutions. Electrocution occurs when a perching bird simultaneously contacts two energized or grounded conductors or an energized conductor and grounded hardware. This happens most frequently when a bird attempts to perch on a structure with insufficient clearance between the conductors or grounds. The majority of raptor electrocutions are caused by distribution lines and relatively small transmission lines, energized at voltage levels between 1-kV and 69-kV. Higher voltage transmission lines are built with wider spacing between the conductors and grounds, and present reduced threat of electrocution. Electrocution can occur when horizontal separation is less than the wrist-to-wrist (flesh-to-flesh) distance of a bird's wingspan or where vertical separation is less than a bird's length from head to foot.

The largest bird that is likely to come in contact with the Project transmission lines is the golden eagle (wingspan to 7.5 feet; wrist-to-wrist length of 3.5 feet; height to 2.2 feet). The Avian Power Line Interaction Committee (APLIC 2006) guidelines recommend 60 inch separations between energized conductors or hardware and grounded conductors or hardware to protect eagles and other birds of the area (e.g., red-tailed hawk, turkey vulture) from electrocution.

The Project would not increase the number of transmission lines or structures along the Project alignment, and would be likely to decrease overall electrocution due to the increased conductor diameter, increased spacing between towers, and the increased spacing between conductors. Conservation Measures include a recommendation to implement APLIC construction guidelines to minimize potential electrocution risk.

During Aspen's field survey, one active red-tailed hawk nest was observed in a communication tower within the Gila Substation (Photo 7, Figure 2B). Project activities may disturb this or other nesting birds or remove nests on transmission line structures or in adjacent habitats (if present), or damage nests of ground-nesting species (e.g., burrowing owl) that might nest in construction sites or staging areas. Any potential impacts to nesting birds can be avoided by scheduling construction outside of the breeding season or implementing nest avoidance measures (see Conservation Measures).

Other Special-Status Species

Flat-tailed horned lizard (*Phrynosoma mcallii*)

The flat-tailed horned lizard is managed according to an interagency conservation plan (Flat-tailed Horned Lizard Interagency Coordinating Committee; ICC 2003) to prevent the need for future listing as threatened or endangered. It is known from eastern California, western Yuma County, Arizona, and south into Mexico. Its range in Arizona is restricted to the southwestern corner of the state, essentially west of the Gila Mountains and south of Interstate 8 (AGFD 2012c, ICC 2003). It occupies a variety of habitats that include sand dunes, sand fields, sandy washes, and creosote bush scrub with gravelly soils. In Arizona it has been correlated with the presence of big galleta grass which may be an important vegetation component of its habitat (Rorabaugh et al. 1987). It hibernates from mid-November through

mid-February (Muth and Fisher 1992). It has been documented hibernating at an average depth of 6 cm (Grant 2005). Urbanization decreases flat-tailed horn lizard populations due to vehicle route proliferation, increased OHV use, spread of non-native vegetation, trash accumulation, and increased predation from common ravens, American kestrels, domestic dogs and domestic cats (Bolster and Nicol 1989; Barrows 2002; ICC 2003). Hibernating flat-tailed horned lizards have been shown to be protected from the direct impacts from OHVs by overlying sand (Grant 2005). Roads have a significant negative impact on flat-tailed horned lizard populations within 0.10 to 0.15 miles of the road and function as a partial barrier to movement (Young and Young 2000; Barrows 2002; ICC 2003).

The Project alignment is located near the northern margin of the flat-tailed horned lizard range (ICC 2003). The nearest known occupied habitat is on the Barry M. Goldwater Air Force Range, within one mile south-southeast of the Project alignment (ICC 2003). The ICC designates a series of management areas where Project activities are regulated to avoid or mitigate potential impacts to flat-tailed horned lizards. The southern terminus of the Project alignment is within 0.5 mile of the nearest designated management area (the Yuma Desert Management Area, ICC 2003). Project activities would not affect designated flat-tailed horned lizard management areas.

Flat-tailed horned lizards were not detected during Aspen's reconnaissance-level survey of the alignment; however, suitable sandy habitat, covered by Creosotebush-Big Galleta Scrub, is present on the southern portion of the Project alignment intermittently between the Gila and Orchard substations (Photo 2, Figures 2B-2C) and flat-tailed horned lizards have been documented at numerous locations in the immediate vicinity of the alignment (AGFD 2013). Some of this habitat has been fragmented by highway construction, recent land use conversion to agriculture, and residential development (Photo 6). In addition, much of this habitat is partially isolated from more extensive habitat areas, present roughly 0.5 miles to the south and east, by residential development and paved roads. This suitable habitat within the Project area is not on federal land (Figure 1), and is not subject to mitigation or conservation policies of the ICC.

The Project may cause injury or mortality to flat-tailed horned lizards by vehicle strike or other damage by equipment if they are present in a work area or access route. Impacts during hibernation should be limited by the hibernating depths of the flat-tailed horned lizards and their ability to withstand some vehicle traffic. Implementation of the recommended Conservation Measures, which require pre-construction surveys and species relocation during their activity season, would minimize these potential impacts and the Project would not result in a trend toward federal listing or loss of population viability. Indirect impacts such as noise and disturbance could cause flat-tailed horned lizards to temporarily avoid the work areas, but would not affect populations. Sandy habitat at project work sites would recover to pre-construction conditions without additional restoration measures.

Conservation Measures

Aspen makes the following recommendations to minimize adverse Project impacts to biological resources. Conservation Measures apply to Phase I and Phase II of the Project unless otherwise noted.

1. *Limit disturbance area:* At all proposed work areas, limit the mechanical disturbance of previously undisturbed desert shrubland habitat (including soils) to the greatest extent practicable.

2. *Pre-construction Clearance Surveys:* Due to the possibility that special-status reptiles, burrowing owl, or other native nesting birds may be found at work sites, Western will assign a qualified biologist to the Project, to conduct pre-construction clearance surveys for burrowing owls (year-around), nesting birds (at work sites where Project activities are scheduled from March 1 through

September 15), and special-status reptiles, as described in Conservation Measures below. The biologist may perform monitoring on-site during construction activities as needed, to ensure minimization of impacts to special-status species and other biological resources. The biologist'sresponsibilities will include, but will not be limited to (1) inspection of locations of special-status reptiles or active bird nests that were located during the pre-construction survey (see below); (2) monitoring potential activity of these species in the Project area; and (3) regular inspection of the work areas, and other areas related to Project activities, for those species. The biologist will be authorized by Western to temporarily halt construction activity if needed to prevent potential harm to these species. The work supervisor will coordinate with the biologist on planned or ongoing activities and any specific preconstruction survey or monitoring requirements for each activity in those areas.

3. *Gila River Crossing:* All work at the Gila River crossing (Figure 2A), including implosive sleeving and helicopter overflights, will take place between September 16 and February 28, outside of the nesting season for southwestern willow flycatcher, Yuma clapper rail, and western yellow-billed cuckoo. In addition, any vegetation management at the Gila River crossing will be scheduled to avoid the bird nesting season (i.e., work will take place only between September 16 and February 28) and vegetation cutting or clearing will avoid marsh habitat, and will be limited only to removing trees that may be tall enough to cause safety issues relative to the transmission line conductors.

4. *Migratory nesting birds:* Project activities conducted during the breeding season, March 1 through September 15, will take place only after a qualified biologist has surveyed the work area for active bird nests. Preconstruction surveys will be conducted no more than 7 days in advance of any ground- or vegetation-disturbing activities in any location. Project activities may not disturb an active bird nest. If an active bird nest is located on or adjacent to the site, the qualified biologist will designate and flag an appropriate buffer area around the nest where activities will not be permitted. The buffer area will be based on the bird species and nature of Project activity. Project activities outside of the breeding season would require no nesting bird surveys.

6. *Yuma sand fields:* All work in native habitats, south of East 32nd Street (Figure 2C) that takes place between February 15 and November 15 will be surveyed by a qualified biologist prior to any ground disturbing activities to minimize impacts to flat-tailed horned lizards. If flat-tailed horned lizards are present, the qualified biologist will attempt to move them out of harm's way; if they cannot be moved, Project schedule or activities will be modified as feasible to avoid direct impacts to these species. This minimization measure will not apply to Phase II due to absence of suitable habitat within work areas to be affected by Phase II.

7. *Worker training*: Western will conduct employee training to ensure that all workers on the Project site (including contractors) are aware of all applicable Conservation Measures for biological resources. Specifically, workers will be required to (1) limit all activities to approved work areas; (2) report any bird nest observation in the work areas and access routes to the supervisor or on-site biologist; (3) avoid contact with any wildlife that may approach a work area and be aware of potential venomous reptile bites from carelessness or unnecessary harassment; (4) pick up and properly dispose of any food, trash or construction refuse; and (5) report any spilled materials (oil, fuel, solvent, engine coolant, raw concrete, or other material potentially hazardous to wildlife), to the supervisor or on-site biologist. During the training the instructor will briefly discuss special-status species that may occur in the work areas, their habitats, and requirements to avoid or minimize impacts. In addition, all workers will be informed of civil and criminal penalties for violations of the federal ESA, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act.

8. *Animals*: No pets will be permitted on the work site. Workers will not be permitted to feed, harm, approach, harass, or handle wildlife at any time, except to move animals out of harm's way, and only as directed by a supervisor. This condition will not exempt workers, including the biologist, from any Western safety policy with regard to venomous reptiles.

9. *Conform to APLIC design guidelines:* In order to minimize any potential electrocution hazard for golden eagles or other large birds, energized and ground conductors and hardware will be separated by 60 inches or more, or will be covered.

10. *Trash, refuse, concrete, and other materials*: All trash and food materials will be properly contained within vehicles or closed refuse bins while on the site, and will regularly be removed from the site (at least on a weekly basis) for proper disposal. All construction refuse will be removed from each work site upon completion of construction. No raw cement, concrete or washings thereof, asphalt, paint, oil, solvents, or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, shall be disposed of on-site or allowed to spill onto soil. Cleanup of any spilled material shall begin immediately.

11. *Minimize standing water*: Within desert shrubland habitat, water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards, to prevent the formation of puddles, which could attract wildlife to construction sites. The qualified biologist shall patrol these areas to ensure water does not puddle and shall take appropriate action to reduce water application where necessary.

12. *Speed limit:* To minimize potential impacts to special-status wildlife, no vehicles will be permitted to exceed 25 mph while traveling on access roads.

Determination

With implementation of Conservation Measures above, neither Phase I nor Phase II of the Project would affect southwestern willow flycatcher or Yuma clapper rail.

With implementation of Conservation Measures above, neither Phase I nor Phase II of the Project would affect yellow-billed cuckoo or result in a trend toward federal listing of the species.

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Exhibit 1: Photos of Project Area

Photo 1: East-facing view towards the Gila North Substation from Gila-Knob 5-1, showing typical vegetation of the area. Photo taken on February 28, 2013.

Photo 2: North-facing view of fine wind-blown sands present within the Creosotebush-Big Galleta Scrub vegetation type. Photo was taken on March 1, 2013 along the future alignment of the Gila-Orchard transmission line.

Photo 3: South-facing view of the riparian habitat within the Gila River drainage, note the immature cottonwoods rising above the surrounding vegetation in the distance. Photo taken from Gila-North Gila structure 2-7 on February 28, 2013.

Photo 4: A patch of freshwater marsh along the southern margin of the Gila River within the Project area, taken from Gila-North Gila structure 2-7 on February 28, 2013.

Photo 5: Southwest-facing view of riparian habitat adjacent to the existing access road to Gila-North Gila structure 2-7 and Gila-Knob structure 2-7, to be trimmed for construction access. Photo date: February 28, 2013.

Photo 6: Northeast-facing view of the recently converted agricultural land that was recently seeded with a crop grain. Photo was taken on March 1, 2013 along the future alignment of the Gila-Orchard transmission line.

Photo 7: North-facing view of an active red-tailed hawk nest in a communication tower at the Gila Substation. Photo date: March 1, 2013.

Photo 8: West-facing view of the proposed Orchard Substation location; note the large citrus trees. Photo date: March 1, 2013.

Attachment 1 - Observed Species List

Observed Species List

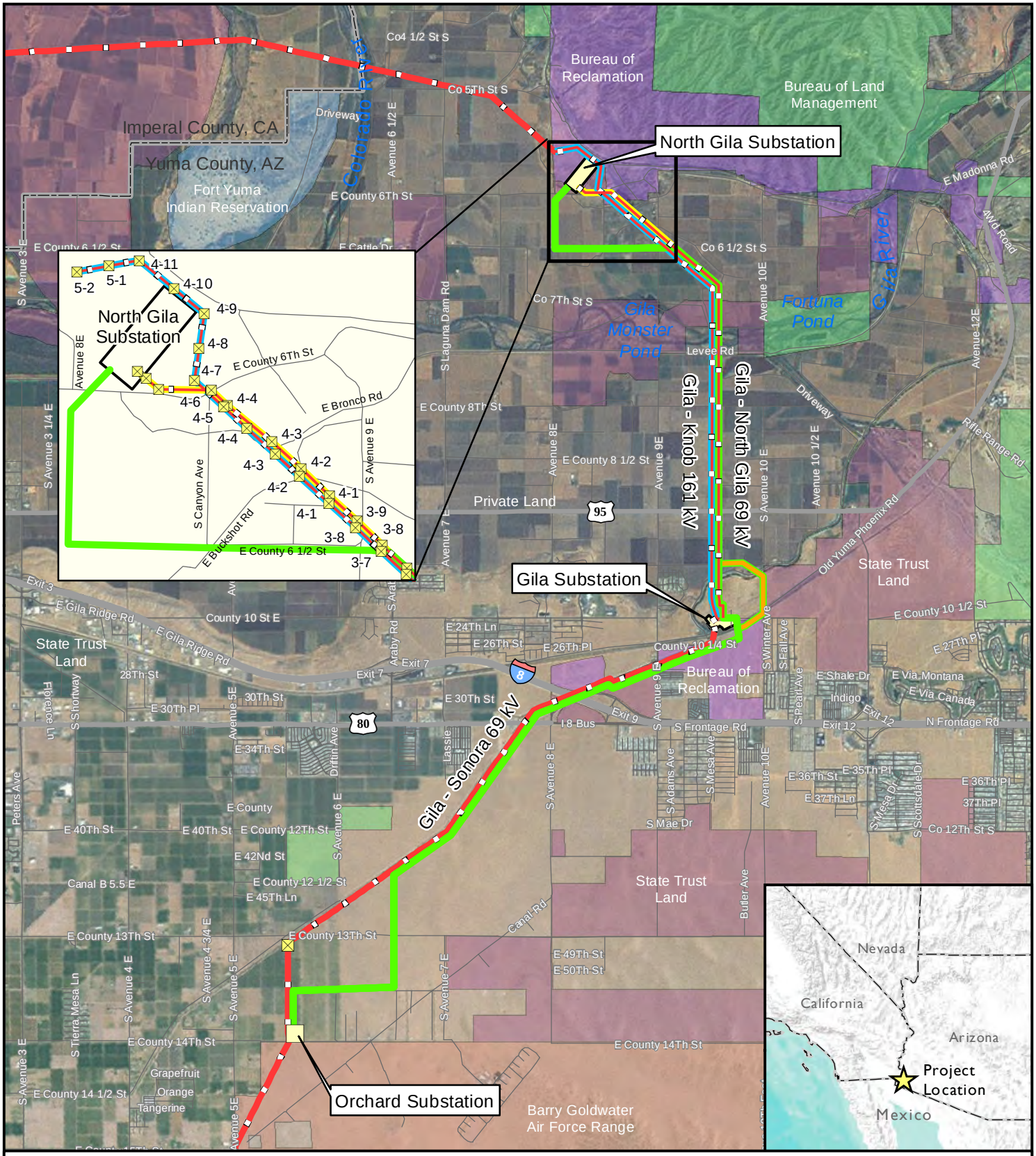
Latin Name	Common Name	Abundance / Habitat
AMARANTHACEAE	AMARANTH FAMILY	
Tidestromia lanuginosa	Woolly honeysweet	Uncomm. / sandy soils
Tidestromia oblongifolia	Honeysweet	Uncomm. / roadsides
APOCYNACEAE	OLEANDER FAMILY	
* *Nerium oleander*	Oleander	Uncomm. / developed
ASTERACEAE	ASTER FAMILY	
Ambrosia dumosa	White bursage, burrobush	Common / throughout
Baccharis salicifolia	Mulefat	Occas. / riparian
Dicoria canescens	Desert dicoria	Uncomm. / sandy soils
Encelia farinosa	Brittlebush	Occas. / rocky areas
Euthamia occidentalis	Western goldentop	Uncomm. / wetlands
Geraea canescens	Desert sunflower	Uncomm. / throughout
Hymenoclea salsola	Cheesebush	Occas. / washes
Palafoxia arida var. *arida*	Spanish needles	Occas. / sandy soils
Pluchea sericea	Arrowweed	Common / riparian
Stephanomeria pauciflora	Desert straw	Uncomm. / washes
BORAGINACEAE	BORAGE FAMILY	
Cryptantha angustifolia	Narrowleaf cryptantha	Occas. / throughout
Tiquilia palmeri	Palmer tiquilia	Uncomm. / sandy soils
BRASSICACEAE	MUSTARD FAMILY	
* *Brassica tournefortii*	Sahara mustard, wild turnip	Uncomm. / sandy soils
* *Sisymbrium irio*	London rocket	Common / agriculture
CHENOPODIACEAE	GOOSEFOOT FAMILY	
Allenrolfea occidentalis	Iodinebush	Scarce / riparian
Atriplex lentiformis	Big saltbush	Occas. / riparian
Atriplex polycarpa	Allscale	Occas. / throughout
EUPHORBIACEAE	SPURGE FAMILY	
Chamaesyce micromera	Sonoran sandmat	Occas. / sandy soils
Chamaesyce setiloba	Yuma spurge	Uncomm. / sandy soils
Ditaxis neomexicana	New Mexico silverbush	Uncomm. / throughout
FABACEAE	PEA FAMILY	
Acacia greggii	Catclaw acacia	Occas. / washes
Astragalus sp.	Unid. milk-vetch	Scarce / sandy soils
Dalea mollissima	Rust dalea	Scarce / rocky areas
Prosopis glandulosa	Mesquite	Occas. / washes
Psorothamnus emoryi	Dyebush	Occas. / sandy soils
Psorothamus schottii	Shott's dalea	Occas. / rocky soils
KRAMERIACEAE	KRAMERIA FAMILY	
Krameria grayii	White rhatany	Occas. / throughout
LOASACEAE	STICK-LEAF FAMILY	
Mentzelia sp.	Unid. annual	Scarce / sandy soils
MALVACEAE	MALLOW FAMILY	
Eremalche rotundifolia	Desert fivespot	Scarce / rocky soils

Latin Name	Common Name	Abundance / Habitat
MOLLUGINACEAE	CARPETWEED FAMILY	
Mollugo cerviana	Threadstem carpetweed	Scarce / sandy soils
NYCTAGINACEAE	FOUR O'CLOCK FAMILY	
Abronia villosa	Sand verbena	Occas. / sandy soils
ONAGRACEAE	EVENING PRIMROSE FAMILY	
Camissonia claviformis	Browneyes	Uncomm. / sandy soils
Oenothera deltoides	Birdcage evening primrose	Occas. / sandy soils
PLANTAGINACEAE	PLANTAIN FAMILY	
Plantago ovata	Desert plantain	Occas. / throughout
POLYGONACEAE	BUCKWHEAT FAMILY	
Chorizanthe brevicornu	Brittle spineflower	Uncomm. / washes
Chorizanthe rigida	Devil's spineflower	Uncomm. / rocky areas
SALICACEAE	WILLOW FAMILY	
Populus fremontii	Fremont cottonwood	Uncomm. / riparian
Salix gooddingii	Black willow	Uncomm. / riparian
SOLANACEAE	NIGHTSHADE FAMILY	
Datura wrightii	Jimsonweed, tolguacha	Uncomm. / throughout
Solanum elaeagnifolium	Silverleaf nightshade	Uncomm. / agriculture
TAMARICACEAE	TAMARISK FAMILY	
* *Tamarix chinensis*	Five-stamen tamarisk	Occas. / riparian
* *Tamarix ramosissima*	Tamarisk	Uncomm. / riparian
ZYGOPHYLLACEAE	CALTROP FAMILY	
Fagonia laevis	Smooth-stem fagonia	Uncomm. / rocky areas
Larrea tridentata	Creosote bush	Common / throughout
POACEAE	GRASS FAMILY	
Aristida adscensionis	Sixweeks threeawn	Occas. / sandy soils
Bouteloua aristidoides	Needle grama	Uncomm. / throughout
** *Cenchrus incertus*	Coast sandbur	Uncomm. / developed
* *Cynodon dactylon*	Bermuda grass	Uncomm. / developed
Pleuraphis rigida	Big galleta	Occas. / sandy soils
* *Poa annua*	Annual bluegrass	Scarce / wetlands
* *Schismus barbatus*	Mediterranean schismus	Uncomm. / throughout
TYPHACEAE	CATTAIL FAMILY	
Typha latifolia	Broad-leaved cattail	Common / wetlands
Vertebrate Animals		
AVES	BIRDS	
ANATIDAE	DUCKS, GEESE AND SWANS	
Anas platyrhynchos	Mallard	Occas. / wetlands
RALLIDAE	RAILS, GALLINULES, COOTS	
Fulica americana	American coot	Occas. / wetlands
CATHARTIDAE	VULTURES	
Cathartes aura	Turkey vulture	Uncomm. / throughout
ACCIPITRIDAE	HAWKS, EAGLES, HARRIERS	
Pandion haliaetus	Osprey	Scarce / wetlands

Latin Name	Common Name	Abundance / Habitat
Buteo jamaicensis	Red-tailed hawk	Occas. / throughout
FALCONIDAE	FALCONS	
Falco sparverius	American kestrel	Occas. / throughout
PHASIANIDAE	GROUSE AND QUAIL	
Callipepla gambelii	Gambel's quail	Scarce / rocky areas
COLUMBIDAE	PIGEONS AND DOVES	
Zenaida asiatica	White-winged dove	Occas. / throughout
Zenaida macroura	Mourning dove	Occas. / throughout
LANIIDAE	SHRIKES	
Lanius ludovicianus	Loggerhead shrike	Uncomm. / agriculture
CORVIDAE	CROWS AND JAYS	
Corvus corax	Common raven	Uncomm. / throughout
HIRUNDINDAE	SWALLOWS	
Stelgidopteryx serripennis	Northern rough-winged swallow	Occas. / riparian
PARULIDAE	WOOD-WARBLERS	
Dendroica coronata	Yellow-rumped warbler	Occas. / riparian
STURNIDAE	STARLINGS	
* *Sturnus vulgaris*	European starling	Occas. / developed
ICTERIDAE	BLACKBIRDS	
Quiscalus mexicanus	Great-tailed grackle	Common / developed
Sturnella neglecta	Western meadowlark	Occas. / agriculture
FRINGILLIDAE	FINCHES	
Carpodacus mexicanus	House finch	Common / developed
MAMMALIA	MAMMALS	
CANIDAE	FOXES AND COYOTES	
* *Canis familiaris*	Domestic dog	Uncomm. / developed
Canis latrans	Coyote	Uncomm. / throughout
LEPIDAE	RABBITS	
Lepus californicus	Black-tailed jackrabbit	Uncomm. / throughout

Introduced species that are becoming naturalized in Arizona are indicated by asterisk, noxious weeds are indicated by two asterisk, and special status species indicated by a cross. This list includes only species observed on the site. Others may have been overlooked or unidentifiable due to season (amphibians are active during rains, reptiles during summer, some birds (and bats) migrate out of the area for summer or winter, some mammals hibernate, many plants are identifiable only in spring). Plants were identified using keys, descriptions, and illustrations in Abrams Kearney and Peebles (1951), Cronquist (1972), and FNA (1993+). Plant taxonomy and nomenclature generally follow USDA (2013). Wildlife taxonomy and nomenclature generally follow Stebbins (2003) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

Attachment 2 – Figures



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Western review required before public release.
Name/Org: _____ Date: _____

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Source: APS, DSW, Aspen EG, ESRI

- Existing Structure
- Existing Western Transmission Line
- Substation

Proposed Action

- Gila-North Gila 69 kV Rebuild
- Gila-Knob Upgrade to 230 kV
- Gila-North Gila 69 kV Underbuild on North Gila-TS8 230 kV Structures
- APS North Gila-Orchard Project

Alternative 1*

- Certificated Route

* Alternative 1 includes Proposed Action components except Certificated Route

Land Ownership

- Barry Goldwater Air Force Range
- Bureau of Land Management
- Bureau of Reclamation
- Fort Yuma Indian Reservation
- Private Land
- State Trust Land

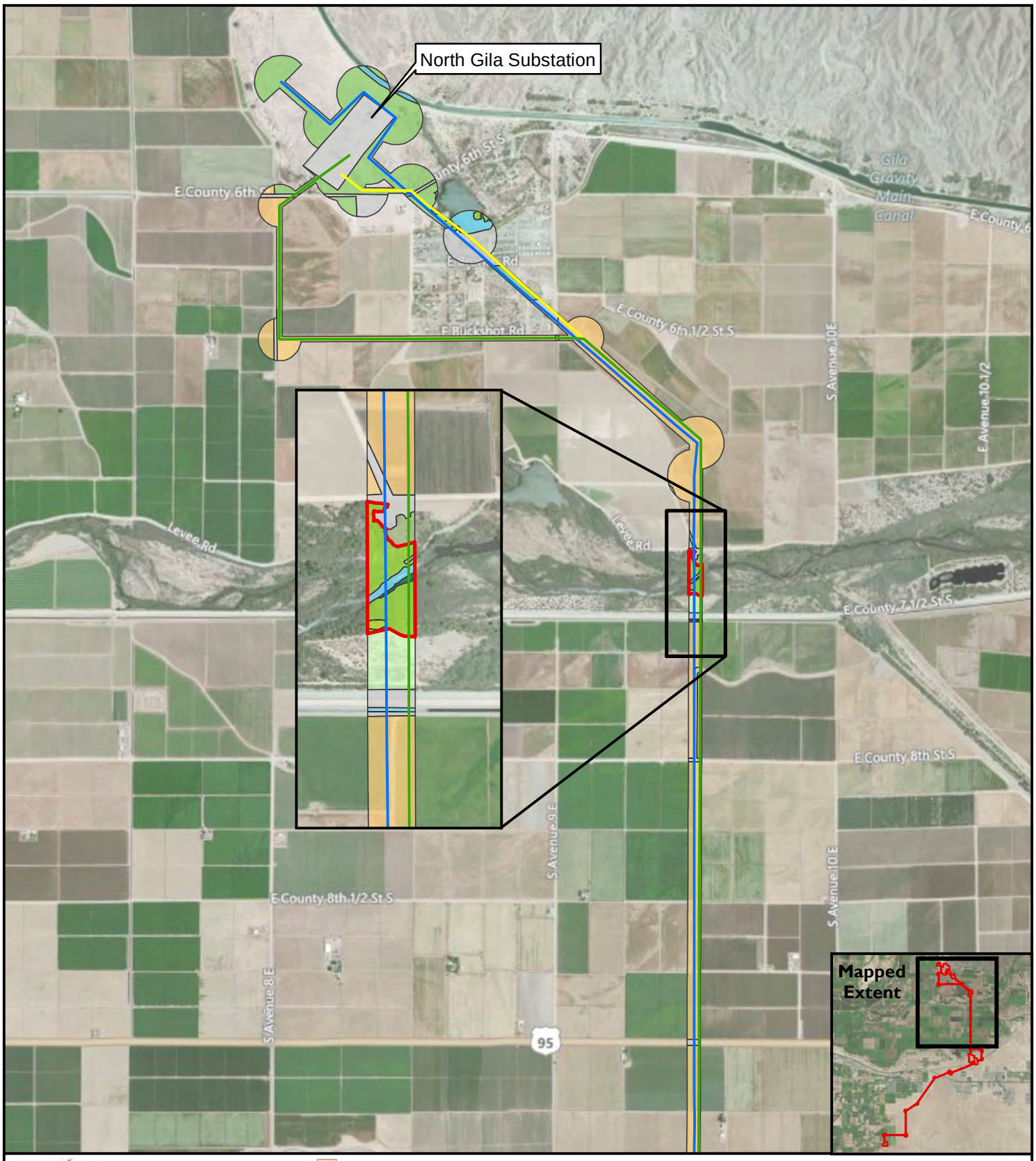
Figure 1:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Overview Map

1 inch = 1 mile

0 1 2 Miles

May 2013



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Source: APS, DSW, Aspen EG, ESRI

- Agricultural
- Developed
- Open Water
- Freshwater Marsh
- Saltbush Scrub
- Tamarisk Scrub
- Creosotebush-White Bursage Scrub
- Sonoran Riparian Scrubland
- Creosotebush-Big Galleta Scrub
- Sonoran Riparian Deciduous Forest and Woodlands

- Gila-Knob Upgrade to 230 kV
- Gila-North Gila 69 kV Rebuild
- North Gila to Orchard 230 kV
- Requires special-status bird nest season avoidance

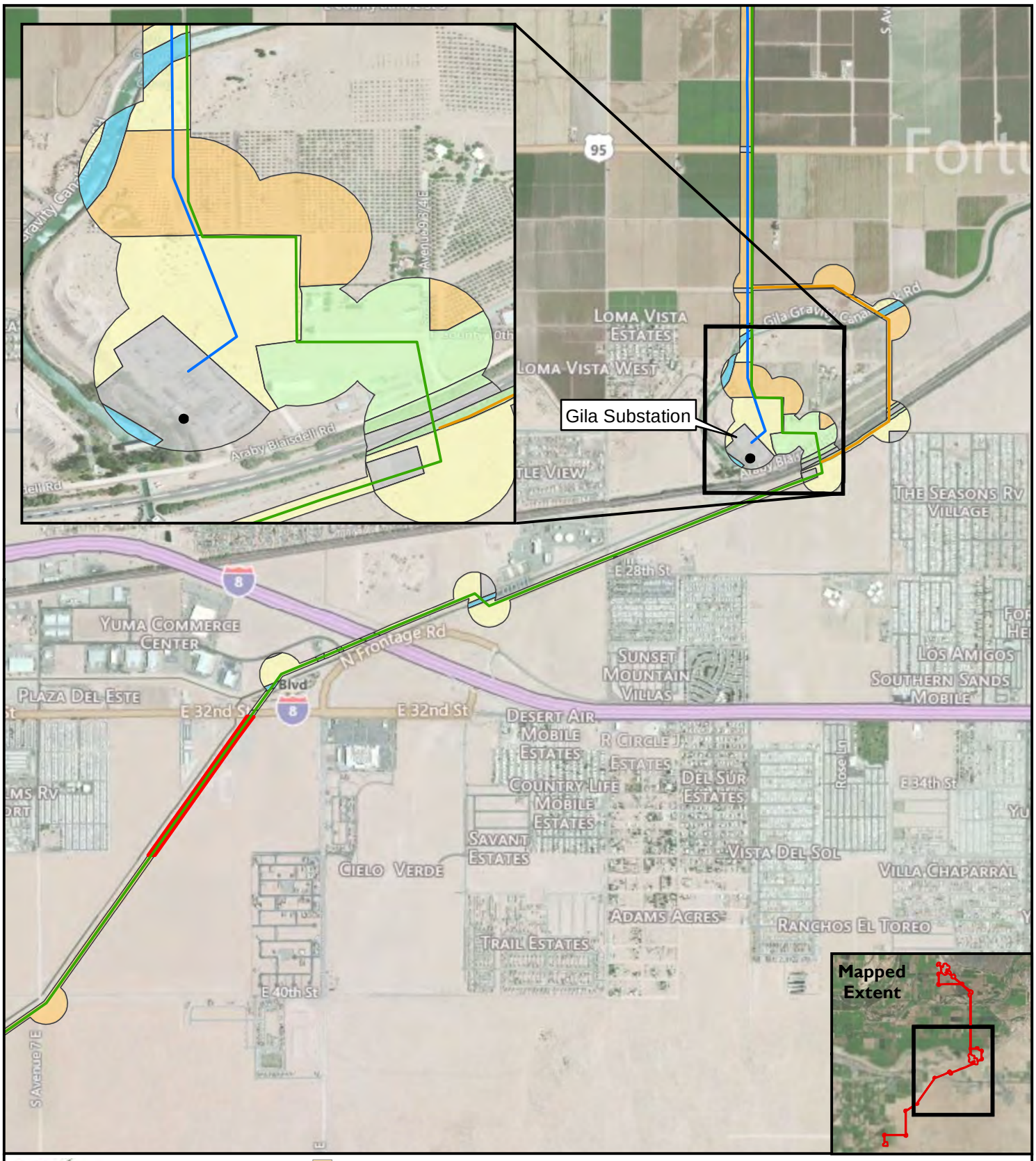
Figure 2A:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Biological Resources Map

1 inch = 2,500 feet

0 0.5 1 Miles

May 2013



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- Sonoran Riparian Scrubland
- Creosotebush-Big Galleta Scrub
- Sonoran Riparian Deciduous Forest and Woodlands

- Gila-Knob Upgrade to 230 kV
- Alternative 1 Certificated Route
- North Gila to Orchard 230 kV
- Requires a pre-construction survey for special-status lizards
- Active Red-Tailed Hawk Nest

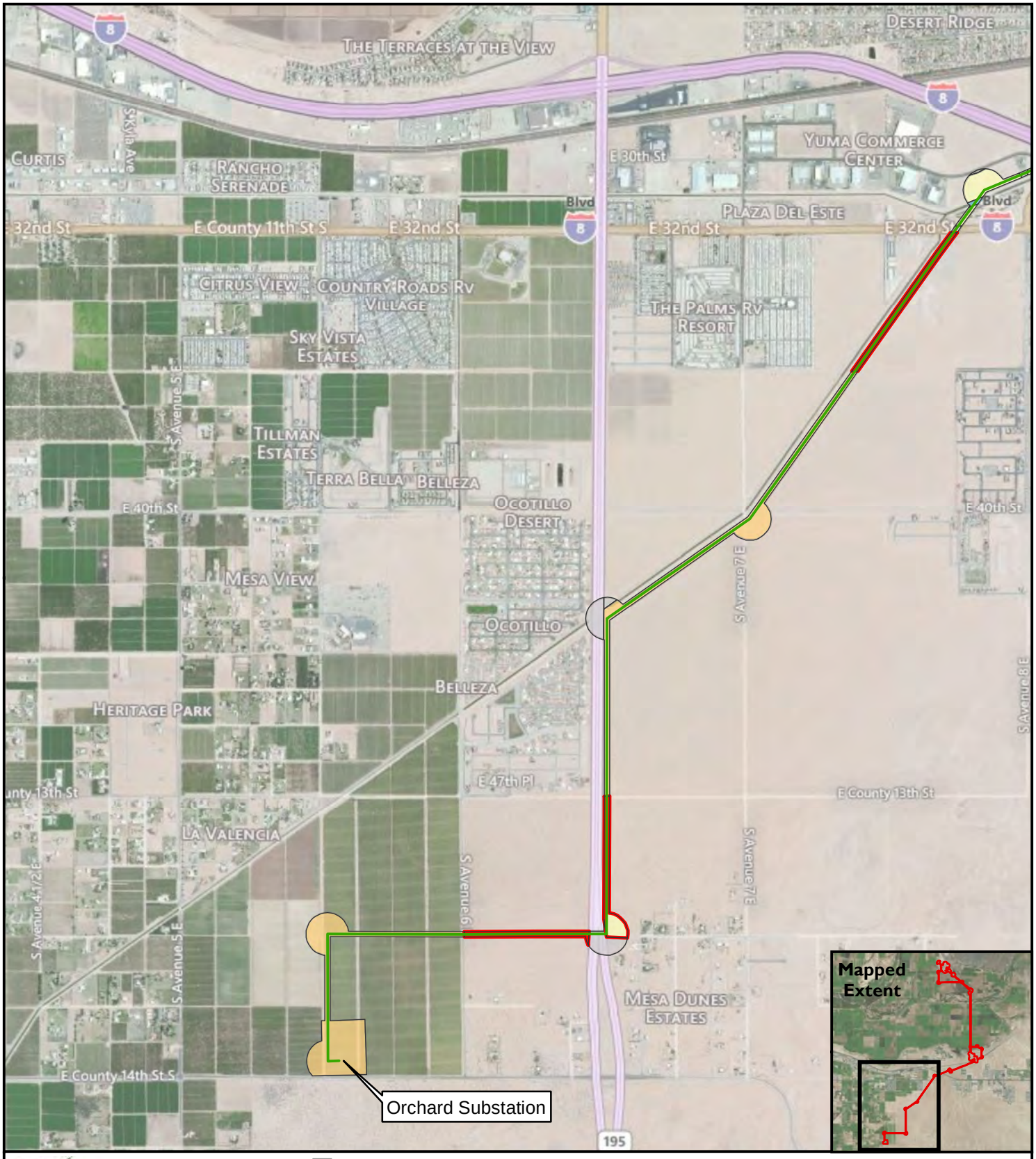
Figure 2B:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Biological Resources Map

1 inch = 2,500 feet

0 0.5 1 Miles

May 2013



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Source: APS, DSW, Aspen EG, ESRI

- Agricultural
- Developed
- Open Water
- Freshwater Marsh
- Saltbush Scrub
- Tamarisk Scrub
- Creosotebush-White Bursage Scrub
- Sonoran Riparian Scrubland
- Creosotebush-Big Galleta Scrub
- Sonoran Riparian Deciduous Forest and Woodlands
- North Gila to Orchard 230 kV
- Requires a pre-construction survey for special-status lizards

Figure 2C:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Biological Resources Map

1 inch = 2,500 feet

0 0.5 1 Miles

May 2013

Appendix C

Preliminary Jurisdictional Waters/Wetlands Delineation Report

Preliminary Jurisdictional Waters/Wetlands Delineation Report

Gila to North Gila Transmission Line Rebuild and Upgrade Project

Prepared for:

Western Area Power Administration, Desert Southwest Region
615 S. 43rd Ave.
Phoenix, Arizona 85009

Prepared by:

Aspen Environmental Group
5020 Chesebro Road, Suite 200
Agoura Hills, CA 91301

Blanket Purchase Agreement No.: DE-AB65-11WG90286
Task Order No.: 1118-024ag Task 5

May 9, 2013

Preliminary Jurisdictional Waters/Wetlands Delineation Report

Gila to North Gila Transmission Line Rebuild and Upgrade Project
Yuma County, Arizona

The undersigned certify that this report is a complete and accurate account of the findings and conclusions of a jurisdictional determination and delineation for the above-referenced project.

_____

Jared Varonin
Associate Biologist/Ecologist
Certified Fisheries Professional
Aspen Environmental Group

May 9, 2013

Contents

Tables

Attachments

1.0 Introduction

This report presents the findings of an investigation of jurisdictional features conducted by Aspen Environmental Group (Aspen) for the proposed Gila-North Gila Transmission Line Rebuild and Upgrade Project (Project) in Yuma County, Arizona. This assessment was conducted by Aspen Associate Biologist/Ecologist Jared Varonin, and Associate Biologist Justin Wood, on 28 February 2013 and 1 March 2013 to determine the extent of resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the Arizona Department of Environmental Quality (ADEQ). These are the primary regulating agencies in Arizona for all activities taking place within streams and wetlands in Arizona.

1.1 Project Description

Western proposes to rebuild and upgrade the existing 4.8 mile Gila-North Gila 69-kilovolt (kV) transmission line and the existing Gila-Knob 161-kV transmission line segment between the Gila and North Gila Substations. Western also proposes to expand its right-of-way (ROW) and grant Arizona Power Service Company (APS) the right to cross Western's Gila Substation with its North Gila-Orchard 230-kV Transmission Line Project. These activities comprise the Proposed Action.

The Proposed Action is located in Yuma County, Arizona (Figure 1; all figures are included in Attachment 1). The Proposed Action is located on public lands managed by the Bureau of Reclamation (BOR) and the Arizona State Land Department (ASLD), and on private lands. The Gila-North Gila 69-kV relocation would begin at the North Gila Substation and end at the Gila Substation. The Gila-Knob 161-kV rebuild would begin north of the North Gila Substation at Structure 5-2 and end at the Gila Substation interconnection.

The Proposed Action would be completed in conjunction with APS, because it involves temporary relocation of Western's existing Gila-North Gila 69-kV circuit to APS's new North Gila-Orchard 230-kV Transmission Line Project structures as an underbuild. Temporary relocation of the existing Gila-North Gila 69-kV circuit would occur concurrently with construction of the APS North Gila-Orchard 230-kV Transmission Line Project. At a later date, Western would rebuild the existing Gila-Knob 161-kV line to 230-kV on new steel structures and permanently move the Gila-North Gila 69-kV conductor from APS structures to the new Gila-Knob structures as an underbuild. An overview of the Proposed Action, including APS's project, is illustrated in Figure 1.

The Proposed Action is divided into two phases based on timing of activities; each phase is described below.

Phase I would begin in early 2015 and includes the following:

- Constructing APS's North Gila-Orchard 230-kV Transmission Line Project;
- Relocating the existing Gila-North Gila 69-kV circuit as an underbuild on APS's North Gila-Orchard 230-kV structures where APS and Western ROW are adjacent;
- Dismantling, removing, and recycling the Gila-North Gila wood poles that no longer support the 69-kV circuit;
- Where Western ROW is not adjacent to APS ROW (Gila-North Gila structures 3-8 to 4-5; Figure 1), replacing the conductor on the existing Gila-North Gila wood poles or rebuilding the Gila-Knob line on steel monopoles and placing the Gila-North Gila 69-kV circuit as an underbuild on the new Gila-Knob structures;

- Where Western's Gila-North Gila ROW deviates from the Gila-Knob ROW to enter the North Gila Substation (Gila-North Gila Structure 4-5 to North Gila Substation; Figure 1), replacing the existing Gila-North Gila wood pole structures with new structures; and
- Transferring a portion of the Gila-North Gila ROW to APS and issuing APS the right to cross Western's Gila Substation with its North Gila-Orchard 230-kV Transmission Line Project.

Phase II (Full Build-out). Phase II would be implemented when APS requests that Western remove the Gila-North Gila conductors from APS's North Gila-Orchard 230 kV structures.

Phase II includes the following:

- Acquiring up to an additional 50 feet of ROW adjacent to (west of) the existing Gila-Knob ROW; and
- Removing the existing Gila-Knob 161-kV wood structures, conductor, and associated infrastructure and rebuilding it as a single-circuit 230-kV line on steel monopoles that would be capable of supporting two 230-kV circuits with a single-circuit 69-kV underbuild.

Construction

Ground disturbance from construction activities would occur as a result of removing existing structures, grading areas and drilling holes for new structure placement, improving existing access roads for vehicle and equipment access, and installing/removing conductor and overhead ground wire. These activities would be conducted within Western's existing Gila-North Gila 69-kV and Gila-Knob 161-kV transmission line ROWs and APS's North Gila-Orchard ROW. However, short-term disturbance outside these ROWs would be required for wire pulling and tensioning sites.

Conductor pulling and tensioning sites would be approximately 100 feet wide by 400 feet long within the ROW between structures. At turning structures (where the transmission line turns), conductor pulling and tensioning sites would be approximately 100 feet wide by 300 feet long and may be located partially outside of the ROW. Any conductor pulling or tensioning sites that may occur outside the ROW would require Special Use or Temporary Use Permits, which would be acquired in consultation with the land owner(s).

Temporary disturbance areas for structure installation would be approximately 100 feet in diameter; permanent disturbance required for foundation footprints would be approximately three to six feet in diameter. Excavation up to 30 feet deep would be required to install the foundations. At structures within the Gila River floodplain, reuse of existing island rip/rap around structures or concrete abutment would be utilized to the maximum extent feasible.

Vegetation clearing between structures would not be needed for stringing conductor. The conductor and ground wire would be installed under controlled tension, using powered pulling equipment at one end and powered braking or tensioning equipment at the other end. This keeps the conductor and ground wire off the ground to avoid damage to both the conductors and underlying vegetation. Western and APS may also use helicopters to string conductor and implosive sleeving to join conductor segments.

No new access roads would be required. If necessary, overland access off existing access roads would occur using rubber tire vehicles. Existing access roads would require improvements to be passable for construction and maintenance vehicles, as some may no longer be useable due to vegetation overgrowth and erosion. Improving existing access roads would involve brush clearing, minor grading, and the installation of corrugated metal pipes to maintain stormwater flows within any ephemeral wash areas. In the area between Levee Road to East County 9th Street South, vegetation would be cleared at

existing and new tower locations and to create temporary access to all work areas (refer to Figure 1 for this location).

For existing damaged access roads or roads with existing drainage and erosion problems, surface material lost or worn away would be replaced, then grade and shape the road surface, turnouts, and shoulders to their original condition, or better. Watering could be required to control dust and to retain fine surface rock. Access road repair work would be confined to within 10 feet of either side of the existing access road width.

Restoration would be completed within the ROW following construction and cleanup of each construction phase. Disturbed surfaces would be restored to the original contour. All disturbed soil, other than surfaces intended for permanent access roads, would be seeded with native species free of invasive seed. Where necessary, water diversions (i.e., waterbars) would be constructed along the access roads to control surface water drainage and erosion.

Project activities could use any or all of the following equipment: helicopter, motor grader, bucket truck, bulldozer, backhoe, dozer, front end loader, tractor trailer, crane, flatbed truck, truck or backhoe-mounted auger, crew truck, pickup truck, air compressor, hydro lift, mixer truck, puller, tensioner, reel-stringing trailers, material trucks, and tractor/harrow/disc.

Operation and Maintenance

Western would inspect the Gila-North Gila 69-kV underbuild and the Gila-Knob 230-kV transmission line on a regular basis for maintenance needs. Operation and maintenance activities would include:

- **Vegetation management** would ensure that vegetation does not interfere with human safety, transmission line conductors, structures, other hardware, or impede access to the transmission line for maintenance crews. In general, vegetation maintenance would be performed using a variety of methods including manual methods (hand-controlled, powered, or non-powered tools such as chainsaws and clippers) and mechanical methods (such as heavy-duty mowers).
- **Access road maintenance** would include activities to ensure that access roads are in appropriate condition for all-weather access to transmission lines and structures by maintenance and inspection crews. Access road maintenance could include grading, surfacing, erosion-control measures, installing low water crossings, and constructing water diversions such as rolling drain dips (shallow dip followed by a hump, along with an earthen berm at the edge of one side of the road to provide cross-drainage) and water bars (a ridge that directs water off the road) on existing access roads. A grader would be the primary equipment type used to conduct this work.
- **Transmission line and associated structure, hardware, and equipment maintenance.** This category of activities would include equipment and system maintenance and upgrades, routine aerial and ground patrols of transmission lines and ROWs, and transmission system repairs, as needed.

Certificated Route Alternative

The Certificated Route Alternative is the route approved by the Arizona Corporation Commission for this portion of APS's North Gila-Orchard 230-kV Transmission Line Project. This route would increase the overall length of the North Gila-Orchard 230-kV transmission line by 0.5 mile (to a total of 13.3 miles) by extending eastward around Gila Substation and a date farm (Figure 1).

Prior to field surveys, Aspen biologist Justin M. Wood reviewed the Arizona On-line Environmental Review Tool (Arizona Game and Fish Department, AGFD 2013a), Arizona Ecological Service's List of Endangered and Threatened Species of Yuma County (USFWS 2013a), and the Arizona Rare Plant Field

Guide (Arizona Rare Plant Committee 2001) to identify all federally listed endangered or threatened species, as well as candidate species for listing.

Aspen biologists Wood and Jared Varonin visited the Project area on February 28 and March 1, 2013 to evaluate the extent of potentially jurisdictional features. All Project components were surveyed including the ROW, which varies from 100 to 250 feet, and up to a 500 foot radius around each turning structure (Figure 1).

1.2 Contact Information

Table 1-1. Applicant and Consultant Contact Information

Applicant Contact	**Wetland and Biological Consultant**	
Western Area Power Administration Desert Southwest Region 615 S. 43rd Ave. Phoenix, AZ 85009	**Aspen Environmental Group** 5020 Chesebro Road, Suite 200 Agoura Hills, CA 91301	
Contact:	***Contacts:***	
Matthew Bilsbarrow 602.605.2636 Bilsbarrow@wapa.gov	Jared Varonin 818.338.6715 jvaronin@aspeneg.com	Heather Blair 916.379.0350 x17 hblair@aspeneg.com

1.3 Site Access

Driving directions to the Project area are provided below:

Table 1-2. Driving Directions to the Project Area

From the East
Take the I-8 W towards the California/Arizona border. Take exit 9 toward I-8/Avenue 8 ½ East and turn left onto the I-8 Business Loop. Take the 1st right onto E 30th St. The southern extent of the Project crosses E 30th St. immediately northeast of the I-8 Business Loop.
From the West
Take the I-8 E towards Yuma Take exit 7 for Araby Rd. Turn right onto AZ-195/Araby Rd. Turn left on E. 30th St. Travel just over 1.0 mile where you will find the southern extent of the Project crossing E 30th St. immediately northeast of the I-8 Business Loop.

2.0 Regulatory Background

Any impacts to jurisdictional waters or wetlands associated with the Project would require authorization from the USACE and the ADEQ. The USACE Regulatory Program regulates activities pursuant to Section 404 of the federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. The ADEQ regulates activities under Section 401 of the CWA.

2.1 Section 404 of the Clean Water Act (CWA)

Section 404 of the CWA regulates the discharge of dredged material, placement of fill material, or certain types of excavation within "waters of the U.S." (resulting in more than incidental fallback of material) and authorizes the Secretary of the Army, through the Chief of Engineers, to issue permits for such actions. Permits can be issued for individual projects (individual permits) or for general categories of projects (general permits). "Waters of the U.S." are defined by the CWA as "rivers, creeks, streams, and lakes extending to their headwaters and any associated wetlands." Wetlands are defined by the CWA as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions."

The USACE may: authorize use of a Nationwide Permit (NWP), which is a type of general permit issued by the USACE Headquarters for nationwide application; authorize use of a Regional General Permit (RGP), issued by particular USACE Districts or Divisions; or issue an Individual/Standard Permit (IP/SP) if a project meets the general terms and conditions of an NWP or RGP, but will result in greater than minimal impacts to aquatic resources on an individual or cumulative basis. A pre-construction notification (PCN) of project activities may be required depending on specific conditions in the NWP, RGP or IP.

2.1.1 Nationwide Permit 12 – Utility Line Activities

NWP 12 is applicable to activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in "waters of the U.S.," provided the activity does not result in the loss of greater than ½ acre of "waters of the U.S."

NWP 12 authorizes the construction of access roads for the construction and maintenance of utility lines in "waters of the U.S.," provided the total discharge from a single and complete project (i.e., each wash crossing) does not cause the loss of greater than 0.5 acres of "waters of the U.S." Access roads must be the minimum width necessary. Access roads must be constructed so that the length of the road minimizes any adverse effects to "waters of the U.S.", and must be as near as possible to pre-construction contours and elevations. Access roads constructed above pre-construction contours and elevations in potential jurisdictional "waters of the U.S." must be properly bridged or culverted to maintain surface flows.

If impacts to "waters of the U.S." are minor, and do not exceed criteria listed under the current NWP 12 (Special Public Notice Arizona Nationwide Permits, May 18, 2012), notification to the USACE is not required. Western must submit a PCN in accordance with NWP 12 general condition 31 to the district engineer prior to commencing the activity if road maintenance activities cause any discharges that result in the loss of greater than 0.1 acre of "waters of the U.S."

In addition to permit specific conditions, the permittee must comply with the 29 NWP general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Two important general conditions are discussed below and the full list of general conditions is found in NWP 12 (USACE 2012).

Endangered Species (General Condition 18): No activity is authorized under any NWP, which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or modify critical habitat of such species. Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in desig-

nated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and the activity is authorized.

Historic Properties (General Condition 20): In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied. Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties.

2.2 Section 401 of the CWA

Section 401 of the CWA requires that:

> *…any applicant for a Federal permit for activities that involve a discharge to "waters of the State," shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act.*

Therefore, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification from the ADEQ. The ADEQ may add conditions to their certification to remove or mitigate potential impacts to water quality standards. Such conditions must ultimately be included in the Federal Section 404 permit.

3.0 Existing Conditions

3.1 Project Location, Topography and Land Ownership

The Project area is located east of the downtown center of Yuma, Arizona. It is shown on the Fortuna and Yuma East USGS 7.5 minute topographic quads. Elevation of the Project area ranges from approximately 155 to 225 feet.

The northern portion of the Project alignment abuts the Laguna Mountains and the southern portion terminates north of the Yuma Desert. The Gila Mountains are approximately 5 miles east of the center of the Project alignment. The transmission line crosses the Gila River channel and surface flow was observed in the river during the field visit. The only mapped drainage within the Project area is the Gila River, which flows east to west across the alignment (refer to Figure 4). It is mapped as a perennial blue line stream on the Fortuna USGS 7½-minute topographic quadrangle, and surface flow was observed during the field visit. Agricultural land uses throughout most of the project area have eliminated most minor washes or drainage channels which may have been present. Due to topography of the area, most runoff from the project area is retained within low-lying agricultural fields. Runoff during heavy rain or flooding would drain to the Gila River via sheet flow or surface flow outside of jurisdictional channels.

3.2 Climate

Regional climate is semi-arid, characterized by hot summers and mild winters, with an average monthly maximum temperature between 90 and 93 degrees Fahrenheit and an average monthly minimum temperature of between 50 and 55 degrees Fahrenheit (ADWR 2009). Rainfall totals in the region average

approximately 4.6 inches per year (ranging from a high of 9.0 inches and a low of 3.0 inches depending on the location) (ADWR 2009).

3.3 Hydrology, Geology and Geomorphology

The Project location is within the Yuma Basin of the Arizona Department of Water Resources (ADWR) Lower Colorado River Planning Area (LCRPA), which is approximately 792 square miles in area (the LCRPA is 17,2000 square miles in total) and is "characterized by desert valleys and mountain ranges" (ADWR 2009). The Yuma Basin contains the driest and hottest portions of the State of Arizona. Key geographical features within the Yuma Basin include the Colorado River, Yuma Desert, Tinajas Atlas Mountains and the Gila Mountains. The Gila River flows in a westerly direction through the Yuma Basin until its confluence with the Colorado River.

The Project area is located in the Basin and Range physiographic province of Arizona, which is characterized by broad, gently sloping alluvial basins separated by north to northwest trending fault-block mountains (ADWR).

3.4 Soils

Soil data from the Natural Resources Conservation Service (NRCS) historic mapping projects (NRCS, 2013a) were used to determine if and where hydric soils could be present in the Project area (NRCS, 2013b). Figure 2 illustrates the location of these mapped soil types in relation to the Project area. Refer to Table 3-1 for a brief description of the soils within the Project area. All of the mapped soil types are described as well-drained or somewhat excessively drained and are not prone to flooding (or "prone to rare flooding" for map unit symbol 16). In general, the descriptions of soil types within the project area indicate that hydric soils conditions are not expected. It is possible that the mapped soils below may include small pockets of other soil types that were not captured within the NRCS mapping scale but that were assessed as part of the field work discussed below in Section 4.0.

Table 3-1. Soil Types Within the Project Area

Map Unit Symbol	Map Unit Name	Description
10	Glenbar silty clay loam	A well-drained soil generally found from 80 to 600 feet in elevation; parent material consists of recent mixed alluvium; depth to water table is generally more than 80 inches; not prone to flooding; silty clay loam (0–60 inches).
13	Indio silt loam	A well-drained soil generally found from 80 to 600 feet in elevation; parent material consists of mixed alluvium; depth to water table is generally more than 80 inches; not prone to flooding; silt loam (0–6 inches) stratified very fine sandy loam (6–63 inches)
16	Indio-Lagunita-Ripley complex	A well-drained to somewhat excessively drained soil generally found from 100 to 500 feet in elevation; parent material consists of recent mixed alluvium; depth to water table is generally more than 80 inches; prone to rare flooding; Indio - silt loam (0–6 inches) stratified very fine sandy loam (6–63 inches) Lagunita – loamy sand (0–60) Ripley – silt loam (0–6 inches) very find sandy loam (6–25 inches) sand (25–60 inches).

Table 3-1. Soil Types Within the Project Area

Map Unit Symbol	Map Unit Name	Description
18	Lagunita loamy sand	A somewhat excessively drained soil generally found from 80 to 600 feet in elevation; parent material consists of recent mixed alluvium; depth to water table is generally more than 80 inches; not prone to flooding; loamy sand (0–60 inches).
19	Lagunita silt loam	A somewhat excessively drained soil generally found from 100 to 600 feet in elevation; parent material consists of recent mixed alluvium; depth to water table is generally more than 80 inches; not prone to flooding; loamy sand (0–60 inches).
24	Ripley silt loam	A well-drained soil generally found from 80 to 600 feet in elevation; parent material consists of mixed alluvium; depth to water table is generally more than 80 inches; not prone to flooding; silt loam (0–6 inches), very fine sandy loam (6–25 inches), sand (25–60 inches).
25	Rositas sand	A somewhat excessively drained soil generally found from 80 to 700 feet in elevation; parent material consists of mixed eolian sands; depth to water table is generally more than 80 inches; not prone to flooding; sand (0–60 inches).
26	Rositas-Ligurta complex	A well-drained to somewhat excessively drained soil generally found from 200 to 400 feet in elevation; parent material consists of mixed eolian sands and mixed alluvium; not prone to flooding; Rositas – sand (0–60 inches) Ligurta – very gravelly loam (0–2 inches), gravelly clay loam (2–60 inches).
30	Torriorthents-Torrifluvents complex, 1 to 50 percent slopes	A well-drained soil generally found from 400 to 1,200 feet in elevation; parent material consists of mixed eolian sands and mixed unconsolidated alluvium; not prone to flooding.
35	Water	N/A

3.5 Vegetation

Most of the survey area is in agricultural land use but several natural areas with creosote bush scrub and riparian scrub as also present (Aspen 2013). The northern portion of the alignment is located within the Gila River Valley while the southern portion is located on the Yuma sand fields. All vegetation types present in the survey area are described below. Vegetation nomenclature matches Brown (1994).

- **Saltbush Scrub**. This vegetation is also found within the historic flood plain of the Gila River. Within the survey area this vegetation is distinguished from Sonoran Riparian Scrub vegetation by the abundance of dense monotypic stands of big saltbush. This vegetation matches the description of Sonoran Riparian Shrubland (Brown 1994).
- **Creosotebush-White Bursage Scrub.** This vegetation is characterized by the co-dominance of creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Other species noted include Schoot's dalea (*Psorothamnus schottii*), burrobrush (*Hymenoclea salsola*) and brittlebush (*Encelia farinosa*). Within the survey area, this vegetation is found primarily at the northern end of the Project alignment on low rolling hills in the vicinity of the North Gila Substation. This vegetation matches the Creosotebush–White Bursage Series in the Lower Colorado River Valley Subdivision of Sonoran Desertscrub (Brown 1994).
- **Creosotebush-Big Galleta Scrub.** This vegetation is similar to creosote bush scrub described above but grows in fine sandy soils, typical of stabilized sand field. Creosote bush, dyebush (*Psorothamnus*

emoryi), big galleta (*Pleuraphis rigida*), white bursage, and California croton (*Croton californicus*) were the dominant species observed within this vegetation type along with numerous annual wildflowers. This vegetation matches Creosotebush-Big Galleta Scrub in the Lower Colorado River Valley Subdivision of Sonoran Desertscrub (Brown 1994).

- **Sonoran Riparian Scrubland.** This vegetation is found along the Gila River within the historic floodplain. Within the survey area, this vegetation is characterized by the presence tamarisk (*Tamarix* sp.), honey mesquite (*Prosopis glandulosa*), big saltbush (*Atriplex lentiformis* ssp. *lentiformis*), and arrowweed (*Pluchea sericea*). This vegetation matches the description of Sonoran Riparian Shrubland (Brown 1994).
- **Sonoran Riparian Deciduous Forest and Woodlands.** This vegetation is found along the Gila River within the historic floodplain, particularly in areas that have not been recently scoured and are in close proximity to ground water. Within the survey area, a young stand of this vegetation is present along an old secondary channel of the river just south of the current rive alignment. It is characterized by the presence Fremont cottonwoods (*Populus fremontii*) and willows (*Salix* spp.) that are growing among species listed above for Sonoran Riparian Scrubland. This vegetation matches the description of Sonoran Riparian Deciduous Forest and Woodlands (Brown 1994).
- **Freshwater Marsh.** This vegetation is characterized by cattails (*Typha* spp.) which form dense stands of herbaceous vegetation. Within the survey area, a single area of marsh was mapped along the southern margin of the Gila River. In addition to cattails, western goldentop (*Euthamia occidentalis*) was observed along with other herbaceous species. This vegetation matches descriptions of Sonoran Interior Marshlands and Submergent Communities in Tropical-subtropical Wetlands (Brown 1994).
- **Agricultural.** The portions of the survey area that are currently being used for crop production, as orchards, or have recently been tilled for future plant production have been mapped as agricultural. The agriculture in the northern portion of the alignment is entirely crop lands and during surveys these fields were planted with lettuce, spinach, radishes, and grain crops (i.e., wheat and barley). In the portion of the alignment near the Orchard Substation, the agriculture is lemon orchards. In the southern portion of the alignment, south of Interstate 8, 1.8 miles of the alignment was recently cleared and is being converted from Creosotebush-Big Galleta Scrub to agriculture. During our site visit construction of the new irrigation canals and access roads was underway and at least a portion of these new fields had already been planted with grain crops.
- **Developed.** Portions of the project segments are in or adjacent to human-dominated land uses, including residential lands, dirt roads, paved highways, flood control facilities, and the Southern Pacific railroad. Vegetation (if present) is dominated by native and non-native ruderal (weedy) species. The Southern Pacific Railroad crosses the project alignment near the Gila Substation.
- **Tamarisk Scrub.** This vegetation type is characterized by the presence of tamarisk (*Tamarix* spp.). Within the survey area, two locations were mapped, including two windrows that parallel the Southern Pacific Railroad and a portion of the Gila River floodplain. The windrows are very densely vegetated and are dominated by non-native five-stamen tamarisk (*Tamarix chinensis*) and oleander (*Nerium oleander*). The Tamarisk Scrub within the Gila River floodplain is very sparse and appears to also be dominated by five-stamen tamarisk and possibly other tamarisk species (*Tamarix* spp.). This vegetation also matches the description of Sonoran Riparian Shrubland (Brown 1994).
- **Open Water**. Includes the portion of the survey area that crosses open water such as the Gila River, Yuma Lake, and numerous irrigation canals.

A complete list of all plant species observed within the Project area and their wetland indicator status is presented in Attachment 3.

4.0 Waters/Wetlands Delineation

The alignment surveyed for this delineation starts from the north at Gila-Knob structure 5-2, immediately northwest of the North Gila Substation, and continues in a southeasterly direction to the intersection of the existing Western lines and the new APS project alignment. The field surveys covered up to a 160-foot-wide ROW for Western lines between the North Gila Substation and the intersection with the APS Project alignment, a 250-foot-wide ROW where Western lines and the APS Project alignment are adjacent, and a 100-foot-wide ROW of the APS Project alignment where it is not adjacent to Western lines. A 500 foot (Western structures) or 400 foot (APS structures) radius was surveyed around all dead-end and turning structures. For calculation and analysis purposes it was assumed that Project activities related to the removal of existing structures or construction of new structures could result in impacts within a 50 foot radius around each structure.

4.1 Non-Wetland "Waters of the U.S." Delineation Methods

Aspen biologists reviewed recent aerial photographs, detailed topographic maps, NRCS Soil Surveys, and the local and state hydric soil list to evaluate the potential jurisdictional features prior to conducting the field assessment (NRCS 2013a, 2013b; Attachment 4). During the field assessment, biological resources and potentially jurisdictional features were evaluated concurrently. Boundaries of non-wetland "waters of the U.S." were identified. Potentially jurisdictional waters were mapped on aerial photographs or with a Trimble Juno SB GPS unit. Field maps were digitized using Global Information System (GIS) technology and the total area of jurisdictional features was calculated.

Jurisdictional non-wetland "waters of the U.S." were delineated based on the limits of the ordinary high water marks (OHWM) as determined by aerial imagery, evidence of flow, changes in physical and biological features, such as bank erosion, deposited vegetation or debris, and vegetation characteristics and characteristics of vegetation and soils. Criteria used to identify OHWMs and, if present, determine the limit of jurisdictional "waters of the U.S.," are presented in Attachment 5 (Federal Wetlands Delineation Methods).

4.2 Federal Wetlands Delineation Methods

Potentially jurisdictional features were evaluated to determine their federal wetlands status using a routine determination according to the methods outlined in the USACE Wetland Delineation Manual (1987) and the Arid West Supplement (2008), based on three wetland parameters: dominant hydrophytic vegetation, wetland hydrology, and hydric soils. Data on vegetation, hydrology, and soils were collected using the methods described in Attachment 5 and, when necessary, recorded on Wetland Determination Data Forms.

4.3 Results

Aspen delineated the limits of USACE and ADEQ jurisdictions within the Project area (refer to Figure 4). According to the NRCS Hydric Soils List (NRCS 2013a and 2013b), there are no mapped hydric soils in the Project area. Two types of jurisdictional features were documented within the Project area: USACE non-wetland "waters of the U.S." and wetland "waters of the U.S." (Tables 4-1 through 4-3, Figure 4). Table 4-1 summarizes total acreage of jurisdictional "waters of the U.S." within the ROW across the Gila River.

The actual extent of Project impacts to jurisdictional "waters of the U.S." will be dependent on locations and limits of disturbance at work sites, including existing structures that may be removed, as well as new structures to be constructed for Phase 1 and Phase 2 of the Proposed Action adjacent to the Gila River.

Table 4-1. Acreage of Jurisdictional Wetlands and Non-wetland "Waters of the U.S."

	USACE/ADEQ Waters and Wetlands (Acres)		
	Non-wetland "Waters of U.S."	Wetlands	Total
Acres Within Project Impact Areas*	0.41 acres	0.48 acres	0.89 acres

* Refer to Figure 4 for the location of drainages in relation to impact areas.

4.3.1 Federal Wetlands

Due to the presence of high vertical banks and sections of deep flowing water, the Project area within the Gila River channel could not be accessed. Therefore, a traditional wetland delineation consisting of soil pit excavations and the completion of wetland data forms noting soil characteristics, hydrologic indicators, and wetland vegetation was not attainable.

Vegetation

Wetland plant species or hydrophytes constituted 50 percent or more of the of the dominant plants within the riparian vegetation within a small portion of the Gila River channel; therefore, the criteria for wetland vegetation defined by the USACE Wetland Delineation Manual (1987) and the Arid West Supplement (2008) was met (Figure 4) within these areas. Because of the access issues noted above wetland data forms were not completed for this Project. Utilizing aerial photography and on-site observations from high points along the banks of the Gila River changes in vegetation communities were noted. The shift from open water/freshwater marsh to Sonoran riparian scrubland was used as a factor in determining the wetland vs. waters boundary. The remainder of the Project area did not exhibit a dominance of wetland plant species and therefore does not meet the established criteria.

Soils

With the exception of inundated portions of the Gila River, indicators of hydric soils were not observed; therefore, only a portion of the mapped areas within the confines of the Gila River channel meet the criteria defined by the USACE Wetland Delineation Manual (1987) and the Arid West Supplement (2008) for hydric soils. Due to the access issues noted above soil pits were not excavated within the Gila River channel. However, based on a review of current and historic aerial photography and on-site observations portions of the Gila River within the Project area have experienced inundation for a period of 10 or more years and were presumed to have soils that would exhibit hydric soil indicators as discussed in Attachment 5. Observations of soils throughout the remainder of the Project area did not reveal evidence of ponding or soil saturation. The lack of evidence of ponding or soil saturation within the majority of the Project area correlates with the "well drained" nature of the soils mapped in the Project area (NRCS 2013a).

Hydrology

Wetland hydrology indicators were observed within the Gila River channel; therefore, the criteria defined by the USACE Wetland Delineation Manual (1987) and the Arid West Supplement (2008) for

wetland hydrology was met. The most notable indicator was the presence of surface flow as wells as visible inundation on current and historic aerial photography within the Project area. For the remainder of the Project area, the lack of evidence of ponding or soils saturation correlates with the "well drained" or "somewhat excessively drained" nature of the soils mapped in Project area (NRCS 2013a).

Summary

Based on assessment of hydrology, vegetation and soils during the field surveys and in Aspen's professional opinion, 0.48 acres of the Project alignment satisfies the criteria as wetlands pursuant to the USACE Wetland Delineation Manual (1987) and the Arid West Supplement (2008), with subsequent clarification memoranda and dependent on confirmation by the USACE. Existing Gila-North Gila structure 2-7 is located on the north bank of the Gila River, outside the jurisdictional wetlands. However, a 50-foot radius work area surrounding the structure would encroach into 0.04 acres of jurisdictional wetlands (see Table 4-2 and Figure 4). There are no jurisdictional wetlands within a 50-foot radius of the adjacent Gila-Knob structure 2-7.

Table 4-2. Mapped Drainages Meeting Jurisdictional Criteria as Wetlands within the Project Impact Areas

Drainage No.	Width* (feet)	Acreage of Drainage within Project Impact Area		Drainage Type	NWP No. 12	
		Phase I	Phase II		Meets Usage Requirements	PCN Required
1	184.15	0.04	0.04	Perennial Stream	Yes	Yes

* Average width of drainage within the surveyed area

4.3.2 Non-Wetland "Waters of the U.S."

In addition to the wetland acreage above, we conclude that approximately 0.41 acres of the Project alignment meet the definition of "waters of the United States" as defined in 33 CFR Part 328 (Table 4-3 and Figure 4). These non-wetland "waters of the U.S." are adjacent to mapped wetlands and the existing Gila-North Gila structure 2-7 on the north bank of the Gila River. This structure is located outside the jurisdictional "waters of the U.S." but a 50-foot radius work area surrounding the structure would encroach into 0.03 acres of non-jurisdictional "waters of the U.S." (see Table 4-2 and Figure 4). In addition, a 50-foot radius work area surrounding the adjacent Gila-Knob structure 2-7 would encroach into 0.01 acres of jurisdictional non-wetland "waters of the U.S.".

Table 4-3. Mapped Drainages Meeting the Definition of "Waters of the United States" within the Project Impact Areas

Drainage No.	Width* (feet)	Acreage of Drainage within Project Impact Area		Drainage Type	NWP No. 12	
		Phase I	Phase II		Meets Usage Requirements	PCN Required
1	184.15	0.04	0.04	Perennial Stream	Yes	Yes

*Average width of drainage occurring within the surveyed area.

Connectivity Analysis

The only mapped drainage within the Project area is the Gila River, which flows east to west across the alignment (refer to Figures 1 through 4). The Gila River is a tributary to the Colorado River; both rivers meet jurisdictional criteria as "waters of the U.S."

5.0 Summary and Conclusions

The only jurisdictional feature located within the Project alignment is the Gila River. A total of 0.89 acres of jurisdictional "waters of the U.S." (0.48 acres of wetlands, and 0.41 acres of non-wetland "waters of the U.S.") are located within the project alignment. Project impacts to jurisdictional "waters of the U.S.," if any, would be dependent on extent of project activities within these jurisdictional areas. We estimate that 0.08 acres of "waters of the U.S." (0.04 acres of wetlands and 0.04 acres of non-wetland waters) would be affected at Gila-North Gila structure 2-7 and Gila-Knob structure 2-7, presuming a 50-foot radius work area surrounding the structures. The actual jurisdictional acreage affected by the project will vary, according to the locations of new structures or other project work sites, and on actual disturbance surrounding work areas at new and existing structures. These impacts, if any, are anticipated to meet the conditions of a NWP No. 12 (Utility Line Activities) and would require a PCN to the USACE. If impacts to "waters of the U.S." can be avoided, then no notification or NWP would be necessary.

Project activities would not occur within Outstanding Arizona Waters (OAW); however, based on current Project design, Project activities would occur less than 0.5 miles downstream of 303(d) impaired waters (based on the draft 2010 impaired waters list). The Gila River from Fortuna Wash (just upstream of the Project) upstream to Coyote Wash appears on the 303(d) impaired waters list. Therefore, if the project would affect jurisdictional "waters of the U.S.", Western would be required to obtain an individual certification under section 401 of the CWA from the ADEQ. If impacts to waters of the U.S. can be avoided, then no 401 certification would be necessary. Prior to commencement of Project activities the current ADEQ list of OAW and 303(d) impaired waters should be reviewed for updates for changes that would affect the need for individual certification and may allow for conditional certification for Project activities under Section 401.

5.1 Phase I

At the Gila River crossing, Phase I of the Project consists of relocating the existing Gila-North Gila 69-kV circuit as an underbuild on APS's North Gila-Orchard 230-kV structures, and removing the existing Gila-North Gila structures. Either of these activities could affect "waters of the U.S.," depending on the actual limits of disturbance.

If all project activities are conducted outside the "waters of the U.S.," and if work practices prevent runoff or other discharge into adjacent "waters of the U.S.," then Phase I would not require permitting or notification under the federal Clean Water Act. We make the following recommendations to minimize or avoid impacts to "waters of the U.S.":

1. Locate the APS North Gila-Orchard 230-kV structures and all associated ground disturbance outside jurisdictional "waters of the U.S.". If possible, locate the first structure north of the Gila River (corresponding to the Gila-North Gila structure 2-7) approximately 360 feet north of the existing Western structures, within a disturbed area adjacent to the existing road (Figure 4). If possible, locate the first structure south of the Gila River (corresponding to the Gila-North Gila structure 2-6) no further north than the location of the existing Gila-North Gila structure 2-6. This design would

result in a total span of approximately 1,015 feet and avoid impacts to potentially jurisdictional features.

2. During the removal of Gila-North Gila structure 2-7, avoid any ground disturbing activities, including placement of soil or other material, within "waters of the U.S." immediately south of the structure. Implement Best Management Practices to ensure that no runoff, silt, pollutants, or other materials enter the active channel of the Gila River, immediately south of the structure.

With implementation of the recommendations above, Phase I of the Proposed Action would avoid effects to "waters of the U.S." and no Clean Water Act permitting or certification would be required.

If the recommendations above would not be implemented, then we recommend that Western apply to ADEQ for Section 401 certification under the Clean Water Act, and notify the USACE under the Clean Water Act Section 404 NWP program. The application and notification should include actual acreages of project activities to be conducted within jurisdictional "waters of the U.S.," based on final design of APS structure locations, methods for removing existing Gila-North Gila structure 2-7, and other project features such as access routes or pull sites. If Phase I construction activities were to proceed without the above recommendations, it is estimated that construction activities could result in up to 0.03 acres of impacts to potentially jurisdictional non-wetland "waters of the U.S." and 0.04 acres of wetland waters. In addition, the USACE notification should include applicable biological and cultural resources documentation to demonstrate consistency with NWP 12 conditions.

5.2 Phase II

At the Gila River crossing, Phase II of the project consists of removing the existing Gila-Knob 161-kV transmission line and rebuilding it as a single-circuit 230-kV line on steel monopoles. Phase II removal or reconstruction activities could affect "waters of the U.S.," depending on the actual work sites and limits of disturbance.

If all project activities are conducted outside the "waters of the U.S.," and if work practices prevent runoff or other discharge into adjacent "waters of the U.S.," then Phase II would not require permitting or notification under the federal Clean Water Act. We make the following recommendations to minimize or avoid impacts to "waters of the U.S."

1. Locate the new Gila-Knob 230 kV transmission line structures and all associated ground disturbance outside jurisdictional "waters of the U.S." If possible, locate the first new Gila-Knob structure north of the Gila River (corresponding to the existing Gila-Knob structure 2-7) approximately 360 feet north of the existing Gila-Knob structure 2-7, within a disturbed area adjacent to the existing road (Figure 4). If possible, locate the first structure south of the Gila River (corresponding to existing Gila-Knob structure 2-6) no further north than the location of the existing Gila-Knob structure 2-6. This design would result in a total span of approximately 1,015 feet and avoid impacts to potentially jurisdictional features.

2. During the removal of Gila-Knob structure 2-7, avoid any ground disturbing activities, including placement of soil or other material, within waters of the U.S. immediately south of the structure. During the removal of Gila-Knob structure 2-7, implement Best Management Practices to ensure that no runoff, silt, pollutants, or other materials enter the active channel of the Gila River, immediately south of the structure.

With implementation of the recommendations above, Phase II of the Proposed Action would avoid effects to "waters of the U.S.," and no Clean Water Act permitting or certification would be required.

If the recommendations above would not be implemented, then we recommend that Western apply to ADEQ for Section 401 certification under the Clean Water Act, and notify the USACE under the Clean Water Act Section 404 NWP program. The application and notification should include actual acreages of project activities to be conducted within jurisdictional "waters of the U.S.," based on final design of Gila-Knob replacement structure locations, methods for removing existing Gila-Knob structure 2-7, and other project features such as access routes or pull sites. If Phase II construction activities were to proceed today, without the above recommendations, it is estimated that construction activities could result in up to 0.01 acres of impacts to potentially jurisdictional non-wetland "waters of the U.S." In addition, the USACE notification should include applicable biological and cultural resources documentation to demonstrate consistency with NWP 12 conditions.

The conclusions presented above represent Aspen's professional opinion based on its knowledge and experience with the USACE and ADEQ, including their regulatory guidance documents and manuals. However, the USACE and ADEQ have final authority in determining the status and presence of jurisdictional wetlands/waters and the extent of their boundaries.

6.0 References

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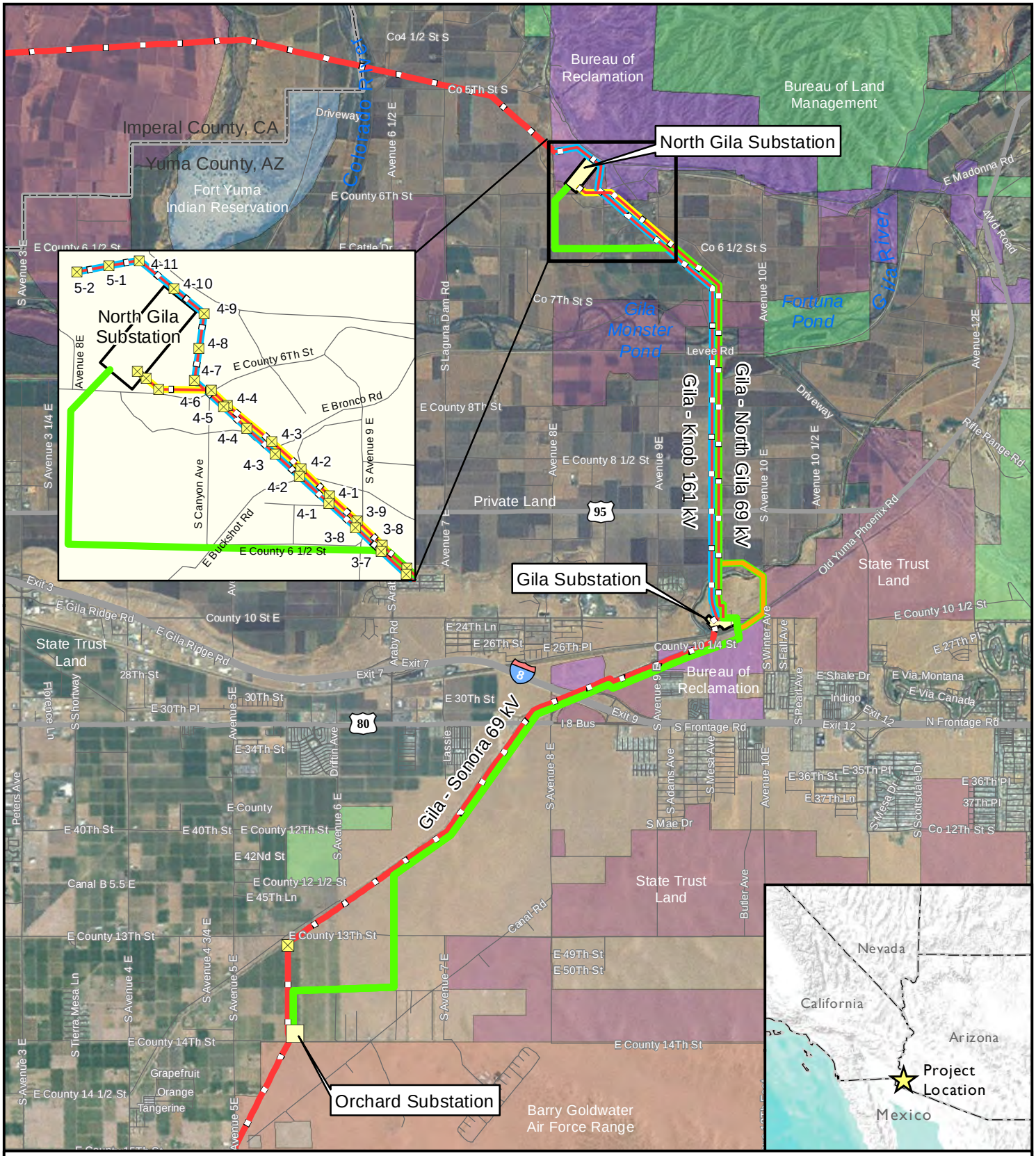
Attachment 1 – Figures



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Source: APS, DSW, Aspen EG, ESRI

- Existing Structure
- Existing Western Transmission Line
- Substation

Proposed Action

- Gila-North Gila 69 kV Rebuild
- Gila-Knob Upgrade to 230 kV
- Gila-North Gila 69 kV Underbuild on North Gila-TS8 230 kV Structures
- APS North Gila-Orchard Project

Alternative 1*

- Certificated Route

* Alternative 1 includes Proposed Action components except Certificated Route

Land Ownership

- Barry Goldwater Air Force Range
- Bureau of Land Management
- Bureau of Reclamation
- Fort Yuma Indian Reservation
- Private Land
- State Trust Land

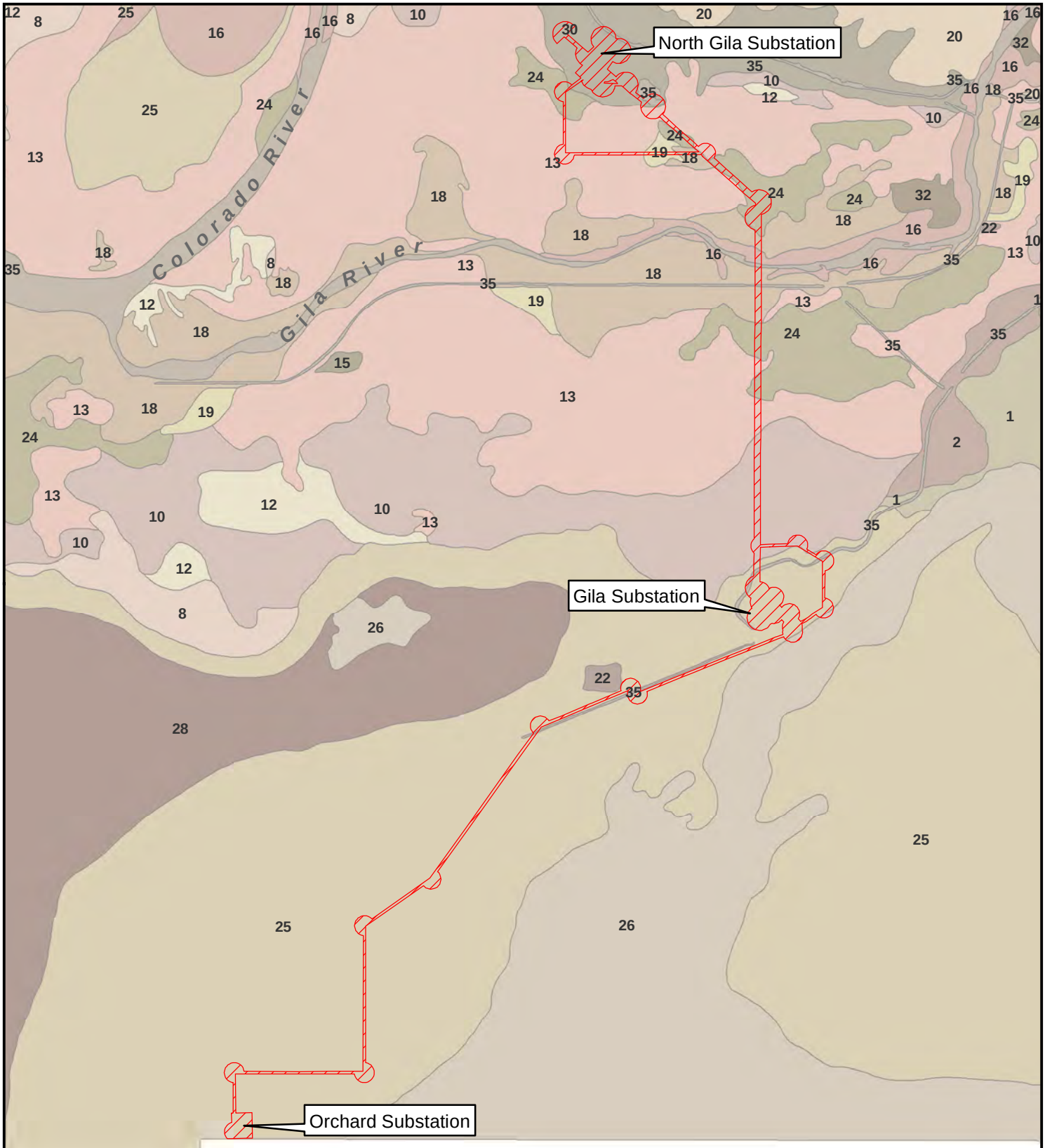
Figure 1:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Overview Map

1 inch = 1 mile

0 1 2 Miles

May 2013



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Source: APS, DSW, Aspen EG, ESRI

Project Area

Map Unit Symbol

1	16	26
2	18	28
8	19	30
10	20	32
12	22	35
13	24	
15	25	

Refer to Table 3-1 in Section 3.4 for Soil Symbol Descriptions

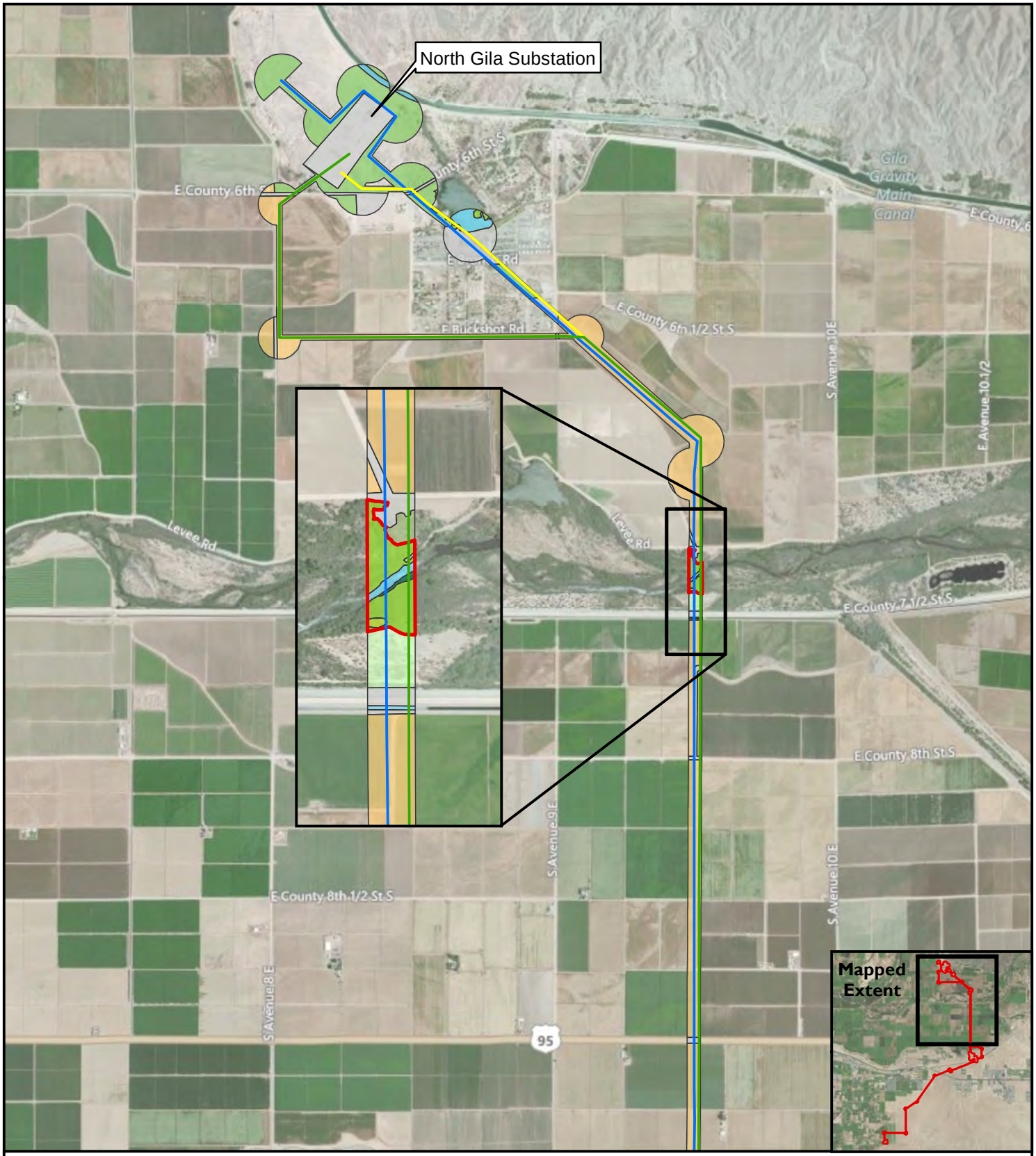
Figure 2:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Soils Map

1 inch = 1 mile

0 1 2 Miles

May 2013



Source: APS, DSW, Aspen EG, ESRI

- Agricultural
- Developed
- Open Water
- Freshwater Marsh
- Saltbush Scrub
- Tamarisk Scrub
- Creosotebush-White Bursage Scrub
- Sonoran Riparian Scrubland
- Creosotebush-Big Galleta Scrub
- Sonoran Riparian Deciduous Forest and Woodlands

- Gila-Knob Upgrade to 230 kV
- Gila-North Gila 69 kV Rebuild
- North Gila to Orchard 230 kV
- Requires special-status bird nest season avoidance

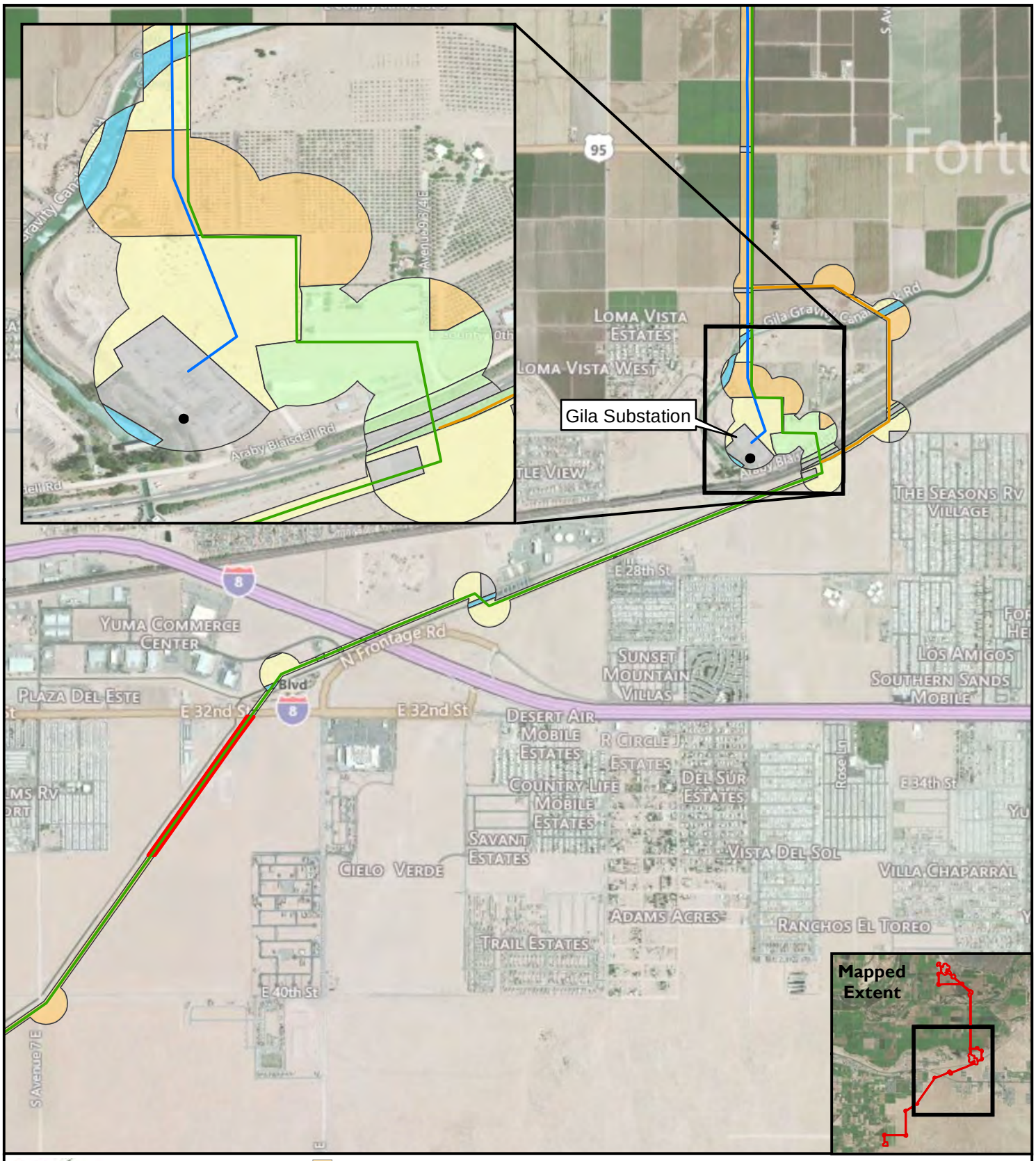
Figure 3A:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Biological Resources Map

1 inch = 2,500 feet

0 0.5 1 Miles

May 2013



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Name/Org: _____ Date: _____

This cartographic product and GIS data were prepared in accordance with professional practice standards. Data is only as accurate as its primary source and is spatially relative-grade. It should not replace or be used in place of survey data. Refer to metadata for source and accuracy.

Source: APS, DSW, Aspen EG, ESRI

- Agricultural
- Developed
- Open Water
- Freshwater Marsh
- Saltbush Scrub
- Tamarisk Scrub
- Creosotebush-White Bursage Scrub
- Sonoran Riparian Scrubland
- Creosotebush-Big Galleta Scrub
- Sonoran Riparian Deciduous Forest and Woodlands

- Gila-Knob Upgrade to 230 kV
- Alternative 1 Certificated Route
- North Gila to Orchard 230 kV
- Requires a pre-construction survey for special-status lizards
- Active Red-Tailed Hawk Nest

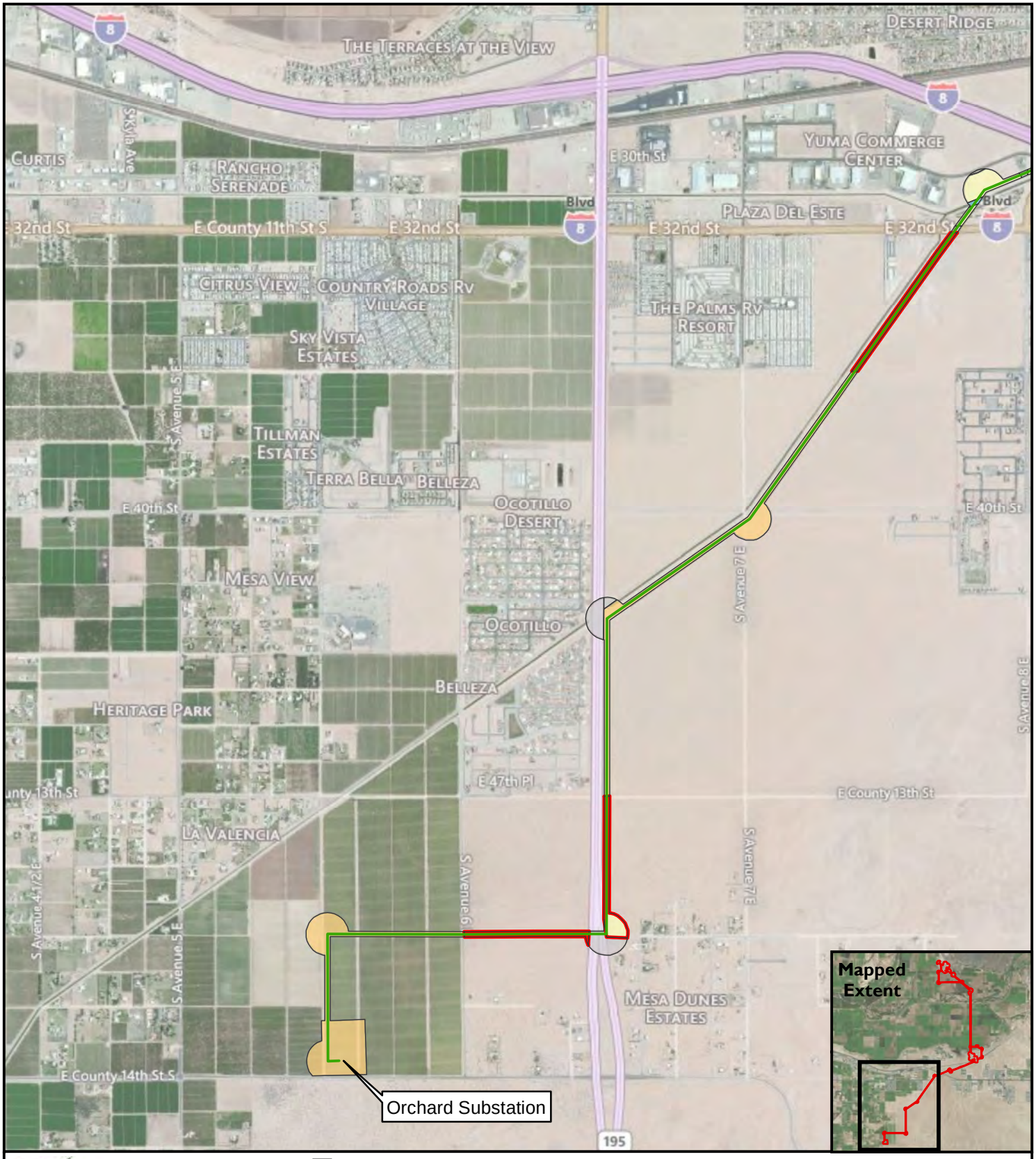
Figure 3B:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Biological Resources Map

1 inch = 2,500 feet

0 0.5 1 Miles

May 2013



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Source: APS, DSW, Aspen EG, ESRI

- Agricultural
- Developed
- Open Water
- Freshwater Marsh
- Saltbush Scrub
- Tamarisk Scrub
- Creosotebush-White Bursage Scrub
- Sonoran Riparian Scrubland
- Creosotebush-Big Galleta Scrub
- Sonoran Riparian Deciduous Forest and Woodlands
- North Gila to Orchard 230 kV
- Requires a pre-construction survey for special-status lizards

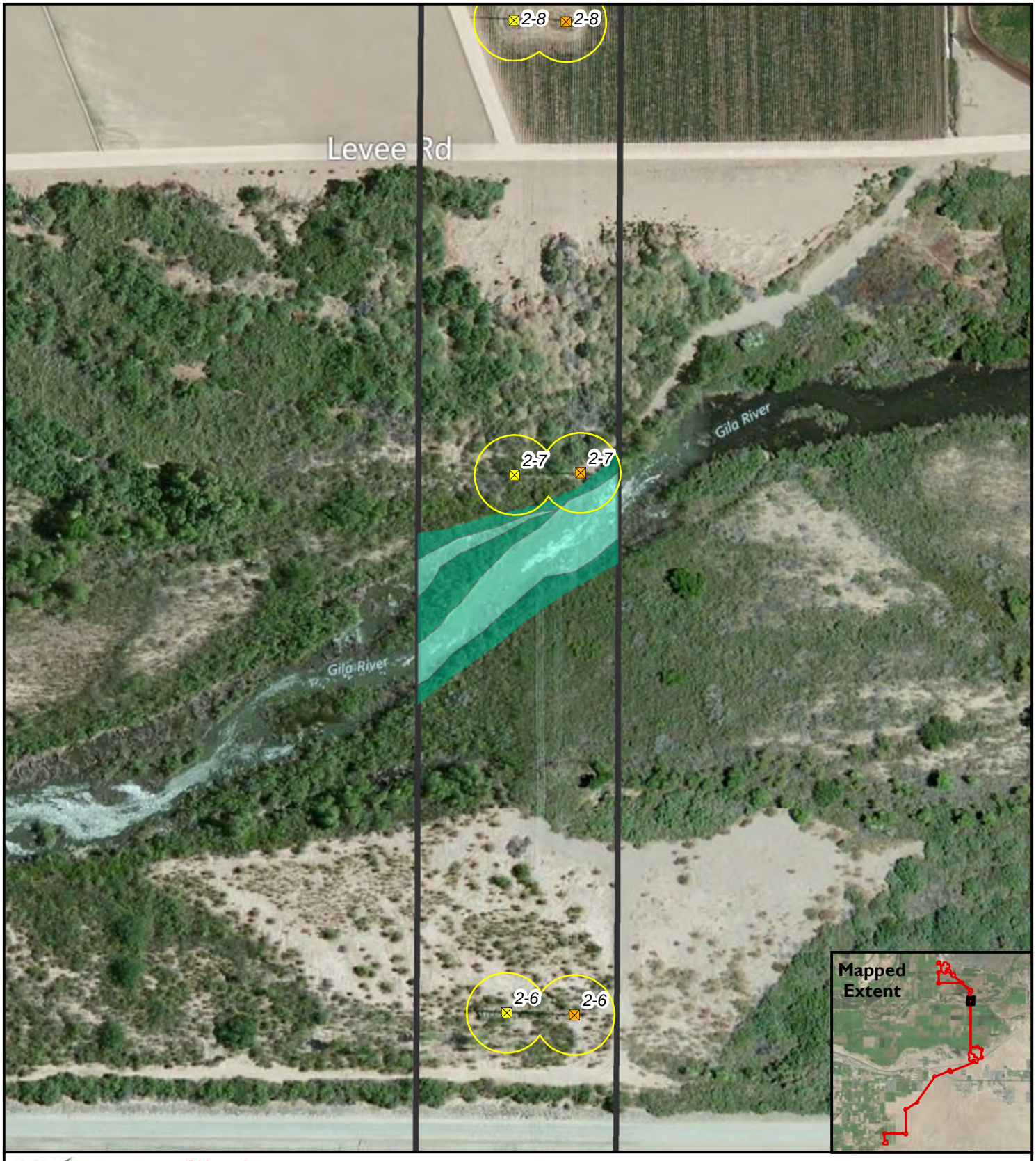
Figure 3C:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Biological Resources Map

1 inch = 2,500 feet

0 0.5 1 Miles

May 2013



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Source: APS, DSW, Aspen EG, ESRI

- Existing Gila-Knob Structure
- Existing Gila-North Gila Structure
- 50 Foot Buffer Around Existing Structures
- Potentially Jurisdictional Wetlands
- Potentially Jurisdictional Waters
- Project Area

Figure 4:
Gila to North Gila Transmission Line Rebuild and Upgrade Project

Jurisdictional Delineation

1 inch = 167 feet

0 200 400 Feet

May 2013

Attachment 2 – Representative Site Photos

Due to presence of steep vertical banks, dense vegetation, and deep water photographs of the Gila River were only able to be taken from atop the banks at locations with openings in the vegetation.

Photo 1 – View looking south at the Gila River near Western Structures 2-7.

Photo 2 – View looking south at structures 2-6 and the span over the Gila River.

Attachment 3 – Wetland Indicator Status of Plant Species Observed in the Project Area

Latin Name	Common Name	Wetland Indicator Status Southwest Region 7
AMARANTHACEAE	AMARANTH FAMILY	
Tidestromia lanuginosa	Woolly honeysweet	—
Tidestromia oblongifolia	Honeysweet	—
APOCYNACEAE	OLEANDER FAMILY	
* *Nerium oleander*	Oleander	—
ASTERACEAE	ASTER FAMILY	
Ambrosia dumosa	White bursage, burrobush	—
Baccharis salicifolia	Mulefat	FACW/FAC
Dicoria canescens	Desert dicoria	N/A
Encelia farinosa	Brittlebush	N/A
Euthamia occidentalis	Western goldentop	FACW+/FACW/FACW*
Geraea canescens	Desert sunflower	—
Hymenoclea salsola	Cheesebush	NI
Palafoxia arida var. *arida*	Spanish needles	—
Pluchea sericea	Arrowweed	FACW-/FAC/FACW
Stephanomeria pauciflora	Desert straw	—
BORAGINACEAE	BORAGE FAMILY	
Cryptantha angustifolia	Narrowleaf cryptantha	—
Tiquilia palmeri	Palmer tiquilia	—
BRASSICACEAE	MUSTARD FAMILY	
* *Brassica tournefortii*	Sahara mustard, wild turnip	—
* *Sisymbrium irio*	London rocket	—
CHENOPODIACEAE	GOOSEFOOT FAMILY	
Allenrolfea occidentalis	Iodinebush	FACW
Atriplex lentiformis	Big saltbush	FAC/FACW
Atriplex polycarpa	Allscale	FACU/FACU-
EUPHORBIACEAE	SPURGE FAMILY	
Chamaesyce micromera	Sonoran sandmat	—
Chamaesyce setiloba	Yuma spurge	—
Ditaxis neomexicana	New Mexico silverbush	—
FABACEAE	PEA FAMILY	
Acacia greggii	Catclaw acacia	FACU
Astragalus sp.	Unid. milk-vetch	UPL
Dalea mollissima	Rust dalea	—
Prosopis glandulosa	Mesquite	FACU/UPL
Psorothamnus emoryi	Dyebush	—
Psorothamus schottii	Shott's dalea	—
KRAMERIACEAE	KRAMERIA FAMILY	
Krameria grayii	White rhatany	—
LOASACEAE	STICK-LEAF FAMILY	
Mentzelia sp.	Unid. annual	FAC/NI
MALVACEAE	MALLOW FAMILY	
Eremalche rotundifolia	Desert fivespot	—
MOLLUGINACEAE	CARPETWEED FAMILY	
Mollugo cerviana	Threadstem carpetweed	FAC/NI
NYCTAGINACEAE	FOUR O'CLOCK FAMILY	
Abronia villosa	Sand verbena	—

Latin Name	Common Name	Wetland Indicator Status Southwest Region 7
ONAGRACEAE	EVENING PRIMROSE FAMILY	
Camissonia claviformis	Browneyes	—
Oenothera deltoides	Birdcage evening primrose	—
PLANTAGINACEAE	PLANTAIN FAMILY	
Plantago ovata	Desert plantain	UPL/FACU
POLYGONACEAE	BUCKWHEAT FAMILY	
Chorizanthe brevicornu	Brittle spineflower	—
Chorizanthe rigida	Devil's spineflower	—
SALICACEAE	WILLOW FAMILY	
Populus fremontii	Fremont cottonwood	FACW
Salix gooddingii	Black willow	OBL/FACW
SOLANACEAE	NIGHTSHADE FAMILY	
Datura wrightii	Jimsonweed, tolguacha	UPL
Solanum elaeagnifolium	Silverleaf nightshade	—
TAMARICACEAE	TAMARISK FAMILY	
* *Tamarix chinensis*	Five-stamen tamarisk	FACW*/FAC/NI
* *Tamarix ramosissima*	Tamarisk	FACW*/NI
ZYGOPHYLLACEAE	CALTROP FAMILY	
Fagonia laevis	Smooth-stem fagonia	—
Larrea tridentata	Creosote bush	—
POACEAE	GRASS FAMILY	
Aristida adscensionis	Sixweeks threeawn	—
Bouteloua aristidoides	Needle grama	—
** *Cenchrus incertus*	Coast sandbur	—
* *Cynodon dactylon*	Bermuda grass	FACU
Pleuraphis rigida	Big galleta	—
* *Poa annua*	Annual bluegrass	FAC-/FACU
* *Schismus barbatus*	Mediterranean schismus	—
TYPHACEAE	CATTAIL FAMILY	
Typha latifolia	Broad-leaved cattail	OBL

* = limited ecological information is available
** = Wetland Indicator Status (Reed, 1988; National Wetlands Inventory, 1996; USACE, 2012)

OBL (Obligate Wetland) - Almost always occur in wetlands (estimated probability of >99%)
FACW (Facultative Wetland) - Usually occur in wetlands (estimated probability of 67 to 99%)
FAC (Facultative) - Equally likely to occur in wetlands/non-wetlands (estimated probability of 34 to 66%)
FACU (Facultative Upland) - Usually occur in non-wetlands (estimated probability 67 to 99%)
NI (Non-indicator) – No indicator status assigned
UPL (Obligate Upland) - Almost always occur in non-wetlands (estimated probability >99%)
— = A wetland indicator status has not been assigned to these species.

Plant taxonomy and nomenclature generally follow USDA (2012). This list includes only species observed on the site. Others may have been overlooked or unidentifiable due to season (many plants are identifiable only in spring). Plants were identified using keys, descriptions, and illustrations in Baldwin et al. (2002), and Munz (1974). Taxonomy and nomenclature generally follow Baldwin.

Attachment 4 – Excerpts from Local Soil Survey Lists

10—Glenbar silty clay loam

Map Unit Setting

Elevation: 80 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition

Glenbar and similar soils: 100 percent

Description of Glenbar

Setting

Landform: Flood plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent mixed alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 50.0
Available water capacity: High (about 12.0 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium
Land capability classification (irrigated): 1
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B

Typical profile

0 to 16 inches: Silty clay loam
16 to 60 inches: Silty clay loam

Parent material: Mixed alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to strongly saline (2.0 to 32.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Very high (about 12.2 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium
Land capability classification (irrigated): 3s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: C

Typical profile

0 to 13 inches: Clay
13 to 23 inches: Clay
23 to 75 inches: Stratified silty clay loam

13—Indio silt loam

Map Unit Setting

Elevation: 80 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition

Indio and similar soils: 100 percent

Description of Indio

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: High (about 10.8 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium
Land capability classification (irrigated): 1
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B

Typical profile

0 to 6 inches: Silt loam
6 to 63 inches: Stratified very fine sandy loam

14—Indio silt loam, saline

Map Unit Setting

Elevation: 80 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition

Indio and similar soils: 100 percent

Description of Indio

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent

Hydrologic Soil Group: B
Ecological site: Saline Bottom 3-7" p.z. (R040XD412AZ)

Typical profile
0 to 4 inches: Silt loam
4 to 60 inches: Stratified very fine sandy loam

16—Indio-Lagunita-Ripley complex

Map Unit Setting
Elevation: 100 to 500 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition
Indio and similar soils: 35 percent
Ripley and similar soils: 25 percent
Lagunita and similar soils: 25 percent

Description of Indio

Setting
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent mixed alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 45.0
Available water capacity: High (about 10.8 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: Loamy Swale 3-7" p.z. (R040XD411AZ)

Typical profile
0 to 6 inches: Silt loam

6 to 63 inches: Stratified very fine sandy loam

Description of Lagunita

Setting

Landform: Terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent mixed alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Sandy Wash 3-7" p.z. (R040XD416AZ)

Typical profile

0 to 8 inches: Loamy sand
8 to 60 inches: Loamy sand

Description of Ripley

Setting

Landform: Drainageways
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent mixed alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Low (about 5.4 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: Loamy Swale 3-7" p.z. (R040XD411AZ)

Typical profile
0 to 6 inches: Silt loam
6 to 25 inches: Very fine sandy loam
25 to 60 inches: Sand

17—Kofa clay

Map Unit Setting
Elevation: 80 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition
Kofa and similar soils: 100 percent

Description of Kofa

Setting
Landform: Flood plains, stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent mixed alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Moderate (about 6.1 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 3s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: D

Typical profile

0 to 12 inches: Clay
12 to 28 inches: Clay
28 to 60 inches: Sand

18—Lagunita loamy sand

Map Unit Setting

Elevation: 80 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition

Lagunita and similar soils: 100 percent

Description of Lagunita

Setting

Landform: Flood plains, alluvial fans, terraces, drainageways
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent mixed alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A

Typical profile
0 to 8 inches: Loamy sand
8 to 60 inches: Loamy sand

19—Lagunita silt loam

Map Unit Setting
Elevation: 100 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition
Lagunita and similar soils: 100 percent

Description of Lagunita

Setting
Landform: Alluvial fans, drainageways, flood plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Recent mixed alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: Low (about 5.2 inches)

Interpretive groups
Farmland classification: Not prime farmland
Land capability classification (irrigated): 3s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A

Typical profile
0 to 12 inches: Silt loam
12 to 60 inches: Sand

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Old mixed alluvium

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Moderately saline to strongly saline (16.0 to 32.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: Very low (about 1.2 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: Saline Terrace 3-7" p.z. (R040XD424AZ)

Typical profile

0 to 2 inches: Very gravelly loam
2 to 25 inches: Very gravelly clay loam
25 to 60 inches: Very gravelly clay loam

22—Pits, borrow

Map Unit Composition

Pits, borrow: 100 percent

23—Pits, gravel

Map Unit Composition

Pits, gravel: 100 percent

24—Ripley silt loam

Map Unit Setting

Elevation: 80 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition
Ripley and similar soils: 100 percent

Description of Ripley

Setting
Landform: Flood plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Low (about 5.4 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: B

Typical profile
0 to 6 inches: Silt loam
6 to 25 inches: Very fine sandy loam
25 to 60 inches: Sand

25—Rositas sand

Map Unit Setting
Elevation: 80 to 700 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition
Rositas and similar soils: 100 percent

Description of Rositas

Setting

Landform: Alluvial fans, terraces, dunes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed eolian sands

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Low (about 4.1 inches)

Interpretive groups

Farmland classification: Farmland of unique importance
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Deep Sand 3-7" p.z. (R040XD423AZ)

Typical profile

0 to 5 inches: Sand
5 to 60 inches: Sand

26—Rositas-Ligurta complex

Map Unit Setting

Elevation: 200 to 400 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition

Rositas and similar soils: 55 percent
Ligurta and similar soils: 30 percent

Description of Rositas

Setting

Landform: Terraces
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed eolian sands

Properties and qualities

Slope: 0 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Low (about 4.1 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Deep Sand 3-7" p.z. (R040XD423AZ)

Typical profile

0 to 5 inches: Sand
5 to 60 inches: Sand

Description of Ligurta

Setting

Landform: Dunes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Moderately saline to strongly saline (16.0 to 32.0 mmhos/cm)
Sodium adsorption ratio, maximum: 45.0
Available water capacity: Very low (about 1.8 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability classification (irrigated): 4s

Land capability (nonirrigated): 7s
Hydrologic Soil Group: B

Typical profile
0 to 2 inches: Very gravelly loam
2 to 60 inches: Gravelly clay loam

27—Salorthids, nearly level

Map Unit Setting
Elevation: 100 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition
Salorthids and similar soils: 100 percent

Description of Salorthids

Setting
Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None

Interpretive groups
Farmland classification: Not prime farmland
Land capability (nonirrigated): 7w
Ecological site: Saline Subirrigated 3-7" p.z. (R040XD413AZ)

28—Superstition sand

Map Unit Setting
Elevation: 100 to 600 feet
Mean annual precipitation: 0 to 0 inches
Mean annual air temperature: 72 to 76 degrees F

Available water capacity: Low (about 5.5 inches)

Interpretive groups

Farmland classification: Farmland of unique importance
Land capability classification (irrigated): 3s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A

Typical profile

0 to 10 inches: Sandy clay loam
10 to 60 inches: Sand

Description of Superstition

Setting

Landform: Terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed sandy alluvium

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Farmland classification: Farmland of unique importance
Land capability classification (irrigated): 3s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A

Typical profile

0 to 10 inches: Loam
10 to 60 inches: Sand

30—Torriorthents-Torrifluvents complex, 1 to 50 percent slopes

Map Unit Setting

Elevation: 400 to 1,200 feet
Mean annual precipitation: 0 to 0 inches

Mean annual air temperature: 72 to 76 degrees F
Frost-free period: 250 to 325 days

Map Unit Composition
Torriorthents and similar soils: 50 percent
Torrifluvents and similar soils: 30 percent

Description of Torriorthents

Setting
Landform: Terraces, escarpments
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed uncolsolidated alluvium

Properties and qualities
Slope: 1 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Ecological site: Breaks 3-7" p.z. (R040XD402AZ)

Description of Torrifluvents

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed uncolsolidated alluvium

Properties and qualities
Slope: 1 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Farmland classification: Not prime farmland
Land capability (nonirrigated): 7e
Ecological site: Sandy Wash 3-7" p.z. (R040XD416AZ)

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water capacity: Low (about 4.1 inches)

Interpretive groups

Farmland classification: Farmland of unique importance
Land capability classification (irrigated): 4s
Land capability (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Deep Sand 3-7" p.z. (R040XD423AZ)

Typical profile

0 to 5 inches: Sand
5 to 60 inches: Sand

35—Water

Map Unit Composition

Water: 100 percent

36—Dam

Map Unit Composition

Dam: 100 percent

Attachment 5 – Federal Waters/Wetlands Delineation Methods

Federal Non-Wetland Waters Delineation Methods

Jurisdictional non-wetland "waters of the U.S." were delineated based on the limits of the ordinary high water marks (OHWM) as determined by changes in physical and biological features, such as bank erosion, deposited vegetation or debris, and vegetation characteristics. Geomorphic and vegetative indicators used are presented in Tables 1 and 2.

Table 1. Potential Geomorphic Indicators of Ordinary High Water Marks for the Arid West

(A) Below OHW	(B) At OHW	(C) Above OHW
1. In-stream dunes 2. Crested ripples 3. Flaser bedding 4. Harrow marks 5. Gravel sheets to rippled sands 6. Meander bars 7. Sand tongues 8. Muddy point bars 9. Long gravel bars 10. Cobble bars behind obstructions 11. Scour holes downstream of obstructions 12. Obstacle marks 13. Stepped-bed morphology in gravel 14. Narrow berms and levees 15. Streaming lineations 16. Desiccation/mud cracks 17. Armored mud balls 18. Knick Points	1. Valley flat 2. Active floodplain 3. Benches: low, mid, most prominent 4. Highest surface of channel bars 5. Top of point bars 6. Break in bank slope 7. Upper limit of sand-sized particles 8. Change in particle size distribution 9. Staining of rocks 10. Exposed root hairs below intact soil layer 11. Silt deposits 12. Litter (organic debris, small twigs and leaves) 13. Drift (organic debris, larger than twigs)	1. Desert pavement 2. Rock varnish 3. Clast weathering 4. Salt splitting 5. Carbonate etching 6. Depositional topography 7. Caliche rubble 8. Soil development 9. Surface color/tone 10. Drainage development 11. Surface relief 12. Surface rounding

Table 2. Potential Vegetation Indicators of Ordinary High Water Marks for the Arid West

	(D) Below OHW	(E) At OHW	(F) Above OHW
Hydroriparian indicators	1. Herbaceous marsh species 2. Pioneer tree seedlings 3. Sparse, low vegetation 4. Annual herbs, hydromesic ruderals 5. Perennial herbs, hydromesic clonals	1. Annual herbs, hydromesic ruderals 2. Perennial herbs, hydromesic clonals 3. Pioneer tree seedlings 4. Pioneer tree saplings	1. Annual herbs, xeric ruderals 2. Perennial herbs, non-clonal 3. Perennial herbs, clonal and non-clonal co-dominant 4. Mature pioneer trees, no young trees 5. Mature pioneer trees w/upland species 6. Late-successional species
Mesoriparian Indicators	6. Pioneer tree seedlings 7. Sparse, low vegetation 8. Pioneer tree saplings 9. Xeroriparian species	5. Sparse, low vegetation annual herbs, hydromesic 6. ruderals 7. Perennial herbs, hydromesic clonals 8. Pioneer tree seedlings 9. Pioneer tree saplings 10. Xeroriparian species 11. Annual herbs, xeric ruderals	7. Xeroriparian species 8. Annual herbs, xeric ruderals 9. Perennial herbs, non-clonal 10. Perennial herbs, clonal and non-clonal codominent 11. Mature pioneer trees, no young trees 12. Mature pioneer trees, xeric understory 13. Mature pioneer trees w/upland species 14. Late-successional species 15. Upland species

Table 2. Potential Vegetation Indicators of Ordinary High Water Marks for the Arid West

	(D) Below OHW	(E) At OHW	(F) Above OHW
Xeroriparian indicators	10. Sparse, low vegetation 11. Xeroriparian species 12. Annual herbs, xeric ruderals	12. Sparse, low vegetation 13. Xeroriparian species 14. Annual herbs, xeric ruderals	16. Annual herbs, xeric ruderals 17. Mature pioneer trees w/upland species 18. Upland species

Federal Wetland Delineation Methods

Vegetation

Plant species in each stratum (tree, sapling/shrub, herb, and woody vine) were ranked according to their canopy dominance (USACE, 2008). Beginning with the species with the highest coverage, species that contributed to a cumulative coverage total of at least 50 percent and any species that comprised at least 20 percent of the total coverage for each stratum were recorded on the Field Data Sheets (50/20 Rule). The wetland indicator status was assigned to each dominant species using the Region 7 (Southwest Region) and 0 (California) *List of Plant Species that Occur in Wetlands* and *Summary of Wetland Indicator Status* (Reed 1988) and the National *National List of Vascular Plant Species That Occur In Wetlands* (National Wetlands Inventory, 1996). As shown below in Table 1, if greater than 50 percent of the dominant species from all strata were Obligate, Facultative-wetland, or Facultative species, the criteria for wetland vegetation was considered to be met.

Table 3. Summary of Wetland Indicator Status

Category		Probability
Obligate Wetland	OBL	Almost always occur in wetlands (estimated probability >99%)
Facultative Wetland	FACW	Usually occur in wetlands (estimated probability of 67–99%)
Facultative	FAC	Equally likely to occur in wetlands/non-wetlands (estimated probability of 34–66%)
Facultative Upland	FACU	Usually occur in non-wetlands (estimated probability 67–99%)
Obligate Upland	UPL	Almost always occur in non-wetlands (estimated probability >99%)
Non-Indicator	NI	No indicator status has been assigned

Source: Reed, 1988

Hydrology

The presence of wetland hydrology was evaluated by recording the extent of observed primary and secondary indicators (USACE, 2008). Such indicators as, but not limited to surface water or saturated soils (both Group A indicators) would be recorded if observed within the Project area. The Arid West Supplement includes two additional indicator groups that can be utilized during dry conditions or in areas where surface water/saturated soils are not present including Group B (evidence of recent inundation) and Group C (evidence of recent soil saturation) (USACE, 2008). The indicators are divided into two categories (primary and secondary indicators) and the presence of one primary indicator from any of the groups is considered evidence of wetland hydrology. These indicators are intended to be one-time observations of site conditions representing evidence of wetland hydrology when hydrophytic vegetation and hydric soils are present (USACE, 2008).

Table 4. Wetland Hydrology Indicators*

Primary Indicators	Secondary Indicators
Watermarks	Oxidized Rhizospheres Associated with Living Roots
Water-Borne Sediment Deposits	FAC-Neutral Test
Drift Lines	Water-Stained Leaves
Drainage Patterns Within Wetlands	Local Soil Survey Data

*Table adapted from 1987 USACE Manual and Related Guidance Documents.

Table 5. Wetland Hydrology Indicators for the Arid West*

	Primary Indicator (any one indicator is sufficient to make a determination that wetland hydrology is present)		Secondary Indicator (two or more indicators are required to make a determination that wetland hydrology is present)
Group A – Observation of Surface Water or Saturated Soils			
A1 – Surface Water	X		
A2 – High Water Table	X		
A3 – Saturation	X		
Group B – Evidence of Recent Inundation			
B1 – Water Marks	**X** (Non-riverine)		**X** (Riverine)
B2 – Sediment Deposits	**X** (Non-riverine)		**X** (Riverine)
B3 – Drift Deposits	**X** (Non-riverine)		**X** (Riverine)
B6 – Surface Soil Cracks	X		
B7 – Inundation Visible on Aerial Imagery	X		
B9 –Water-Stained Leaves	X		
B10 – Drainage	X		X
B11 – Salt Crust	X		
B12 – Biotic Crust	X		
B13 – Aquatic Invertebrates	X		
Group C – Evidence of Current or Recent Soil Saturation			
C1 – Hydrogen Sulfide Odor	X		
C2 – Dry-Season Water Table			X
C3 – Oxidized Rhizospheres along Living Roots	X		
C4 – Presence of Reduced Iron	X		
C6 – Recent Iron Reduction in Tilled Soils	X		
C7 – Thin Muck Surface	X		
C8 – Crayfish Burrows		X	
C9 – Saturation Visible on Aerial Imagery		X	
Group D – Evidence from other Site Conditions or Data			
D3 – Shallow Aquitard		X	
D5 – FAC-Neutral Test		X	

*Table adapted from Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0.

Soils

Historic soil data from the National Resource Conservation Society (NRCS) was used to determine if and where hydric soils could be present (2012a and 2012b). Refer to Section 3.4 of the delineation report for a detailed description of soils that have historically occurred in the Project area. Soil pits, if necessary, were excavated in areas containing both wetland vegetation and hydrology in an effort to document the soil structure regardless of whether or not hydric soils were mapped. Soil pits were dug to a depth of 20 inches where possible (USACE, 2008). At each soil pit, the soil texture and color were recorded by comparison with standard plates within a Munsell soil color chart (2000). Any other indicators of hydric soils, such as redoximorphic features, buried organic matter, organic streaking, reduced soil conditions, gleyed or low-chroma soils were also recorded.

Table 6. Field Indicators of Hydric Soil Conditions*

1. Indicators of Historical Hydric Soil Conditions	2. Indicators of Current Hydric Soil Conditions
a. Histosols b. Histic epipedons; c. Soil colors (e.g., gleyed or low-chroma colors, soils with bright mottles (Redoximorphic features) and/or depleted soil matrix d. High organic content in surface of sandy soils e. Organic streaking in sandy soils f. Iron and manganese concretions g. Soil listed on county hydric soils list	a. Aquic or peraquic moisture regime (inundation and/or soil saturation for *7 continuous days) b. Reducing soil conditions (inundation and/or soil saturation for *7 continuous days) c. Sulfidic material (rotten egg smell)

*Table adapted from 1987 USACE Manual and Related Guidance Documents.

Table 7. Hydric Soil Indicators for the Arid West*

Hydric Soil Indicators			Hydric Soil Indicators for Problem Soils**
All Soils	**Sandy Soils**	**Loamy and Clay Soils**	
A1 – Histosol	S1 – Sandy Mucky Mineral	F1 – Loamy Mucky Mineral	A9 – 1 cm Muck
A2 – Histic Epipedon	S4 – Sandy Gleyed Matrix	F2 – Loamy Gleyed Matrix	A10 – 2 cm Muck
A3 – Black Histic	S5 – Sandy Redox	F3 – Depleted Matrix	F18 – Reduced Verti
A4 – Hydrogen Sulfide	S6 – Stripped Matrix	F6 – Redox Dark Surface	TF2 – Red Parent Material
A5 – Stratified Layers	—	F7 – Depleted Dark Surface	Other (See Section 5 of Regional Supplement, Version 2.0)
A9 – 1 cm Muck	—	F8 – Redox Depressions	—
A11 – Depleted Below Dark Surface	—	F9 – Vernal Pools	—
A12 – Thick Dark Surface	—	—	—

* Table adapted from Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0.
** Indicators of hydrophytic vegetation and wetland hydrology must be present

Appendix D

Public Involvement and Notice of Floodplain Action

Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

January 16, 2013

SUBJECT: **Scoping Letter for Environmental Assessment or Environmental Impact Statement and Notice of Floodplain and Wetland Action for Western's Gila-North Gila Transmission Line Re-build Project in Conjunction with APS's North Gila-TS8 Construction Project (DOE/EA-1948)**

Dear Interested Party:

This letter invites you to be involved in and provide input on environmental issues associated with the above-mentioned Federal action, which is further described below.

Western Area Power Administration (Western) is a Federal power-marketing agency within the U.S. Department of Energy (DOE) that operates and maintains transmission lines and associated facilities. Western proposes to re-build and upgrade two, parallel 4.8 mile-long transmission lines located between the existing Gila and North Gila substations and take land actions in support of portions of APS's construction of a new, 12.8-mile-long, 230-kV transmission line between North Gila and a proposed TS8 substation east of Yuma in Yuma County, Arizona (see enclosed map). Western's reconstruction action involves a portion of its wood-pole Gila-Knob 161-kV transmission line, which will be upgraded to 230-kV and re-built on steel structures, as well as the wood-pole, double-circuited, Gila-North Gila 69-kV transmission line, which would be re-built as an underbuild on steel structures associated with APS's new North Gila-TS8 230-kV transmission line. Western's land action entails acquiring up to an additional 50 feet adjacent to (west of) the existing Gila-Knob transmission line right-of-way (ROW), transferring a portion of the Gila-North Gila transmission line ROW to APS, and granting APS the right for their new transmission line to cross Western's Gila Substation.

Western proposes this project to increase the reliability and safety of the bulk electric system by replacing wood structures with steel ones, moving away from the 161-kV standard which is no longer commonly used, and efficiently using existing transmission line ROW. The Gila-Knob transmission line was built in 1943 and has been in service well beyond its useful life.

As part of the project planning tasks, Western will address the following issues before construction can begin:

- **Cultural Resources:** Western will ensure that an intensive pedestrian (Class III) survey of the project area has been conducted. Western will serve as Lead to consult with the Arizona State Historic Preservation Office, Tribes, and consulting parties regarding this project.
- **Biological Resources:** Western will ensure that a biological survey of the project is conducted. The biological survey will evaluate threatened, endangered and other special status species and their habitat potentially affected by the project.

- **Floodplains and Wetlands Review**: Western will assess impacts to floodplains and wetlands and comply with the applicable requirements of U.S. Army Corps of Engineers Clean Water Act section 404 requirements.
- **National Environmental Policy Act (NEPA):** Western will serve as Lead Federal Agency in the preparation of an environmental assessment (EA) for this project unless, 1) a cooperating agency objects, or 2) if a significant impact that cannot be mitigated is identified. In these cases, Western may prepare an Environmental Impact Statement. APS's North Gila-TS8 Transmission Line Project will be analyzed as a connected action.

We anticipate project-related construction activities could begin in January 2015, provided the above-mentioned tasks are completed and no significant environmental effects are identified. Project information is available online:

http://www.wapa.gov/dsw/environment/GilaToNorthGilaRebuild.htm.

We would like to know of any issues, concerns and suggestions you may have regarding the project. Your comments will help define issues and alternatives for consideration in the environmental review process. Comments can be provided in writing, by phone, or in person at the public scoping meeting (information below). Please submit your comments by February 21, 2013.

Mail: Western Area Power Administration
ATTN.: Matthew Bilsbarrow, NEPA Document Manager
P.O. Box 6457
Phoenix, AZ 85005
Email: DSW-EA1948PublicComment@wapa.gov
Phone: (602) 605-2536
Fax: (602) 605-2630

Western will host a public open house to allow the public and interested parties an opportunity to learn about the project, the NEPA process, and ask questions. The meeting will be held at the following date, time and location.

Thursday, February 7, 2013, 6:00–8:00 pm
Pivot Point Conference Center/Hilton Garden Inn
310 N. Madison Avenue
Yuma, AZ 85364

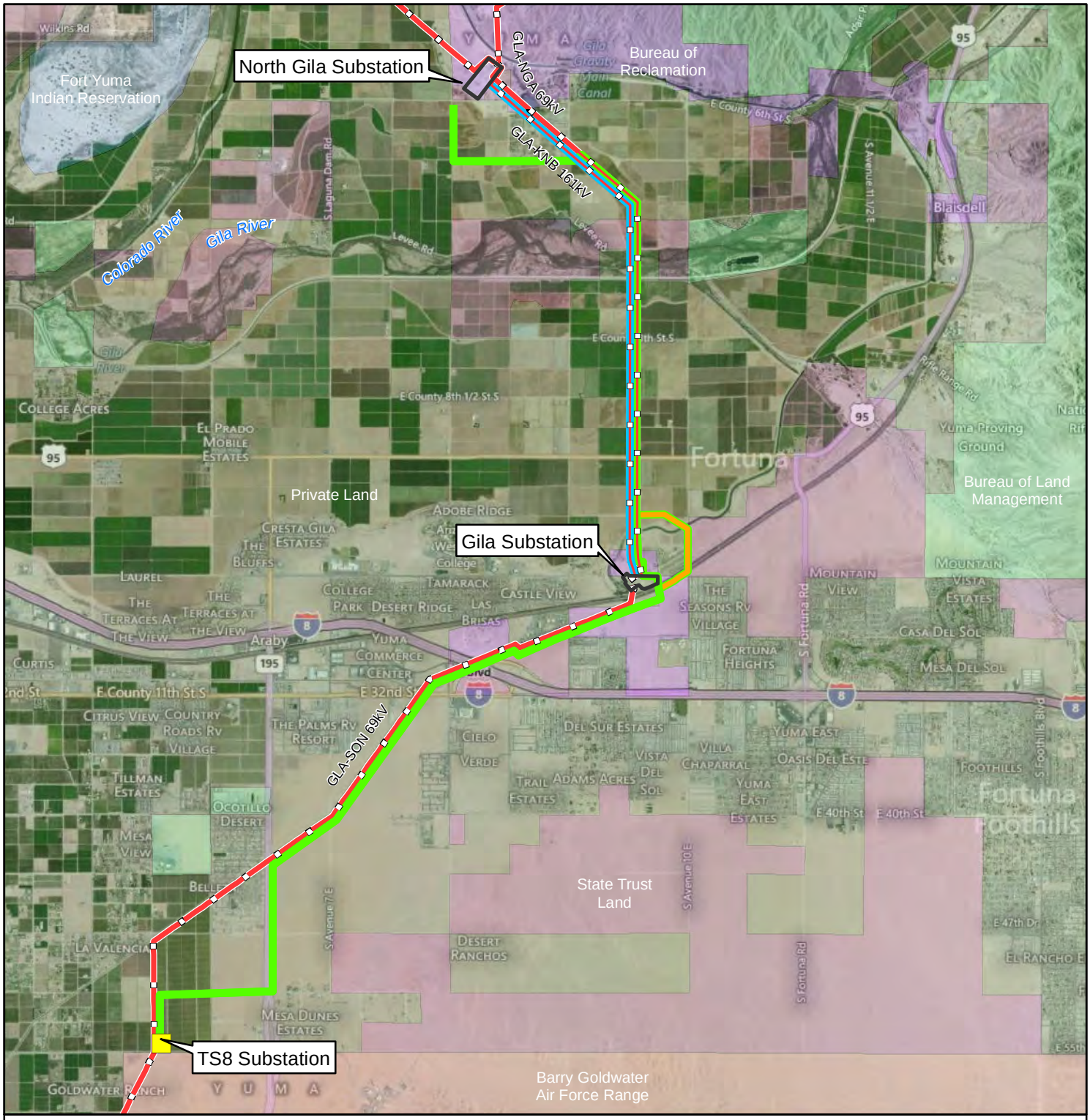
We look forward to receiving your comments on this project and hope that you will be able to attend the public scoping meeting.

Sincerely,

Linda Marianito

Linda Marianito, Environmental Manager

Enclosure (map)



- TS8 Substation
- Existing Substation
- Existing Western Transmission Line

Proposed Action

- Gila-Knob Upgrade to 230kV
- Gila-North Gila 69kV Underbuild on North Gila-TS8 230kV Structures
- APS North Gila-TS8 Project (Connected Action)

Alternative 1*

- Certificated Route

Land Ownership

- Barry Goldwater Air Force Range
- Bureau of Land Management
- Bureau of Reclamation
- Fort Yuma Indian Reservation
- Private Land
- State Trust Land

Gila to North Gila Transmission Line Rebuild and Upgrade Project

DOE / EA - 1948

N

1:75,000

1 in = 6,250 feet

0 1 2 Miles

Source: DSW, Aspen EG, ESRI

* Alternative 1 includes Proposed Action components except Certificated Route

A:\Projects\1118_Western\1118_024_DSW\GLA-NGA\MXD\GLA-NGA_ProjectOverview_A.mxd

Open House

Gila-North Gila, North Gila-TS8 Transmission Projects

Learn more about the proposed rebuild and upgrade of two transmission lines between Gila and North Gila substations and land actions for portions of APS' North Gila-TS8 Transmission Project at an open house, February 7, 2013.

The proposed project includes:

- Upgrading Gila-Knob 161-kV to 230-kV using steel structures
- Rebuilding Gila-North Gila 69-kV transmission line as an underbuild on APS's new North Gila-TS8 structures.

APS is also proposing an alternative route around the Gila Substation.

Western will analyze the environmental impacts to resources in the proposed project area and assess APS' North-Gila TS8 Project as a connected action. Because the project crosses the Gila River and ephemeral washes, impacts to floodplains will also be analyzed. Your input is sought to help Western and APS identify impacts to be analyzed.

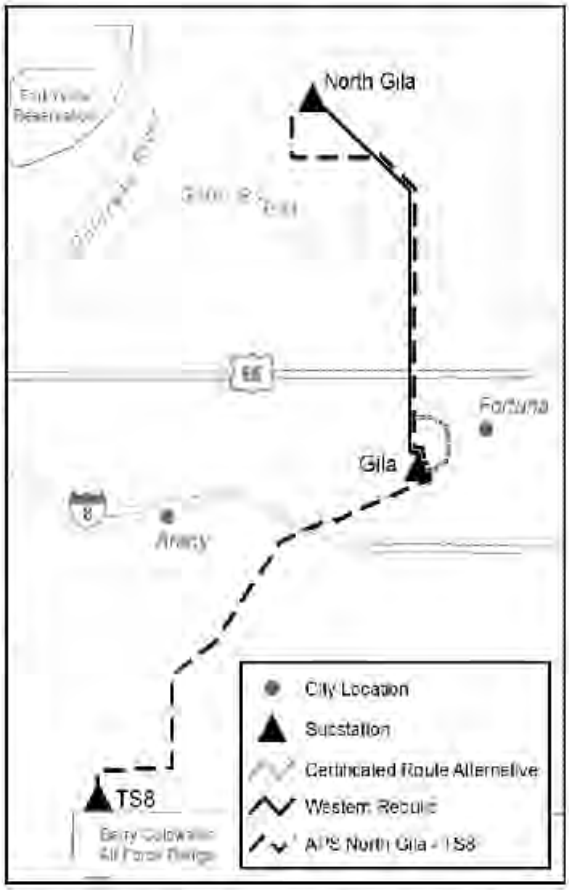
Come to the open house:
Thursday, February 7, 2013, 6 – 8 pm
Pivot Point Conference Center/Hilton Garden Inn
310 N. Madison Avenue
Yuma, AZ 85364

Send us your comments:
If you have comments or input, you can provide it at the open house, by phone, by fax, or by mail. Send comments by Feb. 21, 2013 to:

Western Area Power Administration
Matthew Bilsbarrow, NEPA Document Manager
P.O. Box 6457 Phoenix, AZ 85005
Email: DSWEA1948PublicComment@wapa.gov
Phone: 602-605-2536
Fax: 602-605-2630

For more information visit:

- http://www.wapa.gov/dsw/environment/GilaToNorthGilaRebuild.htm
- http://www.aps.com/aps/general_info/Siting/siting_37.html



For translation services, call Heather Blair at 916-379-0350 x17 or email DSW-EA1948PublicComment@wapa.gov.

Public Open House Thursday, February 7, 2013, 6 – 8 pm

Appendix E

Agency Correspondence

Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

NOV 06 2012

Ms. Jill Dale, Environment Group Manager
U.S. Bureau of Reclamation, Yuma Area Office
7301 Calle Agua Salada
Yuma, Arizona 85364

Attn: Mr. Julian DeSantiago

RE: Invitation to be a Cooperating Agency in the Environmental Reviews for Western's Gila North Gila Transmission Line Rebuild Project in conjunction with Arizona Public Service's North Gila TS-8 Transmission Line Project, Yuma, Yuma County, Arizona. DOE/EA-1948

Dear Ms. Dale:

Western Area Power Administration (Western) invites your agency to be a cooperating agency (per 40 CFR 1501.6) in the National Environmental Policy Act (NEPA) process for Western's proposed Gila to North Gila Transmission Line Rebuild Project in conjunction with Arizona Public Service's (APS) North Gila to TS-8 Transmission Line Project, Yuma, Yuma County, Arizona. DOE/EA-1948 is our tracking number for this NEPA effort. Your agency has jurisdiction by law over a portion of the project, because APS has applied for and Western may apply for right-of-ways (ROWs) across land managed by your agency. Western's Matthew Bilsbarrow discussed this project with Mr. Julian DeSantiago on 9/26/12.

Project Description

Western proposes to rebuild and upgrade two, parallel, 4.8-mile-long transmission lines located between Gila and North Gila Substations and take land actions in support of portions of APS's construction of a new, 12.8-mile-long, 230-kV transmission line between North Gila and a proposed TS-8 substation in Yuma County, Arizona. Western's reconstruction action involves a portion of the wood-pole Gila Knob 161-kV Transmission Line, which would be upgraded to 230-kV and rebuilt on steel structures as well as the double-circuited, wood-pole Gila North Gila 69-kV Transmission Line, which would be rebuilt as an under-build on steel structures associated with the new APS line. Western's land action entails acquiring up to an additional 50 feet ROW adjacent to the existing Gila Knob ROW, transferring a portion of the Gila North Gila ROW to APS, and granting APS the right for their new transmission line to cross Western's Gila Substation. APS's proposed transmission line crosses 0.9 miles of U.S. Bureau of Reclamation (BOR) land in Sections 1 & 2, Township 9 South, Range 22 West on the Gila and Salt River Baseline and Meridian (GSRBM). They applied for a ROW on 5/3/11 and their line also cross a portion of the A Canal. Western's existing transmission lines crosses 0.5 miles of BOR land in Sections 11, 14 & 36 in Township 8 South Range 22 West on the GSRBM.

Western's proposed action will increase the reliability and safety of the bulk electric system by replacing wood structures with steel ones, moving away from the 161-kV standard which is no longer commonly used, and efficiently using existing transmission line ROWs. The Gila Knob Transmission Line was built in 1943 and has been in service well beyond its projected useful life. The Gila North Gila

Transmission Line was built in 1984. Western's customer, APS, determined that this project will increase reliability and meet current and future electric load on their system.

Initial Environmental Scoping

Western proposes to act as Lead Federal agency for NEPA, National Historic Preservation Act (NHPA) and Endangered Species Act (ESA) processes for this project. According to our NEPA regulations, the initial starting point for this project type is the Environmental Assessment (EA) path. Western anticipates that the EA will include analysis of the project's direct, indirect and cumulative impacts for the following resource areas: Land Use/ Aviation, Agriculture/ Prime Farmland, Recreation, Human Health and Safety, Visual/Aesthetics, Noise, Water Resources/ Floodplains/ Water of the U.S., and Wildlife. The following resources areas likely do not require analysis in the EA: Air Quality, Climate Change, Socio Economic, Vegetation, Cultural Resources, Transportation, Intentional Destructive Acts, Geology/ Soils/ Minerals, and Hazardous Materials. As scoping and technical analyses proceed, we may add or remove resources areas from detailed study (per 40 CFR 1501.7(a)(3)). At this point, Western plans to consider two action alternatives and a no action alternative. Both action alternatives cross BOR land. The difference between the two is that APS's proposed transmission line either goes around Gila Substation to the east or takes a more direct route and crosses the substation.

Western determined that this project is the type of activity that could impact historic properties should they be present, and thus meets the definition of an undertaking under the NHPA's Section 106 regulations. We determined that most of the area of potential effect for ground disturbance was previously surveyed, and we are gathering this documentation and will address any gaps.

Western determined that this project is a Federal action and will follow the ESA's Section 7 regulations. We plan to conduct a biological resources assessment of the action area and evaluate project's effects to threatened or endangered species or their habitat.

Project Schedule

Western and APS plan to begin construction, which will be phased, in May 2014 and energize the North Gila to TS-8 transmission line by May 2015. Western plans to prepare a final Environment Assessment by 9/30/2013 and issue a NEPA decision document (i.e., Finding of No Significant Impact or Determination to Prepare an Environmental Impact Statement) by 10/31/2013. Western plans to hold one public scoping meeting during either December 2012 or January 2013 and located in Yuma County, Arizona.

Cooperating Agency Role

Western expects your agency's involvement will entail only those areas under its jurisdiction and will occur in a timely manner relative to the project schedule. This may include (per 40 CFR 1501.6(b)):

1) providing meaningful early input on defining the purpose and need, determining alternatives, and analytical methods;
2) participating in the public scoping meeting, coordination meetings and joint field reviews, as appropriate; and
3) providing timely review and comments on draft documents.

Given the scope of this environmental effort, Western does not propose preparing a Memorandum of Understanding between our two agencies.

As a cooperating agency, you have the right to expect that the NEPA, NHPA and ESA documents will enable your agency to discharge its jurisdictional responsibilities. Likewise, your agency has the obligation to tell us if, at any point in the process that your needs are not being met.

Looking Ahead

Please let Western know if your agency requires a different NEPA path (e.g., Environmental Impact Statement), has any unique procedural or documentation requirements, has data relevant to the project area or the project's impacts, or is aware of other individuals or affiliated organizations that should be contacted regarding this project. If you are not your agency's point of contact, please direct us to one.

Western will contact your agency's point of contact regarding a NEPA kickoff meeting, public scoping meeting, and monthly status updates. If you have any questions, please contact Environmental Planner Mr. Matthew Bilsbarrow at 602-605-2536, or via email at bilsbarrow@wapa.gov or myself at 602-605-2525.

Sincerely,

Linda Hughes
Environmental Manager

Accept Western's cooperating agency invitation & Western's designation as lead Federal agency

Sign: _____ Date: _____

Name: _____ Title: _____

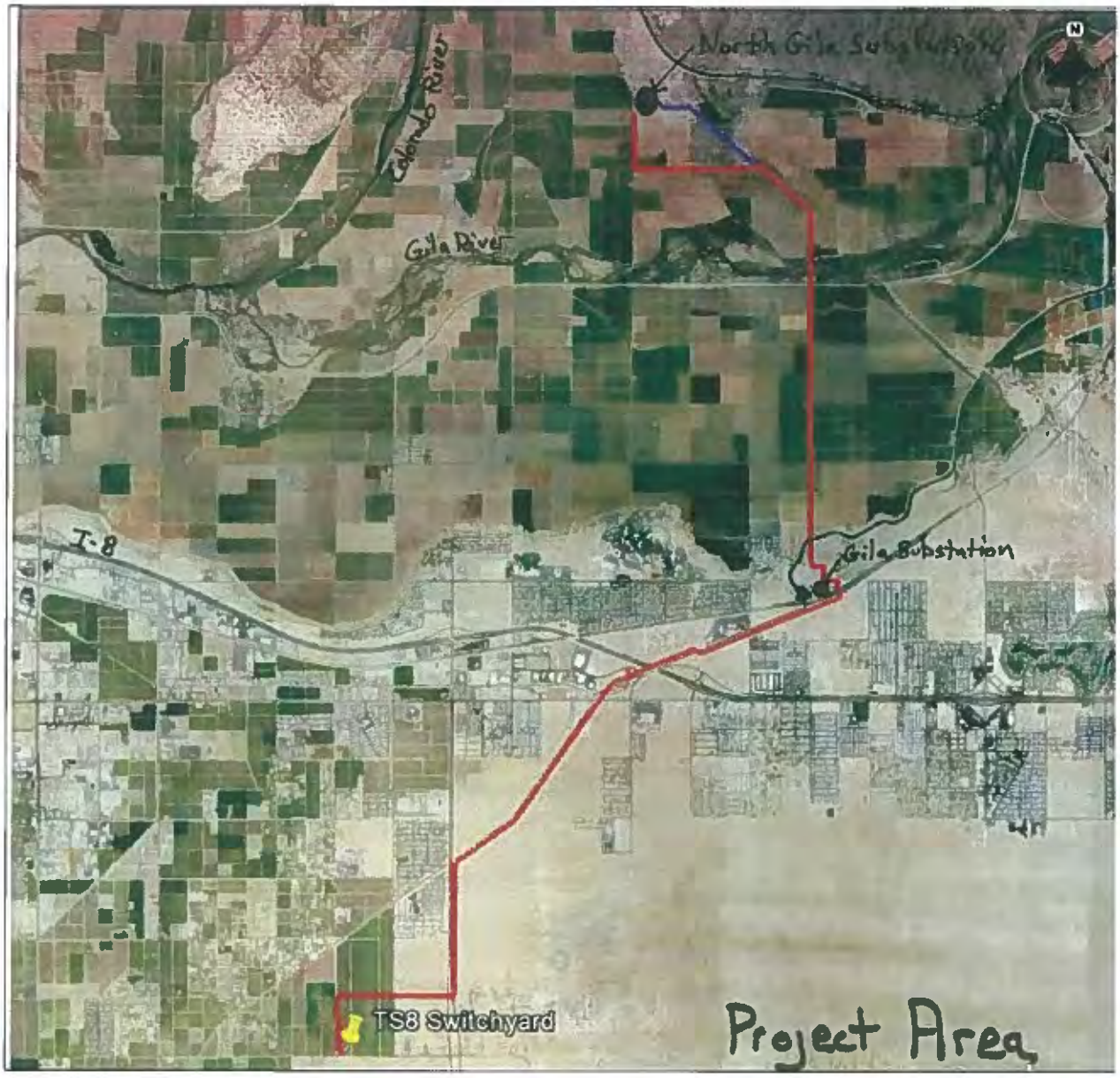
Comments (e.g., reason for rejection, clarification of jurisdiction or expertise, point of contact information):

_____

_____

_____

enclosure (map)


Colorado River
Gila River
I-8
Gila Substation
TS8 Switchyard
Project Area

Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

NOV 06 2012

Mr. Bill Miller
U.S. Army Corps of Engineers, Los Angeles District Office
3636 North Central Avenue, Suite 900
Phoenix, Arizona 85012

RE: Invitation to be a Cooperating Agency in the Environmental Reviews for Western's Gila North Gila Transmission Line Rebuild Project in conjunction with Arizona Public Service's North Gila TS-8 Transmission Line Project, Yuma, Yuma County, Arizona DOE/EA-1948

Dear Mr. Miller:

Western Area Power Administration (Western) invites your agency to be a cooperating agency (per 40 CFR 1501.6) in the National Environmental Policy Act (NEPA) process for Western's proposed Gila to North Gila Transmission Line Rebuild Project in conjunction with Arizona Public Service's (APS) North Gila to TS-8 Transmission Line Project, Yuma, Yuma County, Arizona. DOE/EA-1948 is our tracking number for this NEPA effort. Your agency has jurisdiction by law over a portion of the project, because two transmission lines will be rebuilt within the Gila River floodplain and may impact wetlands and waters of the U.S. during construction. Western's Matthew Bilsbarrow discussed this project with you on 9/26/12.

Project Description

Western proposes to rebuild and upgrade two, parallel, 4.8-mile-long transmission lines located between Gila and North Gila Substations and take land actions in support of portions of APS's construction of a new, 12.8-mile-long, 230-kV transmission line between North Gila and a proposed TS-8 substation in Yuma County, Arizona. Western's reconstruction action involves a portion of the wood-pole Gila Knob 161-kV Transmission Line, which would be upgraded to 230-kV and rebuilt on steel structures as well as the double-circuited, wood-pole Gila North Gila 69-kV Transmission Line, which would be rebuilt as an under-build on steel structures associated with the new APS line. Western's land action entails acquiring up to an additional 50 feet right-of-way (ROW) adjacent to the existing Gila Knob ROW, transferring a portion of the Gila North Gila ROW to APS, and granting APS the right for their new transmission line to cross Western's Gila Substation. Western's transmission lines cross the mile-wide Gila River floodplain in Section 24, Township 8 South, Range 22 West on the Gila and Salt River Baseline and Meridian.

Western's proposed action will increase the reliability and safety of the bulk electric system by replacing wood structures with steel ones, moving away from the 161-kV standard which is no longer commonly used, and efficiently using existing transmission line ROWs. The Gila Knob Transmission Line was built in 1943 and has been in service well beyond its projected useful life. The Gila North Gila Transmission Line was built in 1984. Western's customer, APS, determined that this project will increase reliability and meet current and future electric load on their system.

Initial Environmental Scoping

Western proposes to act as Lead Federal agency for NEPA, National Historic Preservation Act (NHPA) and Endangered Species Act (ESA) processes for this project. According to our NEPA regulations, the initial starting point for this project type is the Environmental Assessment (EA) path. Western anticipates that the EA will include analysis of the project's direct, indirect and cumulative impacts for the following resource areas: Land Use/ Aviation, Agriculture/ Prime Farmland, Recreation, Human Health and Safety, Visual/Aesthetics, Noise, Water Resources/ Floodplains/ Water of the U.S., and Wildlife. The following resources areas likely do not require analysis in the EA: Air Quality, Climate Change, Socio Economic, Vegetation, Cultural Resources, Transportation, Intentional Destructive Acts, Geology/ Soils/ Minerals, and Hazardous Materials. As scoping and technical analyses proceed, we may add or remove resources areas from detailed study (per 40 CFR 1501.7(a)(3)). At this point, Western plans to consider two action alternatives and a no action alternative. In the Gila River floodplain vicinity, both action alternatives are identical.

Western determined that this project is the type of activity that could impact historic properties should they be present, and thus meets the definition of an undertaking under the NHPA's Section 106 regulations. We determined that most of the area of potential effect for ground disturbance was previously surveyed, and we are gathering this documentation and will address any gaps. We anticipate that the ground surface within portions of the Gila River floodplain will be unsurveyable due to dense vegetation.

Western determined that this project is a Federal action and will follow the ESA's Section 7 regulations. We plan to conduct a biological resources assessment of the action area and evaluate project's effects to threatened or endangered species or their habitat. We anticipate that migratory birds may be present in the Gila River floodplain during a portion of the year, and that construction may be restricted to times when they are absent.

Project Schedule

Western and APS plan to begin construction, which will be phased, in May 2014 and energize the North Gila to TS-8 transmission line by May 2015. Western plans to prepare a final Environment Assessment by 9/30/2013 and issue a NEPA decision document (i.e., Finding of No Significant Impact or Determination to Prepare an Environmental Impact Statement) by 10/31/2013. Western plans to hold one public scoping meeting during either December 2012 or January 2013 and located in Yuma County, Arizona.

Cooperating Agency Role

Western expects your agency's involvement will entail only those areas under its jurisdiction and will occur in a timely manner relative to the project schedule. This may include (per 40 CFR 1501.6(b)):

1) providing meaningful early input on defining the purpose and need, determining alternatives, and analytical methods;
2) participating in the public scoping meeting, coordination meetings and joint field reviews, as appropriate; and
3) providing timely review and comments on draft documents.

Given the scope of this environmental effort, Western does not propose preparing a Memorandum of Understanding between our two agencies.

As a cooperating agency, you have the right to expect that the NEPA, NHPA and ESA documents will enable your agency to discharge its jurisdictional responsibilities. Likewise, your agency has the obligation to tell us if, at any point in the process that your needs are not being met.

Looking Ahead

Please let Western know if your agency requires a different NEPA path (e.g., Environmental Impact Statement), has any unique procedural or documentation requirements, has data relevant to the project area or the project's impacts, or is aware of other individuals or affiliated organizations that should be contacted regarding this project. If you are not your agency's point of contact, please direct us to one.

Western will contact your agency's point of contact regarding a NEPA kickoff meeting, public scoping meeting, and monthly status updates. If you have any questions, please contact Environmental Planner Mr. Matthew Bilsbarrow at 602-605-2536, or via email at bilsbarrow@wapa.gov or myself at 602-605-2525.

Sincerely,

Linda Hughes
Environmental Manager

Accept Western's cooperating agency invitation & Western's designation as lead Federal agency

Sign: _____ Date: _____

Name: _____ Title: _____

Comments (e.g., reason for rejection, clarification of jurisdiction or expertise, point of contact information):

_____

_____

_____

enclosure (map)


North Gila Substation
Colorado River
Gila River
I-8
Gila Substation
TS8 Switchyard
Project Area

SHPO-2013-1120 (116005)

Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

James Garrison
State Historic Preservation Officer
Arizona State Parks
1300 W. Washington Street
Phoenix, AZ
85007

Re: Gila-North Gila Transmission Line Rebuild Project

Dear Mr. Garrison:

As required by the National Environmental Policy Act (NEPA) Western is writing an Environmental Assessment to evaluate a proposal to rebuild and upgrade two, parallel, 4.8-mile-long transmission lines located between the Gila and North Gila Substations. As part of this NEPA evaluation Western seeks your comment regarding the potential for impact to cultural resources as part of the proposed action. Western has also determined that this action is a federal undertaking, as defined in 36 CFR Part 800.16(y) (as revised in 2004), the regulations implementing Section 106 of the National Historic Preservation Act (NHPA). Western is the lead federal agency for this undertaking. The intent of this letter to perform scoping as required by NEPA and initiate consultation as required by NHPA.

Western's undertaking involves a portion of the wood-pole GLA–KNB 161-kV transmission line, which would be upgraded to 230-kV and rebuilt on steel structures, as well as the double-circuit, wood-pole GLA–NGA 69-kV transmission line, which would be rebuilt as an underbuild on steel structures associated with the new APS North Gila–Orchard 230-kV transmission line.

Western's land action entails acquiring up to an additional 50 feet of right-of-way (ROW) adjacent to the existing GLA–KNB ROW, transferring a portion of the GLA–NGA ROW to APS, and granting APS the right for their new transmission line to cross Western's Gila Substation.

Portions of the project area were previously surveyed for separate projects (Florie et al. 2009; Graves et al. 2013; Moreno et al. 1995; Watkins 2011; Watkins et al. 2011). Western requested that Logan Simpson Design, Inc. (LSD), conduct a Class III inventory of those portions that had not previously been subjected to survey as well as those that were inaccessible during previous surveys. Western also requested that the following previously recorded sites be visited and, if necessary, documented to current industry standards: AZ X:7:11(ASM); AZ X:7:40(ASM); and AZ X:7:41(ASM). In addition, portions of two linear sites, the historic alignment of US 95 (AZ L: 7:30[ASM]) and the historic alignment of the Main Drain (AZ X:6:39[ASM]) are within the

project area, but were not previously recorded as sites. Logan Simpson Design, Inc. recorded and evaluated these sites within the project area.

The project area, including the survey area and areas of site recording, crosses land under the jurisdiction of the Bureau of Reclamation, Lower Colorado Region, Yuma Field Office (Reclamation); State Trust land under the administration of the Arizona State Land Department (ASLD); and private lands within the City of Yuma and unincorporated Yuma County lands. It is located within the SE¼ of Section (Sec.) 10; NW¼, NE¼, SE¼, and SW¼ of Sec. 11; NW¼, SE¼, and SW¼ of Sec. 13; NW¼, NE¼, SE¼, and SW¼ of Sec. 14; NW¼, NE¼, SE¼, and SW¼ of Sec. 24; NW¼, NE¼, SE¼, and SW¼ of Sec. 25; and the NW¼, NE¼, SE¼, and SW¼ of Sec 36, Township 8 South (T8S), Range 22 West (R22W); the SW¼ of Sec. 31, T8S, R21W; the NW¼ of Sec. 6, T9S, R21W; and the NW¼ and NE¼ of Sec. 1, the SE¼ and SW¼ of Sec. 2, the SE¼ of Sec. 3, the NW¼, NE¼, and SE¼ of Sec. 10, the NW¼ of Sec. 15, the NW¼, NE¼, SE¼, and SW¼ of Sec. 16, the NW¼, NE¼, SE¼, and SW¼ of Sec. 20, and the NW¼, NE¼, SE¼, and SW¼ of Sec. 21, T9S, R22W. USGS 7.5' quadrangles Fortuna, AZ 1992; Yuma, AZ 1973, 1983; Gila and Salt River Baseline and Meridian (G&SRB&M).

Only those areas between the Gila and North Gila substation are considered part of the Area of Potential Effect (APE) for the purposes of Section 106 compliance. The area to the south of the Gila Substation will be built by APS regardless of whether the Gila-North Gila line is rebuilt/upgraded, and requires no permission from Western to do so.

The Class III cultural resources inventory of 73.80 acres for the Gila–North Gila Transmission Line Rebuild Project resulted in the identification of five previously recorded sites and structures, one newly recorded feature, and two IOs (see enclosed report).

It should be noted that there are several areas within the project area that were not inventoried for cultural resources. As illustrated in the report, the westernmost un-inventoried area shown in Figure A.1 (page 28) is comprised of agricultural fields, whereas the easternmost un-inventoried area (Figure A.1) was too densely vegetated to permit pedestrian survey. The un-inventoried area shown in Figure A.2 (page 29) is part of a housing development. The areas shown in Figure A.3 (page 30) were not inventoried for cultural resources because land owner permission could not be secured for access; it should be noted that this area is not considered part of the APE for the purposes of Section 106 compliance.

AZ L:7:30(ASM) is the historic alignment of US 95. ADOT previously determined that the structure is eligible for inclusion in the National Register (Criterion D) with SHPO concurrence. Western has determined that the portion of the historic property within the project area is non-contributing to the structure's eligibility.

AZ X:6:39(ASM) is the previously recorded Main Drain. Reclamation previously determined that the structure is eligible for inclusion in the National Register (Criterion A) with SHPO concurrence. Western has determined that the portion of the historic property within the project area is a contributing component to the structure's eligibility. This site will be avoided during project construction.

AZ X:7:11(ASM) is a previously recorded prehistoric artifact scatter. Previous researchers recommended the site as both eligible for inclusion in the National Register under Criterion D and not eligible. Based on LSD's re-evaluation of the site, Western has determined it is not eligible under any criteria.

AZ X:7:40(ASM) is a previously recorded prehistoric flaked-stone scatter. Previous researchers recommended the site not eligible for inclusion in the National Register, LSD's observations support that assessment. Western has determined that this site is not eligible.

AZ X:7:41(ASM) is a previously recorded prehistoric flaked-stone scatter. Previous researchers recommended the site not eligible for inclusion in the National Register; LSD recorded a possible historic component and expanded the previous site boundary. Geologic setting suggests that it is unlikely that subsurface features are present. Western has determined that this site is not eligible.

The feature consists of approximately 500 aqua and colorless glass Hemengray insulators that are probably associated with AZ X:7:42(ASM), the Gila–Knob transmission line. The Gila–Knob transmission line has been recommended not eligible for inclusion in the National Register. As such, Western has determined that the insulator pile is not eligible.

The IOs consist of a one aqua glass insulator and 15 Patayan ceramic sherds from one vessel; and 10 sherds and one secondary chert flake. None of these convey historical significance and Western has determined that the IOs are not eligible for inclusion in the National Register under any criteria.

In summary, there are five sites/structures, one feature, and two IOs. Western has determined that three of these sites are not eligible for inclusion on the NRHP: AZ X:7:11(ASM), AZ X:7:40(ASM), and AZ X:7:41(ASM). One site is eligible for the NRHP overall but the portion within the APE is a non-contributing element: AZ L:7:30(ASM). And one site is eligible for the NRHP but will be avoided during project construction: AZ X:6:39(ASM). Based on these data, Western has determined that the proposed undertaking will result in No Adverse Effect to cultural resources.

If you concur with our finding of **No Adverse Effect** we have provided for your convenience a signature line and comment field for use below. Of course you may provide separate correspondence if you desire. If we do not receive a response within 30 days we will assume you concur with our finding.

If you have any questions, concerns or wish to consult further about this undertaking please contact our archaeologist, Ms. Jill Jensen at (602) 605-2842 or myself at (602) 605-2524. Thank you for your assistance in this matter.

Sincerely,

NO ADVERSE EFFECTS
18 NOV 13
ARIZONA STATE HISTORIC
PRESERVATION OFFICE

Linda J. Marianito
Environmental Manager

As indicated by my signature below I concur with Western's finding of No Adverse Effect for the proposed Gila-North Gila Transmission Line Rebuild Project

Signature:_____ Date:_____

Affiliation:_____

Other comment:

Enclosures: project map, report

cc:
Marianito
Tromly
Jensen
FILE

Appendix F

Tribal Government Contacts

Hon Charles Wood Chairman Chemehuevi Tribe PO Box 1976 Havasu Lake, CA 92363	Leigh Kuwanwisiwma Director, Cultural Preservation Office Hopi Tribe 123 Main St. Kykotsmovi, AZ 86039
June Leivas Director, Cultural Center Chemehuevi Tribe PO Box 1976 Havasu Lake, CA 92363	Hon Leroy N. Shingoitewa Chairman Hopi Tribe 123 Main St. Kykotsmovi, AZ 86039
Cheryl Bradstreet Director of Communications Cocopah Indian Tribe County 15th & Ave. G Somerton, AZ 85350	Brian Golding Sr. Economic Development Director Quechan Tribe of Ft. Yuma Indian Reservation PO Box 1899 Yuma, AZ 85366-1899
Sherry Cordova Tribal Council Chairwoman Cocopah Indian Tribe County 15th & Ave. G Somerton, AZ 85350	Hon Keeny Escalanti Sr. President Quechan Tribe of Ft. Yuma Indian Reservation PO Box 1899 Yuma, AZ 85366
Jill McCormick Cultural Resources Manager Cocopah Indian Tribe County 15th & Ave. G Somerton, AZ 85350	Arlene Kingery Historic Preservation Officer Quechan Tribe of Ft. Yuma Indian Reservation PO Box 1900 Yuma, AZ 85367
Kermit Palmer Tribal Administrator Cocopah Indian Tribe County 15th & Ave. G Somerton, AZ 85350	Laura Homewytewa Tohono O'odham Nation PO Box 837 Sells, AZ 85634
Paul Soto Tribal Resource Planner Cocopah Indian Tribe County 15th & Ave. G Somerton, AZ 85350	Lorraine Marquez Eiler Director, Hia-CedO'odham Alliance Member, Legislative Council Tohono O'odham Nation PO Box 837 Sells, AZ 85634
Hon Enas Eldred Chairman Colorado River Indian Tribes 26600 Mohave Rd. Parker, AZ 85344	Hon Ned Norris, Jr. Chairman Tohono O'odham Nation Main Tribal Business Loop Sells, AZ 85634
Wilene Fisher-Holt Museum Director Colorado River Indian Tribes 1007 Arizona Ave. Parker, AZ 85344	Peter Steere Tribal Historic Preservation Officer Tohono O'odham Nation Main Tribal Business Loop Sells, AZ 85634
Linda Otero Director, Aha Makav Cultural Society Fort Mohave Indian Tribe 10225 South Harbor Ave. Unit 7 Mohave Valley, AZ 86440	Hon Ernest Jones, Sr. Chairman Yavapai-Prescott Indian Tribe 530 E Merritt St. Prescott, AZ 86301-2038
Timothy Williams Chairman Fort Mohave Tribal Council 500 Merriman Ave. Needles, CA 92363	Linda Ogo Director, Dept. of Culture Research Yavapai-Prescott Indian Tribe 530 E Merritt St. Prescott, AZ 86301-2038