Wellton-Mohawk Generating Facility
Draft Environmental Impact Statement

DOE/EIS-0358

COVER SHEET

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***Cooperating Agency*:** Bureau of Reclamation

***Cooperating Agency*:** Bureau of Land Management

***Title*:** Wellton-Mohawk Generating Facility Draft Environmental Impact Statement

***Location*:** Yuma County, Arizona

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Abstract: Dome Valley Energy Partners LLC, together with the Wellton-Mohawk Irrigation and Drainage District and the Yuma County Water Users' Association, collectively referred to as the Applicant, has applied to the Western Area Power Administration (Western) to interconnect the proposed Wellton-Mohawk Generating Facility (WMGF) to Western's transmission system in the vicinity of Wellton, Arizona, east of Yuma, in Yuma County. The Proposed Project would consist of the WMGF, a natural gas-fired, combined-cycle, electric generating facility, with solar collection field; a facility natural gas pipeline to supply natural gas; newly constructed and upgraded transmission lines; substation modifications; and access roads. The proposed WMGF would be partially located on land currently managed by the U.S. Bureau of Reclamation (Reclamation). Portions of the proposed transmission line upgrade and addition and the facility natural gas pipeline would cross lands managed in part by the U.S. Bureau of Land Management (BLM) and Reclamation. Western must consider approving the interconnection request. Reclamation must consider approving the transfer of the title to the land for a portion of the WMGF site. Both Reclamation and BLM must consider the rights-of-way applications for the proposed pipeline and transmission line components of the Proposed Project. The decisions to be made by Western, BLM, and Reclamation regarding the Proposed Project will be issued following the Final EIS in the form of separate Records of Decision for each agency.

Comments on this Draft EIS should be sent only to Western Area Power Administration at the address below. Comments must be postmarked not later than ????.

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S.0 SUMMARY

Dome Valley Energy Partners LLC (Dome Valley), together with the Wellton-Mohawk Irrigation and Drainage District (WMIDD) and the Yuma County Water Users' Association (YCWUA), collectively referred to as the Applicant, have applied to the Western Area Power Administration (Western) to interconnect the proposed Wellton-Mohawk Generating Facility (WMGF) to Western's transmission system in the vicinity of Wellton, Arizona, 25 miles east of Yuma, in Yuma County (figure S-1). The Proposed Project would consist of the WMGF, a natural gas-fired, combined-cycle, electric generating facility, with solar collection field; a facility natural gas pipeline to supply natural gas; newly constructed and upgraded transmission lines; substation modifications; and access roads. The proposed WMGF would be partially located on land currently managed by the U.S. Bureau of Reclamation (Reclamation), and a portion of the proposed facility natural gas pipeline would cross lands managed by Reclamation. Portions of the proposed transmission line upgrade and addition would cross lands managed by the U.S. Bureau of Land Management (BLM) and Reclamation. Western must consider approving the interconnection request, and if it approves the request, it must construct the associated transmission system additions. Reclamation must consider approving the transfer of the title to the land for a portion of the proposed WMGF site. Also, Reclamation must consider the rights-of-way (ROW) applications for the proposed pipeline and transmission line components of the Proposed Project, and BLM must consider the ROW for the transmission line component. The decisions to be made by Western, BLM, and Reclamation regarding the Proposed Project would be issued following the Final Environmental Impact Statement (EIS) in the form of separate Records of Decision (ROD) for each agency.

Under the No Action Alternative, Western would reject the application to interconnect to Western's transmission system, and the proposed WMGF, facility natural gas pipeline, and transmission system additions would not be built. Due to the interconnectedness of the other Federal decisions, the Proposed Project would not be built if BLM or Reclamation did not authorize the land transfer or the ROW across Federal lands. The lack of the land transfer could be overcome by Reclamation relinquishing its interest in the land, thus allowing BLM to declare the land surplus and selling or exchanging the 96 acres, however this process would require two or more years to complete.

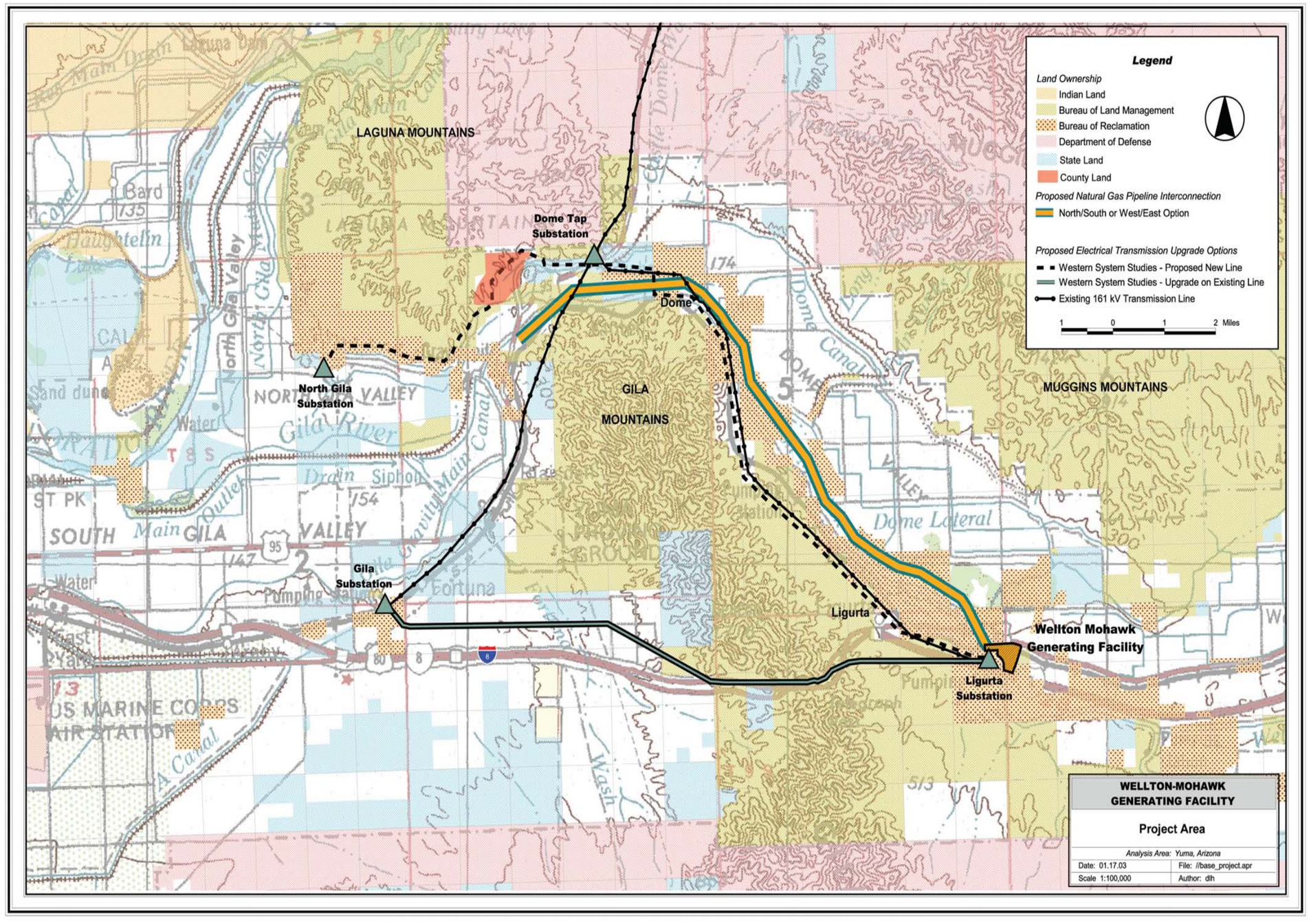

Figure S-1. Proposed Project Area.

S.1 PURPOSE AND NEED FOR AGENCY ACTION

The National Environmental Policy Act (NEPA) and its associated regulations are designed to address discretionary decisions that are made by a Federal agency. The purpose and need for the decisions of the Federal agencies regarding the Proposed Project are discussed below.

Western Area Power Administration

Western's decision is to grant or deny an interconnection request at the Ligurta Substation under the provisions of its General Guidelines for Interconnections. If it approves the interconnection, Western would be committed to making transmission system additions which are described in this document. In granting or denying the application for interconnection, Western also needs to meet its obligations under its Open Access Tariff, which is intended to comply with the intent of Federal Energy Regulatory Commission (FERC) Orders for providing nondiscriminatory transmission access.

U.S. Bureau of Reclamation

Reclamation's decision is to grant or deny the request from the Applicant, for transfer of title to 96 acres of land to be used as a portion of the proposed WMGF site. In addition, Reclamation must consider applications the Applicant has filed for ROW across Reclamation managed lands for the facility natural gas pipeline, and a ROW Western would require for transmission system additions. If approved, BLM would issue the ROW for the Proposed Project components crossing Federal lands, with Reclamation concurrence.

U.S. Bureau of Land Management

BLM's decision is to grant or deny the ROW for Western to make its transmission system additions that would be required if the Proposed Project is authorized. BLM must ensure that the facilities constructed on public lands are safe and ensure reclamation of public lands that would be disturbed.

S.2 APPLICANT'S PURPOSE AND GOALS

The Applicant is made up of Dome Valley, WMIDD, and YCWUA, each with its own responsibilities and goals for the Proposed Project. Dome Valley is an experienced independent power developer, owner, and operator, responsible for managing the development of the Proposed Project for profit and to fulfill an electric power need. WMIDD is a political subdivision of the State of Arizona responsible for providing water and electric power to the farming industry and others residing in the geographic region. WMIDD is a participant because it is leasing the land and providing water for the Proposed Project in order to make a profit and reduce its customer service costs. There is the potential that WMIDD would also use a small portion of the power produced by the Proposed Project. YCWUA has responsibilities to provide water and power in the Yuma area, and is a participant for the sake of having increased generation capacity.

The Yuma Transmission Import Constraint Area is one of five load pockets (areas consuming electricity) identified by the Arizona Corporation Commission (ACC). Within the Yuma load pocket there is a need for additional local generation to meet Yuma area loads, and a need to place less reliance on the existing small, older, less efficient, and higher polluting "reliably must run" (RMR) generation facilities in the Yuma area. The Applicant is responding to those needs by proposing to provide new power generation capacity for the Yuma load pocket. The Applicant's goal is to make a profit selling the power. Based on this goal, the Applicant's purposes are to:

- Site the proposed WMGF near existing WMIDD water supplies.
- Site the proposed WMGF near an existing substation or existing transmission lines.
- Site the proposed WMGF near regional natural gas supplies.
- Maximize the use of existing ROW.
- Site the proposed WMGF on land owned or administered by the Applicant.
- Limit the cost of constructing the proposed WMGF.

In addition to the above-mentioned purposes, there are conditions that must be met for the Proposed Project to be acceptable to various regulating and permitting entities that have approved, or would approve, the proposed WMGF. These conditions include such things as:

- Incorporating solar energy use into the energy production process in compliance with the Environmental Portfolio Standard adopted by the ACC.
- Ensuring compatibility with management zoning, land use, recreation, and known plans of Federal, state, local, and private entities for the site and surrounding area.
- Minimizing of air emissions.
- Participating in an environmental education program to teach the science of solar energy technology.
- Participating in regional energy groups to ensure adequate energy for Arizona.
- Protecting wildlife and cultural resources.
- Making payments to local governments to partially offset taxes foregone due to WMIDD's tax exempt status as a state agency.
- Minimizing of noise impacts to the surrounding area.

S.3 PUBLIC SCOPING

A Notice of Intent to prepare a WMGF EIS was published in the *Federal Register* on May 19, 2003 (68 FR 27056). Western provided notice of scoping meetings to tribal, local, and state entities as well as the public. Public scoping meetings were held in Wellton and Yuma, Arizona, on June 3 and 4, 2003, respectively. The comments received during public scoping raised issues to be evaluated in the WMGF EIS including: the need for the Proposed Project; Proposed Project alternatives; public role in decisionmaking; final approval authority; effects on the rural character of the area; transportation and management of hazardous materials; ultimate disposition of the proposed WMGF; socioeconomic factors, environmental justice, and effects on the biological, cultural, water, human health, and visual resources, as well as on air quality and noise. These issues are included in the analyses and discussions presented in this EIS. In addition, consultations have been initiated with Federal, state, and local resource management and regulatory agencies as well as interested tribal governments.

S.4 PROPOSED ACTION AND ALTERNATIVES

Proposed Project

The Applicant proposes to construct and operate the proposed WMGF in unincorporated Yuma County, Arizona, near the Town of Wellton. The Applicant proposes to connect the proposed WMGF to the regional natural gas supply system and to Western's regional power transmission system.

The proposed WMGF, which is to be constructed in two phases, would consist of two natural gas-fired, combined-cycle, electric generating stations rated at 310 megawatts (MW) each. Additionally there would be an associated solar collection field, cooling tower, evaporation pond, and ancillary facilities covering a total of approximately 119 acres. The proposed WMGF would be located adjacent to the Ligurta Substation on a combination of private land and Federal land currently managed by Reclamation.

A proposed facility natural gas pipeline would be constructed on behalf of the Applicant to deliver fuel to the proposed WMGF. There are two proposed routes or options for the facility natural gas pipeline. Option 1 would be approximately 12.7 miles in length running in a northwesterly direction, adjacent to the Wellton-Mohawk Canal, (100 to 300 feet from the centerline of the canal). Option 1 would cross Reclamation, state, and private lands before interconnecting to a proposed regional gas pipeline at Highway 95. Alternatively, Option 2 would be approximately 0.25 mile in length on land managed by Reclamation, connecting to a proposed regional gas pipeline along Interstate 8 (I-8) south of the proposed WMGF.

The changes to the existing electrical transmission system that would be required as part of the Proposed Project are:

- Upgrade of Western's existing 12.7-mile, 161-kilovolt (kV) transmission line between the Ligurta and Gila Substations, west of the proposed WMGF, crossing Federal land managed by BLM, Reclamation, and State and private lands.

- Construction of a new 18.7-mile, 161-kV transmission line between the Ligurta Substation and Arizona Public Service's (APS) North Gila Substation north of Yuma, following the ROW for Western's existing Ligurta-Dome Tap Transmission Line on lands managed by Reclamation, BLM, state, and private owners northwest of the proposed WMGF, and continuing onto the North Gila Substation on land managed by Reclamation, state, and county. Both the Ligurta-Gila and Ligurta-North Gila transmission lines would be constructed to 230-kV specifications, but operated initially at 161-kV.

- Modifications to Western's existing Ligurta, Gila, and Dome Tap substations and APS's North Gila Substation, within the existing fenced boundaries, to accommodate the new and upgraded transmission lines.

S.5 NO ACTION ALTERNATIVE

Each Federal agency (Western, Reclamation, and BLM) could independently determine not to grant the access or rights the Proposed Project needs. Each agency could independently choose the No Action Alternative.

Without the ability to interconnect to Western's transmission system, the Proposed Project would not be feasible and would not be built or operated. Neither the new facility natural gas pipeline nor the transmission system additions would be constructed or operated. If BLM and Reclamation do not grant ROW permits and amendments for the proposed transmission system additions, Western would not upgrade its transmission system as proposed. Thus, the proposed WMGF could not connect to the grid through Western's system due to inadequate capacity. Likewise, if Reclamation does not transfer the lands needed for the Proposed Project, or consent to ROW issuance by BLM, the Proposed Project would not be built.

Under the No Action Alternative, no pole-replacement or major reconstruction activities are currently planned for Western's transmission lines in the area for the next 10 years. However, it is likely that Western's transmission system in the area would be rebuilt to 230-kV within the next 10 to 15 years.

S.6 OTHER ALTERNATIVES CONSIDERED BUT NOT EVALUATED IN DETAIL

The Applicant's screening process to assess alternative sites for the proposed WMGF included such things as: close proximity to WMIDD water supplies, close proximity to an existing substation, close proximity to an existing natural gas pipeline, close proximity to ROW, need for approximately 120 acres, land not currently used for agriculture, etc. When all of these criteria were applied there were only two potential sites for the proposed WMGF. The site selected and another site that is potentially valuable as a reservoir site. Due to the suitable soils and geology, and the anticipated future need for the reservoir site, it was agreed that there is no feasible alternative site for the WMGF that meets the Applicant's selection criteria other than the site described in the Proposed Action.

Conservation and demand-side management, and alternative energy resources were also considered. However, none of these alternatives were selected, because they would not meet the objectives of the Proposed Project.

S.7 IMPACTS

Table S-1 presents a summary of the environmental impacts of the Proposed Project and No Action Alternative, based on the analyses in chapter 4 of this EIS. The table presents impacts that would result from the proposed WMGF, facility natural gas pipeline, and transmission system additions for each resource/environmental component after the mitigation measures described in chapter 2 are put into place.

The resources/environmental components evaluated for potential impacts are:

- Geology, paleontology, and soils
- Water resources
- Air quality
- Biological resources
- Cultural resources
- Land use and recreation
- Transportation
- Visual resources
- Noise
- Socioeconomics
- Environmental justice
- Health and safety
- Waste management

There are a number of different mitigation measures that are included as part of the Proposed Project, described in section 2.2.5 of this EIS. Implementation of these mitigation measures would lessen impacts; however, some adverse impacts from the Proposed Project would remain. Some additional mitigation measures are identified in chapter 4 that would further lessen impacts. These additional mitigations may, or may not be included in the RODs prepared by Western, Reclamation and BLM.

Western, BLM, and Reclamation have not yet determined whether the cultural resources in the Proposed Project area are eligible for listing on the National Register of Historic Places (NRHP). A programmatic agreement (PA) has been developed for the Proposed Project by Western in consultation with Reclamation, BLM, Arizona State Historic Preservation Officer, interested Tribes, the Applicant and others. The signed PA takes the place of procedures outlined in Federal regulations to implement section 106 of the National Historic Preservation Act (NHPA). The PA outlines the steps to be taken to identify and evaluate cultural resources, to assess adverse impacts, and to develop measures to avoid, reduce, or mitigate adverse impacts.

The recommendations presented in this EIS are those proposed by the archaeologists and ethnographers who performed the archaeological survey and ethnographic studies. The recommendations are based on their evaluation of sites' archaeological, historic and

ethnographic significance. Some ethnographic information on traditionally significant and important resources has been obtained through consultation with interested tribes and other sources. As more information is obtained and evaluated through consultation, other sites may also be determined eligible for listing. Final recommendations of eligibility will be developed in consultation with the PA signatories. Either the final recommendations or the current status of the consultations will be included in the final EIS.

Correspondingly, the Federal agencies have not determined the appropriate mitigations for reducing potential impacts to cultural resources. Therefore, the impacts presented in table S-1 include only those committed mitigation measures described in chapter 2, section 2.2.5. The final determination of mitigations will be made in the ROD of each agency following the final EIS.

- Eleven cultural resource sites could be physically impacted by the construction of the proposed WMGF, facility natural gas pipeline, and the transmission lines. The Proposed Project includes mitigation measures to reduce these impacts. If not mitigated, impacts to these sites could be significant.

- The tribes believe that the construction and maintenance of the Proposed Project would impact individual cultural resources through physical damage, and through intrusions into the settings of the resources. Consultation with the PA signatories will continue to determine the type and extent of impacts on the cultural landscape and associated resources.

No significant long-term impacts are expected for other resources. Short-term effects would be primarily related to construction activities and would, for the most part, return to normal after construction has been completed. Chapter 4 discusses additional mitigation measures that would be considered to reduce any substantial impacts for each specific resource or environmental component. Commitments to these additional mitigation measures would be discussed in the final EIS and committed to in the ROD of each agency.

The Proposed Project would have positive effects on some resource areas including:

- The local economy would experience a small boost over the life of the Proposed Project due to construction and operations workforce payroll earnings and construction expenditures.

- The use of the solar technology to chill the inlet air for the turbines would boost the efficiency (power produced per unit of fuel consumed) of the proposed WMGF compared to other natural gas-fired, combined-cycle, electric generating facilities.

- Possible improvements in air quality from potentially reducing the operations of one or more of the aging RMR generation facilities.

- Some cultural resources discovered and avoided by Proposed Project facilities would be less susceptible to damage and vandalism. Existing access roads impacting sites would be closed and re-routed to avoid the sites.

Table S-1. Summary Comparison of Environmental Impacts.

Resource/Environmental Component	Proposed Project	No Action Alternative
Geology, Paleontology, and Soils	**WMGF** No impacts to geological, paleontological, and mineral resources. Increase in erosion potential during construction, but impacts would be minor and temporary. **Pipeline** **Option 1**: A total of 154 acres of soil (including 6 acres of prime farmland) would be temporarily disturbed during construction. No permanent impacts to soil or prime farmland would occur. Topsoil erosion would be minor and temporary. **Option 2**: A total of 3 acres of soil would be temporarily disturbed. No prime farmland would be impacted. Topsoil erosion would be minor and temporary. **Transmission lines** **New:** Approximately 128 acres of land would be temporarily disturbed during installation of transmission line structures. Less than 10 acres would be permanently disturbed for transmission structure footprints and for the upgrade and construction of access roads. Less than one acre of prime farmland would be temporarily disturbed. Increased erosion potential in the transmission line ROW due to removal of vegetation but the impact would not be significant.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Resource/Environmental Component	Resource/Environmental Component
Geology, Paleontology, and Soils (cont.)	**Upgrade**: Approximately 98 acres of land would be temporarily disturbed during the installation of transmission line structures. Approximately 4 acres would be permanently disturbed for transmission structure footprints and for the upgrade and construction of access roads. No impacts to prime farmland. Erosion impacts would be minor and temporary, occurring primarily during construction.	
Water Resources	**WMGF** No change in onsite surface water drainage is anticipated. The proposed WMGF would not impact any Federal jurisdictional watercourses. There would be no direct discharges to groundwater. Water from cooling operations would be discharged to lined evaporation ponds. Impacts from normal operations of the proposed WMGF would be negligible. Being a zero discharge facility, precipitation would be caught, used, and evaporated, resulting in a minor loss of water being contributed to stream flows and groundwater recharge.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Water Resources (cont.)	**Pipeline** **Option 1**: Depth to groundwater in the area of the proposed route ranges from 10 to 60 feet. No impacts to groundwater from construction and operation of the pipeline are anticipated. Increase in surface water runoff due to reduction in vegetative cover during construction would be slight. Total temporary impact area within the boundaries of qualifying Waters of the United States (WUS) is estimated to be 1.069 acres. Compliance with Section 404 of the Clean Water Act Nationwide Permit No. 12 and United States Army Corps of Engineers (USACE) "Special Conditions" would mitigate impacts. Localized flooding potential is low. **Option 2**: Surface water and groundwater impacts would be similar in kind to Option 1, but far smaller since Option 2 is only about 2 percent of the length of Option 1. No impact to Federal jurisdictional watercourses. **Transmission lines** **New**: Depth to groundwater is more than 60 feet. No groundwater resources would be impacted. Increase in surface water runoff due to reduction in vegetative cover during construction would not be significant. Transmission line structures would be sited in areas with reduced erosion potential and to avoid Federal jurisdictional waters. Construction activity for transmission lines in wash areas would comply with Section 404 of the Clean Water Act Nationwide Permit No. 12. Approximately 0.12 acre of area within the boundaries of qualifying WUS would be disturbed by access road construction. Compliance with Section 404 Clean Water Act Nationwide Permit No. 12 would mitigate impacts. **Upgrade**: Impacts are the same as the new transmission line.	

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Air Quality	**WMGF** No significant impact is expected from construction and operation. Predicted impacts are below ambient air quality standards. The proposed WMGF would not be a major source of air pollution, per the Prevention of Significant Deterioration (PSD) criteria. Estimated ambient air concentrations are below EPA Class I significance level. Operation of the proposed WMGF would not significantly impact visibility in the closest federally designated Class I area (Joshua Tree National Park) located in excess of 100 miles to the northwest of the proposed WMGF. The Muggins Mountain Wilderness, the nearest Class II area, would experience an insignificant reduction in visibility since it would only occur 4.63 percent of the time. The CO_2 emission rate would be approximately 952 pounds per megawatt hour, less than one-half the CO_2 emission rate of coal-fired generation. Operation of the proposed WMGF may provide enough generation capacity for some of the older, more air polluting RMR's to be closed. **Pipeline** **Option 1:** Short-term fugitive dust and emissions from construction vehicles are expected along the ROW during construction. Impacts would be temporary and minor. **Option 2:** Impacts would be of the same kind as Option 1 but far less in magnitude than in Option 1.	Current environmental conditions and trends would continue, and the opportunity to possibly close one or more of the RMR's would be lost.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Air Quality (cont.)	**Transmission lines** **New**: Short-term fugitive dust and vehicle emissions are expected along the ROW during construction. Impacts would be temporary and minor. **Upgrade:** Impacts are expected to be the same as for the new construction.	
Biological Resources	**WMGF** **<u>Vegetation</u>** Permanent removal of 119 acres of desertscrub plant communities, including approximately 30 acres of intermittent sand deposits which are potential habitat for the special-status plants identified below. Potential impact to special-status plant species, such as sand food, Schott's wire lettuce, scaly sandpoint, and blue sand lily. While not listed as a sensitive species, the rare parasitic plant, *Pilostyles thurberi*, is found on the proposed WMGF site, and site development would increase the risk of local species population loss. Construction of the proposed WMGF would impact 86 individuals of dyeweed plants parasitized by *Pilostyles thurberi*. The Applicant has agreed to salvage a sample of 24 dyeweed plants that are parasitized by *Pilostyles thurberi*, to better determine the transplant survival rate. The anticipated impacts to the plants would be negligible.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Biological Resources (cont.)	**Wildlife** Short-term impacts to wildlife in the Proposed Project area due to construction and maintenance activities. Minor long-term impacts due to loss of habitat from permanent removal of 119 acres. Increased risk of mortality of burrowing animals, small mammals, and insects due to excavation activities and loss of habitat. No adverse effect to special-status species or their habitat is expected. **Pipeline** **Vegetation** **Option 1:** Approximately 154 acres would be temporarily disturbed. Seventy-five to 85 percent of the area would be desertscrub, and 15 to 25 percent of the area would be tamarisk-dominated riparian communities. Minimal impact to sand deposit habitat in the ROW. **Option 2:** Approximately 3 acres of desertscrub vegetation would be temporarily disturbed. No wetlands or riparian areas would be affected. **Wildlife** **Option 1:** Increased risk of mortality to burrowing animals due to excavation and animals on or near the pipeline ROW. Impact on local and regional species and populations would be nondetectable. **Option 2:** Impacts to wildlife in and around the pipeline ROW would be far less than impacts from Option 1; due to the fact that this option is only 2 percent of the length of Option 1.	

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Biological Resources (cont.)	**Transmission lines** **Vegetation** **New:** Construction of access roads and clearing of transmission structure sites, staging areas, wire pulling and splicing sites would temporarily disturb 128 acres of vegetation. Permanent displacement of vegetation at structure sites and for roads would affect 9 acres. Periodic clearing of riparian vegetation to reduce fire hazards would impact tamarisk. Maintenance activities would impact vegetation in the ROW, mainly in and around transmission line structure locations. The overall impact to vegetation would not be significant. **Upgrade:** Repair of existing roads, and clearing of transmission structure sites, staging areas, wire pulling and splicing sites would temporarily disturb 98 acres. Permanent displacement of vegetation at structure sites and for roads would affect 4 acres. Again, the overall impact to vegetation would not be significant. **Wildlife** **New**: Short-term impacts to wildlife in the Proposed Project areas due to construction and maintenance activities. No adverse effect to special-status species or their habitat is expected. Permanent loss of habitat would not result in impacts detectable at the species or population level. Increased risk of mortality to migrating birds from collision with transmission conductors and structures; however, this would be mitigated by placing state-of-the-art bird warning devices on the portion of the transmission line crossing the Gila River, where the greatest number of birds would be exposed to the hazard.	

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Biological Resources (cont.)	**Upgrade:** Impacts similar to new transmission line construction impacts. Little to no increase in bird mortality over current conditions due to presence of existing line. No impact to biological resources from substation modification activities, because the modifications would be done within the footprints of the existing substations.	
Cultural Resources	**WMGF** One potential NRHP-eligible archaeological resource is on the proposed WMGF site. Impacts from proposed WMGF construction may include complete destruction; however, the site would be mitigated through inventorying, recording, and the collection and preservation of scientifically significant artifacts. Four historic resources are adjacent to the proposed WMGF site: a segment of the Wellton-Mohawk Canal, the Ligurta Substation, a segment of the old Southern Pacific Railroad, and a segment of Old Highway 80. Construction of the proposed WMGF would likely have no direct or indirect impacts to these historic sites adjacent to the site. Eligibility recommendations are proposed by the field archaeologists, and ethnographers. Final evaluation of eligibility, or the current status of consultations to determine eligibility will be included in the Final EIS. The tribes believe that the construction and maintenance of the Proposed Project would impact individual cultural resources through physical damage, and through intrusions into the settings of the resources that were physically avoided. These impacts would result in significant impacts on the cultural landscape and associated resources.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Cultural Resources (cont.)	**Pipeline** **Option 1:** Four potential NRHP-eligible archaeological resources were found in the pipeline ROW. Direct construction impacts and indirect impacts are expected to a portion of one of the archaeological sites. Eligibility for these sites and mitigations for these impacts are under consideration by the Federal agencies. **Option 2:** No potential NRHP-eligible archaeological resources in the pipeline ROW. No impacts are anticipated from construction and operation activities within the ROW.	

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Cultural Resources (cont.)	**Transmission lines** **New**: Eleven potential NRHP-eligible archaeological resources are in the transmission line corridor. Impacts to these sites would be avoided by locating access roads, staging areas, wire pulling and splicing areas away from them, and by spanning the sites. Four of these sites would have significant indirect impacts by the presence of a transmission line over or near the site and nearby structures as a visual intrusion to the setting of the resource. Eligibility for these sites and mitigations for these impacts are under consideration by the Federal agencies. **Upgrade**: Five potential NRHP-eligible archaeological resources are in the transmission line corridor. Impacts to these sites would be avoided by locating staging areas, wire pulling and splicing areas away from them, and by spanning the sites. Existing access roads cross two sites, and these roads would be closed and re-routed to avoid the sites. The presence of the transmission line over or near these sites represents an additional visual intrusion to the setting of the resource. Eligibility for these sites and mitigation for these impacts are under consideration by the Federal agencies. Substation modifications would not likely impact any archaeological resources.	
Land Use and Recreation	**WMGF** Direct impact to land use includes change in land use designation of large part of proposed WMGF site from open and undeveloped to industrial use. No change in population growth and consequent land use impacts are expected. Yuma County has zoned the site for industrial uses. Overall, the impact is considered insignificant. Impacts to recreation would also be insignificant.	No change in existing land use or recreation use. Land use and recreation use trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Land Use and Recreation (cont.)	**Pipeline** **Option 1**: No land use impacts would occur since pipeline would be located in or near existing ROW. Impacts to recreation would be insignificant. **Option 2**: Same as Option 1. **Transmission lines** **New:** No change in land use or land use impacts would occur since transmission lines would be located primarily in or parallel to existing ROW. Impacts to recreation would be insignificant. **Upgrade:** No change to land use or land use impact would occur since upgrade would occur on an existing transmission line and within the existing ROW. Impacts to recreation would be insignificant.	
Transportation	**WMGF** Temporary increase in traffic of 10 to 15% during the 12 to 18 month construction period. Short-term traffic impacts would be expected along local transportation routes in the vicinity of the proposed WMGF. Long-term traffic levels associated with proposed WMGF operation would have little impact on transportation routes in the vicinity of the proposed WMGF. **Pipeline** **Option 1**: Short-term temporary traffic delays and lane closures along existing local roads in the vicinity of the pipeline construction area. **Option 2**: Impacts would be part of proposed WMGF construction.	No change in existing transportation systems would be expected and current trends would be expected to continue

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Transportation (cont.)	**Transmission lines** **New**: Access roads along the Wellton-Mohawk Canal ROW and substation locations are not heavily traveled. Traffic disruptions would be minor. **Upgrade**: Impacts are the same as the impacts of the new transmission line.	
Visual Resources	**WMGF** Minimal visual impact due to existing alterations to the landscape. Short-term visual impact due to dust and equipment during construction. Impacts to visual landscape from the addition of the combustion turbine generators (CTG) and their associated 160-foot high stacks, the heat recovery steam generators (HRSG), solar collectors for the SEECOT™ system, cooling towers, and occasional steam clouds when viewed from points of local interest, travel routes, or nearby residences. **Pipeline** **Option 1**: Minimal visual impact from the cleared area above the buried pipeline. **Option 2**: Same as Option 1, but reduced in magnitude due to the reduced length.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Visual Resources (cont.)	**Transmission lines** **New**: Minimal visual impact from steel pole structures. Views of the transmission line would be partially obstructed due to terrain, but line would be visible from a portion of I-8, in the foreground of Highway 95, and from some residences in the vicinity. **Upgrade**: Because the structures would be changed from dark wood to lighter colored steel, there would be some reduction in visual contrast. However, as the steel structures would be taller and would have ground wires, there would be a slight increase in overall visual impact.	
Noise	**WMGF** Short-term increase in noise levels above background during construction of the proposed WMGF. Although significant noise impacts are expected at the proposed WMGF site boundary and up to about 140 feet beyond the boundary, the noise level at the closest residence is predicted to be increased by only 1.1 dBA, which would be undetectable by the human ear. The area in the vicinity of the proposed WMGF is already impacted by noise from traffic on I-8 and the railroad. **Pipeline** **Option 1**: Short-term increase in noise levels above background during construction. Minimal noise impacts are anticipated from any pipeline maintenance activities. **Option 2**: Same as Option 1.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Noise (cont.)	**Transmission lines** **New**: Short-term increase in noise levels above background during construction. Long-term corona-generated audible noise from transmission lines, but this noise is usually lost in the background noise beyond the boundary of the transmission line ROW. **Upgrade**: Impacts similar to those from construction and operation of new transmission line.	
Socioeconomics	**WMGF** Minimal impact to area population. Direct and indirect effects of construction and operation would be 494 and 86 jobs in the region of influence (ROI), respectively. Annual payroll increase would be $1.2 million during operations, and $10.8 million during construction. Minimal impact on existing housing stocks in the ROI. Peak construction requirement would be 1.5% of available housing stock in Yuma County and 3.6% of available housing stock in the City of Yuma and Town of Wellton combined. No adverse impact to the value of nearby property is anticipated.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Socioeconomics (cont.)	**Pipeline** **Option 1**: Construction impacts would be minimal. Population associated with an additional construction workforce of 40 persons would be a total of 115 when spouses and children are included. This total is less than 1% of the combined City of Yuma and Town of Wellton population in 2000. Direct and indirect effects of construction employment would be 66 jobs. Payroll increase would be a $491,000 increase to the regional economy. **Option 2**: Impacts less than Option 1. **Transmission lines** **New and Upgrade**: Construction impacts would be minimal. Population associated with an additional construction workforce of 50 persons would be 143 when spouses and children are included. This total is less than 1% of the combined City of Yuma and Town of Wellton population in 2000. The combined direct and indirect effects of transmission line construction employment would result in an increase of approximately 82 jobs within the region. Likewise, the direct and indirect effect of transmission line construction payroll expenditures would be an estimated $1,922,000 increase to the regional economy, a very small percent of the total personal income for Yuma County.	

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Environmental Justice	**WMGF** Minority and low-income groups in the ROI do not meet the Counsil on Environmental Quality's (CEQ) definition/criteria for minority or low-income populations. There would be no disproportionately high or adverse health and environmental impacts to minority or low-income groups. **Pipeline** **Option 1**: Minority and low-income groups in the ROI do not meet CEQ's definition/criteria for minority or low-income populations. No impacts to minority or low-income communities. **Option 2**: Same as Option 1. **Transmission lines** **New**: Minority and low-income groups in the ROI do not meet CEQ's definition/criteria for minority or low-income populations. No impacts to minority or low-income communities. **Upgrade**: Minority and low-income groups in the ROI do not meet CEQ's definition/criteria for minority or low-income populations. No impacts to minority or low-income communities.	Minority and low-income groups in the ROI do not meet CEQ's definition/criteria for minority or low-income populations.
Health and Safety	**WMGF** **Worker** Typical construction and industrial work-related injuries may occur. Risk to workers would be minimized through WMGF design, safe work practices, good housekeeping, and compliance with state and Federal worker safety regulations such as OSHA.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Health and Safety (cont.)	**Public** Potential impacts due primarily to fugitive dust emissions and increased noise levels would be minimal due to low-density population in the vicinity of the site. To prevent and minimize exposure of the public to the potential impact of accidental spills and releases, the Applicant would develop and implement a Spill Prevention, Control, Countermeasures and Emergency Response Plan (SPCCERP). Risks of fire or explosion would be minor and would be addressed in the basic proposed WMGF design. **Pipeline** **Worker** **Option 1**: Typical construction and industrial work-related injuries may occur, including the remote possibility of a fire or natural gas explosion. Risks would be minimized through routine maintenance, incorporating safety requirements into the design and operation of the pipeline, and compliance with state and Federal worker safety regulations such as OSHA. **Option 2**: Same as Option 1, but smaller in magnitude. **Public** **Option 1**: Risks of fire or natural gas explosion would be minimized through routine maintenance and by incorporating all regulatory safety measures into the design and operation of the pipeline. **Option 2**: Same as Option 1, but smaller in magnitude.	

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Health and Safety (cont.)	**Transmission lines** **Worker** **New**: Typical construction and industrial work-related injuries may occur. Likelihood of electric shock or electrocution would be very small. Maintenance workers would experience temporary effects such as raised hair on arms and head when working in the ROW. Mitigations would include compliance with state and Federal worker safety regulations such as OSHA. **Upgrade**: Same as new transmission line. **Public** **New**: Risk to public health and safety from fires. Potential for wildfires or vegetation and equipment fires would be reduced by routine maintenance activities and design of transmission line structures. EMF exposure would be the same as or less than exposure from common household appliances. **Upgrade**: Same as new transmission line.	

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Waste Management	**WMGF** Potential contamination hazard from the storage and use of fuel, lubricants, and other fluids during construction. Minimal amounts of regulated and hazardous wastes are expected to be generated. Mitigation of potential risks would be compliance with state and Federal waste management laws such as the Resources Conservation and Recovery Act (RCRA). No significant impact to waste facilities from hazardous and regulated waste generation would occur since the nearest landfill has an expected life of over 100 years, and there are 17 commercial hazardous waste storage and treatment facilities in the Phoenix area. Wastewater would be directly reused or recycled. **Pipeline** **Option 1**: Potential contamination hazard from the storage and use of fuel, lubricants, and other fluids during construction. Impacts would be minimized by immediate clean up of spills and leaks, restricting location of refueling activities, and compliance with state and Federal waste management laws. **Option 2**: Same as Option 1.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (continued).

Resource/Environmental Component	Proposed Project	No Action Alternative
Waste Management (cont.)	**Transmission lines** **New**: Potential contamination hazard from the storage and use of fuel, lubricants, and other fluids during construction. Minimal amounts of hazardous waste would be generated from routine maintenance activities on the transmission lines. Potential risks would be minimized by compliance with state and Federal waste management laws such as RCRA. **Upgrade**: Same as new transmission lines. **Substations** Potential contamination hazard from the storage and use of fuel, lubricants, and other fluids at the substations. Impacts would be minimized by immediate clean up of spills and leaks, restricting location of refueling activities, and compliance with state and Federal waste management laws.	

AZX # = Arizona State Museum Resource Number; CO_2 = carbon dioxide; CTG = combustion turbine generator; dBA = frequency-weighted sound unit; EMF = electric and magnetic field; EPA = U.S. Environmental Protection Agency; FEMA = Federal Emergency Management Agency; FLAG = Federal Land Managers Air Quality Related Values Workgroup; HRSG = heat recovery steam generator; MWh = megawatt hour; NRHP = National Register of Historic Places; OSHA= Occupational Safety and Health Administration; PSD = Prevention of Significant Deterioration; RCRA = Resource Conservation and Recovery Act; RMR = reliably must run; ROI = Region of Influence; ROW = right-of-way; SPCCERP = Spill Prevention, Control, Countermeasures, and Emergency Response Plan; USACE = U.S. Army Corps of Engineers; WMGF = Welton-Mohawk Generating Facility; WUS = water of the United States.

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ACRONYMS

The following acronyms are used in this environmental impact statement (EIS). For the reader's convenience, they will be re-defined in each chapter the first time they are used.

AAAQG	Arizona Ambient Air Quality Guidelines
AAAQS	Arizona Ambient Air Quality Standards
AADT	Annual Average Daily Traffic
ACC	Arizona Corporation Commission
ADEQ	Arizona Department of Environmental Quality
ADOSH	Arizona Department of Occupational Safety and Health
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
AM	amplitude modulation
AO	authorized officer (BLM)
APE	area of potential effects
Applicant	Dome Valley Energy Partners, Wellton-Mohawk Irrigation and Drainage District, and the Yuma County Water User's Association.
APP	Aquifer Protection Permit
APS	Arizona Public Service
AQCR	Air Quality Control Region
ASLD	Arizona State Land Department
ASM	Arizona State Museum
AZPDES	Arizona Pollution Discharge Elimination System
BA	Bachelor of Arts degree
BACT	Best Available Control Technology
BLM	U.S. Bureau of Land Management
BS	Bachelor of Science degree
BMP	Best Management Practice
CAA	Clean Air Act
CEC	Certificate of Environmental Compatibility

CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CTG	combustion turbine generator
CWA	Clean Water Act
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EIS	Environmental Impact Statement
El Paso	El Paso Natural Gas Company
EMF	electric and magnetic field
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FLAG	Federal Land Managers Air Quality Related Values Workgroup
FLPMA	Federal Land Policy and Management Act
FM	frequency modulation
FR	*Federal Register*
GLC	ground level concentration
HAP	hazardous air pollutant
HPTP	Historic Properties Treatment Plan
HRSG	heat recovery steam generator
HUD	U.S. Department of Housing and Urban Development
I-8	Interstate 8
MA	Master of Arts degree
MS	Master of Science degree
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Ace
NEGT	National Energy Gas Transmission

NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OSC	Oil Spill Contingency
OSHA	Occupational Safety and Health Administration
PG&E	Pacific Gas & Electric Company
PI	point of intersection-where transmission lines intersect or change direction
PILT	payments in lieu of taxes
PM	particulate matter
PSD	Prevention of Significant Deterioration
Reclamation	U.S. Bureau of Reclamation
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROI	Region of Influence
ROW	rights-of-way
RMR	reliably must run
RMS	Reliability Management System
RTO	Regional Transportation Organization
SCR	selective catalytic reduction
SEECOT™	SEECOT™ Solar Thermal System
SHPO	State Historic Preservation Officer
SIL	significant impact levels
SPCC	Spill Prevention Control and Countermeasure
SPCCERP	Spill Prevention, Control, Countermeasures and Emergency Response Plan
SPRR	Southern Pacific Railroad
STEP	Southwest Transmission Expansion Planning

STG	steam turbine generator
SUP	Special Use Permit
TCP	Traditional Cultural Property
TDS	total dissolved solids
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOCs	volatile organic compounds
WECC	Western Electricity Coordinating Council
Western	Western Area Power Administration
WMGF	Wellton-Mohawk Generating Facility
WSCA	Wildlife of Special Concern in Arizona
WUS	Waters of the United States
WMIDD	Wellton-Mohawk Irrigation and Drainage District
YCWUA	Yuma County Water Users' Association

1.0 PURPOSE AND NEED

This chapter briefly describes the Proposed Project, shows the location, describes the purpose and need for agency actions, and the Applicant's purpose and goals. The chapter concludes with a description of the public scoping process, the results of which help focus the issues analyzed later in this environmental impact statement (EIS).

1.1 PROJECT PROPOSAL

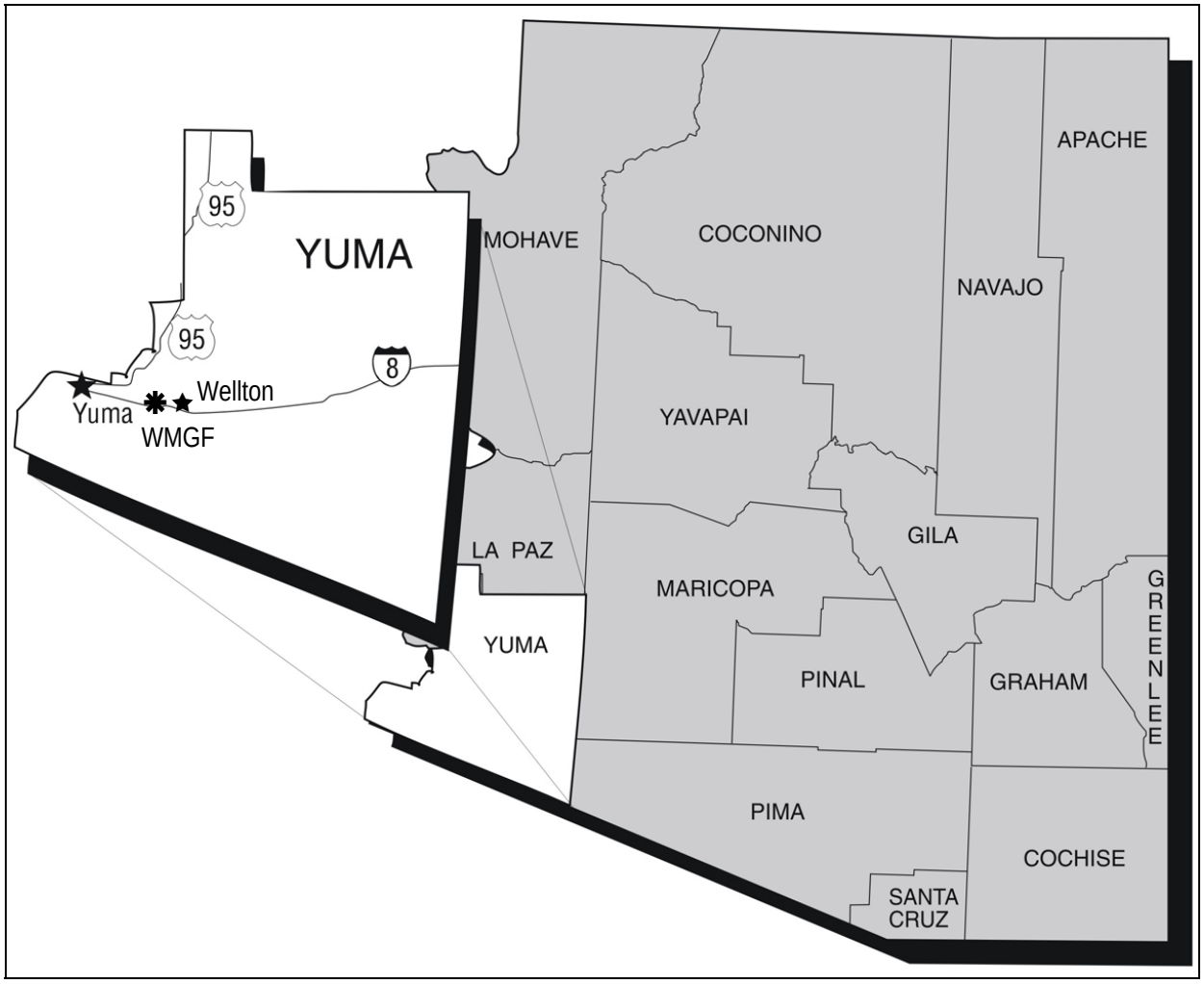
Dome Valley Energy Partners LLC (Dome Valley), together with the Wellton-Mohawk Irrigation and Drainage District (WMIDD) and the Yuma County Water Users' Association (YCWUA), collectively referred to as the Applicant, has applied to the Western Area Power Administration (Western) to interconnect in the proposed Wellton-Mohawk Generating Facility (WMGF) to Western's transmission system in the vicinity of Wellton, Arizona, 25 miles east of Yuma, in Yuma County (figure 1.1-1). The Proposed Project would consist of the WMGF, a natural gas-fired, combined-cycle, electric generating facility, with solar collection field; a facility natural gas pipeline to supply natural gas; newly constructed and upgraded transmission lines; substation modifications; and access roads. The proposed WMGF would be partially located on land currently managed by the U.S. Bureau of Reclamation (Reclamation). Portions of the proposed transmission line upgrade and addition, and the facility natural gas pipeline would cross lands managed by the U.S. Bureau of Land Management (BLM) and Reclamation (figure 1.1-2). Western must consider approving the interconnection request. Reclamation must consider approving the transfer of the title to the land for a portion of the proposed WMGF site. Both Reclamation and BLM must consider the rights-of-way (ROW) applications for the proposed pipeline and transmission line components of the Proposed Project. The decisions to be made by Western, BLM, and Reclamation regarding the Proposed Project will be issued following the Final EIS in the form of separate Records of Decision (ROD) for each agency.

1.2 PURPOSE AND NEED FOR AGENCY ACTION

Federal regulations implementing the National Environmental Policy Act (NEPA) state, "The statement [EIS] shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the Proposed Action." (Code of Federal Regulations (40 CFR 1502.13)). The role of this EIS is to inform decision-makers and the public of the environmental impacts attendant with the Proposed Project and reasonable alternatives that would avoid or minimize adverse impacts. The EIS will be used by Federal officials in conjunction with other relevant material to plan actions and make decisions concerning the Proposed Project. Preparation of this EIS involves the cooperation of Western, BLM, and Reclamation. Western is the lead Federal agency, as defined by 40 CFR 1501.5; BLM and Reclamation are cooperating agencies. The EIS is intended to satisfy the requirements of the NEPA for each Federal agency's decision related to the siting, construction, operation, and maintenance of the Proposed Project and to aid local and state permitting authorities with their permitting responsibilities.

NEPA and its associated regulations are designed to address proposed actions that are developed by a Federal agency having considerable discretion in formulating the Proposed Action and alternatives. In this instance, the Federal agencies have been presented with a fully developed Proposed Project to which they must respond. The Applicant may have completely different

goals than Western or the other cooperating agencies, which potentially have specific purposes and needs stemming from the Applicant's proposal. The purpose and need for the actions of the Federal agencies regarding the Proposed Project are as discussed below.



Source: Commerce 2003.

Figure 1.1–1. Proposed Location of the WMGF, Yuma County, Arizona.

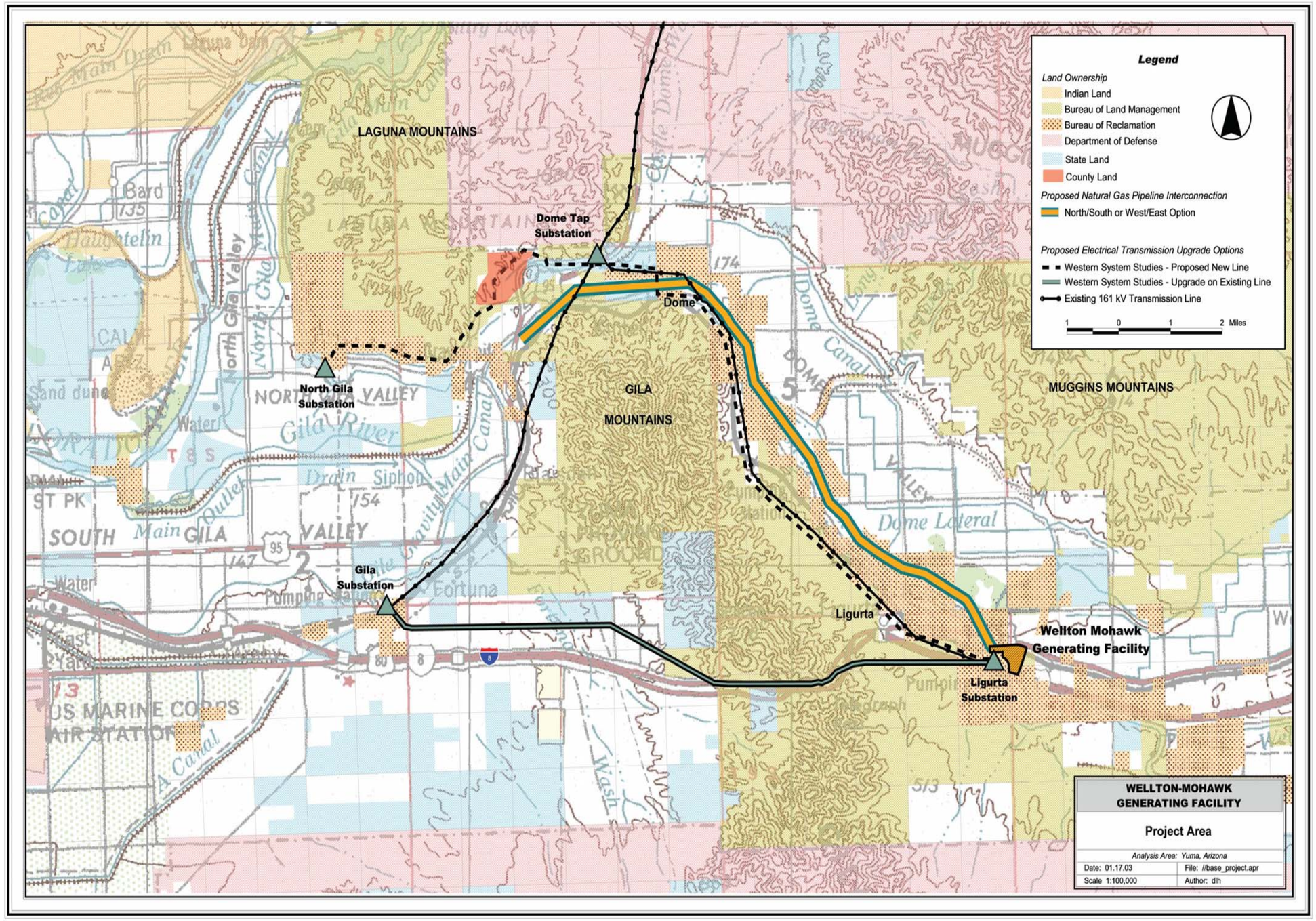


Figure 1.1-2. Proposed Project Area

1.2.1 Western Area Power Administration

The Applicant has applied to interconnect the proposed WMGF with Western's transmission system at the existing Ligurta Substation. Western is a power marketing agency of the U.S. Department of Energy that markets Federal power resources predominately to publicly-owned utilities, municipalities, and Native American tribes. Western offers its transmission lines for delivery of electricity when capacity is available, per Western's Open Access Transmission Service Tariff. Western needs to grant or deny an interconnection request at the Ligurta Substation under the provisions of its General Guidelines for Interconnections. In 2002, Western performed two System Impact Studies (Western 2002a, Western 2002b) to assess whether there was sufficient transmission system capacity for the power that would be generated by the proposed WMGF. These studies identified the changes to the transmission system that would be required for the interconnection, as reflected in the transmission line upgrades and additions included as part of the Proposed Project. In granting or denying the application for interconnection, Western also needs to meet its obligations under applicable laws and regulations, including complying with the provisions of NEPA and other environmental requirements.

Western's purposes in meeting the need for agency action are to:

- Meet the requirements of Western's Open Access Transmission Service Tariff, which is intended to comply with the intent of Federal Energy Regulatory Commission (FERC) Orders for providing nondiscriminatory transmission access.
- Provide transmission service and capacity for the proposed WMGF without degrading service to existing customers.
- Ensure transmission system reliability is maintained.
- Ensure any system additions or upgrades necessary to accommodate the Proposed Action are identified and included in the environmental review and project scope.
- Ensure all environmental effects of the Proposed Action and reasonable alternatives are adequately analyzed and fully disclosed.
- Minimize adverse environmental effects.

1.2.2 U.S. Bureau of Reclamation

Reclamation, an agency within the U.S. Department of the Interior, manages, develops, and protects water and related resources in an environmentally and economically sound manner in the interest of the American public. Reclamation is considering transferring title to approximately 46,810 acres (as of January 18, 2005) to WMIDD, including part of the land proposed for the WMGF site, pursuant to the Wellton-Mohawk Transfer Act of June 2000, Public Law 106-221, (section 2.1.2). As a result of continuing consultations, the acreage included in the proposed transfer has been reduced by excluding culturally sensitive lands. Since decisions regarding this larger transfer of title have not yet been made, Reclamation is still

responsible for the subject acreage, including part of the proposed WMGF site. Therefore, Reclamation is acting as a cooperating agency in this EIS process. Reclamation's purpose and need for agency action is to respond to the request from WMIDD for transfer of title to 96 acres of land for a portion of the proposed WMGF site. As described in section 2.1.2, the WMGF EIS and decisions resulting from it can go forward regardless of whether the larger Reclamation land transfer proposal occurs. In addition, Reclamation must consider applications from: (1) The Applicant for an easement for the proposed pipeline within the existing Wellton-Mohawk Canal right-of-way (ROW), and new ROW where the proposed pipeline would be outside the existing canal ROW; and (2) Western for widening the existing ROW for the segment of the proposed new Ligurta-North Gila transmission line between the Ligurta and Dome Tap substations, granting a new ROW for the segment of the proposed new Ligurta-North Gila transmission line between the Dome Tap and North Gila substations, and amending the existing ROW for the proposed upgraded transmission line between the Ligurta and Gila substations.

The facility natural gas pipeline and transmission line portions of the Proposed Project would traverse lands managed by Reclamation. If approved, BLM would issue the ROW for the Proposed Project components crossing Reclamation lands, with Reclamation concurrence (section 1.2.3 below).

1.2.3 U.S. Bureau of Land Management

BLM, an agency within the U.S. Department of the Interior, administers 261 million surface acres of America's public lands, located primarily in 12 western states. BLM sustains the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. BLM's purpose and need for agency action is to respond to the Applicant's ROW applications to cross Federal lands with the proposed natural gas pipeline. Secondly, BLM needs to process applications from Western for: (1) a new transmission line that will be adjacent to and partially within the existing Ligurta to Dome Tap transmission line ROW, (2) a new transmission line ROW from the Dome Tap substation to the North Gila substation, and an amended ROW for upgrading the existing Ligurta to Gila transmission line. In responding to these applications, BLM must ensure that transmission lines constructed on public lands are safe and reliable, and ensure the reclamation of public lands that would be disturbed. BLM must also ensure that land use authorizations are consistent with the approved Resource Management Plan.

The Federal Land Policy and Management Act of 1976 (FLPMA), as amended, 43 U.S.C. 1701 *et seq*., provides the authority for BLM land use planning, and section 202(c)(1-9) requires that in developing land use plans BLM shall:

- Use and observe the principles of multiple use and sustained yield.
- Use a systematic interdisciplinary approach.
- Give priority to the designation and protection of areas of critical environmental concern.
- Rely, to the extent it is available, on the inventory of the public lands.
- Consider present and potential uses of the public lands.

- Consider the relative scarcity of the values involved and the availability of alternative means and sites for realizing those values.

- Weigh long-term benefits to the public against short-term benefits.

- Provide for compliance with applicable pollution control laws, including state and Federal air, water, noise, or other pollution standards or implementation plans.

- Consider the policies of approved state and tribal land resource management programs and developing land use plans that are consistent with state and local plans to the maximum extent possible consistent with Federal law and the purposes of the FLPMA.

Section 302(a) of the FLPMA requires the Secretary of the U.S. Department of the Interior to manage public lands under the principles of multiple use and sustained yield, in accordance with available land use plans developed under section 202 of the FLPMA. The BLM has determined that the proposed ROW use would be in conformance with the Yuma District Resource Management Plan, as amended, February 1987.

The BLM must consider issuing the ROW for the facility natural gas pipeline, in accordance with the requirements of 43 CFR Part 2880, "Rights-of-Way under the Mineral Leasing Act." Section 2882.2-2(b) of this Act states that:

> Where the Federal lands involved are under the jurisdiction of two or more agencies of the Department of the Interior, or where the Federal lands involved are under the jurisdiction of one or more agencies of the Department of the Interior and one or more other Federal agencies, or where the Federal lands involved are under the jurisdiction of two or more non-Interior agencies, the initial application for a right-of-way grant or temporary use permit may be filed at the most convenient State Office of the Bureau of Land Management, at locations listed in Sec. 1821.2-1 of this title or at the nearest Bureau of Land Management Office that has jurisdiction over a portion of the Federal lands involved.

If Reclamation concurs, the BLM's Yuma office may issue the ROW grant for the proposed facility natural gas pipeline and the transmission line components of the Proposed Project for both BLM and Reclamation lands.

1.3 APPLICANT'S PURPOSE AND GOALS

The Applicant is made up of Dome Valley, WMIDD, and YCWUA, each with its own responsibilities and goals for the Proposed Project. Dome Valley is an experienced independent power developer, owner, and operator, responsible for managing the development of the Proposed Project for profit and to fulfill an electric power need. WMIDD is a political subdivision of the State of Arizona responsible for providing water and electric power to the farming industry and others residing in the geographic region. WMIDD is a participant because it is leasing the land and providing water for the project (for a profit) to reduce its customer service costs. There is the potential that WMIDD will also use a small portion of the power produced by the proposed WMGF. YCWUA is an independent, incorporated water users

association, and is also a participant in the same regard as WMIDD. YCWUA provides water to the Yuma Valley, south of the Colorado River to the Mexican border and west of the City of Yuma.

The Yuma Transmission Import Constraint Area is one of five load pockets (areas consuming electricity) identified within Arizona in the *Second Biennial Transmission Assessment 2002-2011* (ACC 2002), approved by the Arizona Corporation Commission (ACC) in December 2002. Currently, a number of generating units in Arizona are designated as "reliably must run" (RMR) since they are required to run during certain conditions in order for the load-serving utility to provide reliable service to its retail customers in that load pocket. One of ACC's goals is to mitigate or eliminate of all RMR conditions within the State of Arizona to ensure reliability of power supplies.

Within the Yuma load pocket there is a need for local generation to meet Yuma area loads, and a need to place less reliance on the existing small, older, less efficient, and higher polluting RMR generation in the area. The Applicant is responding to those state and public needs by proposing to provide new power generation capacity in the Yuma load pocket. The Applicant's goal is to make a profit selling the power.

Based on this goal, the Applicant's purposes are to:

- Site the proposed WMGF near existing WMIDD water supplies to minimize the distance for construction of a new water supply pipeline, and minimize associated environmental impacts.

- Site the proposed WMGF near an existing substation or existing transmission lines to minimize the construction of new transmission lines, utilize existing infrastructure and minimize disturbance to the environment.

- Site the proposed WMGF near existing regional natural gas supplies to minimize the distance for construction of a new natural gas pipeline, thus reducing associated environmental impacts.

- Maximize the use of existing ROWs on land managed by Reclamation and BLM to conform with agency and land management plans and reduce overall environmental impacts of the Proposed Project.

- Site the proposed WMGF on land owned or administered by one of the Applicants, WMIDD, while adhering to the recently created Rural Planning Area, which protects and preserves agriculture and open space.

- Limit the costs of constructing the proposed WMGF through adherence to the previously discussed purposes so that it remains an economically viable proposal.

In addition to the above-mentioned purposes, there are conditions that must be met for the Proposed Project to be acceptable to various regulating and permitting entities that have approved, or would approve, the proposed WMGF. These conditions include:

- Incorporation of solar energy use into the energy production process in compliance with the Environmental Portfolio Standard adopted by the ACC (ACC 2001).

- Compatibility with management zoning, land use, recreation, and known plans of Federal, state, local, and private entities for the site and surrounding area.

- Minimization of air emissions.

- Minimization of noise impacts to the surrounding area.

1.4 PUBLIC SCOPING

1.4.1 Notice of Intent

A Notice of Intent (NOI) to prepare a WMGF EIS was published in the *Federal Register* on May 19, 2003 (68 FR 27056). Western provided notice of scoping meetings to tribal, local, and state entities as well as the public. The forms of notice included a newsletter, project fact sheet, response sheet, display ad, and a bill stuffer in the Town of Wellton's water billing newsletter. Notice was also published in the *Yuma Daily Sun* and the *Baja El Sol* newspapers.

Additionally, Western mailed scoping meeting notices directly to over 300 persons and/or entities including local, state, and Federal agencies, elected officials, as well as the following Native American tribes: Ak-Chin Indian Community, Fort McDowell Mohave/Apache Indian Community, Gila River Indian Community, Hopi Tribe of Arizona, Salt River Pima-Maricopa Indian Community, Hia-Ced O'Odham Alliance, San Carlos Apache Indian Tribe, Tonto Apache Indian Tribe, Yavapai Prescott Indian Tribe, Tohono O'Odham Nation, Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribe, Fort Mohave Tribe, Fort Yuma Quechan Tribe, the Navajo Nation, Hualapai Tribe, and the Kaibab Paiute Tribe.

1.4.2 Public Scoping Meetings

Public scoping meetings were held in Wellton and Yuma, Arizona, on June 3 and 4, 2003, respectively. These meetings were announced in the NOI, the Town of Wellton May 2003 newsletter, advertisements in the *Baja El Sol* and *Yuma Daily Sun*, and mailings in English and Spanish to a distribution list that included local government officials, agencies, tribes, and individuals. The meeting in Wellton was held at the Wellton Elementary School, with 43 adult attendees. Thirteen people represented organizations, agencies, or businesses. Two written comment forms were provided to Western at the meeting and 33 comments and issues were recorded on flip charts during the meeting. The meeting in Yuma was held at the Yuma Civic and Convention Center, with 19 adult attendees, six of whom represented organizations, agencies, or businesses. One written comment form was provided to Western at the meeting and four comments and issues were recorded during the meeting.

1.4.3 Scoping Comments

Comments at the scoping meetings that were recorded on flip chart display boards were posted on the walls during the meetings. Attendees were invited to edit the comments or add to them during and after the meeting. In addition, some written comments were handed in at the end of

the meeting. Western received a total of 12 written comments throughout the public scoping period.

The comments received during public scoping and the treatment of these comments in this document are summarized in table 1.4-1 (page 1-12). The comments are grouped by categories and arranged in the same order as they appear in this EIS. In general, commentors requested a thorough examination of the impacts to each resource.

1.4.4 Tribal Coordination

Western has coordinated with potentially interested tribes and one tribally-affiliated group. Tribes having a potential interest in the Proposed Project were identified through a number of sources, including those involved in the dialogue and the consultation for the proposed transfer of title of facilities, works, and lands from Reclamation to the WMIDD; recently concluded consultation on the Antelope Hill project; the Arizona State Historic Preservation Officer (SHPO); and by word of mouth from conversations with area tribes. Table 1.4-2 lists the 22 Native American tribes designated by Western as potentially interested in the Proposed Project. Coordination and consultation with these tribes has been through letters of notification, follow-up phone calls, group meetings, individual tribal meetings and site visits.

Table 1.4-2. Native American Tribes Contacted by Western.

Ak-Chin Indian Community	Campo Band of Kumeyaay
Chemehuevi Indian Tribe	Cocopah Indian Tribe
Colorado River Indian Tribes	Fort McDowell Yavapai Tribe
Fort Mojave Indian Tribe	Fort Yuma Quechan Indian Tribe
Gila River Indian Community	Hia-Ced O'odham Alliance
Hopi Tribe	Hualapai Indian Tribe
Kaibab-Paiute Tribe	Navajo Nation
Pascua Yaqui Indian Tribe	Salt River Pima-Maricopa Indian Community
San Carlos Apache Tribe	Tohono O'odham Nation
Tonto Apache Tribe	Viejas Band of Kumeyaay
Yavapai-Apache Nation	Yavapai Prescott Indian Tribe

Shortly after, and in direct response to, a request from a tribal representative at the public scoping meetings, representatives from Western and the Applicant attended a regularly scheduled meeting of the Four Southern Tribes Cultural Resources Working Group on July 16, 2003, to give a presentation on the Proposed Project and answer questions posed by the attending tribal representatives. The five tribes attending this meeting (Tohono O'odham Nation, Gila River Indian Community, Ak-Chin Indian Community, Pascua Yaqui Indian Tribe, and Salt River Pima-Maricopa Indian Community) indicated that they had concerns about potential impacts from the Proposed Project to important archaeological sites and traditional cultural properties (TCPs) in and near the Proposed Project area. TCPs are areas of significance to the beliefs, customs, and practices of a community of people that have been passed down through generations.

Letters introducing the Proposed Project and agency contacts were sent to the tribes on July 28, 2003. Follow-up telephone calls were made to each tribe to discuss the Proposed Project and

determine their interest in receiving further information about the Proposed Project. Almost all tribes contacted indicated some level of interest in the Proposed Project.

On August 26 through 28, 2003, a tribal representative from the Fort Mojave Indian Reservation accompanied contract archaeologists on a portion of the initial archaeological field survey for the Proposed Project. The representative was able to see the Proposed Project area and help record some of the archaeological sites.

A series of meetings with tribes in western and southern Arizona were conducted in mid-September 2003. At these meetings, attendees were provided with information about the Proposed Project including maps of the Proposed Project area showing locations of archaeological sites identified during the recent archaeological field surveys. Attendees were also provided with a draft Programmatic Agreement (PA) for their review and comment regarding the processes to be conducted for identifying and evaluating archaeological sites, historic sites, and TCPs; determining treatment of these resources; and dealing with discoveries during construction activities. During these meetings, the tribes indicated a concern for archaeological sites and TCPs located in the region of the Proposed Project. As a result, the cultural resources inventory report and ethnographic study reports described in chapter 3 were sent to the interested tribes for their review and comments.

On September 24, 2003, a Western representative attended another regularly scheduled meeting of the Four Southern Tribes Cultural Resources Working Group and reviewed information about the Proposed Project and discussed the draft PA. At this meeting, the five tribes reiterated their concern for archaeological sites and TCPs that could be impacted by the Proposed Project. An outcome of the meetings was agreement that visits to the Proposed Project area by tribal representatives would be necessary to determine if the Proposed Project would potentially impact archaeological sites or TCPs important to the tribes.

During the field survey for archaeological sites and historic sites in the Proposed Project area, field visits were held so that tribal members could provide input to the significance and the interpretation of the archaeological sites and features found during the survey. During the site visit on April 14, 2004, several of the tribal representatives in attendance expressed concern about the proximity of parts of the proposed Ligurta–North Gila transmission line corridor to prehistoric sites identified in the archaeological survey. The representatives were especially concerned about how the proposed alignment of the transmission line closely followed the lower edge of the Laguna Mountains, just above the Gila River floodplain, where archaeological sites had been identified. Additional site visits were made on April 16, April 27, May 11 and May 12, 2004.

The Cocopah Tribe hosted a meeting and invited representatives from Western's transmission-line design team to meet with them in order to more effectively communicate their concerns. The meeting, held at the Cocopah Casino in Yuma on May 10, 2004, was attended by representatives from Western and representatives of the Ak-Chin Indian Community, Cocopah Indian Tribe, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Gila River Indian Community, Navajo Nation, Salt River Pima-Maricopa Indian Community, and the Tohono O'odham Nation. Another meeting was held on September 30,

2004, at Western's Desert Southwest Regional Office in Phoenix. It was attended by the Colorado River Indian Tribes and the Hualapai Indian Tribe.

The proposed Ligurta-North Gila Transmission Line (section 2.2.3.2) would cross many north-south trending ridges at the southern edge of the Laguna Mountains (figure 1.1-2). During meetings with the tribes in the area, the tribes asked Western if part of the transmission line could be routed further north along the existing APS 500-kV transmission line, or further south off of the ridges and along the canal road.

Western evaluated the two routes suggested at the meeting, as well as additional routes suggested internally. After evaluating the suggested routes, Western looked at several different options that might accomplish the same goal of reducing impacts to archaeological sites and TCPs. These different mitigation route options are described in section 4.5.2.2 along with their advantages and disadvantages as potential mitigation to the impacts the proposed transmission line route would have on the identified sensitive cultural resource.

In addition to Western and the interested tribes, the PA signatories now include the Applicant, the cooperating agencies, the State Historic Preservation Officer (SHPO) and others. The PA outlines the steps to be taken: to identify cultural resources; to evaluate them to determine eligibility for National Register of Historic Places (NRHP); to identify potential adverse effects and to develop mitigation measures; and to address inadvertent discoveries. It also assigns roles and responsibilities for implementation of the PA, ensuring that all interested parties are involved in decisions regarding the treatment of historic properties and TCPs that may be affected by the Proposed Project.

Table 1.4-1. Summary of Scoping Comments.

Comment Category	Summary of Comments and Issues	Treatment in WMGF EIS
NEPA Process	Various commentors requested an explanation of the role and authority that the decision-makers had over the approval and siting of the proposed WMGF. They asked about the role of the EIS in the overall permitting process. The commentors wanted to know how their input from past siting committee and regulator meetings would be handled. Other comments included how comments on the draft EIS would be handled, the need for the proposed WMGF, the need for clear statements of the purpose and need for agency action, as well as evaluation of cumulative impacts and potential mitigations.	The role and authority of Federal decision-makers over the approval and siting of the Proposed Project is discussed in section 1.2 as is the role of the EIS in the permitting process. Public input from past siting committee and regulator meetings has been used by the various permitting authorities to develop conditions of approval that are shown in Section 2.2.5, Proposed Action Mitigation. Comments on the draft EIS will be analyzed and responded to in the final EIS. The need for the Proposed Project is discussed in section 1.3, and clear statements of the purpose and need for agency actions are presented in section 1.2. Additional recommended mitigating measures where identified are described and evaluated in the resource sections in chapter 4, and cumulative impacts are discussed in section 4.17.
Alternatives	Various commentors were concerned that alternate locations for the proposed WMGF had not been proposed and asked that a full range of alternatives be evaluated, including alternative locations for the proposed WMGF. In addition, commentors asked for a full discussion of the rationale for any alternatives eliminated from detailed evaluation. Other comments included looking at demand-side management (reduction in energy consumption) and alternative energy sources to meet power needs, and evaluation of alternate cooling technologies. Comments ranged from why the proposed location was selected, to suggestions for other locations and statements that the location was unsuitable due to proximity to residences and agriculture. Other commentors asked about the consumption of natural gas by the proposed WMGF contributing to natural gas shortages in the region.	The purpose and need for agency action (discussed in chapter 1) and input received during public scoping were used to determine the range of reasonable alternatives. Alternatives, including those that were dismissed from further evaluation, are discussed in chapter 2. A site that was preliminarily considered by the Applicant was dismissed by Western from detailed analysis in the EIS (section 2.4.1). Western eliminated demand-side management and the use of alternative energy sources from further analysis in this EIS, as described in sections 2.4.2 and 2.4.3. Potential changes to the transmission line routes to avoid impacts to cultural resources are discussed in section 4.5.2.2. Alternate cooling technologies were eliminated from further analysis in this EIS for the reasons described in section 2.4.4. Chapter 2 also discusses the proposed WMGF's use of natural gas in relation to proposed regional natural gas pipelines. For reasons of reliability, the ACC would not allow Dome Valley to market power from the proposed WMGF by double circuiting the Ligurta to Gila transmission line.

Table 1.4-1. Summary of Scoping Comments (*continued*).

Comment Category	Summary of Comments and Issues	Treatment in WMGF EIS
Role of Decision makers	A few commentors asked for information on the role of the Federal agencies in approving or disapproving the Proposed Project. Questions included: Who has the final authority over the proposed WMGF? Was the EIS being prepared too late in the overall permitting process, so that the proposed WMGF could not be feasibly disapproved? What is Western's jurisdiction over the proposed WMGF if Western's concern is with the interconnection?	The role of the decision makers and the NEPA process and its timing are discussed in chapter 1. Western has authority over whether the proposed WMGF can interconnect with Western's transmission system. Reclamation has authority over whether to transfer the parcel of land for the proposed WMGF. BLM and Reclamation have authority to grant the needed ROW. Each agency (Western, Reclamation, and BLM) could independently determine not to grant the access or rights the project needs; or conceivably none of the needed approvals could be granted. Without the ability to interconnect to Western's transmission system, the proposed WMGF would not be feasible and would not be built or operated. If BLM and Reclamation do not grant ROW additions and amendments for the proposed transmission system additions, Western would not be able to upgrade its transmission system, and the proposed WMGF could not connect to the grid through Western's system due to inadequate capacity. If Reclamation does not allow the transfer of title to WMIDD for the parcel needed for the proposed WMGF site, the Applicant would not be able to lease the site from WMIDD. If BLM and Reclamation do not grant ROW additions and amendments for the proposed facility natural gas pipeline, the proposed WMGF would not have a fuel source and could not be operated. For each agency approval of the Proposed Project is dependent on the Applicant meeting regulatory requirements and agreeing to reasonable measures to minimize environmental impacts. The timing of the EIS is appropriate as no Federal decisions have or will be made until the EIS process is completed.

Table 1.4-1. Summary of Scoping Comments (*continued*).

Comment Category	Summary of Comments and Issues	Treatment in WMGF EIS
Water Resources	Commentors were concerned with the effects on water quality and quantity/availability in the local and regional area. Comments received included concerns over the impacts to local residential water quality, the process of keeping the salt from the cooling towers out of the groundwater, and the potential for flood drainage/storm water runoff from the proposed WMGF running onto local property. There was a concern about the retention pond's potential to leak and contaminate the groundwater. Water rights and use for the proposed WMGF were questioned. Other questions included: Under what water rights was the water being made available? Under what conditions? What water minimization/recycling techniques would be used? If the drought continues, would the water to the proposed WMGF be reduced or would the water to farmers be cut?	The existing surface and groundwater resources are discussed in Section 3.2, Water Resources. The potential impacts to water resources from the proposed WMGF are discussed in Section 4.2, Water Resources. The proposed WMGF water supply source is surface water from the Wellton-Mohawk Canal and therefore would not withdraw groundwater. The proposed WMGF is designed as a zero liquid discharge system, which means that there would be no discharges to groundwater under normal operations. The disposition of the salt is discussed in Section 4.13, Waste Management. Water rights are described in section 2.2.1.3. WMIDD has consumptive Colorado River water rights of 278,000 acre-feet per year. They would supply approximately 1,678 acre–feet per year to the proposed WMGF for Phase I and approximately double that amount for both phases. Post-development storm water flow rates would not exceed pre-development flow rates. Damage to the evaporation pond lining would allow high dissolved solids content water to discharge to the subsurface, which could impact water quality in the groundwater. The required Aquifer Protection Permit (APP) would require measures to monitor and evaluate possible spills of chemicals and leaks from the lined evaporation ponds along with monitoring wells and liner inspection to minimize the potential for significant discharges to groundwater.
Air Quality	Some commentors were concerned with the proposed WMGF's effects on air quality in the local and regional area. There were concerns over increases in heat, humidity, pollutants, air emissions, and cumulative effects from emissions. Some comments asked for comparisons to agricultural burning in the area, discussion of air quality standards, permit conditions against operating during adverse conditions, and penalties if air permit conditions were exceeded. Others asked why a variance for stack height was being sought, and if a conformity analysis was required.	The existing local and regional air quality is discussed in Section 3.3, Air Resources. The potential impacts to air quality from the proposed WMGF are fully discussed in Section 4.3, Air Resources. A variance was requested to allow the stacks to be constructed 60 feet higher than Yuma County's 100-foot limit. This additional height would be in accordance with good engineering practice for this size project. A Clean Air Act conformity analysis is only necessary in areas that currently or previously exceeded the National Ambient Air Quality Standards (NAAQS), and is thus not required for the Proposed Project.

Table 1.4-1. Summary of Scoping Comments (*continued*).

Comment Category	Summary of Comments and Issues	Treatment in WMGF EIS
Biological Resources	The comments on biological resources ranged from the effects on crops and cattle from dust from the proposed WMGF to the effects and timing of construction on local beekeeping activities. Commentors expressed concern about the effects of solar panels on migrating birds. Other comments concerned the disruption of wildlife and native plants in the project area and the potential presence of endangered species in the project area.	Information on plant and animal species in the area is discussed in Section 3.4, Biological Resources. The potential impacts to biological resources from the proposed WMGF are fully discussed in Section 4.4, Biological Resources. Section 4.4 also addresses the potential impacts of solar panels on migrating birds. Special status species that may occur in the Region of Influence (ROI) of the Proposed Project are shown on tables 3.4.3 (Plants) and 3.4.4 (Animals). Impacts to these species are described in section 4.4.5.
Cultural Resources	Comments on cultural resources included questions about the impacts of constructing the large solar field concrete pad on archaeological and historic sites and the urging of proper outreach and consultation with affected Native American tribes.	Information on archaeological and historical sites and artifacts in the area is discussed in Section 3.5, Cultural Resources. The potential impacts to cultural resources from the proposed WMGF are discussed in Section 4.5, Cultural Resources. Consultations with interested Native American Tribes are described in section 1.4.4, section 3.5, and in Chapter 5, Coordination and Consultation.
Transportation	Commentors were concerned about the transportation of hazardous chemicals to the plant site. In addition, comments were received on potential future necessary road or bridge improvements and funding.	The transportation of construction materials and materials for operation of the proposed WMGF is discussed in Sections 3.13 and 4.13, Waste Management. The need for any transportation facility improvement is also discussed.
Visual Resources and Aesthetics	Comments received concerning visual resources included the potential glare from the solar panels, the visual impacts of the stacks, light pollution at night, and impacts to the view from Telegraph Hill.	A discussion of, and graphics depicting, the visual impacts to the landscape, with and without the proposed WMGF and associated lines, are included in Section 4.8, Visual Resources.
Noise	One commentor expressed concerns with noise from the proposed WMGF including vibration from the turbines and the cumulative effect of the proposed WMGF noise in addition to that from trains on the nearby railroad tracks.	The existing noise environment in the area is discussed in Chapter 3.9, Noise. The potential increase in noise impacts from the proposed WMGF is discussed in Section 4.9, Noise.

Table 1.4-1. Summary of Scoping Comments (*continued*).

Comment Category	Summary of Comments and Issues	Treatment in WMGF EIS
Socioeconomics and Environmental Justice	Commentors questioned if there would be any beneficial impacts to the local area from the operation of the proposed WMGF. The issue of taxes or payments in lieu of taxes was raised. Other commentors asked about the breakdown of construction and operations jobs and the sources of the labor, effects on electrical rates, effects on property values, effects on schools and the potential increase in the number of students. Comments were received that asked that the EIS examine impacts to low-income and minority communities.	The current population and local resources, including schools and community services, is discussed in Section 3.10, Socioeconomics. Payments in lieu of taxes are discussed in Section 3.10, Socioeconomics. The impacts to local labor utilization, property values and community services are discussed in Section 4.10, Socioeconomics. An Environmental Justice analysis (of potential impacts to low-income and minority communities) is provided in Sections 3.11 and 4.11, Environmental Justice.
Human Health	Commentors wanted the overall health effects to nearby residents evaluated, including the impacts to nearby sick and elderly. In addition, commentors asked about the potential for the pond to become a breeding ground for mosquitoes and other disease vectors.	The potential health and disease impacts to residents from the proposed WMGF are discussed in Section 4.12, Health and Safety.
Hazardous Materials/Waste Management	Commentor expressed concerns about the handling and use of hazardous materials including the chemicals in solar panels, salt accumulation from the cooling towers, and containment of spills.	The handling and use of chemicals, including spill prevention and mitigation measures, is discussed in Sections 2.2.1.3 Wellton-Mohawk Generating Facility Description, 3.13, Waste Management, and 4.13, Waste Management. Experience with minor leaks in the evaporation pond liner and a broken pipe in the cooling tower at the Griffith facility were factored into the design of the proposed WMGF.
Accidents	Comments were received stating that accidents at other power plants should be evaluated for the proposed WMGF. Specific issues included the arrangements for emergency response (lack of local hazmat team), containment of spills, ammonia spills, and responsibility of bearing cost of any cleanup.	The potential impacts to residents from the proposed WMGF including potential accidents are discussed in Section 4.12, Health and Safety. The handling of hazardous materials is discussed in section 4.13.1. To suppress fires, such as those that have occurred at some similar facilities, the proposed WMGF design includes sprinkler, or CO_2 flooding systems in susceptible areas.
Disposition of the Facility in the Future	Commentors requested a discussion of the ultimate disposition of the proposed WMGF once it was shut down. Questions included whether it would be dismantled and whether the site would be returned to present conditions.	The potential decommissioning of the proposed WMGF is discussed in Section 2.2.4, Final Disposition of the Proposed Project.

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2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter identifies the decisions to be made by Western Area Power Administration (Western), the Bureau of Reclamation (Reclamation), and the Bureau of Land Management (BLM) associated with the Applicant's Proposed Project evaluated in this environmental impact statement (EIS). This chapter also describes decisions that are related to the Proposed Project, but are not evaluated in this EIS. In addition, this chapter describes the details of the Applicant's Proposed Project, the No Action Alternative, and alternatives that were considered but not evaluated in detail. A summary table comparing of the potential environmental impacts of the Proposed Project and the No Action Alternative is also provided, based on the analysis presented in chapter 4.

2.1 FEDERAL AGENCY DECISIONS

2.1.1 Decisions Being Considered in this EIS

Most Federal actions are proposed by a Federal agency that has control over the formulation of the Proposed Action and associated alternatives that will be analyzed through the National Environmental Policy Act (NEPA) process. The Federal agency is free to modify the various alternatives, including the Proposed Action, during the NEPA process as input is received from other agencies, tribes, interested parties, and individuals. However, the Proposed Project is being promoted by a private applicant. Thus, there are specific and limited decisions being considered in this EIS by each of the involved Federal agencies, based on the purpose and need for agency action as described in section 1.2. The Proposed Action that is evaluated in this EIS involves the decisions associated with the Proposed Project for each Federal agency, as follows:

> ***Western.*** Consider allowing the Applicant an interconnection to Western's transmission system at the Ligurta Substation.
>
> ***Reclamation.*** Consider transferring title to 96 acres of land for a portion of the proposed WMGF site, and consider approving new right-of-way (ROW) grants or changes to an existing ROW grant for the proposed facility natural gas pipeline and proposed transmission system additions.
>
> ***BLM.*** Consider issuing ROW grants for the new Ligurta-North Gila Transmission Line, and authorizing an amendment to upgrade the existing Ligurta-Gila Transmission Line. If approved by Reclamation, BLM will issue a ROW grand for the proposed facility natural gas pipeline.

These Federal actions constitute the Proposed Action as they will, if approved, result in the Proposed Project, which consists of the construction, operation, maintenance and, where applicable, de-commissioning of the Wellton-Mohawk Generating Facility (WMGF), and the associated facility natural gas pipeline and the transmission system interconnection, additions and upgrades. Since these are all connected actions they are all included in the scope of this EIS.

2.1.2 Decisions Not Considered in this EIS

There are several decisions not evaluated in this EIS that are related to but not directly connected with the Proposed Project. The following provides an explanation of these decisions. Additional details are provided in Appendix A – Background on Land Transfer and Regional Natural Gas Pipeline.

Federal decisions associated with the general transfer of title of land in the area from Reclamation to the Wellton-Mohawk Irrigation and Drainage District (WMIDD) (section 1.2.2) are being addressed in a separate EIS, *Environmental Impact Statement for the Transfer of Title to Facilities, Works, and Lands of the Gila Project, Wellton-Mohawk Division to Wellton-Mohawk Irrigation and Drainage District, Yuma County, Arizona* (Reclamation 2003b), which was released as a draft EIS for public review and comment in August 2003. The 57,418 acres of land under consideration for transfer of title include part of the land proposed for the WMGF site. Since decisions on Reclamation's larger title transfer action may not be made until after the WMGF EIS is completed, and because the proposed WMGF project is completely independent of the larger transfer of Reclamation facilities and lands, the WMGF EIS specifically addresses the transfer of the federally-owned 96 acres included in the 119-acre proposed WMGF site to WMIDD. Thus, the WMGF EIS, and decisions resulting from it, can go forward regardless of whether or not the larger Reclamation land transfer proposal occurs. The larger land transfer by Reclamation is analyzed in this EIS as a cumulative action in section 4.17.

The Proposed Project would include a new facility natural gas pipeline that would connect in one of two locations, either near Highway 95 at the Wellton-Mohawk Canal, or just south of the proposed WMGF near Interstate 8 (I-8), to a larger regional natural gas supply line. The larger regional gas supply line would either be the Northern Baja pipeline, a newly proposed regional natural gas pipeline that would be built by National Energy & Gas Transmission, Inc. (NEGT) through the Yuma area to serve a number of customers, or an expansion of the existing El Paso Natural Gas Company (El Paso) pipeline that currently exists near Highway 95 at the Wellton-Mohawk Canal. For the purpose of this EIS, and since the timing and location of these main natural gas pipeline projects are not known, a new facility natural gas pipeline from the proposed WMGF to both of these potential natural gas interconnection locations is evaluated in this EIS. As the new proposed Northern Baja pipeline and/or the expansion of the El Paso pipeline would occur regardless of the Proposed Project, these actions involve needs not driven by the proposed WMGF, and are not evaluated as connected actions in this document; however, they are included in the analysis of cumulative impacts in section 4.17. Any upgrade or new pipeline facilities constructed by El Paso or NEGT to the Yuma area would be subject to the jurisdiction and regulation of the Federal Energy Regulatory Commission (FERC), and would have to go through a review and approval process that would likely include the preparation of an EIS and a Record of Decision (ROD) by FERC.

2.2 APPLICANT'S PROPOSED PROJECT

The Applicant's Proposed Project consists of the proposed WMGF, a facility natural gas pipeline, and transmission system additions, as shown in figure 1.1-2. This section describes each component of the Proposed Project in detail. The Proposed Project also incorporates the mitigation measures discussed in section 2.2.5.

2.2.1 Wellton-Mohawk Generating Facility

The proposed WMGF would be a natural gas-fired, combined-cycle power plant supplemented by solar energy technology for cooling of input air. Since the transmission system has been determined to be constrained and not able to interconnect the entire projected load (output) of the proposed WMGF, the WMGF would be developed in two phases, both of which are addressed as part of the Proposed Project. Phase I would involve construction of the proposed WMGF with one gas turbine, half of the solar field, a facility natural gas pipeline, and transmission system additions to handle Phase I and II output. The full output of Phase I would be nominally rated at 260 megawatts (MW). Peaking capacity using duct burners would be approximately 310 MW. The current Western transmission system can accommodate the output of Phase I with the upgrades and additions discussed in section 2.2.3. Phase II would involve the installation of a second turbine and the other half of the solar field. With Phase II, the proposed WMGF would be nominally rated at 520 MW with peaking capacity of approximately 620 MW via duct burners (Wellton-Mohawk 2003b).

Initially, the proposed WMGF would be brought online for Phase I only. Before Phase II of the Proposed Project can be initiated, the Arizona Corporation Commission (ACC) requires the Applicant to provide technical studies to show that there is sufficient transmission capacity to accommodate the full output of Phase II (ACC approval conditions numbers 7, 12 and 13, in appendix B). This EIS assumes that both phases of the proposed WMGF would be built, as reflected in the description of the WMGF, and analyzes the potential environmental impacts of both phases.

2.2.1.1 *Location and Land Status*

The Applicant proposes to construct and operate the proposed WMGF in unincorporated Yuma County near the existing Ligurta Substation, approximately 25 miles east of Yuma, Arizona, and 9 miles west of Wellton, Arizona, just north of I-8, as shown in figure 1.1-2.

The proposed WMGF would be built on a 119-acre parcel located immediately east and north of the Ligurta Substation. The land would be leased from the WMIDD. This land was previously disturbed from past activities associated with a concrete batch plant formerly on the site, construction of the Ligurta Substation, and construction of WMIDD facilities (including the Wellton-Mohawk Canal and pumping stations) in the 1940s. The proposed WMGF site does not currently contain any structures. Of the 119 acres of land that would be leased to Dome Valley for the proposed WMGF, 96 acres are Federal lands currently managed by WMIDD and owned by Reclamation. WMIDD has an option to acquire the additional 23 acres from a private landowner should the Proposed Project be approved.

2.2.1.2 *Existing Infrastructure*

Figure 2.2-1 shows the existing infrastructure in the vicinity of the proposed WMGF site (Reclamation 2003a). The proposed WMGF site is immediately east and north of Western's existing Ligurta Substation. The Ligurta Substation is connected to two Western transmission lines and two WMIDD distribution lines. The Ligurta-Gila 161-kilovolt (kV) Transmission Line connects to the Gila Substation, 12.7 miles to the west near Yuma. The Ligurta-Dome Tap 161-

kV Transmission Line connects to the Dome Tap Substation approximately 13 miles to the northwest. The Ligurta Substation backs on to the Wellton-Mohawk Canal to the south. The 18.5-mile long Wellton-Mohawk Canal is concrete lined for a portion of its length. It runs from the Gila Gravity Main Canal along the south side of the Gila River to Pumping Plant Number 3, about 5 miles southwest of Wellton, Arizona. Pumping Plant Number 2 is located at the proposed WMGF site. A portion of the Ligurta Substation is used by WMIDD to provide power for the pumping plants via the two WMIDD distribution lines.

2.2.1.3 *Wellton-Mohawk Generating Facility Description*

The proposed WMGF would consist of the following (Wellton-Mohawk 2003b):

- SEECOT™ Solar Thermal System (SEECOT™ system) that includes an approximately 30-acre field of solar collectors for each phase of the Proposed Project.
- Two inlet chilling systems to supply chilled air to the combustion turbine generators (CTG), one system for Phase I, and the second for Phase II.
- Two industrial "F" Type CTGs, one for Phase I, the second for Phase II.
- Two triple-pressure heat recovery steam generators (HRSGs) with duct firing equipped with duct burners and exhaust stacks, one for Phase I, the second for Phase II.
- Two steam turbine generator set(s) and auxiliaries (STGs), one for Phase I, the second for Phase II.
- A mechanical draft cooling tower.
- Air emission controls, selective catalytic reduction (SCR) system and carbon monoxide (CO) catalyst as necessary to meet U.S. Environmental Protection Agency (EPA) and Arizona Department of Environmental Quality (ADEQ) air standards.
- Auxiliary and ancillary equipment for the balance of the proposed WMGF systems includes administration and support buildings, two black-start (emergency/backup) generators, water systems, one auxiliary boiler, fire protection system, tanks, sedimentation/evaporation ponds, access roads, and a parking area for operating staff. The proposed WMGF would be designed in accordance with regional building codes that include consideration of potential geological hazards.

An artist's rendering of the proposed WMGF is shown in figure 2.2-2.

SEECOT™ Solar Thermal System

The proposed WMGF would include Jasper Energy's patented SEECOT™ system. While the grading for the entire 60-acre solar field would be performed in Phase I, only 30 acres of solar collectors would be installed. The remainder would be installed as part of Phase II. The SEECOT™ system is a solar-energy-based technology that would allow solar energy to be converted into thermal energy, which would be used in a chilling system that would reduce the

temperature of the inlet combustion air to the CTGs. The chilling of the inlet combustion air would increase the output and efficiency of the combined-cycle power plant. A CTG is a constant volume device. By cooling the inlet combustion air, the mass flow through the CTGs can be increased, thereby increasing both the turbine electric output and efficiency. By reducing the combustion inlet air temperature to CTGs by 45 degrees Fahrenheit (ºF), the amount of power that can be generated by using the same amount of natural gas can be increased up to approximately 12 percent depending upon ambient air temperature.

For the SEECOT™ system, parabolic troughs located along a north-south axis would be used to track the movement of the sun and convert solar radiation into thermal energy (employing Paratherm NF, a non-toxic heat transfer fluid). For both phases, this system would require an approximately 60-acre field of solar collectors, less than 10 feet in height, to the east and southeast of the plant. No focused solar rays would leave the troughs and any reflections would be diffused (not magnified or focused). The floor of the solar field would be graded into a shallow depression and lined with concrete. The depression would help reduce the visibility of the solar collectors from offsite. In addition, earthen berms would be built around the solar field to further screen it from view.

The heat transfer fluid in the collectors can be heated to temperatures of 500ºF to 550ºF. This thermal energy would then be used to produce low-pressure steam (approximately 125 pounds per square inch gauge saturated steam), which in turn, would be used to power two-stage absorption chillers that would cool the inlet combustion air temperature to the CTGs.

The incremental power that would be generated using the SEECOT™ system would qualify for renewable energy credits under Arizona's Environmental Portfolio Standard. In February 2001, the ACC adopted an Environmental Portfolio Standard in Decision No. 63364, under which a certain percentage of energy sold to customers by Arizona's regulated load-serving entities must be derived from solar electric or other eligible renewable technologies or resources (ACC 2001).

Air Intake System

The air intake systems would provide air to the CTGs and would be mounted above each CTG. The intake systems would be equipped with filtration units to clean particulates from the air. Silencers would be installed to reduce the noise emissions of the gas turbine compressor inlets. Inlet air chiller systems, installed within the inlet air filter house, would be provided to enhance CTG performance and output at the high local ambient air temperatures. Energy for the inlet chilling systems would be provided by the SEECOT™ system. The inlet chilling systems may also utilize low pressure steam from the HRSGs to increase the density of the inlet air. This would increase WMGF output during the hottest part of the day, when peak electrical demand would be expected.

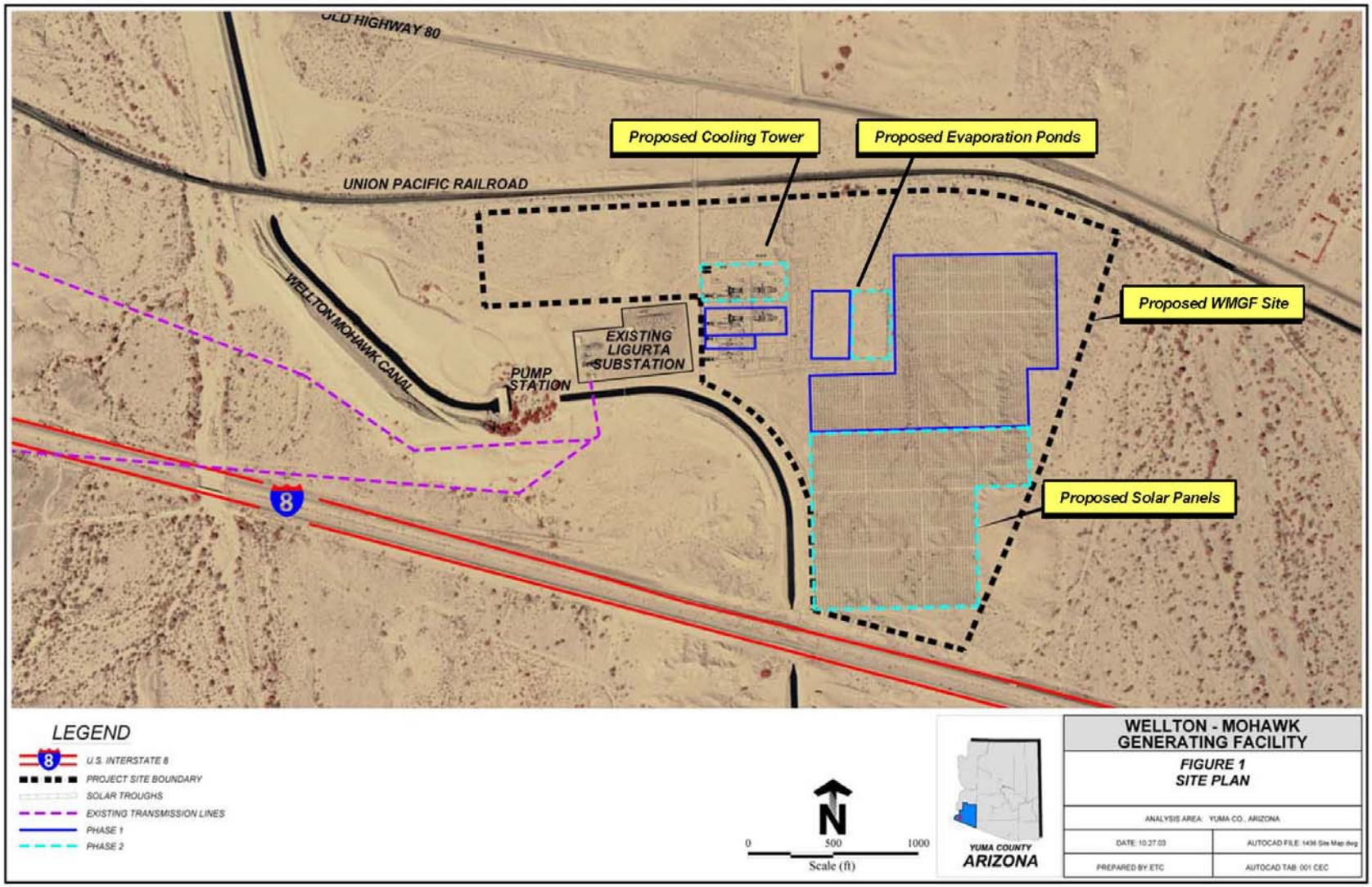


Figure 2.2-1. Existing and Proposed Infrastructure at the Wellton-Mohawk Generating Facility Site.

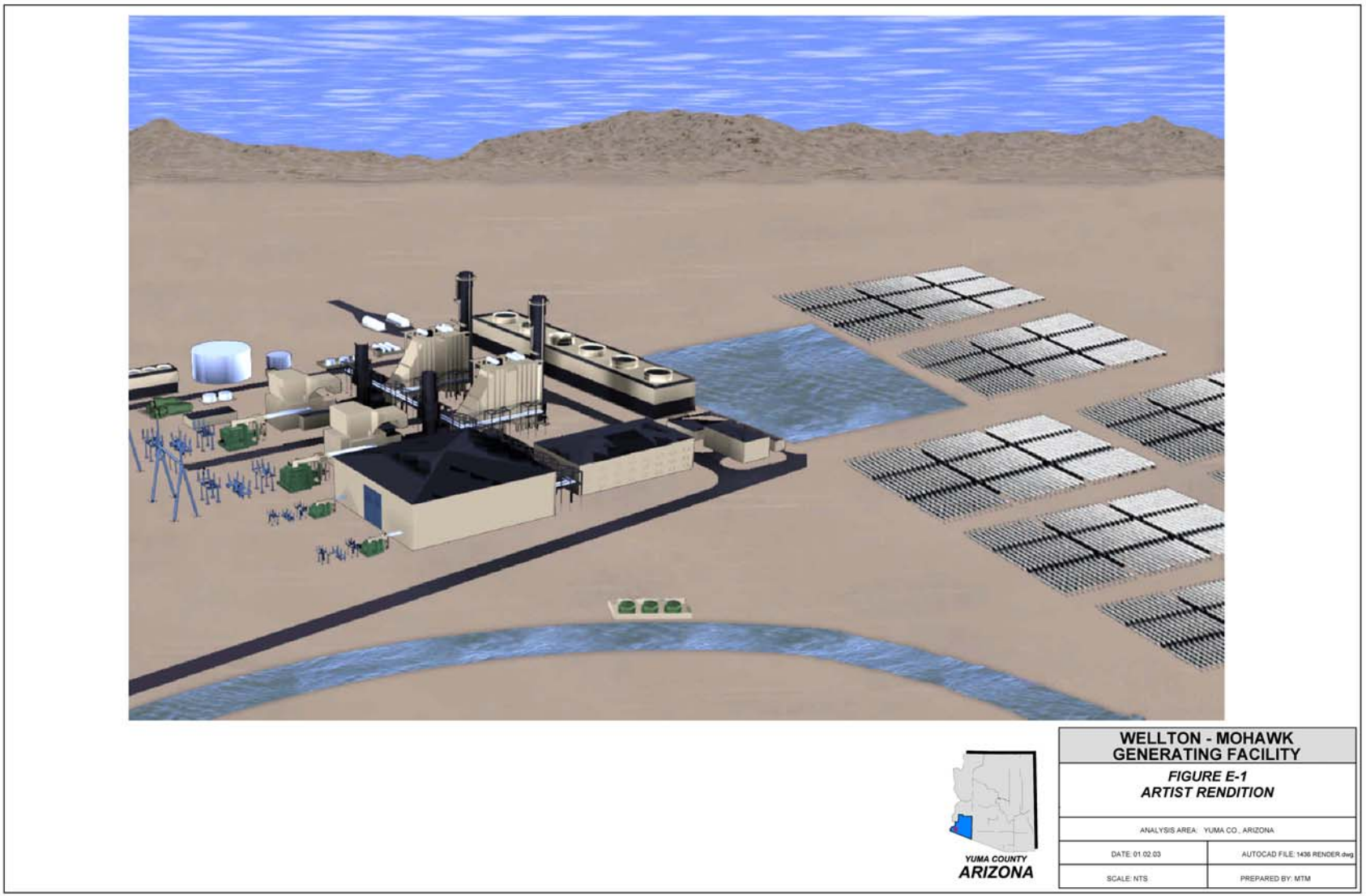


Figure 2.2-2. Artist's Rendition of the Wellton-Mohawk Generating Facility (View from Southwest).

Combustion Turbine Generator

Air would flow through the air intake systems into the compressor sections of the combustion turbines. Inlet air would be compressed as it flows through the stages of the compressors, where it would then enter the combustion chambers. Natural gas fuel would then be injected into the combustion chambers and ignited. The hot combustion gases would expand through the turbine sections of the combustion turbines, causing them to rotate and drive the electric generators. This combination of a combustion turbine and generator is termed a CTG. The combustion turbines would be housed in an enclosed metal building to protect the units from the elements and provide noise reduction. An enclosed hydrogen (H_2) cooled generator would be supplied for each of the CTGs. Each "F" type CTG (frame type, rather than the lighter aero derivative turbines designed for aircraft use) would use state-of-the-art technology to generate approximately 170 MW.

Heat Recovery Steam Generators

Operation of the CTGs alone, without any recovery and use of the high temperature turbine gas, is termed simple cycle operation. The proposed WMGF would not normally be operated in simple cycle operation mode. In combined cycle mode, the high temperature exhaust gas is recovered and used to generate additional power. The high temperature turbine exhaust gas from each CTG would be directed through its respective HRSG. As the hot gas passes through the sections of a HRSG, heat would be transferred from the gasses to the surfaces of the tube bundles through which water would be flowing, which would then be converted to superheated steam. During peak periods, natural gas burners within the ducts (called duct burners) would be used to increase steam production. The superheated steam would then be delivered to steam turbine generators, or STGs. Operating in this manner, the HRSGs would capture the exhaust heat energy from the CTGs and recover it for combined cycle operation. The HRSGs would be an outdoor, freestanding design with integral exhaust stacks 160 feet in height. Each phase of the Proposed Project would have one HRSG and one exhaust stack.

Steam Turbine Generator and Condenser

The superheated steam from the HRSGs would be used to drive the STGs. The STGs would be fitted with stop and control valves for the high-pressure steam admission. The proposed design and size of the STGs would support increased output during peak operations. An enclosed H_2-cooled generator would be supplied for each of the STGs. Once steam passes through the STGs, the exhaust steam would be condensed in surface condensers. The condensate would be removed from the condensers and pumped to the HRSGs. An STG bypass system would be provided around each STG directly to the condensers. This system would allow the CTGs to operate for short periods of time in simple cycle (e.g., during STG startup) and to allow the CTGs to operate if the STGs trips. During steam bypass operation, condensate would be sprayed in the condenser hoods in order to control the temperature and protect the STGs. The two STGs would each be rated at approximately 140 MW.

Mechanical Draft Cooling Tower

Cooling water for the condensers would reject heat using a mechanical draft cooling tower. Additional cooling water would be used to cool auxiliary equipment as required and dissipate the

heat from the inlet chilling system. Make-up water would be supplied by WMIDD, demineralized, and stored in a 120,000-gallon tank. The 12-cycle cooling tower would consist of six cells and would be approximately 40 feet tall by 60 feet wide by 200 feet long. The cooling tower would hold approximately 190,000 gallons of water. The cooling tower water would be treated with an anti-algae/bacterial agent such as sodium hypochlorite (in 8 to 12 percent solution), acidity control (in all likelihood sulfuric acid in small doses), and an anti-scalant to prevent scaling buildup on equipment.

The cooling tower would employ water to cool the process water and result in an increase in both the temperature and moisture content of the air passing through. Entrained liquid droplets in this air, known as drift, would be carried out of the tower through the exhaust fan duct. Following evaporation of the water droplets, the dissolved solids present in the drift may be classified as particulate matter (PM_{10}) emissions. The cooling tower would be equipped with high-efficiency drift eliminators to minimize emissions, as required by Clean Air Act (CAA) regulations and the Arizona Corporation Commission (ACC) Certificate of Environmental Compatibility (CEC).

Air Emissions Controls

The exhaust gases from operation of the CTGs would always be routed through the HRSGs and vented to the atmosphere through the integral 160-foot exhaust stacks. The exhaust gases would include nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), sulfur dioxide (SO_2), PM_{10}, and lesser quantities of hazardous air pollutants.

To minimize the emissions of NO_x, the CTGs would incorporate advanced "dry low" NO_x combustion ("dry low" is an air-to-fuel ratio control system). In addition, the HRSGs would be equipped with selective catalytic reduction, which would use ammonia in the presence of a catalyst to reduce the NO_x concentration in the exhaust gases. An oxidation catalyst, most likely vanadium oxide, would be included in the HRSG casing to reduce the concentrations of CO, VOCs, and organic hazardous air pollutants in the exhaust. This air emission control equipment represents the Best Achievable Control Technology (BACT), as required under the CAA, and by the provisions of the ADEQ air quality permit.

Continuous emission monitors would be installed to monitor NO_x and CO emissions. Emissions from the emergency backup generators are also controlled to meet operation permit requirements. In addition, the proposed WMGF's Title V operating permit issued under the CAA would specify monitoring, testing, recordkeeping, and reporting requirements necessary to demonstrate compliance with all permit requirements.

Auxiliary Boiler Description and Use

A single auxiliary boiler would be used to provide startup energy during combined-cycle startups. The auxiliary boiler would be fired with natural gas with a nominal heat input rating of 20 million British thermal units per hour (MMBTU/hr). It is projected that the auxiliary boiler would be operated no more than 480 hours per year. The primary emissions from the auxiliary boiler would be NO_x and CO, with lesser amounts of PM_{10} and SO_2. Low NO_x burners and good combustion practices (i.e., practices in accordance with the manufacturers recommendations for air/fuel ratio, temperature and load conditions) would be employed for control of emissions.

Instrumentation and Control

The proposed WMGF would use a digital process control system designed for utilization in power plants. The control interface would be located in the Control/Administration/Electrical Building (approximately 95 by 160 feet) located on the proposed WMGF site. The system would be based on a hierarchy and programmable control system to achieve maximum availability, reliability and efficiency. Six employees, a portion of the approximately 15 employees typically onsite for normal operations, would work in this building under normal operating conditions.

Switchyard and Electrical Plant

The generator of each CTG and STG would be connected to the high-voltage switchyard via generator leads. A generator breaker would be provided to connect each CTG and STG to the WMIDD portion of the Ligurta Substation. The 18- to 161-kV unit transformer (that would increase or step-up the voltage) would likely be located to the west of the CTG air inlet house, within the proposed WMGF rather than in the Ligurta Substation.

Auxiliary power for the entire proposed WMGF would be achieved by connecting an auxiliary transformer to each of the generator leads of the CTGs. This connection would supply power to the switchgear, and be designed to be 100 percent redundant. Should a blackout occur on the electric power grid, the proposed WMGF would be started from two black-start (emergency/ backup) generators, each consisting of a natural gas-fired reciprocating engine with a nominal power rating of 6 MW.

Fuel Systems

High-pressure natural gas would be supplied to the proposed WMGF from a proposed facility natural gas pipeline to be constructed on behalf of Dome Valley, as described in section 2.2.2. The proposed WMGF would use a maximum of 43.87 million cubic feet of natural gas per year during Phase I, and approximately 87.8 million cubic feet during Phase II. A gas metering station would be constructed on the proposed WMGF site for the facility natural gas pipeline. From the metering station, gas would be piped to the gas conditioning skids. The gas conditioning skids would filter particulates and moisture contained in the gas. Pressure reduction and control valves would be used to regulate gas pressure to the CTGs. A fuel gas preheater would be used to increase the reliability of the CTGs.

Grounding

The proposed WMGF would have a grounding grid such that electrical equipment, building structures, fencing, and lightning protection would all be tied into a buried wire cable grounding system. The SEECOT^{TM} system would also have a grounding system that would most likely be separate from the proposed WMGF's grounding system due to its location.

Lighting

Permanent yard lighting would be installed for safety and security purposes. This lighting would be arranged around the proposed WMGF site so that the equipment can be operated safely, and to enhance the safety of the Proposed Project personnel and the public. The use of directional

shielding of lights and nonglare fixtures would minimize the glare of night lighting (Wellton-Mohawk 2003b). The Proposed Action would adhere to the Yuma County Outdoor Lighting Ordinance, section 1109.00. There would be flashing aircraft warning lights (readily visible) on the stacks that would be white during the day and red at night, per requirements of the Federal Aviation Administration and Yuma County.

Water Supply and Use Systems

Water for the proposed WMGF's use, including cooling, would be provided by WMIDD via the Wellton-Mohawk Canal. WMIDD presently has consumptive Colorado River water rights of 278,000 acre-feet per year. WMIDD would supply approximately 1,678 acre-feet per year to the proposed WMGF for Phase I, and approximately double that amount for both phases upon completion (Wellton-Mohawk 2003c). As described below, there would be a condensate system, a cooling water system, a demineralized water system, a wastewater system, a potable water system, a condensate/steam system, a stormwater system, and a septic system and leach lines. The design of the proposed WMGF is such that none of the water supplied by WMIDD would be returned as discharge to the Wellton-Mohawk Canal. There would be a raw water storage tank with a capacity of approximately 1,000,000 gallons. Chemicals used for water treatment would be stored in containment structures that have level sensors in accordance with Dome Valley's *Spill Prevention, Control, Countermeasures and Emergency Response Plan* (SPCCERP, see section 2.2.1.4) and contained in WMIDD's Special Use Permit (SUP) Application (Wellton-Mohawk 2003b).

Condensate System. Steam exhausted from the STGs would be condensed directly in a surface condenser. This condensate would be pumped back to the HRSGs. During steam bypass operation, condensate would be sprayed in the condenser hood to control the temperature and protect the STGs.

Cooling Water System. Cooling water for the condenser would reject heat using a mechanical draft-cooling tower, as described previously. Additional cooling water would be used to cool auxiliary equipment as required and dissipate the heat from the inlet chilling system. Make-up water would be supplied by WMIDD.

Demineralized Water Systems. Demineralized water of the required quality would be generated from Wellton-Mohawk Canal water utilizing a reverse-osmosis system followed by a mixed bed demineralizer unit. This unit uses cation and anion resin beads to purify the water, and acid and caustic solutions for regeneration. The chemicals used in this process are included in table 3.13-1. The output of this unit would go to one storage tank (with capacity of approximately 120,000 gallons). The demineralized water system would also include additional storage tanks ranging from 200 to 50,000 gallons. A distribution system would be installed to distribute demineralized water to various users, including boiler makeup and other closed loop systems. The demineralized water would be used as makeup in the HRSGs and Auxiliary Boiler, and makeup for the closed cooling system.

Potable Water System. A potable water treatment system would be incorporated in the proposed WMGF to treat water from the Wellton-Mohawk Canal for domestic use. A potable water storage tank would be incorporated into the proposed WMGF design.

Condensate/Steam System. Once steam passes through the STGs, the exhaust steam would be condensed in a surface condenser. The condensate would be removed from the condenser and pumped to the HRSGs. An STG bypass system would be provided around the STGs directly to the condensers. This system would allow the CTGs to operate for short periods of time in simple cycle if there is a problem with the STGs.

***Stormwater Systems*.** Stormwater runoff from the proposed WMGF site, including the solar collection field, that could be potentially contaminated with oil would be routed to an oil/water separator to remove any oil. Collected oil would be disposed of offsite at a hazardous waste facility consistent with the requirements of the Resource Conservation and Recovery Act (RCRA). Water from the oil/water separator would be routed to the cooling tower basin for reuse. The proposed WMGF site would be located in a region of minimal rainfall. Stormwater runoff would be retained onsite by grading open areas to serve as storage basins. The solar collector field would be made up of concrete slabs that would have drains for collection and routing of stormwater runoff to the oil/water separator. The average annual precipitation at the WMGF site is approximately 4 inches.

The site drainage facilities would be designed in accordance with the Yuma County Department of Development Services Flood Control District requirements. Post-development flow rates would not exceed pre-development rates, since the proposed onsite stormwater retention facilities would eliminate any post-development stormwater runoff from discharging from the proposed WMGF site. Existing and natural drainage patterns adjacent to the proposed WMGF would not change. Onsite runoff design would be addressed as part of the preparation of detailed engineering plans for the proposed WMGF. At that time, Federal National Pollutant Discharge Elimination System (NPDES) Permitting requirements would also be addressed.

Septic System and Leach Lines. Sanitary wastes would be treated in a septic system. The septic system tank would have dimensions of 8 feet by 8 feet by 20 feet with two leach lines 15 feet apart located directly south of the Control/Administration/Electrical Building and north of the road that runs west to the property line.

2.2.1.4 *Waste Management*

Wastewater Systems

The proposed WMGF would be designed as a zero liquid discharge system and would reuse wastewater to the maximum extent practicable. All final wastewater would eventually go into the evaporation pond after being re-used wherever possible. Dome Valley is currently applying to ADEQ for an Aquifer Protection Permit that would detail the specific requirements for the evaporation pond. The aquifer protection permit would establish limits for the quality of the water allowed to go into the pond (i.e. factors such as pH, salts, metal content, temperature, etc.) Before wastewater would be allowed to go into the pond it would have to meet the established limits. This can be done through treatments such as reverse osmosis, oil/water separators, and neutralization tank/process. Wastewater with a salt content too high to be suitable for direct reuse would be treated and recycled back into the process or discharged into the onsite evaporation pond, lined with a geomembrane (a synthetic membrane often made of polyvinyl chloride or high-density polyethlyene). The evaporation pond would be located directly east of

the HRSGs and cooling towers, and would be 600 feet by 1,200 feet. The mineral salts generated by this process would be periodically removed mechanically from the evaporation pond and disposed of in an appropriate landfill. The double-lining of the evaporation pond would be in accordance with all Arizona State Best Available Demonstrated Control Technology Standards (ADEQ 2003).

Emergency Management and Regulated Materials

A SPCCERP and Security Plan have been developed by Dome Valley for the proposed WMGF (Wellton-Mohawk 2003b). The purposes of the SPCCERP include protecting the health and safety of the proposed WMGF personnel and public that could be affected by an oil or regulated materials spill, preventing discharges of oil and chemicals into the environment, or containment and clean-up such discharges. The SPCCERP includes provisions for employee training, equipment inspection and maintenance, and reporting spills. The SPCCERP also includes plans for avoiding and responding to all emergency situations that could cause hazard to life or property from accidental or natural causes (e.g., explosions, fires, bomb threats). The Security Plan describes the security philosophy at the proposed WMGF and provides personnel with guidelines and instructions necessary to ensure that security is effective.

The Rural Metro Fire Department (Fire Department) would provide fire and hazardous materials support for the proposed WMGF, and has provided the Applicant a written commitment to serve the Proposed Project as a contracted service. The Applicant would work with the Fire Department to ensure that plans are in place to deal with fire and hazardous material emergencies prior to operation of the proposed WMGF.

The proposed WMGF would include a diesel-powered water pump to be used in the case of a fire, and a 300-gallon diesel tank (Wellton-Mohawk 2003b). There would be a water tank for fire fighting water that would be shared with the raw water storage tank; the bottom half of the tank (500,000 gallons) would be available only for fire fighting purposes. There would be electric and diesel fire pumps for providing the required water pressure for the plant systems, and a small 300-gallon diesel fuel storage tank used exclusively by the fire pumps. The fire protection system would be comprised of heat, smoke, and flame detection devices, depending on location. These would sound an alarm in the plant and light a specific indicator in the control room. The building, turbines, transformers, and cooling towers would be protected with detectors. The gas turbines, lube oil and gas skids, and generators would be protected by a carbon dioxide (CO_2) flooding system. The steam turbines and oil skids would be protected by an installed sprinkler system. The wooden cooling towers and transformers would be protected by water spray systems. The control room and computer rooms for the distributed control system, gas turbine, and steam turbine control skids are protected by a CO_2 flooding system. The proposed WMGF would also have several hydrants, hoses, nozzles, and monitors. In addition, the proposed WMGF would have portable extinguishers (CO_2 and dry chemical) mounted throughout the facility.

All chemicals used in cooling system operations and cooling tower blow down would be stored in containments. These containments would be stand alone so that in the event of a spill they can be disposed of individually, or would be piped for treatment in the wastewater system which is designed to have virtually zero operational leakage or waste.

All liquid fuel and lubrication oil systems would be within containment areas which would be drained to an oil/water separator. The treated water would be processed for discharge into the evaporation pond, and the collected oils would be disposed of off-site in accordance with the Resource Conservation and Recovery Act (RCRA). Disposal would be through a recycling contractor if possible.

The proposed WMGF would be designed as a small-quantity hazardous waste generator because not more than 2,200 pounds per month of hazardous waste would be generated and stored during any time of the year.

Hazardous waste would be accumulated onsite for up to 90 days prior to being transported and disposed offsite as hazardous waste. All containers would meet the requirements Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities, Consolidated Checklist C6 (40 CFR 265, Subparts I and J). All tanks and containers would be kept closed and would be clearly marked with hazardous waste labels indicating the generator name, address, EPA identification number, and date accumulation began. The storage area for hazardous material would be inspected daily and records would be made and retained of the inspection.

Off site waste disposal would be with licensed contractors and all transportation would be in accordance with Department of Transportation (DOT) regulations. The closest solid waste facility for non-hazardous materials is the Copper Mountain landfill 7 miles east of Wellton which has approximately 100 years of remaining capacity. The closest facilities for hazardous waste (treatment, storage and disposal) are located in Phoenix, Arizona. All solid waste streams from the facility would be disposed of whenever possible through a duly licensed recycling contractor.

If a release would occur, product and impacted material would be segregated accordingly and placed in suitable containers or tanks. The containers would be labeled and stored in designated areas. Signs would be posted at the hazardous waste storage area that would indicate where and how to use the phone to implement the contingency plan during a hazardous waste release or other emergency. In addition, spill response materials and personal protective equipment would be provided at the hazardous waste storage area. Spill prevention equipment would be inspected and maintained monthly.

2.2.1.5 *Construction*

The construction of Phase I of the proposed WMGF would last 12 to 18 months, during which time the number of people working at the site would vary from 50 to 300 employees, with 300 employees during peak construction. Construction of Phase II of the proposed WMGF (installation of the second set of turbines, second half of the solar collectors, and associated equipment) would take approximately 8 to 12 months and would require approximately 50 to 75 fewer workers than for Phase I (peaking at approximately 250 workers). The majority of the required labor pool would be available from the Yuma area, although the workforce may include workers from outside the area.

Equipment needed for construction and installation of the proposed WMGF would include heavy equipment (brush-hogs, bulldozers, excavators, graders, track hoes, backhoes, trenchers, and

front-end loaders), and light- and heavy-duty trucks including cement and water trucks. Cranes would be required to erect the equipment. The largest crane would be large enough to make the 160-foot lift for the top segment of the HRSG stacks. Numerous smaller cranes would be onsite at different times of the construction effort. There would also be trucks and other heavy machinery for earthmoving and heavy lifting.

The proposed WMGF site includes adequate area for construction parking, work trailers, storage, and lay-down areas. Existing water and electrical power facilities are available near the proposed WMGF site for use during construction. The primary access during both construction and operation would be from I-8 via Dome Valley Road to Old Highway 80. The proposed WMGF site would be accessed on its north side from Old Highway 80. The entrance to the proposed WMGF would be paved to aid in dust control.

The combustion turbines and generators (components of the CTGs) would be shipped as separate packages, along with the oil and electrical modules. The HRSGs would be shipped in modules (tube bundles, drums, structural components, and panels). The STGs would be factory assembled and shipped in sections for convenient field erection. The SCR and catalyst would be shipped in modules. The stacks would be shipped in 20-foot segments. The condensers, transformers, diesel engines, large pumps, and large valves would be shipped separately. The cooling tower would be shipped in modules along with the fans and fill material. Tanks would be erected onsite but the wall materials would be sent in sections. The buildings would be prefabricated steel buildings that would be shipped in modules. Piping, small valves, tubing, structural steel, conduit, and wire would likely be delivered on flatbed trucks.

As early as possible in the construction process, a perimeter fence would be installed. The equipment would be stored onsite and all construction materials would be staged within the boundary of the proposed WMGF site. During the construction period, the proposed WMGF site would be patrolled and access would be continually monitored through a guard service. A guard shack manned 24 hours per day, 7 days per week would control access to the site.

Construction Methods

Standard industrial facility construction methods would be used to construct the proposed WMGF. In general terms, these operations would occur in the following sequence: earthmoving; foundation pouring; equipment erection; building, piping, and wiring work; and testing, finishing, and cleanup.

Earthmoving. The plan for the proposed WMGF including the solar field would be surveyed and staked. Depending on permit requirements, areas requiring avoidance during construction would be flagged, fenced, or signed. The construction work area would be cleared and graded to plan for required foundation heights per drainage requirements. In areas where grading is not required, but clearing is needed, vegetation would be cut off at ground level leaving root systems intact. In areas of the proposed WMGF site where clearing is not required, native vegetation would be protected. The excavation at the proposed WMGF site would consist of shallow trenching for footings and underground piping. Grading would be performed to establish level work areas, foundations, and drainage profiles. This stage of construction would require approximately 40 employees onsite.

Foundation Pouring. The foundations for the buildings and mounts for the turbines and other major equipment would be made of concrete. The largest amount of concrete would be for the floor of the solar field and turbine siting. This stage of construction would require approximately 50 employees onsite.

Equipment Erection. The major equipment and the materials for the structures would be lifted from delivery vehicles and put into place by cranes. This step would include tank construction, and the construction of structural steel supports for piping and conduits. This stage of construction would require approximately 200 to 300 employees onsite.

Building, Piping, and Wiring Work. Piping and structural materials would be welded. Siding would be mechanically attached to structural members. Modules of the prefabricated buildings would be assembled. This stage of construction would require approximately 300 employees onsite.

Testing, Finishing, and Cleanup. All work areas would be rough-graded, then finish-graded, to required drainage profiles, and revegetated outside of operation and maintenance work and parking areas. A punch list (final checklist) would guide the final construction activities. Surplus construction material and debris would be removed and disposed of at permitted sites. Construction waste would be sent to a local landfill by the Applicant's construction contractor. Used oil would be sent to an authorized used oil service. Any cleaning agents, solvents, and hazardous wastes including transformer oil would be properly disposed of by the Applicant's construction contractor. Weed control chemicals are unlikely to be used during construction. A summary of anticipated construction wastes is shown in table 4.13-1. This stage of construction would require a maximum of approximately 150 employees onsite.

2.2.1.6 *Operation*

The proposed WMGF would be designed for combined-cycle operation. In Phase I, one CTG and one steam turbine would be operated rated at a nominal 260 MW with a peaking capacity of 310 MW via duct burners. In Phase II, an additional CTG and steam turbine would be installed bringing the WMGF's maximum capacity to 520 MW with a peaking capacity of 620 MW.

The proposed WMGF operation would use advanced control systems to monitor and control operation systems. There would be approximately 25 employees. The proposed WMGF would be manned 24 hours a day in two 12 hour shifts of three employees each. The remaining employees would work Monday through Friday 8 hours a day (normal work day). From Monday through Friday on a normal work day there would be 15 employees. At all other times there would normally be three employees onsite. Many functions including major turbine and generator maintenance would be outsourced to other vendors.

Hazardous substances such as ammonia, caustics and acid would be delivered via tanker truck, on a regular weekly or monthly schedule depending on the substance. Other substances such as anti-algae/bacterial agents (e.g., sodium hypochlorite) or anti-scalants for the cooling towers would be delivered either via tanker truck, tote, or drum depending on the substance. There would be daily, monthly, quarterly, and annual commercial traffic necessary for the proposed WMGF. The chemicals that would be stored and used at the proposed WMGF are shown in table 2.2-1.

Table 2.2-1. Chemicals Used Onsite at the WMGF.

Chemical Name	Quantity Stored Onsite
CW Sodium Hypochlorite	400 gallons
Demin. Sodium Hypochlorite	200 gallons
CW Sulfuric Acid (98%)	4,500 gallons
Demin. Sulfuric Acid (98%)	4,500 gallons
Sodium Hyrdoxide (50%)	6,000 gallons
Soda Ash	1,500 ft^3
Lime	5,000 ft^3
Magnesium Oxide	1,300 ft^3
Ammonia	30,000 gallons
Hydrogen	45,000 standard ft^3
Carbon dioxide	18 tons
Ethylene Propolyne (30%)	32,500 gallons
Coagulant	4,500 gallons
Scale Inhibitor	400 gallons
Sodium Sulfite	400 gallons
Coagulant Aid	400 gallons
Amine	400 gallons
Oxygen Scavenger	400 gallons

Source: Wellton-Mohawk 2003b.
ft^3 = cubic feet.
CW = cooling water
Demin. = Demineralization

The entire proposed WMGF property would be fenced with a 6-foot-high chain link fence with a 1-foot-high barbed-wire outrigger placed at the top. A security plan would be developed that describes the security philosophy at the proposed WMGF and provides personnel with guidelines and instructions necessary to ensure that security is effective. There would be permanent yard lighting for safety and security. In addition, a fence within the site perimeter would surround the proposed WMGF's main equipment area.

Waste Management

Operational wastes would be minimal, consisting of limited solid and liquid waste, both hazardous and nonhazardous. These waste materials and associated amounts generated are identified in table 4.13-2. There would be a weekly pickup of solid waste generated from office and administrative operations, and minimal quantities of nonhazardous waste from proposed WMGF operations. Solid wastes would be recycled to the extent possible. It is anticipated that, at a minimum, all oils, hydraulic fluids, batteries, solvent, and scrap metals would be recycled.

Other wastes generated from the long-term operation and maintenance of the proposed WMGF could include solids periodically removed from the onsite evaporation ponds, and limited quantities of cleaning agents and solvents (typical household chemicals), weed control agents, used oil, and equipment packaging materials. Glycol coolant wastes would most likely not be

created, but would be disposed of properly if used. There may be small quantities of waste oil/rags and water wash liquid that would have to be shipped offsite via truck on a monthly basis. Waste from the oil/water separator would be shipped offsite to an approved disposal site via truck, either semi-annually or annually.

2.2.2 Facility Natural Gas Pipeline

Natural gas for the proposed WMGF would be delivered via a new facility natural gas pipeline that would interconnect to a proposed new regional natural gas pipeline or an upgraded existing regional natural gas pipeline. This pipeline would be 16 to 20 inches in diameter if it is designed specifically for the proposed WMGF. If the proposed facility natural gas pipeline alignment becomes part of a larger regional FERC project, the pipeline diameter could range from 16 to 30 inches in diameter. As described in section 2.1.2 and appendix A, two options exist for this regional natural gas pipeline, both of which are currently undergoing feasibility studies. The final routing for the regional natural gas pipeline has yet to be determined. The point of connection is currently undetermined, but two options for the route and point of connection of the facility natural gas pipeline are assessed in this EIS.

Option 1 involves an interconnection near Highway 95 and the Wellton-Mohawk Canal, northwest of the proposed WMGF Project site. Option 1 would be approximately 12.7 miles long and would be located along the Wellton-Mohawk Canal, between 100 and 300 feet from the centerline of the canal. Option 1 for the facility natural gas pipeline traverses Reclamation, State of Arizona, and private lands. This option may involve interconnecting with a regional pipeline operated by NEGT or by El Paso.

Option 2 involves an interconnection just south of the proposed WMGF site near I-8. Option 2 would involve construction of less than 0.25 mile of pipeline across the proposed WMGF site, the Wellton-Mohawk Canal, and the I-8 ROW. For conservative impact assessment purposes, the interconnection is assumed to be on the south side of I-8. Option 2 for the facility natural gas pipeline traverses Reclamation land and I-8.

U.S. Bureau of Reclamation Land

There is currently no defined ROW for the Wellton-Mohawk Canal where it crosses Reclamation land. Thus, a new ROW would have to be issued for the facility natural gas pipeline where it crosses Reclamation land, assuming that the ROW area is not transferred or purchased by WMIDD prior to commencing work on the Proposed Project. Across these presently Federal lands, the permanent ROW would be 50 feet wide plus the width of the pipe. To accommodate the 100-foot wide construction zone, the Applicant would need to apply for a temporary use permit for the area that exceeds the ROW dimensions. If approved, they would receive a non-exclusive ROW which allows for additional authorizations on the land, provided they do not conflict with existing authorized users.

State of Arizona and Private Lands

Where the Wellton-Mohawk Canal crosses State of Arizona or private land, there are existing defined ROW. Where these existing defined ROW are wide enough to accommodate the 100-foot-wide construction zone projected for the facility natural gas pipeline, these ROW would

only have to be amended (to allow a natural gas pipeline) and reissued by the State of Arizona, or by the private landowner.

Table 2.2-2 shows the ROW that would be needed for Options 1 and 2 of the facility natural gas pipeline, based on the length of each option on Reclamation, State of Arizona, and private lands.

Table 2.2-2. Right-of-Way Needs for Facility Natural Gas Pipeline Options (length in miles).

	Reclamation Land	State of Arizona Land		Private Land	
	New ROW Required	Amended ROW	Widened & Amended ROW	Amended ROW	Widened & Amended ROW
Option 1	10.0	0.0	1.0	0.4	1.3
Option 2	0.25	0.0	0.0	0.0	0.0

ROW = right-of-way.

2.2.2.1 *Option 1*

Under Option 1, natural gas for the proposed WMGF would be delivered via a new buried facility natural gas pipeline that would interconnect to a proposed or existing regional natural gas pipeline near Highway 95, 12.7 miles northwest of the proposed WMGF. The facility natural gas pipeline would run west from the generating facility crossing underneath the Wellton-Mohawk Canal before turning north-northwest and running alongside of the canal (figure 2.2-3). Approximately halfway along its length, to avoid construction constraints and cultural resources, the facility natural gas pipeline would cross back under the Wellton-Mohawk Canal and run along the east side for the rest of its length (figure 2.2-4). The facility natural gas pipeline would be located at a distance of between 100 to 300 feet from the centerline of the canal, and would be adjacent to the canal spoils piles (excavated material taken from the canal). The expected total width of disturbance along the construction ROW during pipeline installation would be approximately 100 feet, including disturbances from vehicle movement and soil piles. The width for clearing and grading would be approximately 85 feet.

Access to the proposed facility natural gas pipeline would be provided by the two existing roads, one on each side of the canal, that run parallel to the canal from the proposed WMGF site to Highway 95, and a third access road associated with the Union Pacific Railroad along the west side of the canal. WMIDD owns and operates the existing access roads, and as one of the applicants for the Proposed Project, has granted permission for use associated with the Proposed Project. None of the access roads are currently gated or would be gated.

Construction Methods

Construction of the pipeline between the proposed WMGF site and Highway 95 would take approximately 6 to 8 weeks. Approximately 35 to 40 people, including surveyors, inspectors, and construction personnel, would be employed constructing the pipeline between the proposed WMGF site and Highway 95.

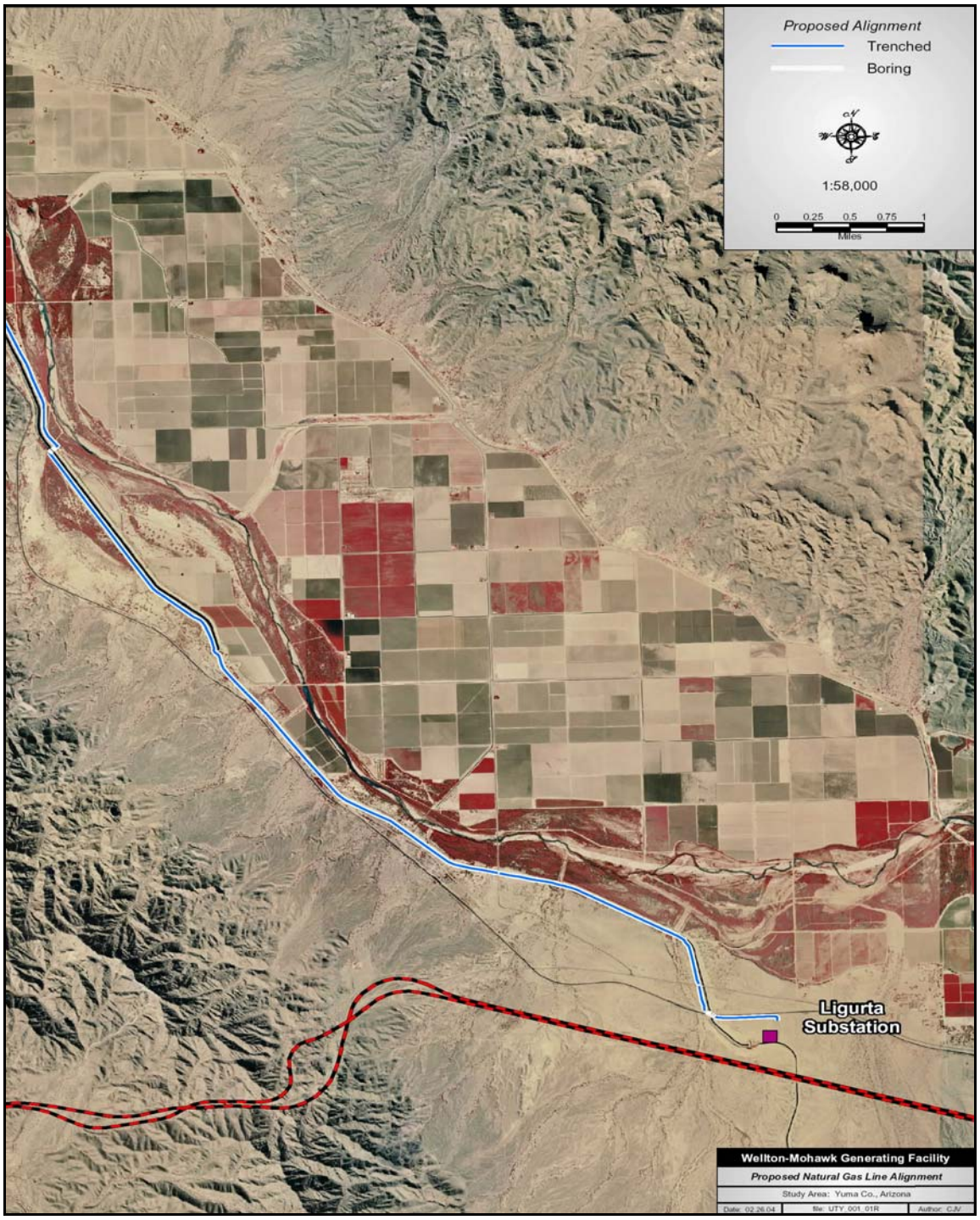


Figure 2.2-3. Facility Natural Gas Pipeline Option 1 (West Side of Canal).

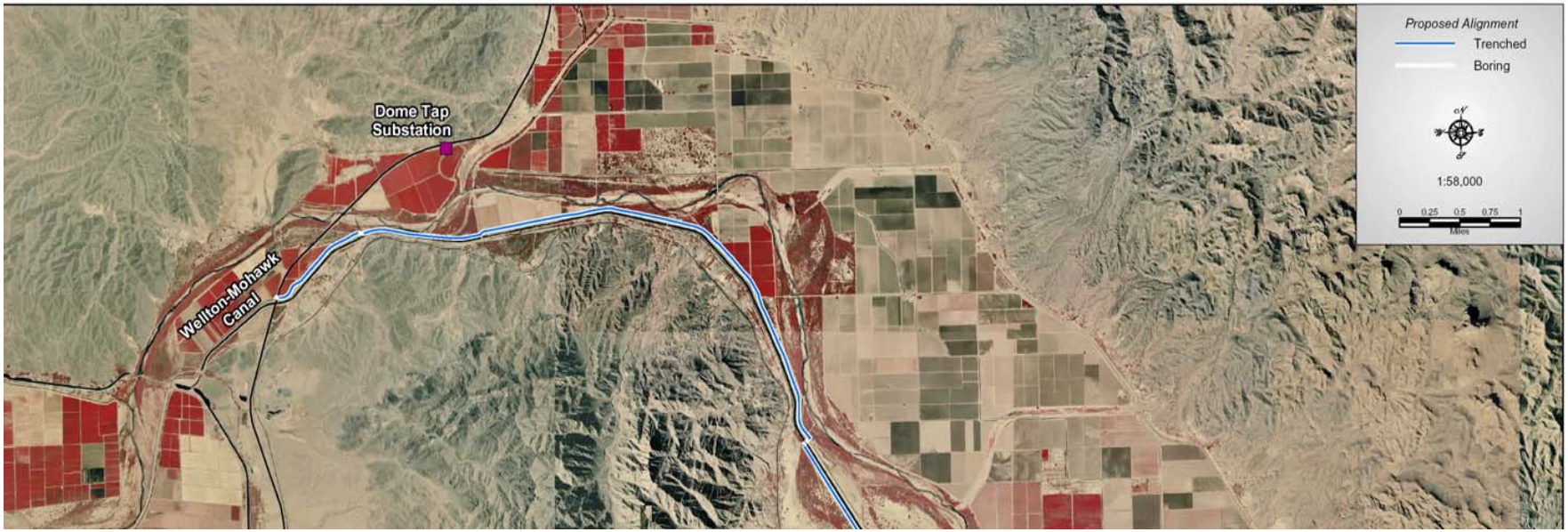


Figure 2.2-4. Facility Natural Gas Pipeline Option 1 (East Side of Canal).

Standard pipeline construction would proceed in the manner of an assembly line comprised of specific activities. These operations would include centerline survey and staking; clearing and grading; trenching; stringing, bending, welding; lowering-in and backfilling; hydrostatic testing; cleanup; and revegetation and reclamation. Construction of the pipeline may include such equipment as brush-hogs, bulldozers, excavators (backhoes and trackhoes), side boom tractors, various welding trucks, pickup trucks, water trucks, pipe stringing trucks, pipe boring/drilling rigs, bending machines, padding machines, and dump trucks.

Survey and Staking. The pipeline centerline and the boundaries of the authorized work area (approximately 85 feet wide along the length of the pipeline) would be surveyed and staked. Areas requiring avoidance during construction would be flagged, fenced, or signed. Existing utility lines and related underground structures would be located and marked to prevent accidental damage during construction.

Clearing and Grading. The construction work area would be cleared and graded where necessary to provide a level surface for trench excavating equipment and a sufficiently wide workspace to allow passage of construction equipment. In areas where grading is not required, but clearing is needed, vegetation outside of the trenched areas would be cut off at ground level leaving root systems intact. Where clearing/grading of the ROW is not required, native vegetation would not be disturbed during construction. Top soil, for use in finishing work, would be stripped and stockpiled separately from trench spoil. Arizona Pollution Discharge Elimination System (AZPDES) and NPDES permitting requirements would be addressed in the engineering plans and followed during construction. Access roads to the proposed natural gas pipeline ROW would need regrading and recontouring for safe truck travel. In addition, washes would require modifications to bank slopes for construction activities.

Trenching. The trench would be excavated to a depth sufficient to provide the minimum cover required by regulation. Typically, the trench would be about 5 feet deep to allow 3 feet of cover over the top of the pipeline. The top of the trench would be about 4 feet to 6 feet wide in stable soils, and up to 12 feet wide in sandy soils. No explosive blasting is expected to be required during pipeline construction. In agricultural areas, depth of cover would be increased to ensure sufficient clearance below maximum tillage depth. At least 1 foot of clearance would be necessary between the pipeline and other underground structures. Spoil from the ditch would be spread onto the working side of the ROW and worked over by equipment or temporarily stored in a pile next to the trench.

Road, Highway, Railroad, and Surface Water Feature Crossings. Construction across these features would be done according to applicable crossing permits. Those features requiring boring, as opposed to simply trenching (open-cutting), would be constructed using a directional boring machine that bores downward at an angle underneath the feature and then upward on the opposite side. The machine then pulls the pipe back through the excavated bore. Six locations would require boring, ranging from approximately 100 feet to 350 feet. The total length would be approximately 1,100 feet. Little or no traffic disruption occurs during the bore. Once the pipe is in place, it is tied into the main section of the line on either side.

Stringing, Bending, and Welding. After trenching, externally coated pipe would be strung along the ROW. Pipe trucks would transport 40- or 80-foot sections of pipe from a central pipe storage yard at the proposed WMGF site to the ROW. Access to and from the ROW would be

planned to accommodate the pipe stringing trucks, which require a relatively wide turning radius due to their length. Individual sections of pipe would be bent where necessary to fit trench contours, aligned, welded into long strings, and placed on temporary supports along the edge of the trench. All welds would be x-rayed to ensure structural integrity and compliance with applicable regulations. Welds not meeting specifications would be repaired or redone. Once the welds are approved, joints would be coated with a protective coating and the pipeline would be inspected for defects and leaks in the coating.

Lowering-in and Backfilling. Before the pipeline is lowered into the trench, fine-grained padding material would be placed at the bottom of the trench as necessary, typically only in rocky areas. Side-boom tractors would carefully lower the long string of welded pipe into the ditch. Soil from the excavation would be used to cover the pipe. If the spoil contains rocks, they would be sifted from the backfill material immediately around the pipe. In extremely rocky areas where fine-grained spoil is sparse, rock shield can be wrapped around the pipe to protect it from rocks in the backfill. No topsoil would be used for padding material.

Hydrostatic Testing. The pipeline would be hydrostatically tested in sections or as a single continuous section with water obtained from the Wellton-Mohawk Canal. No chemicals would be added to the test water. Water would be pumped into the line, pressurized to the design test pressure and maintained at that pressure for about 8 hours. The design test pressure would range between 126 and 183 percent of the maximum allowable operating pressure. If leaks are found they would be repaired and the section of the pipe would be retested until a successful test is completed. The hydrostatic test water would be discharged back into the Wellton-Mohawk Canal.

Cleanup. The trench would be compacted by wheel-rolling. Any surplus construction material and debris would be removed and disposed of at appropriate sites. After completion of construction and hydrotesting, the pipeline would be cleaned and dried using internal inspection tools (pigs) that are propelled through the pipeline. Then the line would be purged of air and filled with natural gas. Pipeline markers and cathodic protection devices would be installed along the ROW.

Revegetation and Reclamation. All work areas would be rough-graded and then finish-graded to restore pre-construction contours as near as possible. Topsoil stockpiled separately during trenching would be used for finishing, and sheeps-footing may be applied to encourage plant growth. Disturbed areas would be revegetated with native seed mixtures. Access roads would be regraded and restored in a manner similar to the pipeline ROW, unless otherwise requested by the property owner.

Operation and Maintenance

As required by the ACC, the natural gas pipeline would be designed and operated in accordance with State of Arizona requirements and 49 CFR Part 192, which prescribes minimum safety requirements for pipeline facilities and the transportation of gas. Pipeline maintenance would include routine inspection and maintenance activities, and would be conducted two to four times per year. Pipeline maintenance would be conducted using the existing Wellton-Mohawk Canal access roads, and there would be no additional permanent disturbance associated with the facility

natural gas pipeline. The access roads are not currently gated and would not be gated during or after construction of the pipeline.

2.2.2.2 *Option 2*

Under Option 2, the facility natural gas pipeline would connect to the regional natural gas pipeline at I-8 adjacent to the proposed WMGF site. The interconnection with the proposed WMGF would involve construction of less than 0.25 mile of pipeline across the proposed WMGF site, the Wellton-Mohawk Canal, and the I-8 ROW. Depending on which side of I-8 the regional gas pipeline is located, the facility gas pipeline may involve boring under I-8. The individual aspects of the construction and maintenance of the facility pipeline would be performed in the same manner as described for Option 1, except the construction time and workforce would be considerably less, in proportion to the shorter length of pipeline to be constructed. Table 2.2-2 presents the amount of ROW that would be needed for Option 2.

Access to the proposed natural gas pipeline would be via open access on the proposed WMGF site. The facility pipeline would cross land currently managed by Reclamation that would be included as part of the proposed WMGF site.

2.2.3 Transmission System Additions

The Applicant has applied for an interconnection with Western's transmission system at Western's Ligurta Substation, located adjacent to the southwest portion of the proposed WMGF (figure 1.1-2). In August 2002, Western performed system impact studies to assess whether there was sufficient existing transmission capacity for the power that would be generated by the proposed WMGF (Western 2002a). The studies identified that transmission system upgrades would be necessary to support the generation load. In support of Western's long-range plans these upgrades are designed to 230-kV specifications, and would be operated at 161-kV until such time as the entire South of Parker system has been similarly upgraded. This would be independent of either Phase I or Phase II of the proposed WMGF.

Western's System Impact Study Report concluded that in order to interconnect the proposed WMGF with the regional electric transmission grid, Western would need to construct, operate, and maintain a new transmission line between the existing Ligurta Substation and Arizona Public Service's (APS) North Gila Substation, and upgrade its existing Ligurta-Gila 161-kV Transmission Line with a larger conductor. These transmission lines would be constructed to 230-kV operating standards. This is because the existing 161-kV lines are no longer an industry standard voltage, and Western's Ten Year Plan calls for upgrading facilities in the Wellton-Mohawk area to 230-kV commencing in late 2007.

The design characteristics of the new and upgraded transmission lines are described in table 2.2-3. The existing and proposed H-Frame transmission line structures are shown in figure 2.2-5, and the new monopole transmission line structure is shown in figure 2.2-6.

Table 2.2-3. Design Characteristics of the Proposed Transmission Lines.

Type of Structure	tubular-steel H-frame; monopoles for turns, lattice structures for Telegraph Pass
Structure Heights	H-frames – 70 to 110 feet; monopoles – 80 to 140 feet
Span Length	average 700 feet (range 600 to 800)
Number of Structures per Mile	7 to 8
ROW Width	125 feet
Land Temporarily Disturbed:	
(1) H-frame Steel Pole and Monopoles	100-foot radius at each structure
(2) Wire pulling sites	125 x 125 (0.35 acres) feet per 3 miles
(3) Wire splicing sites	10 x 50 feet (0.02 acre) per 3 miles
(4) Material staging sites	400 x 540 feet (5 acres)
Land Required Permanently	
(1) Structure base:	
Tubular-steel H-frame	Two 3-foot diameter foundations – 14.14 sq ft or 0.0003 acre per structure
Steel Monopole	One 8-foot diameter foundation – 50.27 sq ft or 0.0012 acre per structure
Lattice	Four 3-foot diameter foundations – 28.27 sq ft or 0.0006 acre per structure
(2) Access roads (average acres per mile of access road) by ground disturbance level:	
use existing roads	0.3 acre
upgrade existing roads	0.3 acre
construct new roads	1.7 acres
Voltage	1.61-kV Alternating Current constructed to 2.3-kV standards
Circuit Configuration (H-frame)	single circuit, one conductor per phase with three phases, horizontal configuration
(monopole)	single or double circuit, one conductor per phase with three phases, vertical configuration
Conductor Size	954 Kcmil Aluminum Conductor Steel Reinforced (1.05 inch diameter)
National Electrical Safety Code (NESC) Standard for Ground Clearance of Conductor	28 feet minimum at 176^{o}F
Structure Foundations	drilled piers, cast-in-place concrete, pre-cast pads or inserts, or direct burial depending on site conditions.

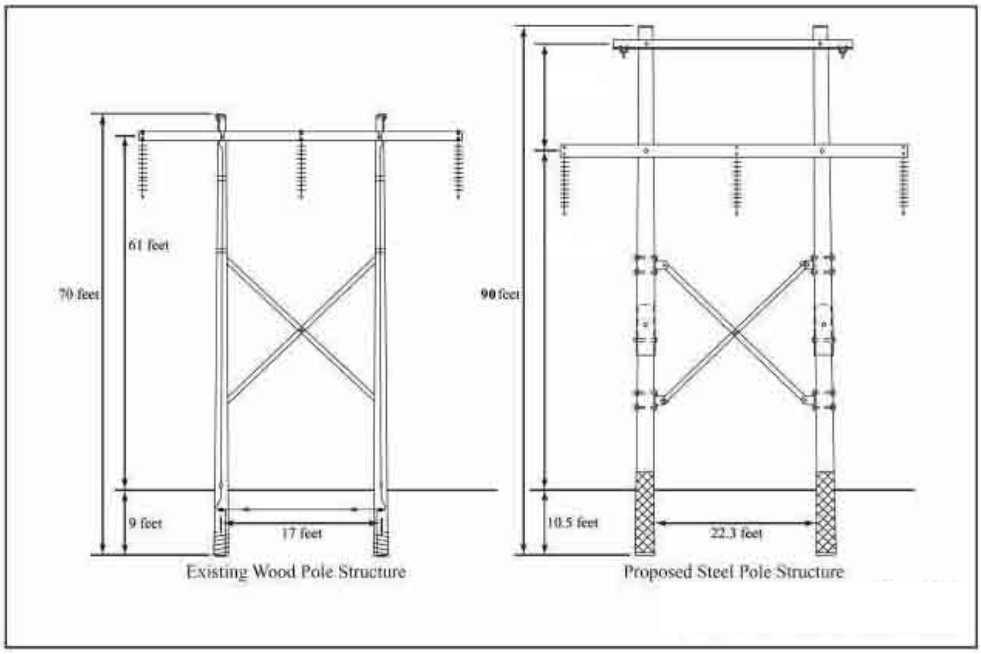


Figure 2.2-5 Typical Existing and Proposed H-Frame Transmission Line Structures.

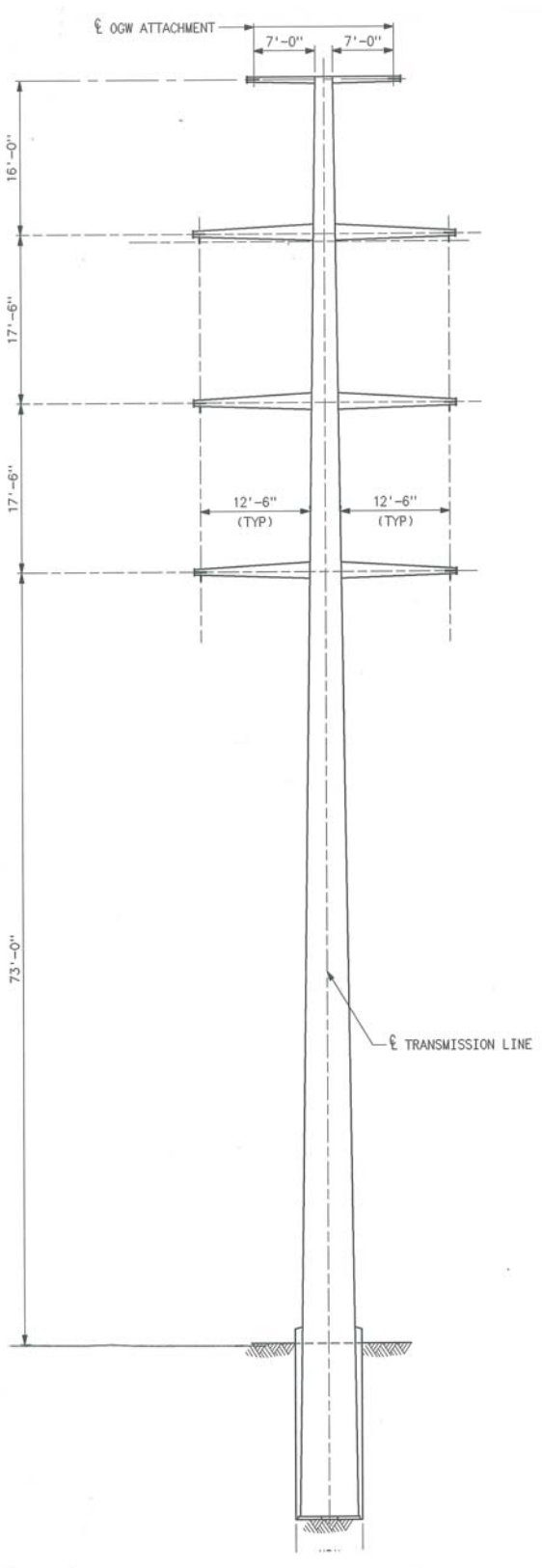


Figure 2.2-6 Typical Proposed Monopole Transmission Line Structure.

Each of these transmission system changes is described in the following sections, which include design, construction, ROW needs, operation, and final disposition (Western 2003b). The proposed electrical interconnection between the proposed WMGF and the power grid would be constructed, owned, and operated by Western.

2.2.3.1 *Ligurta-Gila Transmission Line (Upgrade)*

As part of the Proposed Action, Western would upgrade its existing 12.7-mile, 161-kV Ligurta-Gila Transmission Line. The Ligurta-Gila line runs west from the Ligurta Substation, over the Gila Mountains at Telegraph Pass to the Gila Substation (figure 1.1-2). The line traverses a combination of BLM, Reclamation, State of Arizona, and private lands, as shown in figure 1.1-2. The transmission line upgrade would involve the removal of the existing wood-pole transmission line structures, conductor, and overhead groundwires and the installation of new steel transmission structures, new larger conductors, and overhead groundwires, including one fiber-optic communication cable, within the existing 125-foot-wide transmission line ROW.

BLM would amend the existing ROW to allow the upgrade of the Ligurta-Gila Transmission Line. The new transmission structures would be galvanized light duty steel, H-frame structures as shown in figure 2.2-5, with heights ranging from 70 to 110 feet depending on terrain. Monopoles (single poles), shown in figure 2.2-6, ranging in height from 80 to 140 feet would be used at turning points. Figure 2.2-5 also shows the type of existing wood structures on the Ligurta-Gila Transmission Line. Approximately eight new lattice tower structures, with an average height of 95 feet, would be used for the portion of the line crossing Telegraph Pass. The conductors to be used would be specular (shiny), but would dull over time from weathering, as would the steel support structures. The upgraded transmission line would be constructed to 230-kV standards, but operated at 161-kV.

Assuming that the span length between structures would be between 600 and 800 feet, approximately 122 structures would be required for the upgrade. Approximately four pulling sites and four wire splicing sites would be utilized. A 5-acre material staging area might also be required. It would most likely be located adjacent to or within the Ligurta Substation. Staging areas are selected by the construction contractor and would be subject to subsequent biological and cultural reviews.

No new access roads are anticipated for the transmission line upgrade. The installation of new structures would occur in the existing ROW and utilize existing access roads. Access to the upgraded Ligurta-Gila Transmission Line would be primarily on a road that currently provides access to the existing transmission line. There are approximately 10 structures in the Telegraph Pass area that are inaccessible to land-based vehicles due to terrain and I-8. This area would be surveyed as part of pre-construction activities, and helicopter construction techniques would be employed to erect the lattice structures for these sites (refer to section 2.2.3.5 for a complete description of construction activities).

2.2.3.2 *Ligurta-North Gila Transmission Line (New)*

Western would also construct a new 18.7 -mile transmission line between the Ligurta Substation and APS's North Gila Substation north of Yuma. The new Ligurta-North Gila Transmission Line would parallel the existing Ligurta to Dome Tap 161-kV Transmission Line for

approximately the first 9 1/2 miles. At this point the new transmission line would diverge from the existing transmission line, and continue west on the south side of the Gila River for about one mile before turning north to cross the river and rejoin the existing transmission line for the last mile to Dome Tap Substation. This route traverses Reclamation, BLM, state, and private lands. The transmission line would then continue to the North Gila Substation, traversing Reclamation, state, and county lands. Similar to the Ligurta-Gila Transmission Line, the proposed transmission line would require the installation of new transmission structures, new larger conductors, and two overhead groundwires, one would contain a fiber-optic communication cable.

Ligurta to Dome Tap Segment

The Ligurta to Dome Tap portion of the new Ligurta-North Gila Transmission Line would be approximately 12.2 miles long. Between the Ligurta and Dome Tap substations, the new Transmission Line would run parallel on the west side of the existing Ligurta-Dome Tap Transmission Line for part of its proposed path, and elsewhere would parallel the Wellton-Mohawk Canal within the canal ROW. Where the proposed Ligurta-North Gila Transmission Line parallels the existing Ligurta-Dome Tap Transmission Line, the proposed 125-foot-wide transmission line ROW would overlap 20 feet with the existing transmission line 125-foot-wide ROW (figure 2.2-7), such that the proposed transmission line would be approximately 105 feet from the existing transmission line. Refer to table 2.2-4 for the ROW needed for the Ligurta to Dome Tap segment of the proposed Ligurta-North Gila Transmission Line.

Assuming that the span length between structures would be between 600 and 800 feet, about 92 structures would be required. Approximately four pulling sites and four wire splicing sites would be utilized. A primary 5-acre staging area would likely be located adjacent to or within the Ligurta substation, as described above. A secondary 5-acre staging area would likely be located about midway between Ligurta and North Gila in the vicinity of Dome Tap, perhaps in the area known as Adair Park. Whatever sites are selected would be subject to biological and cultural reviews before use.

The access roads for the existing Ligurta-Dome Tap Transmission Line would be utilized for the construction of this portion of the new transmission line. Access to the structures located within the Gila River floodplain would be via existing bladed access roads associated with levee construction and maintenance.

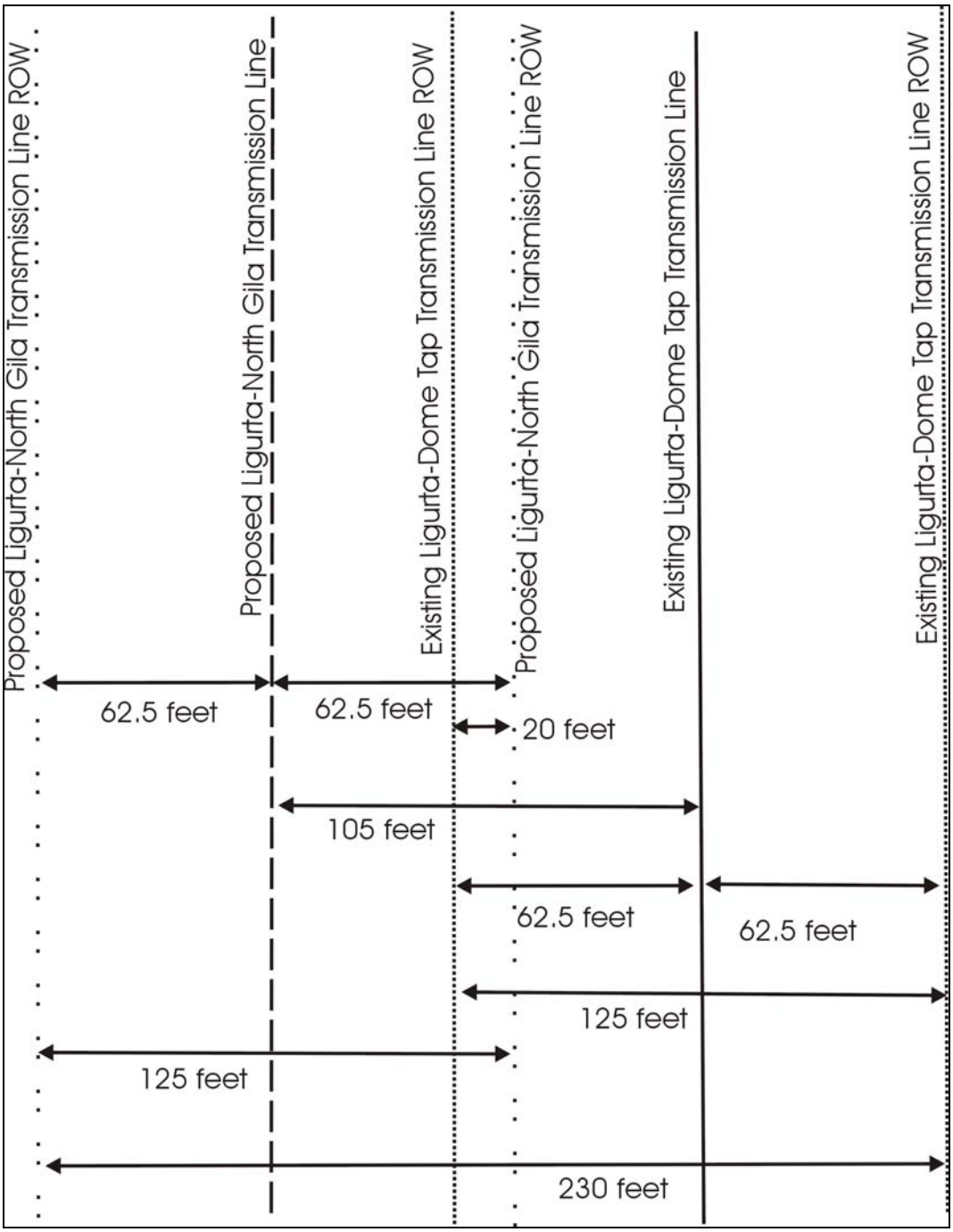


Figure 2.2-7. Proposed New Ligurta-North Gila Transmission Line in Relation to Existing Ligurta-Dome Tap Transmission Line.

Table 2.2-4. Right-of-Way Needs for Proposed Ligurta-North Gila Transmission Line (length in miles). [a]

	Reclamation Land				BLM Land	State Land		County Land	Private Land
Segment	**Parallel ROW to existing trans-mission line ROW**	**ROW along Canal**	**Across Gila River**	**New ROW**	**Parallel ROW to existing trans-mission line ROW**	**Parallel ROW to existing trans-mission line ROW**	**New ROW**	**New ROW**	**Parallel ROW to existing trans-mission line ROW**
Ligurta-Dome Tap	6.5	2.4	0.3	0.0	1.4	0.3	0.0	0.0	1.3
Dome Tap-North Gila	0.0	0.0	0.0	3.9	0.0	0.0	1.1	1.5	0.0
Total Miles	**13.1**				**1.4**	**1.4**		**1.5**	**1.3**

[a] The proposed transmission line ROW width would be 125 feet.

On the south side of the Gila River crossing of the existing transmission line, the proposed new transmission line would turn west for approximately 1 mile to a new proposed transmission line crossing location at the Gila River. The new crossing would allow for a north-south crossing of the line and would reduce potential impacts to riparian habitats, as compared with the current crossing. The new transmission line would span 1,640 feet from the south side levee of the Wellton-Mohawk Canal, across the Gila River, to the north side Gila River levee. The conductors that span the Gila River would have state-of-the-art marking devices (e.g., bird flight diverters such as "flappers" with reflective and phosphorescent tape) to reduce the potential for bird collisions with the conductors (Western 2003d).

There is an existing WMIDD electric distribution line within a cleared 60-foot firebreak (cleared area for wildfire control) that crosses the Gila River at this location. A transmission line monopole turning structure would be built on the south side of the Wellton-Mohawk Canal at this firebreak. From there the transmission line would be rolled to an H-frame structure that would be on the levee south of the low flow channel. The line would then cross the river in a horizontal configuration to an H-frame structure located on the north levee of the river. From this H-frame structure the line would be "rolled" back to a vertical configuration at the monopole turning structure north of the river, where the line again heads west. This would allow the transmission line conductors to cross the Gila River at a 90 degree angle in a horizontal configuration. The new line would run approximately 50 feet east of the centerline of the 60-foot firebreak and the existing WMIDD electric distribution line. Therefore, the proposed transmission line would be 20 feet from the eastern edge of the current firebreak. From the monopole turning point north of the Gila River, the proposed transmission line would then run west for approximately 1 mile to the Dome Tap Substation on monopole structures.

Construction at the river crossing would take approximately 6 weeks to complete (section 2.2.3.5 for a complete description of construction activities). Initially, crews would remove brush from the new pole sites. Tamarisk (a non-native species of woody vegetation, also known as salt cedar) on the north and south levees would be removed underneath the line for safety, line reliability, and to reduce fire hazards. Within 4 days, an auger truck would dig the holes for the pole placement. Cranes would then be used to erect the poles approximately 1 week later.

Within 2 weeks, conductors would be strung over the Gila River crossing using a helicopter to string a sock line that would be hooked up to tensioning/pulley equipment.

Dome Tap to North Gila Segment

The Dome Tap to North Gila portion of the new Ligurta-North Gila Transmission Line would be approximately 6.5 miles long. The line would cross the Laguna foothills to the Gila River and the North Gila Substation. Refer to table 2.2-4 for the ROW that would be required for the Dome Tap to North Gila segment of the proposed Ligurta-North Gila Transmission Line. Between the Dome Tap and North Gila substations, an entirely new 125-foot-wide ROW would be needed.

Assuming that the span length between structures would be 600 and 800 feet, about 49 structures would be required. Two pulling sites and two wire splicing sites would be utilized, and a 5-acre material staging area might also be required. The new transmission structures would be steel monopole structures as shown in figure 2.2-6, ranging in height from 80 to 140 feet. The conductors to be used would be specular (shiny), but would dull over time from weathering, as would the steel support structures. The specific design characteristics of the proposed transmission line are shown in table 2.2-3.

Access to the Dome Tap to North Gila portion of the proposed Ligurta-North Gila Transmission Line would be through existing roads leading to another transmission line in the area. Approximately 4 miles of the length can be serviced by these roads. There would also be access through new access roads approximately 2 miles in total length that Western would construct to structure locations. New access roads would involve the disturbance of approximately 4.3 acres.

2.2.3.3 *Design Characteristics*

Western designs, constructs, operates, and maintains transmission lines to meet or exceed the requirements of the *National Electrical Safety Code (NESC)*, U.S. Department of Labor Occupational Safety and Health Standards, the Western Electric Coordinating Council, and Western's own policies for maximum safety and protection of landowners, their property, and the public. All permanent improvements in proximity to the transmission line, such as fences, metal gates, and metallic structures, would be grounded in accordance with existing codes.

The conductor, the wire cable strung between transmission line structures through which the electric current flows, would be aluminum and steel reinforced. The aluminum carries most of the electrical current and the steel provides tensile strength to support the aluminum strands.

The height of the conductors aboveground would be a minimum of 24 feet, based on the NESC and Western's standards. The minimum conductor vertical clearance dictates the exact height of each structure, based on topography and requirements for safety. The minimum conductor vertical clearances in some instances may be greater in response to logistical requirements or more specific NESC requirements (e.g., minimum clearance above trees in forested areas).

Insulators, which are made of an extremely low-conducting material such as porcelain, glass, or polymer, would be used to suspend the conductors from each structure. Insulators inhibit the flow of electrical current from the conductor to the ground or from one conductor to another

conductor. A permanent assembly of insulators on each structure would be used to position and support each of the three conductors to the structure. These assemblies would be I-shaped. The assemblies of insulators would be designed to maintain electrical clearances between the conductors, the structure, and the ground.

To protect conductors from lightning, two overhead ground wires three-eighths to one-half inch in diameter would be installed on top of the structures. The ground wires would be located above and parallel to conductors. Energy from lightning strikes would be transferred through the ground wires and structures into the ground. One ground wire would also contain fiber-optic cable to serve as a communication system for the Proposed Project in addition to Western's existing microwave communication system. There would be no marketing of surplus fiber optic capacity as part of the Proposed Action. The appearance of the proposed ground wire/fiber-optic cable would not be substantially different from a conventional ground wire without fiber-optic cables.

2.2.3.4 *Right-of-Way Needs*

A 125-foot-wide ROW would be needed for the single-circuit lines to meet the clearance requirements of electrical safety codes, to provide working space for maintenance activities, and to protect buildings or other structures near the ROW from electrical hazards. Easements would be acquired for the new transmission line ROW and for roads and trails required for off-ROW access to and from the line. All land rights needed by Western for transmission line purposes would be acquired in accordance with Western's policies and other applicable laws and regulations governing the Federal acquisition of property rights.

Acquisition of Rights-of-Way Across Federal Land

Western would need to obtain approval from BLM and Reclamation and receive a grant for a 125-foot wide ROW across public lands for a specific period of time (generally the life of the project or perpetuity), and obtain additional easements needed for access roads located outside of the ROW. Easements for access roads would be 30 feet wide to allow for construction, with a width of 15 to 20 feet disturbed. In addition, temporary-use permits would be required for temporary-use areas such as material staging areas and construction areas outside of the proposed ROW. Temporary-use areas would have to be approved by BLM or Reclamation (depending on the location), and the temporary-use permits would have to be issued prior to construction.

Western filed a preliminary ROW application in early 2003 to alert BLM's Yuma Field Office regarding the proposed ROW, the type of use, and the Western point of contact. Upon further development of the Proposed Project design details and precise structure siting, the application would be completed with field survey data. A separate ROW grant would be issued by BLM's Yuma Field Office for each of the proposed transmission lines (the Ligurta-Gila Transmission Line and the Ligurta-North Gila Transmission Line). These ROW grants would include both Reclamation and BLM land, as discussed in section 1.2.2. The ROW grants across Federal land are non-exclusive. BLM may grant other use authorizations, including ROW across these lands after coordinating with the surface managing agency and the existing ROW holder(s) to avoid conflicts.

Acquisition of Rights-of-Way Across State of Arizona Land

Western would coordinate with the Arizona Department of State Land to acquire ROW across state land.

Acquisition of Rights-of-Way Across Private Land

A list of all landowners with title to property lying within the proposed transmission line ROW would be obtained from county records. Permission to enter the property would be requested from the landowners for personnel to conduct surveys, real property appraisals, environmental studies, and geotechnical studies. From survey data of the transmission line and access road ROW, detailed legal descriptions would be prepared and tract plats (survey drawings) of the land rights to be acquired would be drawn. Every ROW easement would be individually appraised by a qualified real estate appraiser. The appraised value is tied directly to the value of the land and the impact of the transmission lines on the land.

After the title evidence is obtained and the appraisal and legal descriptions are completed, realty specialists would present formal offers to acquire the necessary land rights. Land rights would be acquired in the form of an easement contract for the transmission line ROW. The realty specialist would explain the Proposed Project and contract to the landowners. If agreeable to both the landowner and realty specialist, the contract would be signed. The executed contract would be recorded in the official records of the county and the ROW would be insured with title insurance. The landowner would be paid the amount of the contract's consideration. Also, all costs incidental to the contract's execution, such as recording fees, closing costs, and title insurance fees would be paid. After completion of construction, realty specialists would work with the landowners to correct or reimburse any construction damages to their property.

If an agreement cannot be reached through negotiations, or if clear title cannot be acquired, only then would Western use its authority to acquire land rights by eminent domain proceedings. Condemnation actions are handled by the local United States Attorney's Office, and condemnation cases are tried by the Federal District Court. Immediately upon filing a Declaration of Taking in the court, title to the land rights on the ROW would be vested in the name of the United States. Western would deposit in the court registry the just compensation amount determined by the appraisal. The court would determine the issue of just compensation at a subsequent date. During the trial, both the landowner and the United States have the opportunity to present to the court evidence regarding just compensation.

2.2.3.5 *Construction*

Construction of the proposed transmission lines would include the following roughly sequential major activities performed by small crews progressing along the length of the transmission line:

- Surveying
- Access road upgrading
- Structure site clearing/grading
- Construction materials hauling

- Structure excavation
- Installation and concrete pouring
- Structure assembly/erection
- Groundwire and conductor stringing and tensioning
- ROW cleanup and restoration

The approximate number of personnel and equipment required for construction of the transmission facilities is shown in table 2.2-5. The peak workforce is estimated to be 50 workers. Construction of the transmission lines would require approximately 1 year and would commence in late 2005.

Table 2.2-5. Typical Personnel and Equipment for Transmission Line Construction.

Activity	No. of Persons	Equipment
Surveying	4	Pickup trucks
Access road construction and structure and site grading	2	Dozer or blade, pickup trucks
Clearing of ROW, construction yard, wire handling site, and structure site	2	Dozer or blade, pickup trucks
Materials hauling	8 - 12	2 tractor trailers, 2 hydrocranes, 3 pickup trucks, 2 flatbed trucks
Foundation excavation	4 - 8	2-4 tractors with augers, 2-4 pickup trucks, 2 backhoes
Structure assembly	6 - 12	1-3 hydrocranes, 4-6 pickup trucks, 1-3 flatbed trucks
Structure erection	4 - 6	1 crane (50- to 100-ton capacity), 2 pickup trucks
Groundwire and conductor stringing	5 - 10	Reel trailer, tensioner, puller, digger, winch truck, pickup trucks, high reach dozers (bucket trucks)
Cleanup	3 - 6	Flatbed and/or pickup trucks

The disturbance that would be associated with the construction of each transmission line segment of the Proposed Project is shown in table 2.2-6.

Table 2.2-6. Temporary and Permanent Disturbance from Construction of the Proposed Transmission Lines.

Project Component		Acres Disturbed	
		Temporary	**Permanent**
Ligurta-North Gila			
Length	18.7 miles		
Access Roads			
Potential Upgrade of Existing Access Road	16 miles	4.8	4.8
New Roads	2.5 miles	4.3	4.3
New ROW	6.5 miles x 125 feet		
Structures			
Steel Monopole and H-Frame steel	141	102	0.1
Wire pulling sites	6 sites	2.1	0
Wire splicing sites	6 sites	0.1	0
Staging areas	3 areas	15	0
Total Acres		**128.3**	**9.2**
Ligurta-Gila Upgrade			
Length	12.7 miles		
Access Roads			
Potential Upgrade of Existing Access Road	12.7	3.8	3.8
New Roads	0	0	0
New ROW	No new ROW required		
Structures			
H-Frame Steel or Monopole	88	63.4	.029
Lattice	8	5.8	0.005
Wire pulling sites	4 sites	1.4	0
Wire splicing sites	4 sites	0.1	0
Staging Area	1area	5	0
Total Acres		**79.5**	**3.8**

Surveying and Access

Additional survey work would be required for locating structure. Until this is done, the final determination on access roads cannot be made. Structures would be located to avoid cultural resource sites, TCPs, plants of concern, floodplains, and other environmentally sensitive sites. Access along or to the ROW would be required for the construction, operation, and maintenance of the proposed transmission system. Access by heavy construction vehicles and equipment would be required to the site of each new structure, but not necessarily along the entire length of the ROW between structures. Wherever possible, access to each structure and along the ROW would be via existing roads and trails. In some locations, particularly where crossing steep slopes, broken terrain, and drainage ways, the existing roads and trails would require improvement (i.e., grading, widening to 12 feet, and culverting of drainage way crossings) to allow passage of the required equipment.

Where no roads or trails exist, and where the terrain is gentle enough (below 12 to 15 percent slope) and soil conditions allow, access would be by overland travel, preferably along the ROW.

Where this occurs, a trail would develop as a result of vehicle use. Where the terrain along the ROW is steeper than 12 to 15 percent, access to structure sites would be, wherever possible, by overland travel on more gentle adjacent terrain outside the ROW. Where no such adjacent gentler terrain exists within reasonable proximity, new graded access trails would be constructed. In many cases, new access trails would be short spurs leading from existing roads to structure sites.

Regardless of whether a road or overland travel is utilized, Western would survey the routes, obtain an easement, and ensure biological and cultural resources survey completion before the routes were used. Access roads would be sited to avoid areas of environmentall sensitive resources.

Right-of-Way Clearing

The only trees to be cleared are tamarisk which are encountered at the previously described Gila River crossing and they cover less than 1 percent of the Ligurta to North Gila Transmission Line route. These trees would be removed for safety, line reliability, and to reduce fire hazards. Clearing of other vegetation types would be performed within the ROW where necessary to provide access for construction equipment near structure sites. Temporary clearing of an area of up to 100 feet in radius would be required around dead-end structures and pulling points. Gates would be installed wherever a new access road ROW crosses an existing fence. Gates would be kept closed but not locked, unless locks are requested by landowners. In agricultural areas, topsoil would be removed, holes augered, poles placed and the holes backfilled. After the poles are placed and backfilled the excess spoil would be hauled away and the top soil would be replaced so the landowner will again be able to use the area. Engineering plans would incorporate NPDES permitting requirements to prevent local increases in runoff from areas of construction.

Construction Yard and Material Handling Sites

Two to three temporary construction yards of no more than 5 acres each are estimated to be required. These would serve as reporting locations for workers, parking space for vehicles, equipment, and materials storage. These areas would be cleared of vegetation, if needed, but previously disturbed or cleared sites would be sought to minimize impacts and reduce cost. Environmentally sensitive resources would be avoided when selecting these sites.

Structure Site Clearing and Grading

At each new structure site, an area would be disturbed by the movement of vehicles, assembly of structure elements, and other operations. An area of temporary disturbance of 100-foot radius would be required for 230-kV structures. The area disturbed by the approximately eight lattice tower structures along the Ligurta-Gila Transmission Line to be constructed by helicopter (section 2.2.3.1) would also be similar although these would entail replacement of existing structures on disturbed sites rather than new disturbance. Additional clearing, except to provide vehicle access, is not anticipated.

Construction Materials Hauling

Construction materials would be hauled to the construction yards from the local highway or rail network and then to structure sites using trucks and trailers on the access roads described previously.

Excavation and Installation

Vertical excavations for poles would be made with power drilling equipment. Where soils permit, a vehicle-mounted power auger or backhoe would be used. In rocky areas, the foundation holes would be excavated by drilling, blasting, or installing special rock anchors. Some blasting would likely be required on the Dome Tap to North Gila segment of the Ligurta to North Gila Transmission Line between Adair Park and the final turn into the North Gila Substation. Also some blasting would be required in the Telegraph Pass area of the Ligurta to Gila Transmission Line. All applicable safeguards and regulations associated with using explosives (e.g., blasting mats) would be employed. Any necessary blasting activities would be coordinated with landowners, particularly for purposes of safety and protection of sensitive areas (e.g., springs, cultural resources). In extremely sandy areas, water or a gelling agent would be used to stabilize the soil before excavation.

Poles would be set using direct burial techniques with concrete backfill where the ground is rocky. Where suitable soil is present, spoil material (excavated soil) would be used for fill and the remainder would be spread at the structure site, except in agricultural areas as previously noted.

Pole site excavation and installation would require access to the site by a power auger or drill, crane, material truck, and ready-mix concrete trucks. Lattice structure sites would require concrete footings to be emplaced. Most likely, the concrete would be flown in by helicopter.

Structure Assembly/Erection

Erection crews would assemble the steel pole structures and, using a large crane, position them in the augered excavations. The lattice structures would be lifted in sections to their sites with helicopters.

Shield Wire and Conductor Stringing

Reels of conductor and overhead shield wire would be delivered to stringing and tensioning sites spaced about every 2 to 3 miles along the ROW. Each site would be approximately 150 feet by 150 feet, totaling approximately 8 acres of temporary disturbance. Level locations would be selected so little or no earthmoving would be required. These sites may have to be cleared of vegetation and would be disturbed by the movement of vehicles and other activities. The conductors and shield wires would then be pulled into place from these locations. Stringing and tensioning sites would be selected to avoid environmentally sensitive resources.

Right-of-Way Cleanup and Restoration

All structure assembly and erection pads, not needed for normal maintenance would be final graded to their original contour or to blend with adjacent landforms. Waste construction

materials and rubbish from all construction areas would be collected, hauled away, and disposed of at approved sites. The intent would be to restore all construction areas as near as feasible to their original condition, including revegetation and reclamation. Any damaged gates and fences would be repaired.

Safety Program

Western would require the contractor to prepare and conduct a Western approved safety program in compliance with all applicable Federal, state, and local safety standards and requirements, and Western's general construction practices and policies. The safety program would include, but not be limited to, procedures for accident prevention, use of protective equipment, medical care of injured employees, safety education, fire protection, and general health and safety of employees and the public. Western would also establish provisions for taking appropriate actions in the event the contractor fails to comply with the approved safety program.

Environmental Awareness Training Program

All workers for the Proposed Project would be required to attend an Environmental Awareness Training presentation where instruction on environmental requirements and restrictions would be provided specific to the components of the Proposed Project. The training presentation would be coordinated through the land management agency associated with the Proposed Project component.

2.2.3.6 *Operation and Maintenance*

Use of the transmission line ROW by the landowner would be permitted for any purpose that does not create a safety hazard or interfere with Western's easement rights. The day-to-day operation of the lines would be directed by system dispatchers in a power-control center in Phoenix, Arizona. These dispatchers use communication facilities to operate circuit breakers that control the transfer of power through the line. These circuit breakers also operate automatically to ensure safety, such as in the event of structure or a conductor failure.

Western's preventative maintenance program for transmission lines would include routine aerial and ground patrols. Aerial patrols would be conducted quarterly. Ground patrols would be conducted annually where the transmission line is accessible, and whenever aerial patrols find evidence of a problem. Maintenance activities may include repairing damaged conductors, inspection and repair of structures, and replacing damaged and broken insulators. In addition to maintaining the structures, conductors, and hardware, Western would maintain any gates installed by Western on access roads and maintain the access roads to minimize erosion. Transmission lines are sometimes damaged by storms, floods, vandalism, or accidents and require immediate repair. Emergency repair would involve prompt movement of crews to repair damage and replace any equipment. If access roads were damaged as a result of the repair activities, Western would restore them as required.

Various practices may be used at structures and along the transmission line ROW to prevent undesirable vegetation. Because of the arid, sparsely vegetated nature of the Proposed Project area, very minor and infrequent measures would be necessary to control vegetation. Herbicides would not be used.

2.2.3.7 *Substations Modifications*

Modifications to Western's existing Ligurta, Gila, and Dome Tap substations and APS's North Gila Substation would be needed to accommodate the new and upgraded transmission lines. All modifications would occur within the fenced boundaries of the existing substations. Western would make modifications to its Ligurta, Gila, and Dome Tap substations under a construction contract, managed by Western. Modifications to the North Gila Substation would be made through an agreement with APS.

Modifications to each of the substations would include the installation of new circuit breakers and controls. Adding the equipment would involve the installation of new concrete foundations, substation bus work, cable trenches, buried cable grounding grid, and new surface grounding material. These modifications would be at the following substations.

> ***Ligurta Substation.*** A new breaker installation would be added that would contain sulfur hexaflouride (SF_6), a potent greenhouse gas. The system pressure would be monitored and alarmed. It would be designed to be a closed system, if that section requires work, the SF_6 gas would be collected. There may be a cylinder or two of SF_6 stored onsite.
>
> ***Gila Substation.*** A new 75 megavolt-ampere capacity transformer would be added between the 161-kV side and the 69-kV side.
>
> ***Dome Tap Substation.*** Disconnect switches would be replaced.
>
> ***North Gila Substation.*** A new 161/69-kV transformer and associated equipment would be added.

While the new Ligurta-North Gila Transmission Line would not connect to the Dome Tap Substation, modifications to the Dome Tap Substation are needed to ensure the ability to carry the power should the Ligurta-North Gila Transmission Line fail. The substation modifications would be designed and constructed to prevent and keep accidental spills from affecting adjacent land and from reaching water bodies in the vicinity of the substation. Oil spill contingency plans and/or Spill Prevention Countermeasure and Control (SPCC) plans would be updated for the modifications of existing substations. These plans explain cleanup and emergency notification procedures specific to each substation. Also, the substation facilities are enclosed by chain-link fences with locking gates and adequate night lighting for security.

Construction of the substations modifications would require the following:

- Cut-and-fill grading to level the construction area to a smooth surface using existing soil.
- Placement and compaction of soil brought in from offsite, as needed, to serve as a foundation for equipment.
- Subsurface grounding grids (buried system of conductors to provide safety for workers).
- Grading to maintain drainage patterns.
- Oil spill containment facilities.

- Erosion control, such as placement of gravel within the fenced area.
- Cleanup and restoration.

Construction of the substation modifications would require approximately 6 months and is scheduled to begin in 2006. Construction would involve approximately 10 workers.

2.2.3.8 *Communication Facilities*

For safe and efficient operation, the proposed new and upgraded transmission lines would require reliable, secure communication circuits for protective and control relaying. Western's existing communication system would be modified to operate the new and upgraded transmission line additions. Fiber-optic cable would be embedded in one of the overhead ground wires and would function, in part, as a communication system for the Proposed Project in addition to Western's existing microwave communication system. The fiber-optic overhead ground wire would substitute for one of the two stranded steel-static wires that are typically placed above transmission lines. The new fiber-optic system could be used for voice communication, protective relaying telemetering, supervisory control, data acquisition, and other purposes. Fiber-optic cable use within the upgraded transmission lines would be limited to Western use and would not be marketed for commercial purposes.

The existing microwave facilities could require some modification (e.g., new equipment); however, these modifications would not be expected to require new ground-disturbing activity. Only a new parabolic (bowl shaped) dish 6 feet to 8 feet in diameter would have to be added to the Ligurta Substation.

2.2.4 Final Disposition of the Proposed Project

When the Proposed Project is no longer needed, the components of the proposed WMGF would be disassembled and removed from their locations. The proposed WMGF is designed for a 20- to 30-year lifetime, after which the facility would either be upgraded, or the generating equipment would be shipped offsite and the foundations onsite would be broken up and removed. The transmission structures would last a minimum of 40 to 50 years, unless the system is upgraded and expanded during this time, which would further extend the life of the structures. When the lines are no longer utilized in Western's system, the old shield wires, conductors, insulators, and hardware would be dismantled and removed from the ROW. The structures embedded in the ground would be pulled out, and structures embedded in concrete foundations would be removed along with their foundations. Cranes, large trucks, and pickup trucks, as well as earthmoving equipment in a few of the steeper areas would be required for efficient removal of the Proposed Project components. When it is no longer needed to fuel the proposed WMGF, the buried natural gas line would be emptied of natural gas and left in place; any associated aboveground facilities would be removed. Areas leveled for equipment used to dismantle the line would be regraded as near as feasible to their original condition. Similarly, areas disturbed and stripped of vegetation during the dismantling process would be regraded and reseeded to minimize erosion.

2.2.5 Committed Mitigations for the Proposed Action

The mitigation measures that follow are included as part of the design, construction, and operation of the Proposed Project. They differ for each of the proposed activities (WMGF, facility natural gas pipeline, transmission system additions), depending upon the nature of the component, which agencies have regulatory oversight over the activities and who owns and manages the land involved. In general, the party with responsibility for implementing the mitigation measures is the one performing or overseeing the construction. For the WMGF and the facility natural gas pipeline, the Applicant is responsible for the mitigation measures; for the transmission system additions, Western is responsible for the mitigation measures.

This section discusses the mitigation measures proposed by the Applicant (including measures required by the ACC), Western, BLM, Reclamation, Arizona Department of Environmental Quality (ADEQ) and the U.S. Army Corps of Engineers (USACE); describes where these mitigation measures are applicable; and clarifies who is responsible for implementing the mitigation. This section concludes with table 2.2-11 that summarizes the mitigation measures that are applicable to each of the Proposed Project activities.

Chapter 4 of this draft EIS provides an analysis of the potential environmental impacts of the Proposed Project assuming implementation of mitigation measures described in sections 2.2.5.1 to 2.2.5.5 and implementation of additional mitigation measures that are developed through the analysis of this draft EIS. Commitments to these additional mitigation measures would be discussed in each agency's ROD.

2.2.5.1 *Applicant's Committed Mitigation Measures*

The Applicant would not pay property taxes to Yuma County for the proposed WMGF because it would be built on land leased from WMIDD. As an Arizona government entity, WMIDD is exempt from taxes. Instead of paying an estimated $2.2 million per year (the amount a commercial plant of similar assessed value would be required to pay), the Applicant has volunteered to donate an estimated $1.2 million per year, for the first phase, to be divided between Yuma County, and school districts in the area surrounding the proposed WMGF. This voluntary contribution, indexed to inflation, was approved by the Yuma County Board of Supervisors as part of the SUP (Wehrle 2003).

Table 2.2-7 lists required mitigation measures that apply to the proposed WMGF. Additionally, the Applicant has committed to the mitigating measures, listed in table 2.2-8. These measures would apply to the proposed WMGF and the facility natural gas pipeline. These mitigation measures reflect standard state and county construction requirements that would be the minimum mitigation for project activities on state, county, and private land. Any additional mitigation measures for private land would be negotiated in consultation with individual landowners. This would include negotiation with landowners for Option 1 of the facility natural gas pipeline where construction would temporarily impact cropland.

In approving the CEC for the proposed WMGF, the ACC established requirements that are the responsibility of the Applicant. The complete list of requirements is found in appendix B. The following are the mitigating measures found in the permit stipulations that relate to environmental impacts associated with the construction and operation of the WMGF portion of the Proposed Project (The numbers relate to the position on the list of requirements in the ACC CEC):

Table 2.2-7. Mitigation Measures Required by the Arizona Corporation Commission.

18.	Applicant shall comply with all existing applicable air and water pollution control standards and regulations, and with all existing applicable ordinance, master plans, and regulations of the local, State of Arizona, and Federal authorities.
19.	Applicant shall comply with all permits required and issued by local, State of Arizona, and Federal authorities. Applicant shall comply with the applicable provisions of the law of the Colorado River regarding beneficial consumptive use of Colorado River water.
20.	Applicant shall comply with all applicable regulations and permits governing transportation, storage, and handling of petroleum products and chemicals.
21.	Applicant shall use nonreflective and/or neutral colors on surface materials and low intensity directive/shielded lighting fixtures to the extent feasible for the proposed WMGF.
22.	Applicant shall operate the proposed WMGF so that during normal operations, the proposed WMGF will not exceed (i) U.S. Department of Housing and Urban Development or (ii) Federal Transportation Administration (FTA) residential noise guidelines or (iii) Occupational Safety and Health Administration (OSHA) Worker Safety Noise Standards.
23.	Applicant shall comply with the Landscape Concept Plan (Exhibit 7 of the application), L-1 and L-2, dated 4/28/03. The berms will be of sufficient height to screen the solar farm as indicated on the Concept Plan and installation to be under the supervision of the town of Wellton.
24.	Applicant shall install night lighting on the proposed WMGF site for security. Applicant shall fence the perimeter of the proposed WMGF site with a 6-foot high chain-link fence with a 1-foot high barbed-wire outrigger placed at the top of the fence. Applicant shall provide a separate gated and fenced entrance from that of the existing Ligurta Substation.
25.	In consultation with the Arizona Game & Fish Department, Applicant shall develop a monitoring and reporting plan for the evaporative ponds. Applicant shall fence the evaporative ponds to minimize effects of plant operations on terrestrial wildlife and shall keep the berms surrounding the evaporative ponds clear of vegetation to limit evaporative pond attractiveness to birds.
26.	Applicant shall continue to work through the federal permitting process, which includes consultation with the Arizona State Historic Preservation Officer (SHPO) and the tribes to implement the mitigation plan for cultural sites, which cannot be avoided. See attached Exhibit 6 Letter from SHPO.
27.	Should any cultural features and/or deposits be discovered during ground disturbing activities associated with construction of the facility, Applicant shall comply with A.R.S. § 41-844, which requires that work cease in the immediate area of the discovery and that the proposed WMGF promptly notify the Director of the Arizona State Museum.

Source: ACC 2003a.

Table 2.2-8. Applicant's Draft Plan of Development General Construction Mitigation Measures.

1.	Vehicle use would be limited to existing or designated routes.
2.	Areas of new construction or disturbance would be flagged or marked on the ground prior to construction. All construction workers would strictly limit their activities and vehicles to areas that have been marked. All construction personnel would be trained to recognize markers and understand the equipment movement restrictions involved.
3.	Blading of new access or work areas would be minimized to areas requiring grading. Disturbance to shrubs would be avoided. If shrubs cannot be avoided during equipment operation or vehicle use in uncleared areas, they would be crushed in place rather than excavated or bladed and removed.
4.	Project features such as open trenches, pits, open pipes, etc., that might trap or entangle sensitive animal species, would be covered or modified to prevent entrapment.
5.	Construction sites would be maintained in a sanitary condition at all times. The Applicant would be responsible for controlling and limiting litter, trash, and garbage by immediately placing refuse in predator-proof, sealable receptacles. Trash and debris would be removed on a regular basis.
6.	Restoration techniques would include removal of equipment and debris, re-contouring, replacing boulders that were moved during construction, seeding, planting, transplanting of cacti and yuccas, etc. Only native plant species would be used in restoration. Plant salvage would be coordinated with the Arizona Department of Agriculture.
7.	Oil, fuel, pesticides, and other hazardous material spills would be cleaned up and properly disposed of as soon as they occur in accordance with applicable state and Federal regulations. All hazardous material spills must be reported promptly to the appropriate surface management agencies and hazardous materials management authorities.
8.	No unleashed pets (e.g., dogs) would be allowed on the construction site.
9.	Temporary access routes created during project construction would be modified as necessary to prevent further use. Closure of access routes would be achieved by ripping, barricading, posting the route as closed, and/or seeding and planting with native plants.
10.	The Applicant would be responsible for noxious weed control on disturbed areas within the limits of the construction area. The Applicant would have a Noxious Weed Management Plan in place that would require the cleaning of construction equipment to prevent the introduction or spread of invasive species.
11.	No firearms would be allowed on the construction sites (except for security guards, if any).
12.	All construction activities will comply with best management practices for the control and minimization of fugitive dust. Vehicle speeds in the ROW will be below 20 miles per hour and all cleared areas will be minimized. Water, or a dust suppressant, will be applied to all disturbed areas and storage piles as necessary to minimize fugitive dust.

An AZPDES permit would be acquired for the Proposed WMGF. Once the plan of development is designed and presented to the ADEQ, it is expected that the AZPDES permit would have the following kinds of mitigations: topsoil stockpiling for reclamation purposes, and placement of erosion control measures, such as earthen catchments, culverts, terracing (if needed), grading, erosion control fencing/screening, and straw bales/wattles.

2.2.5.2 *Western Area Power Administration's Standard Mitigation Measures*

Western has adopted standard construction practices that would be implemented for the construction of the new and upgraded transmission lines and substation portions of the Proposed Project. These standards are summarized in table 2.2-9. A complete list of Western's mitigation measures is contained in *Construction Standards, Standard 13, Environmental Quality Protection* (Western 2003a). Additional mitigation measures that are applicable to portions of the transmission system additions that cross BLM or Reclamation-managed land are discussed in

sections 2.2.5.3 and 2.2.5.4. Western has completed section 7 consultation with the United States Fish and Wildlife Service (USFWS) for Endangered Species Act (ESA) compliance, and will complete section 106 consultation under the National Historic Preservation Act (NHPA) and implement mitigation measures specified by these consultations.

Table 2.2-9. Western's Standard Construction Practices.

1.	All construction vehicle movement outside the ROW normally would be restricted to predesignated access, contractor acquired access, or public roads.
2.	The areal limits of construction activities normally would be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.
3.	In construction areas where recontouring is not required, vegetation would be left in place wherever possible and original contour would be maintained to avoid excessive root damage and allow for resprouting.
4.	In construction areas (e.g., staging yards, structure sites, spur roads from existing access roads) where ground disturbance is substantial or where recontouring is required, surface restoration would occur as required by the landowner or land management agency. The method of restoration normally would consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches.
5.	Watering facilities and other range improvements would be repaired or replaced if they are damaged or destroyed by construction activities to their condition prior to disturbance as agreed to by the parties involved.
6.	Structures and/or ground wire would be marked with highly visible devices where required by governmental agencies (e.g., Federal Aviation Administration).
7.	Prior to construction, all construction personnel would be instructed on the protection of cultural, paleontological, and ecological resources. To assist in this effort, the construction contract would address (a) Federal, state, and tribal laws regarding cultural resources, fossils, plants and wildlife, including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.
8.	Cultural resources would continue to be considered during post-EIS phases of project implementation in accordance with the programmatic agreement that is being developed in conjunction with preparation of the EIS. This would involve intensive surveys to inventory and evaluate new discoveries (cultural resources not previously identified). In consultation with appropriate land managing agencies, tribal and State Historic Preservation Officer, specific mitigation measures would be developed and implemented to mitigate any identified adverse impacts. These may include project modifications to avoid adverse impacts, monitoring of construction activities, and data recovery studies. American Indian tribes would be involved in these consultations to determine whether there are effective or practical ways of addressing impacts on traditional cultural places.
9.	Western would respond to individual complaints of radio or television interference, generated by the transmission line, by investigating the complaints and implementing appropriate mitigation measures (e.g., adjusting or using filtering devices on antennae). The transmission line would be patrolled on a regular basis so that damaged insulators or other transmission line materials, which could cause interference, are repaired or replaced.
10.	Western would apply mitigation needed to eliminate problems of induced currents and voltages onto conductive objects sharing a ROW to the mutual satisfaction of the parties involved.
11.	Western would continue to monitor studies performed to determine the effects of audible noise and electrostatic and electric magnetic fields in order to ascertain whether these effects are significant.
12.	Roads would be built at right angles to washes to the extent practicable. Culverts would be installed where needed. All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial streambanks. In addition, road construction would include dust-control measures during construction in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line.

Table 2.2-9 Western's Standard Construction Practices. (*cont.*)

13. All requirements of those entities having jurisdiction over air quality matters would be adhered to and any permits needed for construction activities would be obtained. Open burning of construction trash would not be allowed unless permitted by appropriate authorities.
14. Fences and gates would be repaired or replaced to their original condition prior to project disturbance as required by the landowner or the land management agency if they are damaged or destroyed by construction activities. Temporary gates would be installed only with the permission of the landowner or the land managing agency.
15. Transmission line materials would be designed and tested to minimize corona. Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.
16. No nonbiodegreadable debris would be deposited in the ROWs. Slash and other biodegradable debris would be left in place or disposed of in accordance with agency requirements.
17. Hazardous materials would not be drained onto the ground or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.
18. Special status species or other species of particular concern would continue to be considered during post-EIS phases of project implementation in accordance with management policies set forth by the appropriate land managing agency. This may entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities (i.e., access and spur roads, staging areas) as agreed upon by the land managing agency. In cases where such species are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat and may include altering the placement of roads or structures as practicable and monitoring construction activities.
19. The alignment of any new access roads would follow the designated area's landform contours where possible. Providing that such alignment does not additionally impact resource values. This would minimize ground disturbance and reduce scarring (visual contrast).
20. Except for repairs necessary to make roads passable, no widening or upgrading of existing access roads would be undertaken in the area of construction and operation, where soils or vegetation are sensitive to disturbance.
21. In designated areas, structures would be placed so as to avoid sensitive features such as, but not limited to, riparian areas, water courses, and cultural sites, or to allow conductors to clearly span the features within limits of standard structure design. This would minimize the amount of disturbance to the sensitive feature or reduce visual contrast.
22. With the exception of emergency repair situations, ROW construction, restoration, maintenance, and termination, activities in designated areas would be modified or discontinued during sensitive periods (e.g., nesting and breeding periods) for candidate, proposed threatened and endangered, or other sensitive animal species.

Source: Western 2003b.

In addition to the above, Western would require that all ROW and temporary use areas be surveyed for flora/fauna species and cultural resources prior to ground-disturbing activities.

Western has completed section 7 consultation with the USFWS for ESA compliance (appendix B Supporting Materials, #5). The only sensitive species identified were the southwestern willow flycatcher and the Yuma clapper rail, both of which can be found in the riparian area along the Gila River. Western is committed to the following mitigations which were identified in the section 7 consultation:

The following measures would be implemented to further reduce effects to the southwestern willow flycatcher and the yuma clapper rail:

- No construction for the Proposed Project would take place at the Gila River crossing during March 1–August 31 in order to remain outside of flycatcher and clapper rail nesting and breeding season.
- If flycatchers or clapper rails are found within the area of the transmission line crossing at the Gila River, construction at this location would cease in the occupied areas and consultation with USFWS would be re-initiated.
- Disturbance to riparian habitats would be avoided.
- Western would place state-of-the-art collision prevention devices at the Gila River crossing to help minimize bird collisions.

Western, as the lead Federal agency has entered into a Programmatic Agreement (PA) with the Federal and state agencies that are involved with the Proposed Project, the concerned Tribes and the Applicant to assure compliance with the NHPA section 106. The PA stipulates how consultation will be conducted. This includes how cultural resources will be identified, and how determinations of eligibility and effect will be made. It requires that Western develop a Historic Properties Treatment Plan as well as a Plan for Discovery of Cultural Resources should Proposed Project activities impact a cultural resource in an unanticipated manner. It also includes procedures that apply if human remains and cultural items, as defined by the Native American Graves Protection and Repatriation Act (NAGPRA) are found.

2.2.5.3 *Bureau of Reclamation Mitigation Measures*

For Project activities on land managed by Reclamation, best management practices (BMPs) would be required during construction. These would include measures such as watering roads for dust control and employing erosion control measures. Required BMPs would be identified in ROW grants or amendments issued for Proposed Project construction. BLM will be responsible for preparing the ROW grant across Reclamation managed lands. Therefore, the ROW on the Reclamation managed lands will have the same mitigating measures as found on the BLM managed lands.

2.2.5.4 *Bureau of Land Management*

For Project activities on land managed by BLM and on land managed by Reclamation, the following mitigation measures would apply in addition to Reclamation's blanket requirement to use BMPs (BLM 2003c). The Applicant has committed to use the BLM stipulations in conducting construction and maintenance activities on state, county, and private lands, unless the landowner has other requirements. The term "land manager" is used below to identify the agency person responsible for decision making. The term "Authorized Officer" (AO) refers specifically to BLM and in this case it is the Yuma Field Office Manager.

Cultural Resource Mitigation Requirements. Prior to construction, all construction personnel would be instructed on the protection of cultural resources. In compliance with the PA, to which the BLM is a signatory, the following (or similar) language would be included in all ROW grants issued. "If any cultural resource (historic or prehistoric), including any human remains, funerary

objects, sacred objects or objects of cultural patrimony as defined in the NAGPRA (P.L. 101-601: 104 Stat. 3048; 25 U.S.C. 3001) are discovered on public or Federal land by the Applicant or any other person working on their behalf the discovery would be immediately reported to the landowner or manager." The Applicant, Western, or their contractors would suspend all operations in the immediate area of such discovery, protect the remains or objects, and immediately notify the AO. Operations will remain suspended until written authorization to proceed is issued by the landowner or AO. An evaluation of the discovery would be made by the landowner or manager to determine appropriate actions to prevent the loss of significant cultural or scientific values. The Applicant would be responsible for the cost of evaluation. Any decision as to proper mitigation measures would be made by the landowner or manager after consulting with the Applicant. Western would implement the same process outlined above for construction activities on the transmission line components of the Proposed Project.

Paleontological Resources. Prior to construction, all construction personnel would be instructed on the protection of paleontological resources. To assist in this effort, the construction contract would address: (1) Federal and state laws regarding antiquities and fossils, including collection and removal; and (2) the importance of these resources and the purpose and necessity of protecting them.

Any paleontological resource discovered on public or Federal land by the Applicant, Western, or any other person working on their behalf would be immediately reported to BLM. The Applicant would suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by BLM. An evaluation of the discovery would be made by BLM to determine appropriate actions to prevent the loss of significant scientific values. The Applicant, or Western, would be responsible for the cost of evaluation. Any decision as to proper mitigation measures would be made by BLM after consulting with the Applicant for the facility natural gas pipeline, or Western for the transmission line additions.

Soil Erosion and Water Pollution Control Measures. All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent and perennial stream banks. In addition, all existing roads would be left in a condition equal to or better than their condition prior to construction.

All such measures would remain in place at the end of construction until reseeded vegetation has matured. These temporary and permanent erosion control measures would include sediment barriers, water bars, erosion control, and mulching. Steep areas would be graded and filled only to the extent necessary to allow passage by construction vehicles. The roots of existing vegetation would be left in place as practicable to promote plant regrowth after construction. Shrub slash would be dispersed to aid in nutrient cycling and soil stabilization.

Soil Replacement and Stabilization. The Applicant, Western, or their contractors would re-contour the disturbed area and remove all embankments, backfilling excavations, and grading to restore the approximate original contours of the land in the ROW. The Applicant or Western would restore drainages, to the greatest extent possible, to the original bank configuration, stream bottom width, and channel gradient. Loose soil, fill, and culverts (if no longer needed) would be removed from drainage channels. The Applicant, Western, or their contractors would uniformly spread topsoil (stockpiled separately from trenching activities) over all unoccupied disturbed areas within the ROW. Spreading would not be done when the ground or topsoil is frozen or wet.

The Applicant, Western, or their contractors would construct water bars (bars of stone, wood, or packed earth that stop and divert water flow off the road) on all disturbed areas to the spacing and cross sections specified by the landowner or land manager. Water bars would be constructed to: (1) simulate the imaginary contour lines of the slope (ideally with a grade of 1 or 2 percent); (2) drain away from the disturbed area; and (3) begin and end in vegetation or rock whenever possible.

Seeding Specifications. The Applicant, Western, or their contractors would seed all disturbed areas with BLM-approved weed-free native seed mixture(s). The seeding rates would be designed to contain native species that would germinate and provide adequate cover to prevent soil erosion and slope stabilization. Seeding would be repeated until a satisfactory stand is established as determined by the AO. Commercial certified or registered seed would be used on all areas of disturbance. Local genotypes would be used where seed supply allows. These specifications are consistent with the Executive Order on landscaping practices (60 *Federal Register* (FR) 40837).

BLM Survey Monuments. The Applicant, Western, or their contractors would protect all survey monuments found on Federal lands. Survey monuments include, but are not limited to, General Land Office and BLM Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments.

2.2.5.5 *U.S. Army Corps of Engineers/Arizona Department of Environmental Quality Clean Water Act Mitigation Requirements*

The Clean Water Act (CWA) includes permit requirements for various construction and operation activities. In Arizona, ADEQ is responsible for issuing AZPDES permits, to meet NPDES permitting requirements. An AZPDES permit would be required for construction of each of the Proposed Project components, and would be applied for following preparation of detailed engineering plans. The AZPDES permit would contain general construction requirements for BMPs on erosion control, runoff, etc. An AZPDES permit would not likely be required for operation of the proposed WMGF, natural gas pipeline, or transmission system additions. However, the permitting thresholds would be reviewed upon preparation of detailed engineering plans.

In addition, activities that could result in impacts to Waters of the United States (WUS) (including wetlands) must be permitted by the USACE under section 404 of the CWA. Wetlands are a subset of WUS. WUS are defined in the CWA as “surface waters, including streams, streambeds, rivers, lakes, reservoirs, arroyos, washes, and other ephemeral watercourses and wetlands.” WUS on the Proposed Project area are under the jurisdiction of USACE. Western has conducted a delineation survey of the WUS in the area of the proposed transmission system additions, and the Applicant has conducted delineation surveys of the WUS in the area of the proposed WMGF, facility natural gas pipeline (Option 1) and access roads. The results of these surveys are shown in Appendix C. The USACE has determined that the WUS delineation complies with the terms of Nationwide Permit No. 12 for utility line activities for the proposed WMGF and the proposed facility natural gas pipeline. In addition to the general terms and conditions (appendix D) the permit requires that the Applicant comply with the Special Conditions listed in table 2.2-10.

Table 2.2-10. USACE Special Conditions.

a.	Discharges of dredged and/or fill material in the CWA jurisdictional area of the six unnamed washes that are necessary for the proposed pipeline construction shall be limited to a 25-foot wide corridor at each wash crossing.
b.	The pipeline shall be installed below the expected scour elevation at each wash crossing.
c.	The permittee shall not use areas below the ordinary high water mark as a fill source.
d.	No debris, soil, silt, sand, rubbish, cement or concrete washings thereof, oil or petroleum products or washing thereof, shall be allowed to enter into or placed where it may be washed by rainfall or runoff into the waterway. When project operations are completed, any and all excess construction materials, debris, and or other associated excess project materials shall be removed to an appropriate off-site location outside of any jurisdictional areas. At no time shall this material be sidecast into the Waters of the United States.
e.	Staging, storage, fueling, and maintenance of equipment and materials shall be located outside the Corps of Engineers jurisdiction.
f.	The permittee shall perform work during low water conditions when the area is naturally dewatered and shall suspend all operations when there is water within the project area.
g.	To the maximum extent possible, the pipeline construction shall be aligned in a manner that will avoid impacts to mature native species.
h.	The permittee shall ensure that the natural course of each impacted jurisdictional water is restored to pre-project contours or gradients and conditions to the maximum extent possible upon project completion. Immediately following completion of the construction activities, all disturbed bank sections shall be reseeded with locally native seed mix.
i.	Should previously unknown historic or archaeological remains be discovered while accomplishing activities authorized by this permit, the permittee shall immediately cease work in the area of discovery and provide immediate notification to the Corps of Engineers.
j.	A copy of the permit shall be on the job site at all times during construction. The permittee shall provide a copy of this permit to all contractor(s), subcontractor(s), foreperson(s), and construction representatives. The permittee shall require that all contractor(s), subcontractor(s), foreperson(s), and construction representatives read this authorization in its entirety and acknowledge they understand its contents and their responsibility to ensure compliance with all general and special conditions contained herein. The permittee shall hold a pre-construction meeting with the contractor(s) to discuss the special conditions of this authorization, as well as other relevant approvals.

Source: USACE 2004.

Western would be responsible for compliance with section 404 for transmission system crossings of WUS such as the Gila River crossing east of the Dome Tap Substation. Upon completion of a ROD regarding the Proposed Project, Western would apply for a nationwide section 404 permit applicable to utility line activities (Nationwide Permit No. 12), which would contain both general conditions and could contain permit-specific mitigation conditions for areas where the existing and proposed access roads cross designated WUS. The general mitigation measures in the Nationwide Permit No. 12 for utility line activities are listed in appendix D of this WMGF EIS. Western would site the transmission line structures, to the extent feasible, such that they would span across (rather than be located within) any identified jurisdictional waters. However, access roads may require some improvement and/or construction activity within identified WUS.

The commitments listed earlier for the Applicant and Western relating to water control and erosion prevention during and after construction will meet the requirement of the section 404 Permit. For additional details about the section 404 permit process and the special conditions, see appendix D.

2.2.5.6 *Mitigation Summary*

Table 2.2-11 provides a summary of the mitigation measures for each Proposed Project activity, and the party responsible for implementation of the mitigation measures.

Table 2.2-11. Summary of Mitigation Measures Applicable to Project Activities.

	WMGF[a]	Transmission System Additions[b]	Facility Natural Gas Pipeline[c]
ACC Mitigation Measures	X		
Applicant's Proposed General Mitigation Measures	X		X
Western Standard Construction Measures		X	
Reclamation Mitigation Measures		X (on Reclamation land)	X (on Reclamation land)
BLM Mitigation Measures		X	X
Sensitive Species Mitigation Measures	X	X	X
CWA Mitigation Requirements	X	X	X
Cultural Resource Mitigation Requirements	X	X	X

[a] The Applicant is responsible for mitigation measures at the WMGF.
[b] Western is responsible for mitigation measures for the transmission system additions.
[c] The Applicant is responsible for mitigation measures for the facility natural gas pipeline.
x = Mitigation measures are applicable for this activity.

2.3 NO ACTION ALTERNATIVE

Each Federal agency (Western, Reclamation, and BLM) could independently determine not to grant the access or rights the Proposed Project needs, or conceivably none of the needed approvals would be granted. Each agency could independently choose the No Action Alternative.

If Reclamation does not allow the transfer of title to WMIDD for the portion of the proposed WMGF site, Dome Valley would not be able to lease the site from WMIDD. Given the proximity to highway and rail transportation and electrical power the site has potential for other future industrial uses and would likely be considered for such uses even if the proposed WMGF is not built. Reclamation may decide to declare the land surplus to Reclamation needs and the land may be disposed of through standard agency procedures. Any withdrawn land would revert to BLM administration. BLM would determine if the land is suitable for retention in the public domain or disposal through sale or exchange. Since this land has potential for industrial use, it may be made available for disposal.

Under the No Action Alternative, Reclamation and BLM land would continue to be managed under current management plans, as described in Section 3.6, Land Use and Recreation. While the title to the 96 acres proposed for the proposed WMGF site would not be transferred from Reclamation under the No Action Alternative, the title to the larger area of land, 57,418 acres (including the 96-acre parcel associated with the proposed WMGF site), could still be transferred by Reclamation as discussed in section 2.1.2.

Without the ability to interconnect to Western's transmission system, the Proposed Project would not be feasible and none of the project components would be built or operated. If BLM and Reclamation do not grant ROW additions and amendments for the proposed transmission system additions, Western could not upgrade its transmission system as proposed. Thus, the proposed WMGF could not connect to the grid through Western's system due to inadequate capacity. The Ligurta - Gila 161-kV Transmission Line would likely be rebuilt in the 2012 time frame, and 230-kV upgrades to the Ligurta and Dome Tap substations would likely take place in 2014, under separate Western actions.

Under the No Action Alternative, Reclamation would not approve, and BLM would not grant ROW additions and amendments for the proposed facility natural gas pipeline; the proposed WMGF would not have a fuel source and could not be operated.

Under the No Action Alternative, the opportunity to replace the existing less efficient powerplants would be lost and there would be increasing reliance on these aging powerplants as the population increases. The possibility of "brownouts" and "blackouts" would increase, until such time as a new power source was found to serve the Yuma load pocket. This could serve as a disincentive for locating facilities in the Yuma County area that would require substantial and reliable electrical supplies.

2.4 ALTERNATIVES CONSIDERED BUT NOT EVALUATED IN DETAIL

2.4.1 Alternative Site for the Wellton-Mohawk Generating Facility

Based on the purpose and goals described in section 1.3, the Applicant conducted an extensive screening analysis of potential alternative sites in the Wellton area for a generation facility location. Subsequently, Western and the cooperating agencies reviewed the Applicant's screening analysis, and input received during the public scoping process, and determined that an alternative site (Site 1) for the proposed WMGF should be considered in the NEPA process. After reviewing Applicant's screening process and the history of Site 1, the agencies ultimately decided that Site 1 would not be evaluated in detail. The factors considered in making that decision are discussed below.

2.4.1.1 *Applicant's Screening Process*

In order to identify potential alternatives for the Proposed Project site, the Applicant developed screening criteria that would be applied within the Yuma County area to ensure the selected site would reasonably meet both environmental suitability and the Applicant's goals as detailed in section 1.3. The Applicant's process, detailed below, was conducted in support of the application to the ACC, and prior to a request for interconnection to Western.

The Applicant's purpose for seeking to construct a new generating facility is to provide needed new local generation in the Yuma area, meet ACC's desires to replace older, less efficient, and higher polluting reliably must run (RMR) generation in the area and financial gain. To minimize potential disturbances at any alternative site considered, the Applicant developed the following screening criteria for siting its proposed generation facility (not in any order of priority):

- Close proximity to existing WMIDD water supplies

- Land owned by WMIDD (currently or after transfer from Reclamation)
- Close proximity to an existing substation with available capacity
- Close proximity to an existing natural gas pipeline
- Close proximity to existing designated ROW
- 120 acres of developable land (approximately 20 acres for a power island and 100 acres for a solar field)
- Compatible industrial land use
- National Ambient Air Quality Standards (NAAQS) attainment area (west of the Gila Mountains is a non-attainment area)
- Not currently used for agriculture
- Access to existing roads
- Limited visual impact
- Not within a floodplain
- Relatively flat to minimize excavation and grading
- Minimum environmental sensitivity to facilitate permitting
- Proximity to a population center

The Applicant applied the screening criteria to the land currently and potentially under WMIDD control. After applying the above screening criteria, the Applicant presented its siting analysis in its permit process with the Power Plant and Transmission Line Siting Committee of the ACC.

Through the ACC permit process, the Applicant incorporated into the Project design opportunities that reduce potential environmental impacts in the Project area, including: (1) maximizing use of the previously disturbed Wellton-Mohawk Canal ROW for the facility natural gas pipeline; (2) upgrading the existing Ligurta-Gila Transmission Line; and (3) siting the power plant close to water supplies and the interconnection point on a previously disturbed area.

The Arizona Power Plant and Transmission Line Siting Committee of the ACC, and ACC itself, unanimously approved the Project after a close and detailed analysis of technical reports that described the feasible and prudent alternatives considered, the potential adverse environmental impacts of the alternatives, and the environmental compatibility of the proposed WMGF.

2.4.1.2 *Sites Evaluated for the Wellton-Mohawk Generating Facility*

Based on the above criteria and as a result of the deliberative permitting process and review of alternatives that took place before the Power Plant and Transmission Line Siting Committee of the ACC, two sites along the Wellton-Mohawk Canal were identified as coming closest to meeting the screening criteria (figure 2.4-1), defined as Site 1 and Site 2. Site 1 is described below. Site 2 is evaluated in this draft EIS.

Site 1

Site 1 is a 160-acre parcel located 29 miles east of Yuma, Arizona, and approximately 4 miles southwest of Wellton, Arizona, south of I-8. This site is located within the southwest quarter of Section 15, Township 9 South, Range 19 West, south of the Wellton Canal and north of the Mohawk Canal (figure 2.4-1). The land is currently administered by Reclamation and is being evaluated for transfer of title to WMIDD. Pumping Plant Number 3 is located on this parcel. The site was zoned by Yuma County for agriculture and rural preservation, and the site was previously disturbed from its natural state by agricultural use, although it has been unused for the past 25 years. Access to the site is via a limited-height underpass, off of Old Highway 80.

Although not a consideration when the Applicant conducted its initial screening, this parcel is now being proposed as a reservoir site by WMIDD. Current drought conditions on the Colorado River have pressured WMIDD to move forward with its plans to develop a large water storage project to address water conservation issues and to enable more off-peak pumping hours. WMIDD considers this site the best location for the reservoir due to its proximity to both the Wellton-Mohawk Canal and the Wellton Canal, the presence of a heavy clay layer beneath the parcel, its location below Pumping Plant Number 3, and suitable topography for minimizing the amount of material that would need to be moved to construct the reservoir.

Site 2

Site 2, the 119-acre parcel adjacent to Western's existing Ligurta Substation, next to the Wellton-Mohawk Canal, is the proposed WMGF site for the Proposed Project described in section 2.2.1.1.

Comparison of Sites

Site 1 is approximately 4 miles away from Western's existing Ligurta Substation. The parcel is administered by Reclamation and large enough for the proposed WMGF. Siting the proposed WMGF at Site 1 would involve the same construction and operation actions as described for the Proposed Project with the following exceptions. Two additional transmission lines, each approximately 5 miles in length, would be constructed to connect the site to the Ligurta Substation, and both would span I-8. The new natural gas pipeline required for this site would be approximately 17 miles long under Option 1. The Option 2 natural gas pipeline would run north from the site to the regional gas pipeline along I-8, a distance of approximately 0.75 maile. It would parallel the Mohawk Canal until it joins the Wellton-Mohawk Canal to continue north and west towards Highway 95.

The proposed WMGF site is large enough for the proposed WMGF. As discussed in section 2.2.1.1, 96 acres of the site are currently administered by Reclamation. The remaining 23 acres can be acquired. The proposed WMGF site is adjacent to the Ligurta Substation. Option 1 for the proposed new natural gas pipeline from this site to the proposed interchange at Highway 95 would be approximately 12.7 miles long and would parallel the Wellton-Mohawk Canal for its entire length. Option 2 would be approximately 0.25 miles and run south to a planned pipeline along I-8.

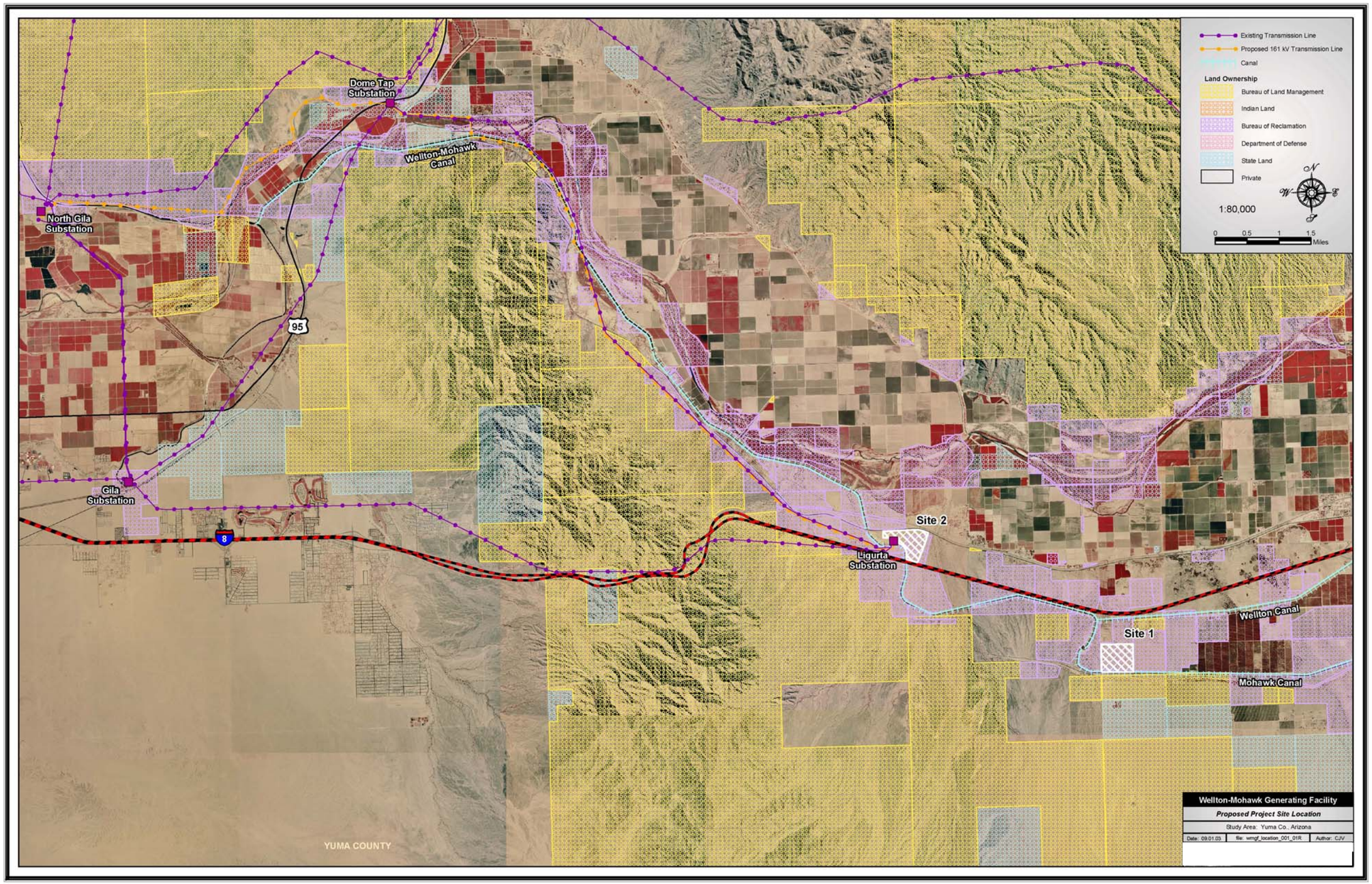


Figure 2.4-1. Land Ownership in the Vicinity of Sites 1 and 2.

Table 2.4-1 summarizes the analysis of the alternative sites based on the screening criteria. Although Site 2, the proposed WMGF site, is too small without acquisition of an additional 23 acres, an option to acquire this acreage has been obtained. Site 2 met more of the screening criteria than Site 1. The proposed WMGF site was selected by the Applicant as its preferred site. Site 2 provides options for the natural gas pipeline connection. Site 1 required the natural gas pipeline to be located along I-8 to be economically viable. The Applicant has no control over where the pipeline would be located and when it would be built. Additional primary factors for choosing Site 2 were the closer proximity to WMIDD water supplies (Wellton-Mohawk Canal) and the existing Ligurta Substation, the shorter length of the proposed pipeline, the previous disturbance of the site, adjacent existing industrial land use (substation, railroad, concrete batch plant, pumping station), direct road access, and the greater distance from the nearest population center of Wellton. These shorter distances are associated with lower costs and less environmental impact. In addition, the two additional transmission lines, each approximately 5 miles in length, would not have to be built from Site 1 to the Ligurta Substation. Site 2 would have improved reliability as a result, as the substation would be immediately adjacent to the site. Site 2 would also negate the transmission line crossings of I-8 with potential associated reliability issues. Issues associated with the slope, soil stability and the additional miles of transmission lines and pipelines would make the Proposed Project costs for Site 1 significantly greater than for Site 2.

Further Site Analysis/Permitting

Due to the factors described above, the Applicant selected the proposed WMGF site. The Applicant then started and completed the permitting processes with the State of Arizona and Yuma County for this location for the proposed WMGF. The Applicant applied for and obtained a CEC from the ACC and a Special Use Permit from Yuma County. Both the state and local processes included an analysis of the compatibility of the proposed site for the WMGF, which incorporated public and stakeholder involvement. After considering public input and environmental issues, the state and local agencies with jurisdiction over site approval (ACC and Yuma County Board of Supervisors) unanimously approved the WMGF at the proposed site.

2.4.1.3 *Western Area Power Administration's Determination*

Western determined that a full evaluation of Site 1 was unnecessary because developing the proposed WMGF at Site 1, while technically feasible, is not economically viable since the future location of the regional natural gas supply pipeline to which the proposed WMGF would connect has not been determined. Western concluded that in order to be an economically viable alternative, Site 1 requires that the regional natural gas supply pipeline be located along the I-8 corridor, which would allow for a shorter pipeline connecting to the proposed WMGF. An I-8 corridor location for the proposed regional natural gas supply pipeline is too speculative on which to base a fully developed siting alternative. Current information indicates that the proposed regional natural gas supply pipeline would most likely be located along Highway 95. In addition, the two transmission lines connecting Site 1 to Ligurta substation would increase reliability risks as compared to Site 2.

It is also apparent that the need for constructing a WMIDD reservoir is becoming increasingly urgent, and it is not reasonable to preempt the best site for the reservoir by constructing the power plant on this site. Site 1 possesses unique topographical, geographical, and geological (clay layer) features that make it the obvious and logical site for construction of the reservoir. For the reasons presented above, and because Site 1 provided no clear environmental benefits,

and would likely result in higher levels of environmental impact. Western dismissed it from full analysis as an alternative, and it is only briefly analyzed in this EIS.

Table 2.4-1. Site Feasibility Analysis Based on Screening Criteria for Site 1 and the Proposed WMGF Site.

Screening Criteria	Site 1	Proposed WMGF Site
Close proximity of existing WMIDD water supplies	North of Mohawk Canal, just south of Wellton Canal located downstream of Pumping Plant 3. Less water available.	Adjacent to Wellton-Mohawk Canal located at Pumping Plant Number 2. More water available and a more secure source.
Close proximity of an existing substation with available capacity	4 miles from Ligurta Substation. Costs and environmental impacts associated with additional 9 to 10 miles of transmission lines. Requires several more high cost angle structures.	Directly adjacent to Ligurta Substation.
Close proximity to an existing natural gas pipeline	Approximately 17 miles from proposed natural gas pipeline interchange at Highway 95. Costs and environmental impacts associated with at least 4 more miles of pipeline.	Approximately 13 miles from proposed natural gas pipeline interchange at Highway 95.
Close proximity of existing ROW	Would utilize WMIDD's existing ROW.	Would utilize WMIDD's existing ROW.
Close proximity of Federal transmission line ROW	Within 1 mile of BLM transmission line ROW.	Located adjacent to BLM transmission line ROW.
Land requirement of approximately 20 acres for power island and 100 acres for solar field	160 acres available. Unsuitable topography and slopes to the north. Large amount of grading required. The underlying clays could cause construction problems.	96 acres available with 23 acres acquired. Suitable topography for solar field. Less grading required.
Compatible industrial land use	Currently proposed as open space and agriculture preservation area by WMIDD. Plans for use as reservoir.	Determined by WMIDD to be designated as Industrial Use Area in their Rural Planning Area created in 2002.
NAAQS attainment area	In a NAAQS attainment area.	In a NAAQS attainment area.
Previously disturbed site	Former agriculture site.	Previously disturbed by concrete batch plant, construction of Wellton-Mohawk Canal and pumping stations, and construction of Ligurta Substation.
Not currently used for agriculture	Previous agriculture land use, currently vacant.	Never used for agriculture.
Access to existing roads	Access is through limited-height underpass, off of Old Highway 80.	Direct access from Old Highway 80.
Visual Resources	No existing utility in the area.	Visual impacts would be reduced due to existing nearby substation and utility structures of similar form, nature and height.
Proximity to nearest population center	4 miles southwest of Wellton, Arizona.	9 miles west of Wellton, Arizona.

2.4.2 Conservation and Demand-Side Management

One alternative to a power generation project could be a program or programs to reduce energy consumption. Such programs exist both inside and outside of Western's decisionmaking authority.

Substantial conservation and demand reduction has occurred in the past several decades through installation of energy efficient equipment and appliances, energy efficiency standards for new buildings, and shifting energy use to off-peak hours. The efficiencies gained through these programs have reduced the amount of additional energy resources needed, but they have not negated requirements for additional energy resources.

Most programs are voluntary, and participation in any given program tends to decrease over time. Moreover, conservation efforts are most successful in times of lower demand. When summertime temperatures are high, demand is high. Experience shows that conservation offsets do not provide enough power to satisfy the growth in additional power needs. Efficiency or conservation programs in the Yuma region would not be sufficient to substitute for the additional generation calculated to be needed.

In addition, part of the need for the Proposed Project is to satisfy the ACC goal of reducing the number of generating units in Arizona that are designated as RMR and place less reliance on the existing small and older, less efficient, and higher polluting RMR generation in the area. RMR generating units are required to run during certain conditions for the load-serving utility to provide reliable service to its retail customers in that load pocket. While it is possible for conservation methods and demand-side management to somewhat reduce the amount of time the RMR generating units must operate, they would not reduce the number of such units. In addition, conservation efforts are not working against a static area load; energy demand is increasing in the Yuma load pocket, as evidenced by the relatively rapid growth in the region.

Conservation and Demand-side Management is not fully analyzed in this EIS as an alternative, as it is not consistent with the Applicant's objectives or to Western's need to address the application for interconnection.

2.4.3 Alternative Energy Resources

Sole reliance on fossil fuel fired power plants creates both environmental impacts and a dependence on a single energy source. Therefore, renewable resources are attractive power sources.

The principal renewable energy technologies that could serve as alternatives to the Proposed Project, which do not burn fossil fuels, were examined, as were the potential for these facilities to be used instead of the proposed natural gas-fired plant. These technologies are geothermal, solar, hydroelectric, wind, and biomass. Each of these technologies is attractive from an environmental perspective because of the absence or reduced level of air pollutant emissions, or because they use a renewable energy source. However, these technologies also can cause other environmental impacts and have feasibility problems.

Geothermal. Geothermal technologies use steam or high-temperature water obtained from naturally occurring geothermal reservoirs to drive steam turbines and generators. The technology relies on either a vapor-dominated resource (dry, super-heated steam) or a liquid-dominated resource to extract energy from the high-temperature water. Geothermal is a commercially available technology, but it is limited to areas where geologic conditions result in high subsurface temperatures. While there are some potential geothermal resources in the region, they have not been proven to be sufficient to supply the required power generation. In addition, exploitation of geothermal resources can require as much or more water than fossil fuel plants for both cooling and ensuring sufficient fluid flow. Geothermal would not generate enough power to meet the Applicant's objective and therefore was dismissed from full analysis.

Biomass. Biomass generation uses waste vegetation fuel source such as wood chips (the preferred source) or agricultural waste. The fuel is burned to generate steam. Biomass facilities generate greater quantities of air pollutant emissions than natural gas burning facilities, though these emissions may be partially offset by the reduction in emissions from the open burning of fields. In addition, biomass plants are typically sized to generate less than 20 to 40 MW, which is substantially less than the capacity of the proposed WMGF. In order to generate 310 MW, which is proposed for Phase I of the WMGF, 8-16 biomass facilities would be required, with 16 to 32 facilities required to match the 620 MW output of Phase II. There would be insufficient local sources of biomass material in the Yuma region to run this number of plants. Therefore, biomass would not be a reasonable, available alternative to the Proposed Project.

Solar. Currently, there are two types of solar generation available: solar thermal power and photovoltaic power generation.

> ***Solar Thermal Power Generation*** uses high temperature solar collectors to convert the sun's radiation into heat energy, which is then used to run steam power systems. Solar thermal is suitable for distributed or centralized generation, but requires far more land than conventional natural gas power plants. Solar parabolic trough systems, for instance, use approximately 5 acres to generate one MW. The 60-acre solar field that is proposed to condition the turbine intake air for the proposed WMGF would only produce 12 MW if used to produce power directly. Due to the generation limits, solar thermal would not meet the Applicant's objective and therefore was dismissed from full analysis.
>
> ***Photovoltaic Power Generation*** uses special semiconductor panels to directly convert sunlight into electricity. Arrays built from the panels can be mounted on the ground or on buildings, where they can also serve as roofing material. Unless photovoltaic systems are constructed as integral parts of buildings, the most efficient photovoltaic systems require about 4 acres of ground area per megawatt of generation.

While solar generation facilities do not generate problematic air emissions and have relatively low water requirements, solar resources would require large land areas to meet the project objective to generate 310 MW of electricity. For example, assuming that a parabolic trough system was located in a maximum solar exposure area, generation of 310 MW equivalent to Phase I of the proposed WMGF would require 1,550 acres, and it would take a total of 3,100 acres to produce the power expected from both phases of the proposed WMGF. Similarly, for a photovoltaic plant, generation of 310 MW would require 1,240 acres and 620 MW would require

2,480 acres. Because photovoltaic installations only generate power during the day, they may have limited usefulness in replacing the existing RMR facilities. Photovoltaic installations are highly capital intensive and manufacturing of the panels generates some hazardous wastes. The high cost of photovoltaic systems, the expansive land area needed, and the inability to generate power around the clock, do not meet the Applicant's objective, and preclude photovoltaic power generation from full analysis.

Wind. Wind carries kinetic energy that can be utilized to spin the blades of a wind turbine rotor and an electrical generator, which then feeds alternating current into the utility grid. Most state-of-the-art wind turbines operating today convert 35 to 40 percent of the wind's kinetic energy into electricity. Modern wind turbines represent viable alternatives to large, bulk, fossil fuel-fired power plants as well as small-scale distributed systems. The range of capacity for an individual wind turbine today ranges from 400 watts up to 3.6 MW.

Wind resources would also require large land areas in order to generate 620 MW of electricity. Depending on the size of the wind turbines, wind generation "farms" generally require between 5 and 17 acres to generate 1 MW, resulting in the need for between 1,550 and 5,270 acres to generate 310 MW (ACC 2003). Between 3,100 and 10,540 acres would be needed to produce 620 MW. However, wind energy technologies generated highly variable power and cannot provide full-time availability due to the natural intermittent availability of wind resources. They must also be located in geographical areas where wind is relatively constant, which greatly restricts the number of suitable sites. Therefore, wind generation technology would not meet the project goal, which is to provide immediate, reliable power to meet demand and help retire the older RMR generation facilities.

Hydroelectric Power. Hydroelectric power requires a large river source with associated infrastructure including dams and turbines. These requirements are not available in the Wellton area. Diversion, or "run of the river" hydropower is similarly not feasible. In this vicinity, the Gila River is ephemeral and the Wellton-Mohawk Canal doesn't have sufficient head (vertical drop) for large scale generation. As a result of the lack of these specific requirements and high costs, it is extremely unlikely that new hydropower facilities could be developed and permitted within the next several years. Therefore, hydropower would not meet the Applicant's objective and has been eliminated from full analysis.

Conclusion Regarding Renewable Resources. The renewable technologies discussed above have the advantage of not requiring fossil fuels and avoiding the environmental and resource impacts associated with natural gas-fired power. However, Western has eliminated these alternatives because (1) specific locations for geothermal, wind, and hydropower facilities are greatly limited by the requirements of these technologies; (2) none of these technologies can feasibly meet project objectives; (3) they have the potential to create potentially significant environmental effects of their own; (4) costs would be substantial; and (5) regulatory requirements would be difficult to meet.

2.4.4 Alternative Cooling Options

Water would be consumed in the proposed WMGF for domestic water, service water, fire protection water, and cooling water. The majority of water use would be for cooling to condense steam exhausted from the steam turbine and to cool other equipment. Therefore, consideration

of alternative designs for the proposed WMGF have been focused on selecting a method to minimize cooling water consumption. The proposed design for the proposed WMGF minimizes total water consumption by maximizing the number of times water is recycled through the facility. Water would be recycled 12 times.

In addition to the proposed system described above, other cooling alternatives could reduce water consumption. Two other methods, open-cycle cooling and closed-cycle dry cooling, are discussed along with the reasons they were excluded from detailed analysis.

Open-Cycle Cooling. Open-cycle cooling is practical when the power plant is located near a large body of water such as an ocean, lake, or large river. Cooling water is pumped from the body of water, circulated through the steam turbine condenser and other facility heat exchangers then returned to the body of water at a higher temperature. Water consumption for this method is minimal. The Wellton-Mohawk Canal rate of flow and water quality precludes this method from being used. Therefore open-cycle cooling is not technically feasible.

Closed-Cycle Dry Cooling. Closed-cycle dry cooling uses large radiators with motor-driven fans to transfer the power plant's waste heat to the atmosphere. Cooling water is circulated through the steam turbine condenser and other heat exchangers located throughout the plant, removing waste heat. After leaving the various heat exchangers the cooling water enters the radiators where the fans located on the radiators increase the heat transfer capability by increasing the airflow across the radiators. Cooled water is then pumped through the condenser and heat exchangers in a closed cycle. Water consumption with this method is minimal.

This method requires installation of additional equipment including heat exchangers, radiators, fans, larger water pumps, and electrical equipment to power them. The added equipment increases the total capital cost of the plant and reduces the net amount of power generated. Moreover, this technology results in a loss of electrical output from the steam generator for all ambient temperatures above 60°F. Local meteorological data shows that the ambient temperature would be above 60°F the vast majority of the time. Closed-cycle dry cooling was eliminated from full analysis because it does not meet the Applicant's fiscal objectives.

Alternative water sources considered for cooling include the use of groundwater. This option has been dismissed due to the limited amount of groundwater and the difficulty in obtaining groundwater rights.

2.4.5 Ligurta-to-Dome Tap Double-Circuit Option

Double-Circuit Option

In lieu of constructing a new transmission line for the Ligurta-to-Dome Tap segment of the proposed Ligurta-North Gila Transmission Line, this option involves upgrading the existing single-circuit 161-kV transmission line from the Ligurta Substation to Dome Tap Substation to a double-circuit transmission line. The Dome Tap to North Gila segment would be constructed as

described above. The structures along the existing Ligurta-Dome Tap Transmission Line would be replaced with new, double-circuit steel structures.

Both options would be constructed in the same manner (structure design and height), within the same environment, and along the same path with one exception: the Gila River crossing to the west of the existing crossing would be used as described for the new transmission line. This draft EIS analyzes the construction and operation of a new transmission line which would have greater impacts than a double circuit. Western prefers to construct the new Ligurta-North Gila Transmission Line for the improved reliability and continuity of service that it would provide, and because the costs and environmental impacts are similar. The ROD will determine which option would be constructed.

The impact of the double-circuit option would be similar to the impacts described in chapter 4. Temporary surface disturbance would probably be slightly more, because existing structures would be removed and the new structure sites cleared. However, the permanent surface disturbance would be less with the one double-circuit transmission line. The cost of the double-circuit transmission line may be slightly higher due to the added cost of removing the old transmission line. Visually, the impact would be less with one transmission line instead of two. The collision hazard for birds and bats would also be less with one transmission line.

2.5 IMPACTS

Table 2.5-1 summarizes the environmental impacts of the Proposed Project and the No Action Alternative, based on the analyses in chapter 4. The table includes both the potential benefits and potential adverse impacts to each resource or environmental component resulting from the proposed WMGF, facility natural gas pipeline, and transmission system additions.

The resources/environmental components evaluated for potential impacts are:

- Geology, paleontology, and soils
- Water resources
- Air resources
- Biological resources
- Cultural resources
- Land use and recreation
- Transportation
- Visual resources
- Noise
- Socioeconomics
- Environmental justice
- Human health and safety
- Waste management

There are a number of mitigation measures included as part of the Proposed Project, as described in section 2.2.5. These mitigation measures will reduce impacts; however, some adverse impacts may still occur.

- Eleven cultural resource sites could be physically impacted by the construction of the proposed WMGF, facility natural gas pipeline, and the transmission lines. Without mitigation, these could be significant impacts.

- The tribes believe that the construction and maintenance of the Proposed Project would impact individual cultural resources through physical damage, and through intrusions into the settings of the resources. The type and extent of impacts on the cultural landscape and associated resources depends on the outcome of further consultation with the PA signatories.

No significant impacts or long-term impacts are expected to other resources or environmental components. Short-term impacts would be primarily related to construction activities; effected resources would, for the most part, return to normal after construction has been completed. Where identified in the analysis, chapter 4 discusses additional mitigation measures that would be considered by the Federal decision makers to reduce impacts. Residual impacts after including these additional mitigation measures are described in Section 4.14 Unavoidable Adverse Impacts, but are not included in table 2.5-1. Commitments to these additional mitigation measures would be discussed in the final EIS and committed to in the ROD of each agency.

The Proposed Project would have positive effects on some resources including:

- The local economy would experience a boost over the life of the Proposed Project due to construction and operations workforce payroll earnings and construction expenditures.

- Use of the solar technology to chill the inlet air for the turbines would boost the efficiency (power produced per unit of fuel consumed) of the proposed WMGF compared to other natural gas-fired, combined-cycle, electric generating facilities.

- Possible improvements in air quality from potentially reducing the operations of one or more of the aging RMR generation facilities.

- Some cultural resources discovered and avoided by Proposed Project facilities would be less susceptible to damage and vandalism. Existing access roads impacting sites would be closed and re-routed to avoid the sites.

Table 2.5-1. Summary Comparison of Environmental Impacts.

Resource/Environmental Component	Proposed Project	No Action Alternative
Geology, Paleontology, and Soils	**WMGF** No impacts to geological, paleontological, and mineral resources. Increase in erosion potential during construction, but impacts would be minor and temporary. **Pipeline** **Option 1**: A total of 154 acres of soil (including 6 acres of prime farmland) would be temporarily disturbed during construction. No permanent impacts to soil or prime farmland would occur. Topsoil erosion would be minor and temporary. **Option 2**: A total of 3 acres of soil would be temporarily disturbed. No prime farmland would be impacted. Topsoil erosion would be minor and temporary. **Transmission lines** **New:** Approximately 128 acres of land would be temporarily disturbed during installation of transmission line structures. Less than 10 acres would be permanently disturbed for transmission structure footprints and for the upgrade and construction of access roads. Less than one acre of prime farmland would be temporarily disturbed. Increased erosion potential in the transmission line ROW due to removal of vegetation but the impact would not be significant.	Current environmental conditions and trends would continue.

Table S-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Resource/Environmental Component	Resource/Environmental Component
Geology, Paleontology, and Soils (cont.)	**Upgrade**: Approximately 98 acres of land would be temporarily disturbed during the installation of transmission line structures. Approximately 4 acres would be permanently disturbed for transmission structure footprints and for the upgrade and construction of access roads. No impacts to prime farmland. Erosion impacts would be minor and temporary, occurring primarily during construction.	
Water Resources	**WMGF** No change in onsite surface water drainage is anticipated. The proposed WMGF would not impact any Federal jurisdictional watercourses. There would be no direct discharges to groundwater. Water from cooling operations would be discharged to lined evaporation ponds. Impacts from normal operations of the proposed WMGF would be negligible. Being a zero discharge facility, precipitation would be caught, used, and evaporated, resulting in a minor loss of water being contributed to stream flows and groundwater recharge.	Current environmental conditions and trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Water Resources (cont.)	**Pipeline** **Option 1**: Depth to groundwater in the area of the proposed route ranges from 10 to 60 feet. No impacts to groundwater from construction and operation of the pipeline are anticipated. Increase in surface water runoff due to reduction in vegetative cover during construction would be slight. Total temporary impact area within the boundaries of qualifying Waters of the United States (WUS) is estimated to be 1.069 acres. Compliance with Section 404 of the Clean Water Act Nationwide Permit No. 12 and United States Army Corps of Engineers (USACE) "Special Conditions" would mitigate impacts. Localized flooding potential is low. **Option 2**: Surface water and groundwater impacts would be similar in kind to Option 1, but far smaller since Option 2 is only about 2 percent of the length of Option 1. No impact to Federal jurisdictional watercourses. **Transmission lines** **New**: Depth to groundwater is more than 60 feet. No groundwater resources would be impacted. Increase in surface water runoff due to reduction in vegetative cover during construction would not be significant. Transmission line structures would be sited in areas with reduced erosion potential and to avoid Federal jurisdictional waters. Construction activity for transmission lines in wash areas would comply with Section 404 of the Clean Water Act Nationwide Permit No. 12. Approximately 0.12 acre of area within the boundaries of qualifying WUS would be disturbed by access road construction. Compliance with Section 404 Clean Water Act Nationwide Permit No. 12 would mitigate impacts. **Upgrade**: Impacts are the same as the new transmission line.	

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Air Quality	**WMGF** No significant impact is expected from construction and operation. Predicted impacts are below ambient air quality standards. The proposed WMGF would not be a major source of air pollution, per the Prevention of Significant Deterioration (PSD) criteria. Estimated ambient air concentrations are below EPA Class I significance level. Operation of the proposed WMGF would not significantly impact visibility in the closest federally designated Class I area (Joshua Tree National Park) located in excess of 100 miles to the northwest of the proposed WMGF. The Muggins Mountain Wilderness, the nearest Class II area, would experience an insignificant reduction in visibility since it would only occur 4.63 percent of the time. The CO_2 emission rate would be approximately 952 pounds per megawatt hour, less than one-half the CO_2 emission rate of coal-fired generation. Operation of the proposed WMGF may provide enough generation capacity for some of the older, more air polluting RMR's to be closed. **Pipeline** **Option 1:** Short-term fugitive dust and emissions from construction vehicles are expected along the ROW during construction. Impacts would be temporary and minor. **Option 2:** Impacts would be of the same kind as Option 1 but far less in magnitude than in Option 1.	Current environmental conditions and trends would continue, and the opportunity to possibly close one or more of the RMR's would be lost.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Air Quality (cont.)	**Transmission lines** **New**: Short-term fugitive dust and vehicle emissions are expected along the ROW during construction. Impacts would be temporary and minor. **Upgrade:** Impacts are expected to be the same as for the new construction.	
Biological Resources	**WMGF** **<u>Vegetation</u>** Permanent removal of 119 acres of desertscrub plant communities, including approximately 30 acres of intermittent sand deposits which are potential habitat for the special-status plants identified below. Potential impact to special-status plant species, such as sand food, Schott's wire lettuce, scaly sandpoint, and blue sand lily. While not listed as a sensitive species, the rare parasitic plant, *Pilostyles thurberi*, is found on the proposed WMGF site, and site development would increase the risk of local species population loss. Construction of the proposed WMGF would impact 86 individuals of dyeweed plants parasitized by *Pilostyles thurberi*. The Applicant has agreed to salvage a sample of 24 dyeweed plants that are parasitized by *Pilostyles thurberi*, to better determine the transplant survival rate. The anticipated impacts to the plants would be negligible.	Current environmental conditions and trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Biological Resources (cont.)	**Wildlife** Short-term impacts to wildlife in the Proposed Project area due to construction and maintenance activities. Minor long-term impacts due to loss of habitat from permanent removal of 119 acres. Increased risk of mortality of burrowing animals, small mammals, and insects due to excavation activities and loss of habitat. No adverse effect to special-status species or their habitat is expected. **Pipeline** **Vegetation** **Option 1:** Approximately 154 acres would be temporarily disturbed. Seventy-five to 85 percent of the area would be desertscrub, and 15 to 25 percent of the area would be tamarisk-dominated riparian communities. Minimal impact to sand deposit habitat in the ROW. **Option 2:** Approximately 3 acres of desertscrub vegetation would be temporarily disturbed. No wetlands or riparian areas would be affected. **Wildlife** **Option 1:** Increased risk of mortality to burrowing animals due to excavation and animals on or near the pipeline ROW. Impact on local and regional species and populations would be nondetectable. **Option 2:** Impacts to wildlife in and around the pipeline ROW would be far less than impacts from Option 1; due to the fact that this option is only 2 percent of the length of Option 1.	

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Biological Resources (cont.)	**Transmission lines** **Vegetation** **New:** Construction of access roads and clearing of transmission structure sites, staging areas, wire pulling and splicing sites would temporarily disturb 128 acres of vegetation. Permanent displacement of vegetation at structure sites and for roads would affect 9 acres. Periodic clearing of riparian vegetation to reduce fire hazards would impact tamarisk. Maintenance activities would impact vegetation in the ROW, mainly in and around transmission line structure locations. The overall impact to vegetation would not be significant. **Upgrade:** Repair of existing roads, and clearing of transmission structure sites, staging areas, wire pulling and splicing sites would temporarily disturb 98 acres. Permanent displacement of vegetation at structure sites and for roads would affect 4 acres. Again, the overall impact to vegetation would not be significant. **Wildlife** **New**: Short-term impacts to wildlife in the Proposed Project areas due to construction and maintenance activities. No adverse effect to special-status species or their habitat is expected. Permanent loss of habitat would not result in impacts detectable at the species or population level. Increased risk of mortality to migrating birds from collision with transmission conductors and structures; however, this would be mitigated by placing state-of-the-art bird warning devices on the portion of the transmission line crossing the Gila River, where the greatest number of birds would be exposed to the hazard.	

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Biological Resources (cont.)	**Upgrade:** Impacts similar to new transmission line construction impacts. Little to no increase in bird mortality over current conditions due to presence of existing line. No impact to biological resources from substation modification activities, because the modifications would be done within the footprints of the existing substations.	
Cultural Resources	**WMGF** One potential NRHP-eligible archaeological resource is on the proposed WMGF site. Impacts from proposed WMGF construction may include complete destruction; however, the site would be mitigated through inventorying, recording, and the collection and preservation of scientifically significant artifacts. Four historic resources are adjacent to the proposed WMGF site: a segment of the Wellton-Mohawk Canal, the Ligurta Substation, a segment of the old Southern Pacific Railroad, and a segment of Old Highway 80. Construction of the proposed WMGF would likely have no direct or indirect impacts to these historic sites adjacent to the site. Eligibility recommendations are proposed by the field archaeologists, and ethnographers. Final evaluation of eligibility, or the current status of consultations to determine eligibility will be included in the Final EIS. The tribes believe that the construction and maintenance of the Proposed Project would impact individual cultural resources through physical damage, and through intrusions into the settings of the resources that were physically avoided. These impacts would result in significant impacts on the cultural landscape and associated resources.	Current environmental conditions and trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Cultural Resources (cont.)	**Pipeline** **Option 1:** Four potential NRHP-eligible archaeological resources were found in the pipeline ROW. Direct construction impacts and indirect impacts are expected to a portion of one of the archaeological sites. Eligibility for these sites and mitigations for these impacts are under consideration by the Federal agencies. **Option 2:** No potential NRHP-eligible archaeological resources in the pipeline ROW. No impacts are anticipated from construction and operation activities within the ROW.	

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Cultural Resources (cont.)	**Transmission lines** **New**: Eleven potential NRHP-eligible archaeological resources are in the transmission line corridor. Impacts to these sites would be avoided by locating access roads, staging areas, wire pulling and splicing areas away from them, and by spanning the sites. Four of these sites would have significant indirect impacts by the presence of a transmission line over or near the site and nearby structures as a visual intrusion to the setting of the resource. Eligibility for these sites and mitigations for these impacts are under consideration by the Federal agencies. **Upgrade**: Five potential NRHP-eligible archaeological resources are in the transmission line corridor. Impacts to these sites would be avoided by locating staging areas, wire pulling and splicing areas away from them, and by spanning the sites. Existing access roads cross two sites, and these roads would be closed and re-routed to avoid the sites. The presence of the transmission line over or near these sites represents an additional visual intrusion to the setting of the resource. Eligibility for these sites and mitigation for these impacts are under consideration by the Federal agencies. Substation modifications would not likely impact any archaeological resources.	
Land Use and Recreation	**WMGF** Direct impact to land use includes change in land use designation of large part of proposed WMGF site from open and undeveloped to industrial use. No change in population growth and consequent land use impacts are expected. Yuma County has zoned the site for industrial uses. Overall, the impact is considered insignificant. Impacts to recreation would also be insignificant.	No change in existing land use or recreation use. Land use and recreation use trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Land Use and Recreation (cont.)	**Pipeline** **Option 1**: No land use impacts would occur since pipeline would be located in or near existing ROW. Impacts to recreation would be insignificant. **Option 2**: Same as Option 1. **Transmission lines** **New:** No change in land use or land use impacts would occur since transmission lines would be located primarily in or parallel to existing ROW. Impacts to recreation would be insignificant. **Upgrade:** No change to land use or land use impact would occur since upgrade would occur on an existing transmission line and within the existing ROW. Impacts to recreation would be insignificant.	
Transportation	**WMGF** Temporary increase in traffic of 10 to 15% during the 12 to 18 month construction period. Short-term traffic impacts would be expected along local transportation routes in the vicinity of the proposed WMGF. Long-term traffic levels associated with WMGF operation would have little impact on transportation routes in the vicinity of the proposed WMGF. **Pipeline** **Option 1**: Short-term temporary traffic delays and lane closures along existing local roads in the vicinity of the pipeline construction area. **Option 2**: Impacts would be part of proposed WMGF construction.	No change in existing transportation systems would be expected and current trends would be expected to continue

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Transportation (cont.)	**Transmission lines** **New**: Access roads along the Wellton-Mohawk Canal ROW and substation locations are not heavily traveled. Traffic disruptions would be minor. **Upgrade**: Impacts are the same as the impacts of the new transmission line.	
Visual Resources	**WMGF** Minimal visual impact due to existing alterations to the landscape. Short-term visual impact due to dust and equipment during construction. Impacts to visual landscape from the addition of the CTG's and their associated 160-foot high stacks, the HRSGs, solar collectors for the SEECOT™ system, cooling towers, and occasional steam clouds when viewed from points of local interest, travel routes, or nearby residences. **Pipeline** **Option 1**: Minimal visual impact from the cleared area above the buried pipeline. **Option 2**: Same as Option 1, but reduced in magnitude due to the reduced length.	Current environmental conditions and trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Visual Resources (cont.)	**Transmission lines** **New**: Minimal visual impact from steel pole structures. Views of the transmission line would be partially obstructed due to terrain, but line would be visible from a portion of I-8, in the foreground of Highway 95, and from some residences in the vicinity. **Upgrade**: Because the structures would be changed from dark wood to lighter colored steel, there would be some reduction in visual contrast. However, as the steel structures would be taller and would have ground wires, there would be a slight increase in overall visual impact.	
Noise	**WMGF** Short-term increase in noise levels above background during construction of the proposed WMGF. Although significant noise impacts are expected at the proposed WMGF site boundary and up to about 140 feet beyond the boundary, the noise level at the closest residence is predicted to be increased by only 1.1 dBA, which would be undetectable by the human ear. The area in the vicinity of the proposed WMGF is already impacted by noise from traffic on I-8 and the railroad. **Pipeline** **Option 1**: Short-term increase in noise levels above background during construction. Minimal noise impacts are anticipated from any pipeline maintenance activities. **Option 2**: Same as Option 1.	Current environmental conditions and trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Noise (cont.)	**Transmission lines** **New**: Short-term increase in noise levels above background during construction. Long-term corona-generated audible noise from transmission lines, but this noise is usually lost in the background noise beyond the boundary of the transmission line ROW. **Upgrade**: Impacts similar to those from construction and operation of new transmission line.	
Socioeconomics	**WMGF** Minimal impact to area population. Direct and indirect effects of construction and operation would be 494 and 86 jobs in the region of influence (ROI), respectively. Annual payroll increase would be $1.2 million during operations, and $10.8 million during construction. Minimal impact on existing housing stocks in the ROI. Peak construction requirement would be 1.5% of available housing stock in Yuma County and 3.6% of available housing stock in the City of Yuma and Town of Wellton combined. No adverse impact to the value of nearby property is anticipated.	Current environmental conditions and trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Socioeconomics (cont.)	**Pipeline** **Option 1**: Construction impacts would be minimal. Population associated with an additional construction workforce of 40 persons would be a total of 115 when spouses and children are included. This total is less than 1% of the combined City of Yuma and Town of Wellton population in 2000. Direct and indirect effects of construction employment would be 66 jobs. Payroll increase would be a $491,000 increase to the regional economy. **Option 2**: Impacts less than Option 1. **Transmission lines** **New and Upgrade**: Construction impacts would be minimal. Population associated with an additional construction workforce of 50 persons would be 143 when spouses and children are included. This total is less than 1% of the combined City of Yuma and Town of Wellton population in 2000. The combined direct and indirect effects of transmission line construction employment would result in an increase of approximately 82 jobs within the region. Likewise, the direct and indirect effect of transmission line construction payroll expenditures would be an estimated $1,922,000 increase to the regional economy, a very small percent of the total personal income for Yuma County.	

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Environmental Justice	**WMGF** Minority and low-income groups in the ROI do not meet the Counsil on Environmental Quality's (CEQ) definition/criteria for minority or low-income populations. There would be no disproportionately high or adverse health and environmental impacts to minority or low-income groups. **Pipeline** **Option 1**: Minority and low-income groups in the ROI do not meet CEQ's definition/criteria for minority or low-income populations. No impacts to minority or low-income communities. **Option 2**: Same as Option 1. **Transmission lines** **New**: Minority and low-income groups in the ROI do not meet CEQ's definition/criteria for minority or low-income populations. No impacts to minority or low-income communities. **Upgrade**: Minority and low-income groups in the ROI do not meet CEQ's definition/criteria for minority or low-income populations. No impacts to minority or low-income communities.	Minority and low-income groups in the ROI do not meet CEQ's definition/criteria for minority or low-income populations.
Health and Safety	**WMGF** **Worker** Typical construction and industrial work-related injuries may occur. Risk to workers would be minimized through proposed WMGF design, safe work practices, good housekeeping, and compliance with state and Federal worker safety regulations such as OSHA.	Current environmental conditions and trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Health and Safety (cont.)	**Public** Potential impacts due primarily to fugitive dust emissions and increased noise levels would be minimal due to low-density population in the vicinity of the site. To prevent and minimize exposure of the public to the potential impact of accidental spills and releases, the Applicant would develop and implement a Spill Prevention, Control, Countermeasures and Emergency Response Plan (SPCCERP). Risks of fire or explosion would be minor and would be addressed in the basic proposed WMGF design. **Pipeline** **Worker** **Option 1**: Typical construction and industrial work-related injuries may occur, including the remote possibility of a fire or natural gas explosion. Risks would be minimized through routine maintenance, incorporating safety requirements into the design and operation of the pipeline, and compliance with state and Federal worker safety regulations such as OSHA. **Option 2**: Same as Option 1, but smaller in magnitude. **Public** **Option 1**: Risks of fire or natural gas explosion would be minimized through routine maintenance and by incorporating all regulatory safety measures into the design and operation of the pipeline. **Option 2**: Same as Option 1, but smaller in magnitude.	

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Health and Safety (cont.)	**Transmission lines** **Worker** **New**: Typical construction and industrial work-related injuries may occur. Likelihood of electric shock or electrocution would be very small. Maintenance workers would experience temporary effects such as raised hair on arms and head when working in the ROW. Mitigations would include compliance with state and Federal worker safety regulations such as OSHA. **Upgrade**: Same as new transmission line. **Public** **New**: Risk to public health and safety from fires. Potential for wildfires or vegetation and equipment fires would be reduced by routine maintenance activities and design of transmission line structures. EMF exposure would be the same as or less than exposure from common household appliances. **Upgrade**: Same as new transmission line.	

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Waste Management	**WMGF** Potential contamination hazard from the storage and use of fuel, lubricants, and other fluids during construction. Minimal amounts of regulated and hazardous wastes are expected to be generated. Mitigation of potential risks would be compliance with state and Federal waste management laws such as the Resources Conservation and Recovery Act (RCRA). No significant impact to waste facilities from hazardous and regulated waste generation would occur since the nearest landfill has an expected life of over 100 years, and there are 17 commercial hazardous waste storage and treatment facilities in the Phoenix area. Wastewater would be directly reused or recycled. **Pipeline** **Option 1**: Potential contamination hazard from the storage and use of fuel, lubricants, and other fluids during construction. Impacts would be minimized by immediate clean up of spills and leaks, restricting location of refueling activities, and compliance with state and Federal waste management laws. **Option 2**: Same as Option 1.	Current environmental conditions and trends would continue.

Table 2.5-1. Summary Comparison of Environmental Impacts (*continued*).

Resource/Environmental Component	Proposed Project	No Action Alternative
Waste Management (cont.)	**Transmission lines** **New**: Potential contamination hazard from the storage and use of fuel, lubricants, and other fluids during construction. Minimal amounts of hazardous waste would be generated from routine maintenance activities on the transmission lines. Potential risks would be minimized by compliance with state and Federal waste management laws such as RCRA. **Upgrade**: Same as new transmission lines. **Substations** Potential contamination hazard from the storage and use of fuel, lubricants, and other fluids at the substations. Impacts would be minimized by immediate clean up of spills and leaks, restricting location of refueling activities, and compliance with state and Federal waste management laws.	

AZX # = Arizona State Museum Resource Number; CO_2 = carbon dioxide; CTG = combustion turbine generator; dBA = frequency-weighted sound unit; EMF = electric and magnetic field; EPA = U.S. Environmental Protection Agency; FEMA = Federal Emergency Management Agency; FLAG = Federal Land Managers Air Quality Related Values Workgroup; HRSG = heat recovery steam generator; MWh = megawatt hour; NRHP = National Register of Historic Places; OSHA= Occupational Safety and Health Administration; PSD = Prevention of Significant Deterioration; RCRA = Resource Conservation and Recovery Act; RMR = reliably must run; ROI = Region of Influence; ROW = right-of-way; SPCCERP = Spill Prevention, Control, Countermeasures, and Emergency Response Plan; USACE = U.S. Army Corps of Engineers; WMGF = Welton-Mohawk Generating Facility; WUS = water of the United States.

3.0 AFFECTED ENVIRONMENT

This chapter describes the affected environment. Consistent with the Council on Environmental Quality (CEQ) regulation 40 CFR 1502.15, the descriptions are no longer than necessary to understand the impacts which will be described in chapter 4. Resources that will not be impacted are described briefly in order to provide the reader with an understanding of the setting. For ease of understanding the impacts and correlating chapters 3 and 4, the document has been prepared so that a resource described in chapter 3 has the same section number in chapter 4. The only exception is geologic hazards, which is discussed in section 3.1.1.4 in this chapter and in Section 4.12 Health and Safety.

Regions of influence (ROI) are described in this chapter. They are defined separately for each of the resources evaluated. The resources and environmental characteristics discussed include geology (including paleontology and minerals) and soils, water, air, biological, and cultural resources, land use and recreation, transportation, visual resources, noise, socioeconomics, minority and low-income populations, health and safety, and waste management. In the cultural resource section, the term ROI will be supplemented by the term "area of potential effects" (APE) which deals with direct impacts to cultural sites. The term APE is used due to cultural resource laws and regulations. This is further described in section 4.5.

3.1 GEOLOGY, MINERALS, PALEONTOLOGY, AND SOILS

3.1.1 Geology and Minerals

The ROI is within the basin and range lowlands province of southwestern Arizona near Yuma. The province is made up of broad alluvial-floored basins bounded by high mountain ranges formed during the middle to late Pleistocene Era. The proposed Wellton-Mohawk Generating Facility (WMGF) site, the potential facility natural gas pipeline routes, and the eastern portions of the transmission line upgrades and additions are located in Dome Valley surrounded by the Muggins Mountains to the north and northeast, the Gila Mountains to the west and south, and the Mohawk Valley to the east. The western portion of the route for the proposed transmission line upgrade crosses Telegraph Pass through the Gila Mountains. The western portion of the proposed new transmission line is located in the North Gila Valley.

The ROI for geology is defined as the area affected by construction and operation of the Proposed Project components. The ROI for the Proposed Project consists of geologic features, mineral resources, and paleontological resources within 200 feet of the Proposed Project components and the associated access roads. For large-scale geological conditions such as earthquakes and geological resources, regional information is presented since these conditions tend to affect broad expanses of land and are not typically restricted to smaller discrete areas. The area lacks unique geological features which would have significant scientific, educational, or interpretive values. Examples of unique geology are sites where advanced classes in geology would tour, exposed rock strata where high numbers of fossils are exposed, etc.

3.1.1.1 *Physical Setting*

The geology of the area has been described in *Geohydrology of the Yuma Area, Arizona and California* (Olmsted 1973), and this summary is derived from that source. The geology of the

Yuma area is characterized by fault block basin and range topography with crystalline bedrock exposed in the mountains and alluvial-filled valleys separating the mountains. The bedrock in the Gila Mountains is composed of Precambrian gneiss and schists in the southern portion, and Jurassic age granite and quartz monzonite rocks in the northern portion. The Muggins Mountains to the north of the proposed WMGF site are predominantly Tertiary volcanic rocks, primarily basalts and andesite.

Overlying the bedrock in the Yuma area is a series of marine and nonmarine sedimentary units. The older units consist of Tertiary age nonmarine sediments and related volcanics, ranging from mudstones and shales to sandstones, conglomerates, and breccias. These sedimentary rocks are associated with a series of Tertiary volcanic flows and tuffs. These older nonmarine sedimentary rocks are unconformably overlain by Tertiary marine sedimentary rocks consisting of fine sandstone, siltstone, and claystone. "Unconformably" means there is a time gap between the rock layers where deposition did not occur, or was laid down and eroded away prior to the deposition of the younger layers of rock. These older marine sediments are unconformably overlain by the marine sedimentary rocks of the Bouse Formation, which consists of claystones, siltstones, and sandstones or sandy limestone. The Bouse Formation is overlain by Older Alluvium, a nonmarine sedimentary unit consisting of alluvial fan and alluvial fill deposits, grading from clays to cobbles and boulders. The Older Alluvium is exposed in the foothills of the Gila Mountains, southwest and west of the proposed WMGF site. The Older Alluvium includes locally derived alluvial fan deposits, terraces, and stream deposits from the Colorado and Gila rivers. This unit is overlain by the Younger Alluvium, which consists of alluvial river deposits of the Colorado and Gila rivers and alluvial fan deposits from local sources. These deposits grade from silts and sands to gravels in the river derived deposits to poorly sorted alluvial fan deposits.

The proposed WMGF site is located where the Older Alluvium and Younger Alluvium deposits meet.

The proposed Ligurta-Gila Transmission Line goes through the Older Alluvium and the early Proterozoic metamorphic rocks, which are primarily gneiss and schist in the Gila Mountains. The proposed Ligurta-North Gila Transmission Line and facility natural gas pipeline routes run through the terrace deposits, the Older Alluvium, and the volcanic and sedimentary rocks in the foothills of the southern Laguna Mountains.

3.1.1.2 *Mineral Resources*

The Dome Valley contains abundant sand and gravel resources. No other mineral resources present in the Proposed Project area would be affected by constructing and operating the Proposed Project.

3.1.1.3 *Paleontological Resources*

Paleontology, the study of fossils, tells us about interrelationships between the biological and geological components of ecosystems over time. Paleontological resources include vertebrate and invertebrate fossils, as well as fossilized remains of plants and traces (tracks, footprints, etc.). Paleontological resources are a fragile and nonrenewable scientific record of the history of life on earth, and therefore, represent a critical component of America's natural heritage.

Paleontological resources include individual fossils and fossil-bearing geological formations or beds. Fossils and fossil beds can have interpretive, exhibit, historical, or scientific significance.

Literature was reviewed to find any references to paleontology or fossil-bearing deposits on the proposed WMGF site and surrounding area. Following the literature review, field surveys were conducted in areas considered likely to contain fossil remains that would be disturbed by the Proposed Project. The proposed WMGF site and portions of the transmission line corridors are located in areas that contain vertebrate fossil remains of animals in Pleistocene Gila River and Colorado River floodplain deposits. These Pleistocene fluvial deposits remain today as elevated terraces adjacent to the modern floodplains. The proposed WMGF site lies on the westernmost extension of the Wellton Mesa. The Wellton Mesa, sometimes referred to as the Wellton-Mohawk Mesa, is an elevated terrace adjacent to and paralleling the present Gila River floodplain. The age of the Wellton Mesa deposits is considered to be late Pleistocene (20,000 to 200,000 years old). Fossils in the older Wellton Mesa deposits can be found on the surface with gravels consisting of rounded Gila River rock fragments. No fossils are found in deposits consisting of locally derived, sub-angular gravels. Fossil vertebrate remains are likely isolated elements (individual fossilized bones or pieces of bones), mostly incomplete and some showing evidence of transport prior to deposition and fossilization (Croxen 2004). The fossils are likely to have been transported by fluvial deposition and erosion after their formation. Fossils expected to be found in the Proposed Project area are the bones and teeth of animals that lived along the Gila River corridor. The animals died, their bodies were broken up and their bones were carried down stream and deposited, where they became fossilized. Thus fossils of whole animals are not expected. The fossils lack a direct context with the animal's environment and many are only fragments.

A field survey was conducted in areas within the ROI with potential for fossil resources. A number of fossil specimens were found on the proposed WMGF site, along the Wellton-Mohawk Canal, and a portion of the new transmission line corridor. All were found in Gila River gravels and sands with varying amounts of locally derived sediments. No paleontological resources were found in exposures consisting solely of locally derived sediments.

Specimens were tentatively identified in the field. On the proposed WMGF site and the ROW, these specimens included the cusp of a mastodon (possibly *Mammut* sp.) molar, the right ungual (terminal phalanx) of *Bison* sp., a 9-inch shaft of a rib of a proboscidean, possible proximal femur of a *Bison* sp., possible caudal vertebra of a ground sloth (*Mylodontidae* sp.) (but could be *Bison* lumbar), portion of the main beam of a deer antler (*Odocoileus* sp.), innominate and acetabulum of *Paleolama* or a small *Hemiauchenia*, possible vertebra of a horse (*Equus* sp.) that may be pathologic, a small vertebra that could be *Capromeryx* (a small antelope), a tusk fragment of a mammoth or mastodon, a small piece of petrified wood, a dentary fragment, and several unidentifiable long bone fragments. The dentary fragment has been tentatively identified as from a camelid, possibly *Paleolama* or a small *Hemiauchenia*.

The mastodont cusp and possible *Capromeryx* indicate the presence of animals not previously recognized in the area.

Along the Ligurta to Dome Tap segment of the proposed new transmission line corridor, a metapodial of a small antilocaprid and a possible metapodial of a ground sloth were found.

The western portion of the Ligurta-Gila Transmission Line crosses over potential fossil-bearing terrace deposits associated with the Yuma Mesa terrace (Late Pleistocene) and Upper Mesa terrace (Middle Pleistocene). Vertebrate fossils have been found in the Upper Mesa deposits (Croxen 2004). The field survey deemed the upgraded transmission line corridor near the Gila Substation to be too developed for exploration for possible fossil resources. Substantial development has also occurred in the foothills area, and much of the upgraded transmission line corridor has been covered with asphalt or landscaped. Only a short section east of the Gila Substation remains relatively undisturbed and no fossil resources were found in that area.

3.1.1.4 *Geologic Hazards*

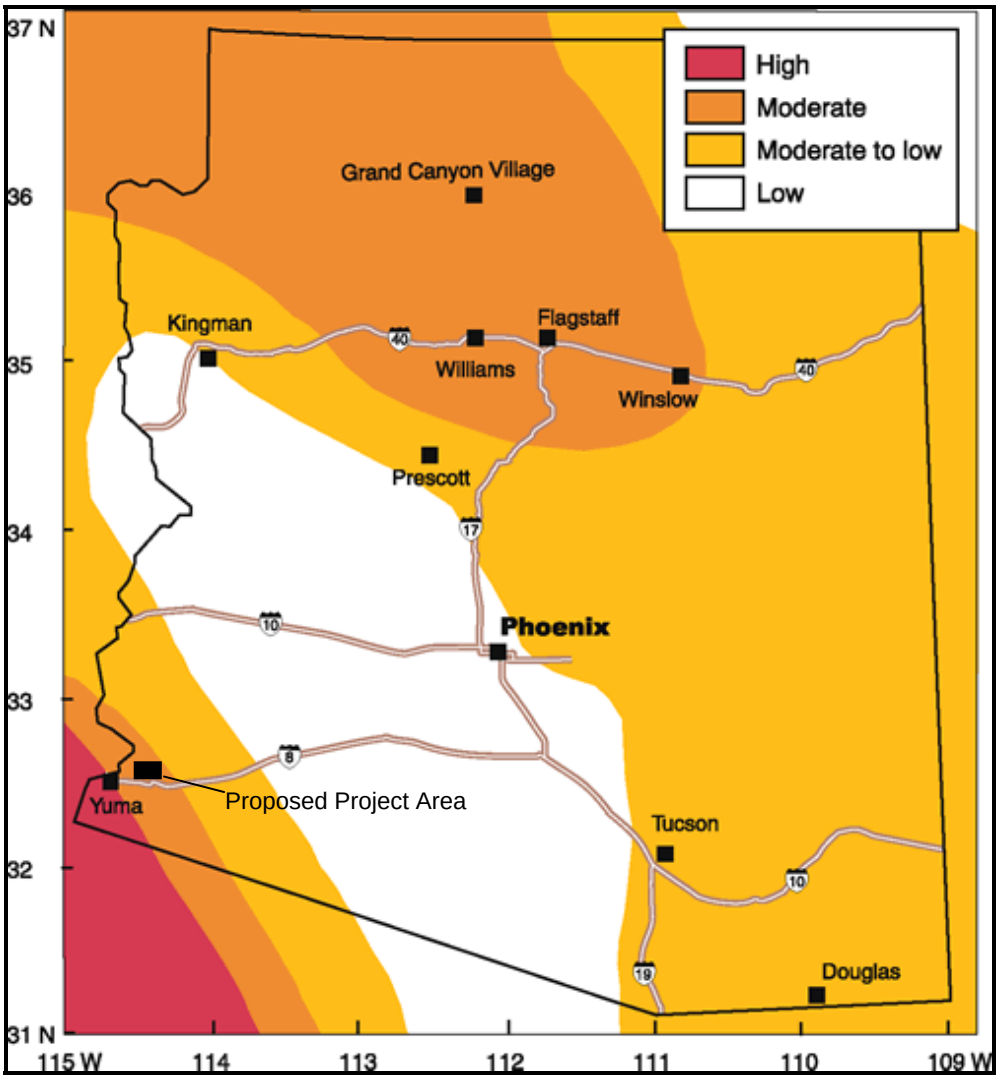
The Proposed Project would not impact geologic hazards, but geologic hazards could impact the Proposed Project. Thus the assessment of geological hazards is covered in the Section 4.12.2 Health and Safety, in the context of how earthquakes and other geologic hazards would impact the workers and the public if the Proposed Project is constructed.

Geologic hazards consist of the geologic conditions that could affect the stability of the ground and engineered structures associated with the Proposed Project, including earthquakes, surface faulting, soil liquefaction, slope stability, and surface subsidence. The western part of Yuma County lies in Seismic Zone 4 (Yuma 2003). The Proposed Project is on the border between Seismic Zone 3 and 4, with Seismic Zone 4 representing the greatest ground-shaking potential (Yuma 1996).

Yuma is subject to ground shaking from earthquakes originating in southern California and northern Mexico, as shown by the earthquake hazard scale in figure 3.1-1. The State of Arizona is subdivided into four categories to show interpreted earthquake hazard. The categories are based on rates of historical earthquake activity, number of potentially active faults, and the estimated slip rates for those faults. Major fault zones, including the San Andreas, San Jacinto, Imperial, and Cerro Prieto, occur within 65 miles of Yuma. The majority of earthquakes felt in the Yuma region occur in these fault zones. On average, earthquakes are felt in the Yuma Region once per year (Yuma 2003). Historically, earthquakes originating in the Imperial Valley region of southern California have caused some damage to the Yuma region.

The seismic hazard potential in the Yuma region is considered the highest in the State of Arizona (figure 3.1-1). There is a reasonable probability that damaging levels of seismic shaking will occur in the Yuma area within the next 50 years (Yuma 2003).

Liquefaction damage resulting from ground shaking is a serious threat in the valleys of the Yuma region. Liquefaction happens when the ground shakes and causes shallow, unconsolidated, water saturated deposits of silt and sand to temporarily lose strength and flow. Structures built on those deposits commonly experience major damage when liquefaction occurs. Liquefaction damage occurred throughout much of the Yuma region during the May 18, 1940, Imperial Valley earthquake. The Yuma and Gila valleys have high liquefaction potential. Dome Valley has not been identified as having high liquefaction potential.



Source: Fellow 2000.

Figure 3.1-1. Earthquake Hazard Scale.

The proposed WMGF site is generally too flat to be affected by mass movements such as rockfalls and landslides, although the potential exists in steeper areas of the Proposed Project such as Telegraph Pass along the Ligurta-Gila Transmission Line. Flash floods can occur in the washes along the east and west ends of the proposed WMGF site, and the facility natural gas pipeline, and transmission line routes.

Surface subsidence is due to the collapse of subsurface voids or withdrawal of large amounts of groundwater. Subsidence due to withdrawal of groundwater occurs over larger areas. The collapse of subsurface voids is not common in the geologic layers underlying the ROI. In addition, because most water use in the area is from surface water, subsidence is not a concern in the ROI.

3.1.2 Soils

This ROI consists of soils within 200 feet of the Proposed Project components and access roads. The area of the Proposed Project includes the Laposa-Rock outcrop complex comprised of moderately deep, steep, well drained, extremely gravelly soil, and rock outcrop in the hills and mountains. The Ligurta-Cristobal-Carrizzo soils are deep, nearly level, well drained and excessively drained, gravelly and very gravelly soils that occur on alluvial fans, low terraces, and floodplains. In the Dome and Wellton valleys, the Indio-Ripley-Lagunita soils are deep, nearly level to gently sloping, well-drained and somewhat excessively drained, silty and sandy soils on the floodplains, low terraces, alluvial fans, and in drainage ways (USDA 1980). In the southern Yuma Valley, the Rositas-Superstition soils are deep, nearly level and undulating, somewhat excessively drained, sandy soils on old terraces, alluvial fans and sand dunes. The floodplain soils tend to be alkaline, and in some areas excessive concentrations of salts have accumulated.

Most farming in the Wellton-Mohawk Irrigation and Drainage District (WMIDD) is done on floodplain soils, which are naturally fertile and have favorable moisture-holding capacities. Prime and unique farmland have soil types with a combination of characteristics making the soils particularly productive for agriculture. According to the Farmland Protection Policy Act (P.L. 97-98; 7 U.S.C. 4201 et seq.), every acre in the WMIDD designated by U.S. Bureau of Reclamation (Reclamation) as irrigable is considered prime and unique (Reclamation 2003b). Most of the irrigable acres lie within the floodplain; however, some irrigable acres are also located on the southern terraces. Figure 3.1-2 shows the location of those irrigable acres. Parts of the Option 1 facility natural gas pipeline route and the transmission line routes run through these irrigable areas and therefore through prime and unique farmlands. The proposed WMGF site is not on prime and unique farmland because it was not farmed in the past and no water delivery system is in place; i.e., not considered irrigable (NRCS 2004).

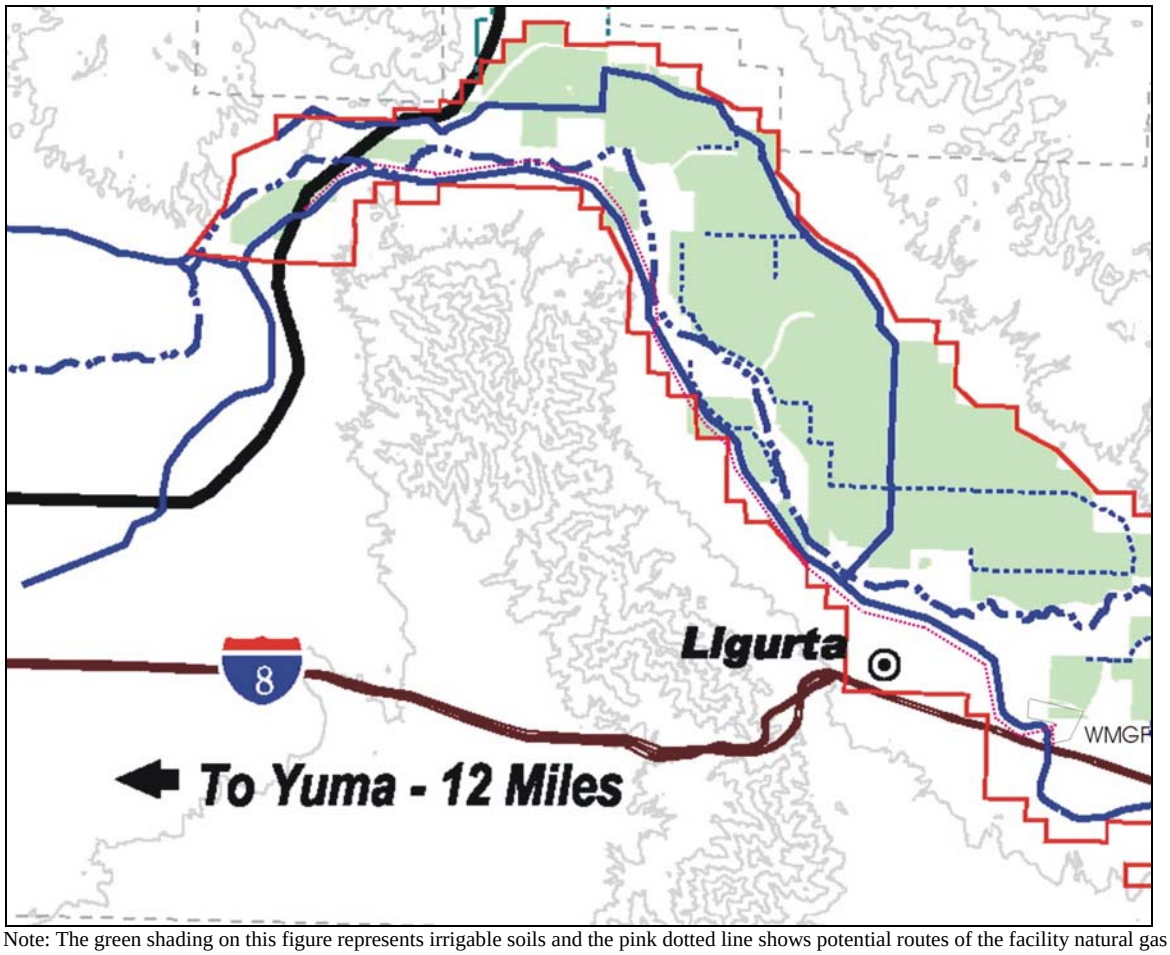
Two soils units were identified in the area of the proposed WMGF by the U.S. Department of Agriculture, Natural Resources Conservation Service (as shown in figures 3.1-3 through 3.1-9): the Torriothents-Torrifluvents complex soils, and the Lagunita loamy sand soils.

The Torriothents-Torrifluvents complex soils are found on terrace escarpments and alluvial fans on slopes of 1 to 50 percent. The soils form in mixed, unconsolidated alluvium sediment. The Torriothents soil is deep and well drained. The hazard of water erosion is slight. Torriofluvents soils are found on the slopes of 0 to 3 percent. Runoff is slow and the hazard of water erosion is generally slight except for piping and bank cutting along entrenched streambeds. They are moderately susceptible to wind erosion. The complex is severely limited for farming.

The Lagunita loamy sand soils are found on floodplains, low terraces, alluvial fans, and drainage ways with slopes of 0 to 3 percent. The Lagunita soil is deep and somewhat excessively drained. The soils form in recent alluvium. Runoff is slow and the hazard of erosion is high. This unit is used for growing irrigated citrus fruit, alfalfa, hay, and small grains. Small areas are used for grazing.

Option 1, the proposed facility natural gas pipeline route located adjacent to the Wellton-Mohawk Canal (figures 3.1-3 through 3.1-5), follows the Wellton-Mohawk Canal northwest for approximately 12.7 miles to intersect with Highway 95. The route goes through Indio-Lagunita-

Ripley complex soils, Torriothents-Torrifluvents complex soils, Ligurta-Cristobal-Carrizo complex soils, Glenbar silty clay loam, and Antho sandy loam, in decreasing order.



Note: The green shading on this figure represents irrigable soils and the pink dotted line shows potential routes of the facility natural gas pipeline.

Figure 3.1-2. Irrigable Soils in the Yuma Region.

The Indio-Lagunita-Ripley soils are found on floodplains, low terraces, alluvial fans and in drainageways with slopes of 0 to 2 percent. The soils are deep, well drained to excessively well drained, silty and sandy soils. Runoff is slow and the hazard of erosion is moderate except for Lagunita soils where the hazard of erosion is high. The Indio silt loams are suitable for irrigated agriculture.

The Ligurta-Cristobal-Carrizo complex soils are found on alluvial fans, low terraces, and floodplains. The Ligurta soils occur on fan terraces with slopes of 0 to 6 percent, Cristobol soils on fan terraces with slopes of 0 to 20 percent, and Carrizo soils on floodplains and alluvial fans with slopes of 0 to 5 percent. The soils are deep and well drained to excessively well drained, gravelly and very gravelly soils. Runoff is slow and the hazard of erosion is slight.

Glenbar soils occur on floodplains and low stream terraces with slopes of 0 to 1 percent. Glenbar soils are deep and well drained. Runoff is slow to medium and the hazard of erosion is moderate. This soil unit is used for growing irrigated crops.

The Antho sandy loam occurs on floodplains and alluvial fans with slopes of 0 to 3 percent. It is deep and well drained. Runoff is slow and the hazard of erosion is slight.

Option 2 follows the Wellton-Mohawk Canal south to I-8 (figure 3.1-3). The Torriothents-Torrifluvents complex soils are the only soils along this potential route.

The proposed new Ligurta-North Gila Transmission Line would parallel the existing 12.2-mile Ligurta-Dome Tap Transmission Line and then run roughly southwest to the North Gila Substation (figures 3.1-3 through 3.1-6). Between the Ligurta and North Gila substations, the new transmission line would be constructed in areas with Indio silt loam, Indio-Lagunita complex soils, Ligurta-Cristobal complex soils, Torriothents-Torrifluvents complex soils, Carrizo very gravelly loam, Antho sandy loam, Lagunita loamy sand, Laposa-Rock outcrop complex soils, and Antho fine sandy loam, in decreasing order.

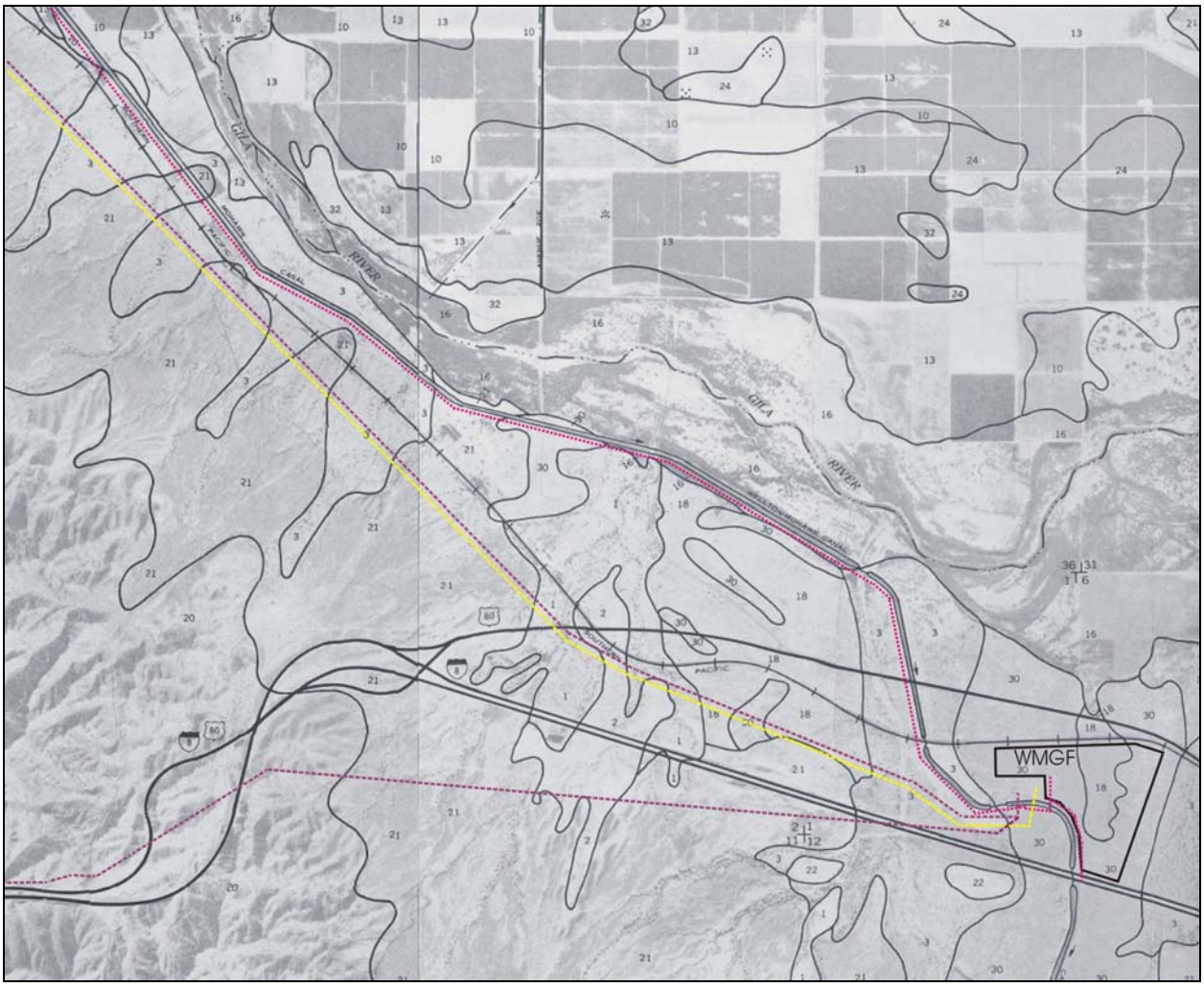
The Laposa-Rock outcrop complex occurs on hills and mountains with 15 to 75 percent slopes. The soils are extremely gravelly, moderately deep, steep, and well drained.

Between Dome Tap and North Gila, the new transmission line would cross Yuma County land, part of which is currently used as a shooting range. In the past, part of this land was used as a mining mill site for processing lead ore. The Environmental Protection Agency (EPA) has designated the old mill site as a brownfield site for lead contamination and possibly other metals as a result of processing lead ore. The proposed path for the new transmission line is to the south of this area. The soils along the path were tested and levels of lead and metals were shown to be below soil remediation levels defined by the ADEQ (Del Mar 2003).

The existing 12.7-mile Ligurta-Gila Transmission Line would be upgraded (figure 3.1-3 and figures 3.1-7 through 3.1-9). Between the Ligurta and Gila substations, the upgrade would occur in areas with Ligurta-Cristobal complex soils, Laposa-Rock outcrop complex soils, Rositas sand, Carrizo very gravelly loam, Rosita-Ligurta complex soils, Torriothents-Torrifluvents complex soils, and minor areas of Antho fine sandy loam.

Rositas soils occur on sand dunes with slopes of 0 to 2 percent. Rositas soils are deep and somewhat excessively drained. Surface runoff is very slow and the hazard of water erosion is slight. The hazard of wind erosion is severe if the natural surface and cover are disturbed.

Desert pavement is a covering of stones found on flat areas that have not been disturbed. It occurs in small intermittent patches of undisturbed land. There are some small areas of desert pavement along the transmission line corridors. Desert pavement is very fragile and subject to severe wind erosion when the protective rock layer is disturbed. Also, the surface generally has a uniform color, and disturbance typically causes the color to change. The change may be a visible intrusion on the landscape.

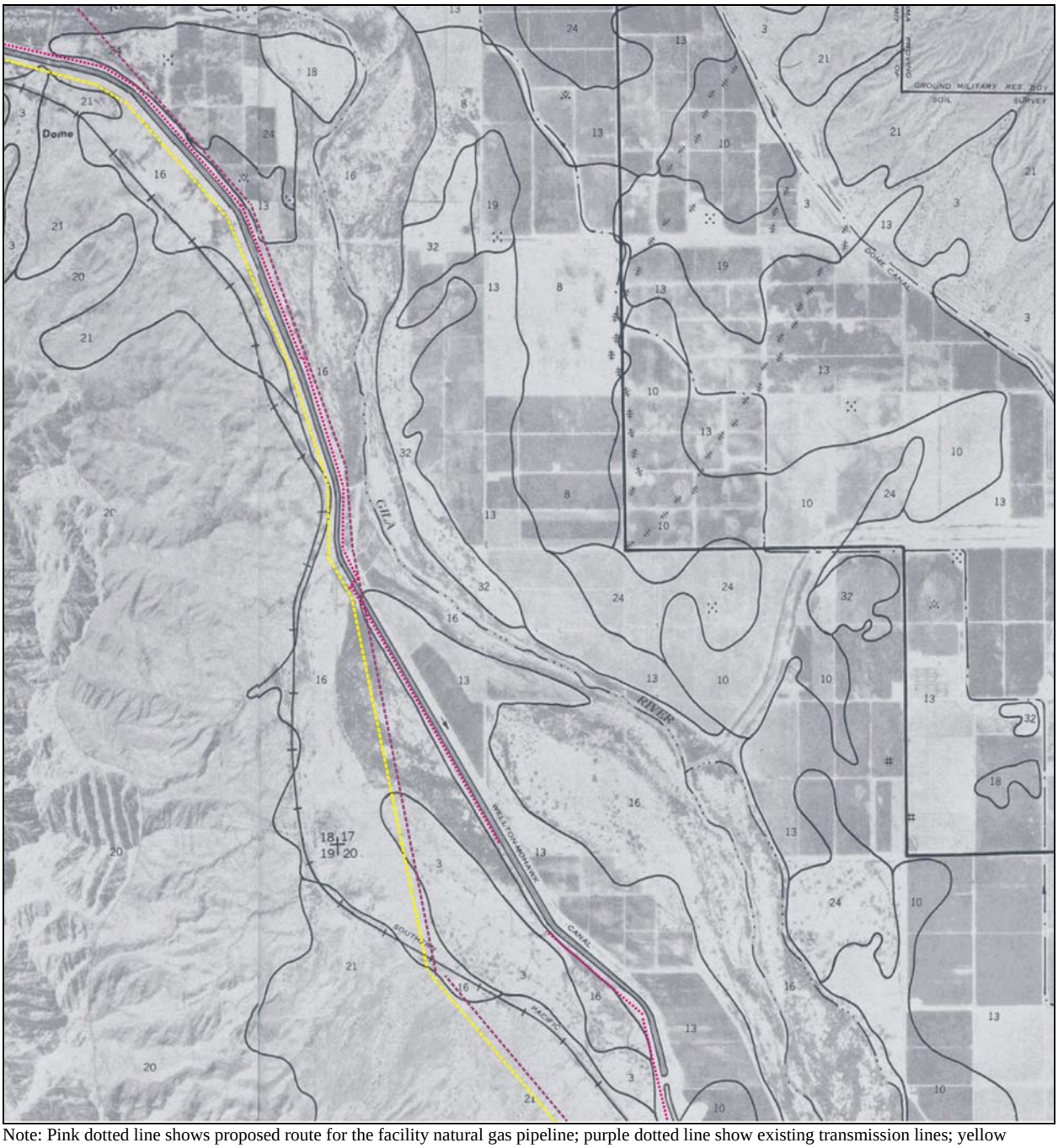


Note: Pink dotted line shows optional routes for facility natural gas pipeline; purple dotted lines show existing transmission lines; yellow dotted line shows proposed new transmission line.

Figure 3.1-3. Soils in the South Part of the Proposed Project Area.

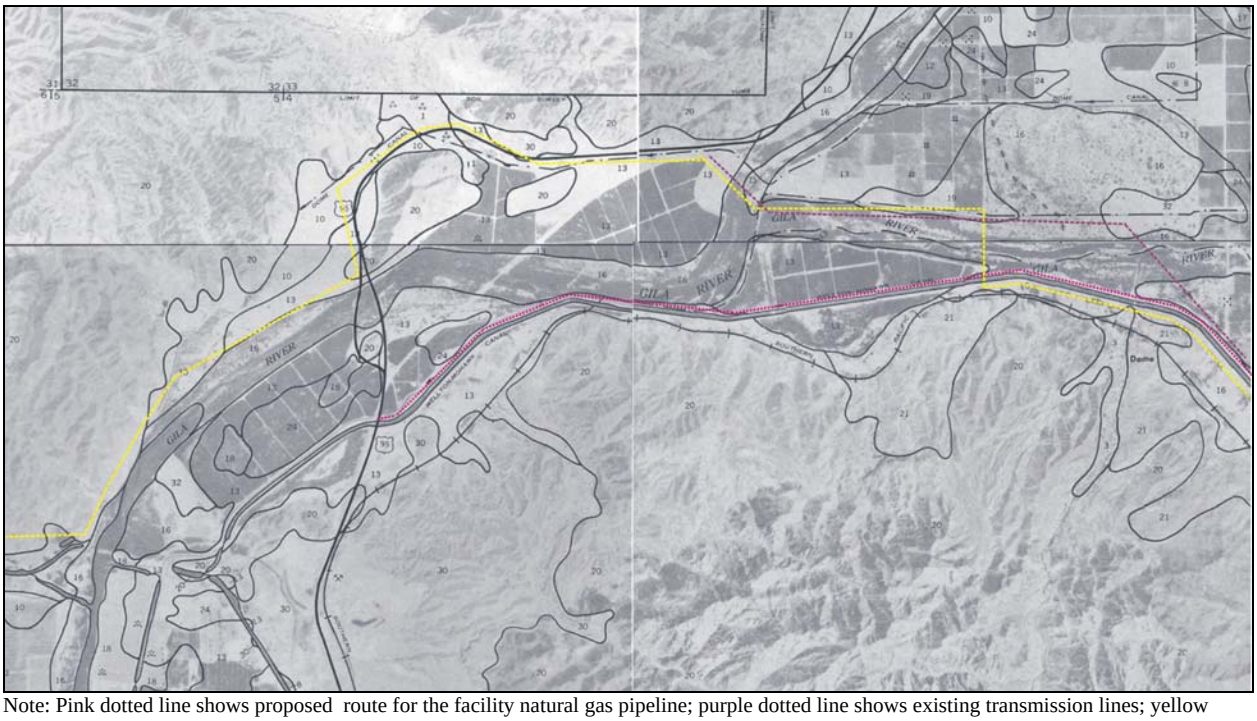
Soil Types Legend for Figures 3.1-3 to 3.1-9.

1	Antho sandy loam	12	Holtville clay	25	Rositas sand
2	Antho fine sandy loam	13	Indio silt loam	26	Rosita-Ligurta complex
3	Carrizo very gravelly sand	14	Indio silt loam, saline	27	Salorthids, nearly level
4	Cheroni-Rock outcrop complex, 25 to 70 percent slopes	15	Indio silt loam, strongly saline	28	Superstition sand
		16	Indio-Lagunita-Ripley complex	29	Superstition complex
5	Dateland loamy fine sand	17	Kofa clay	30	Torriothents-Torrifluvents complex, 1 to 50 percent slopes
6	Dateland fine sandy loam	18	Lagunita loamy sand		
7	Gachado very gravelly loam	19	Lagunita silt loam	31	Tremant-Rositas complex
8	Gadsen clay	20	Laposa-Rock outcrop complex, 15 to 70 percent slopes	32	Vint loamy fine sand
9	Gilman loam			33	Wellton loamy sand
10	Glenbar silty loam	21	Ligurta-Cristobal complex, 2 to 6 percent slopes	34	Wellton-Dateland-Rositas complex
11	Harqua-Trement complex				
		22	Pits, borrow		
		23	Pits, gravel		
		24	Ripley silt loam		



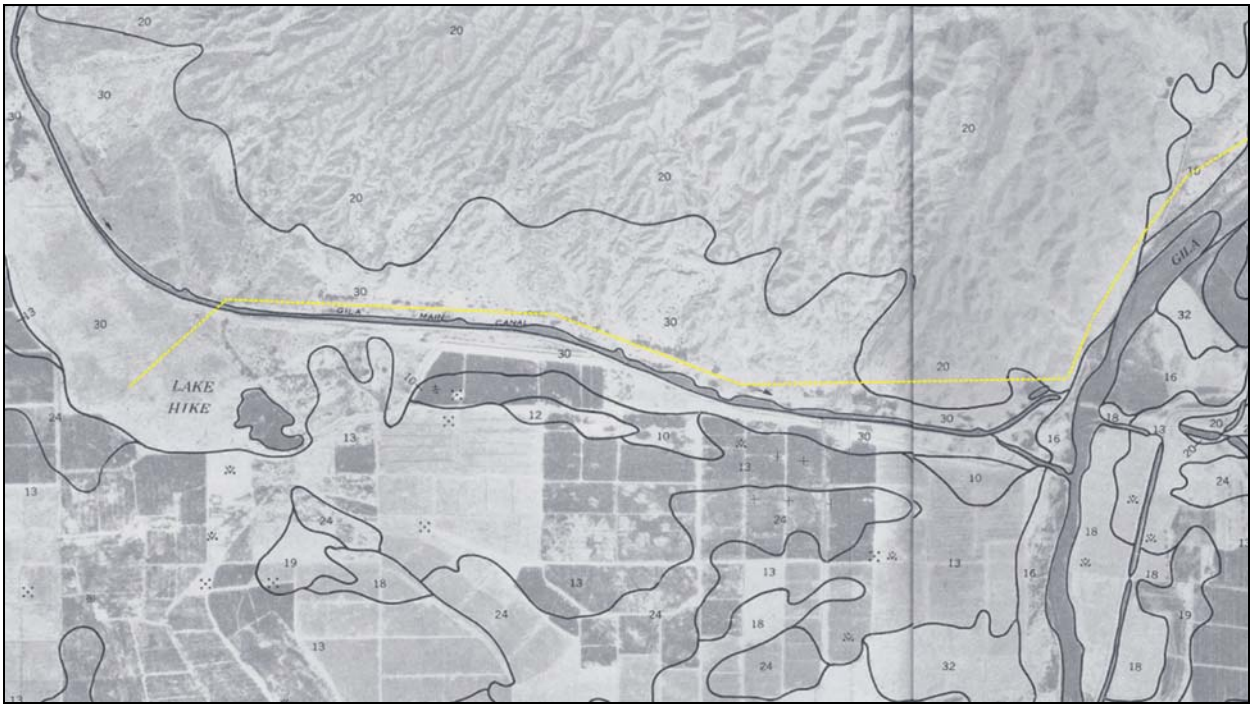
Note: Pink dotted line shows proposed route for the facility natural gas pipeline; purple dotted line show existing transmission lines; yellow dotted line shows proposed new transmission line.

Figure 3.1-4. Soils in the East Central Part of the Proposed Project Area.



Note: Pink dotted line shows proposed route for the facility natural gas pipeline; purple dotted line shows existing transmission lines; yellow dotted line shows proposed new transmission line.

Figure 3.1-5. Soils in the Northern Part of the Proposed Project Area.



Note: Yellow dotted line shows proposed new transmission line.

Figure 3.1-6. Soils in the Northwestern Part of the Proposed Project Area.

Note: Purple dotted line shows proposed transmission line upgrade.

Figure 3.1-7. Soils in the South Central Part of the Proposed Project Area.

Note: Purple dotted line shows proposed transmission line upgrade.

Figure 3.1-8. Soils in the Near South Central Part of the Proposed Project Area.

Note: Purple dotted line shows proposed transmission line upgrade.

Figure 3.1-9. Soils in the Far Southwestern Part of the Proposed Project Area.

3.2 WATER RESOURCES

3.2.1 Surface Water

The Proposed Project would be located in Yuma County in the southeastern portion of Dome Valley near the edge of Ligurta Mesa, in the Lower Gila River Basin. The ROI for surface water is limited to the surface water features in the watershed of the proposed WMGF and those in watersheds through which the proposed facility natural gas pipeline and transmission lines would be located. The principal watersheds are those associated with the Gila River including those located in the Dome, Wellton, and Yuma valleys. Dome Valley is an arid region with one principal waterway, the Gila River (Wellton-Mohawk 2001a). The Gila River flows to the southwest from Painted Rock Dam, located near Gila Bend, Arizona, approximately 80 miles to the east, continuing to the west through Dome Valley past the vicinity of the Proposed Project,

and finally discharging into the Colorado River, north of the City of Yuma, Arizona. The Gila River is ephemeral below the Painted Rock Dam, flowing only in response to runoff-producing precipitation events and water releases from the dam. Due to upstream impoundments and diversions for irrigation from the Gila River and its tributaries, the Gila River below Painted Rock Dam is typically dry. There are no perennial streams within the Lower Gila River Basin. However, the lower Gila River has a small perennial flow (10 +/- cfs) as a result of agricultural return flows to the Gila River channel near Dome, Arizona. This influx of water supports a small flow from Dome to the confluence with the Colorado River (ADWR 2004).

In addition to the Gila River, north of the proposed WMGF site, two local watercourses east and west of the proposed WMGF site. The watercourses are not named within the Federal Emergency Management Agency (FEMA) Flood Insurance Study. However, the east watercourse is identified as Ligurta Creek on local plat maps and by a sign along I-8. In addition, a sign along I-8 identifies the west watercourse as Red Top Wash. The watercourses originate in the mountains south of the proposed WMGF site, flow to the north along each side of the proposed WMGF site, and finally discharge into the Gila River. The watercourses appear to be ephemeral with alluvial bed and banks, typical of the southwestern deserts. According to the FEMA Flood Insurance Rate Maps, Ligurta Creek collects additional flows due to a flood-control levee along several miles of the portion of the Wellton-Mohawk Canal located to the east.

In addition to the Gila River and two watercourses located adjacent to the proposed WMGF site, numerous local watercourses are located along the proposed alignments for both the new and upgraded transmission lines and the facility natural gas pipeline. These watercourses are also ephemeral with alluvial beds and banks, typical of the southwestern deserts.

Although it is typically dry, ADEQ has classified the Gila River from Painted Rock Dam to the Colorado River to support the following uses: aquatic and wildlife; warm water fishery; agricultural, irrigation, and livestock watering; full body contact; and fish consumption. Monitoring of a 28-mile stretch of the Gila River east of Yuma between Coyote Wash and Fortuna Wash indicates that the river is currently not supporting the designated use for irrigation due to elevated boron levels (Wellton-Mohawk 2001a).

Water from the Colorado River is diverted into the Wellton-Mohawk Canal that runs along the southern portion of Dome Valley from northwest to southeast (Wellton-Mohawk 2001a). The Wellton-Mohawk Canal forms the southern boundary of the proposed WMGF site. ADEQ has classified the Wellton-Mohawk Canal to support the following uses: domestic water supply, and agricultural, irrigation, and livestock watering. The quality of the water in the Wellton-Mohawk Canal is generally adequate for use by the proposed WMGF. Water for the proposed WMGF's use, including cooling, would be provided by WMIDD via the adjacent Wellton-Mohawk Canal. The proposed WMGF would use a maximum of 3,356 acre-feet of water per year, when both phases are operating (1.08 billion gallons per year). The proposed WMGF would not be subject to regulation by the Arizona Department of Water Resources (ADWR) because it would utilize water from the Wellton-Mohawk Canal that is already allocated to WMIDD.

Federal jurisdictional waters include both wetlands and Waters of the United States (WUS) (section 2.2.5.5). The evaluation for the presence of wetlands was through review of National Wetland Inventory (NWI) maps and ground reconnaissance of the Proposed Project area on March 18, 2004. No wetlands are reported on the Ligurta NWI, or within the immediate vicinity

of the proposed WMGF site. Site reconnaissance confirmed that no wetlands occur on the proposed WMGF site (appendix C).

Review of NWI maps identified a contiguous wetland area associated with the Gila River that is traversed by the proposed facility natural gas pipeline corridor. The two adjacent wetland areas have NWI code designations of PSS2/1A (palustrine scrub-shrub, needle leaved/broad leaved deciduous, temporarily flooded) and PSS1/2J (palustrine scrub-shrub broad leaved/needle leaved deciduous, intermittently flooded). The NWI depicts the facility natural gas pipeline corridor crossing into the wetland in the SW1/4 of Section 1, T8S, R21W, continuing through section 2 and into the SE1/4 of section 3.

The portion of the facility natural gas pipeline corridor bisecting the NWI-designated wetland area traverses previously disturbed upland directly adjacent to the Wellton-Mohawk Canal. Application of wetland delineation criteria disqualified this area from consideration as a wetland (USACE 1997). Because of construction requirements, the pipeline would be placed in undisturbed soil adjacent to or below the surface disturbance. No hydric soils were identified and no supporting hydrology or hydrophytic vegetation was observed. None of the three required criteria for qualification as a jurisdictional wetland were met (appendix C).

The proposed new Ligurta-North Gila Transmission Line would parallel the existing Ligurta-Dome Tap Transmission Line (figure 3.2-1), deviating to cross the Gila River, approximately 1 mile west of the existing crossing. The portion of the new transmission line that parallels the Wellton-Mohawk Canal would cross the wetland described above in the SW1/4 of Section 1, T8S, R21W. None of the three criteria for qualification as a jurisdictional wetland were met.

The U.S. Army Corps of Engineer's (USACE) regional working definition (for the desert southwest) of WUS is any watercourse, including ephemeral watercourses, with an observable bed and bank. The proposed WMGF site was surveyed for the presence of qualifying WUS. Thorough reconnaissance of the proposed WMGF site resulted in no qualifying WUS identified within the proposed construction footprint. The entire length of two separate, low lying areas within the proposed WMGF site have no discernable bank development, shelving, changes in soil characteristics, or accumulation of debris. In addition, aged terrestrial vegetation was abundant throughout these temporary drainage areas.

Individual stream channel crossings along the proposed facility natural gas pipeline route were identified, measured, and recorded on aerial photography prints on March 18, 2004. A survey crew recorded qualifying WUS for the facility natural gas pipeline corridor by stopping at each flume crossing where water derived from multiple drainages is channeled across the Wellton-Mohawk Canal, which the proposed facility natural gas pipeline corridor would parallel. Due to the altered surface hydrology resulting from construction of the Wellton-Mohawk Canal, there are no naturally formed surface drainages that cross the proposed facility natural gas pipeline corridor.

Eight flumed waterways were identified. These flumed waterway crossings transport water only after significant precipitation events. Each flumed waterway to be crossed by trenching operations was declared a qualifying WUS because they are known to carry water on occasion from upland areas to the south toward the Gila River. Two of these flumed waterways that would be crossed by boring underneath the waterway were excluded from this analysis because

construction activities would not impact the surface channel. Six flumed waterways were delineated as qualifying WUS that could be impacted by construction or operation of the proposed facility natural gas pipeline.

The first portion of the new transmission line ROW is typified by inactive alluvial fans that have been entrenched. The entrenched areas contain braided channels with multiple historic flow paths. Active channels, as indicated by field observations and the absence of desert varnish on surficial deposits, were delineated as qualifying WUS (appendix C). Where the new transmission line ROW is within the Wellton-Mohawk Canal ROW, the WUS as described for the facility natural gas pipeline are present (appendix C). The new transmission line crossing would be from the south side of the Wellton-Mohawk Canal, across the Gila River, to the north side levee. Near the Dome Tap Substation the ROW would mainly be through agricultural fields where natural watercourses have been eliminated. A man-made collector channel that conveys stormwater runoff in the area was delineated as a qualifying WUS, as well as two washes that drain the foothills to the north. Along the southwest trending part of the new transmission line, an extensive area has been disturbed by the development and operation of the gun and archery range. Most of the natural drainage ways have been obliterated. The remaining waterways were designated as qualifying WUS. The westernmost segment crosses the foothills of the Laguna Mountains, where numerous washes were designated qualifying WUS. A total of 24.84 acres designated as qualifying WUS are present in the 125-foot wide ROW. An estimated 0.12 acres designated as qualifying WUS would be involved in access road construction.

The ROW for the upgraded transmission line runs west from the Ligurta Substation across the eastern foothill terraces and alluvial fans, over the Gila Mountains at Telegraph Pass, and across the western foothill terraces to the Gila Substation. Entrenched watercourses were designated as qualifying WUS. A total of 4.35 acres qualify as WUS within the ROW (appendix C).

Floodplains

Maps of the proposed WMGF site, facility natural gas pipeline, and transmission system additions were compared to recent aerial photographs and FEMA Flood Insurance Rate Maps for the area. These maps show the 100-year floodplains in the vicinity of the proposed WMGF site for the Gila River and the two adjacent watercourses (FEMA 1998). According to these FEMA Flood Insurance Rate Maps, the proposed WMGF site is not located within the floodplains of the Gila River; Red Top Wash, which is located along the western WMGF site boundary; or Ligurta Creek, which runs along the eastern boundary of the proposed WMGF site. The FEMA floodplains are shown on figure 3.2-1.

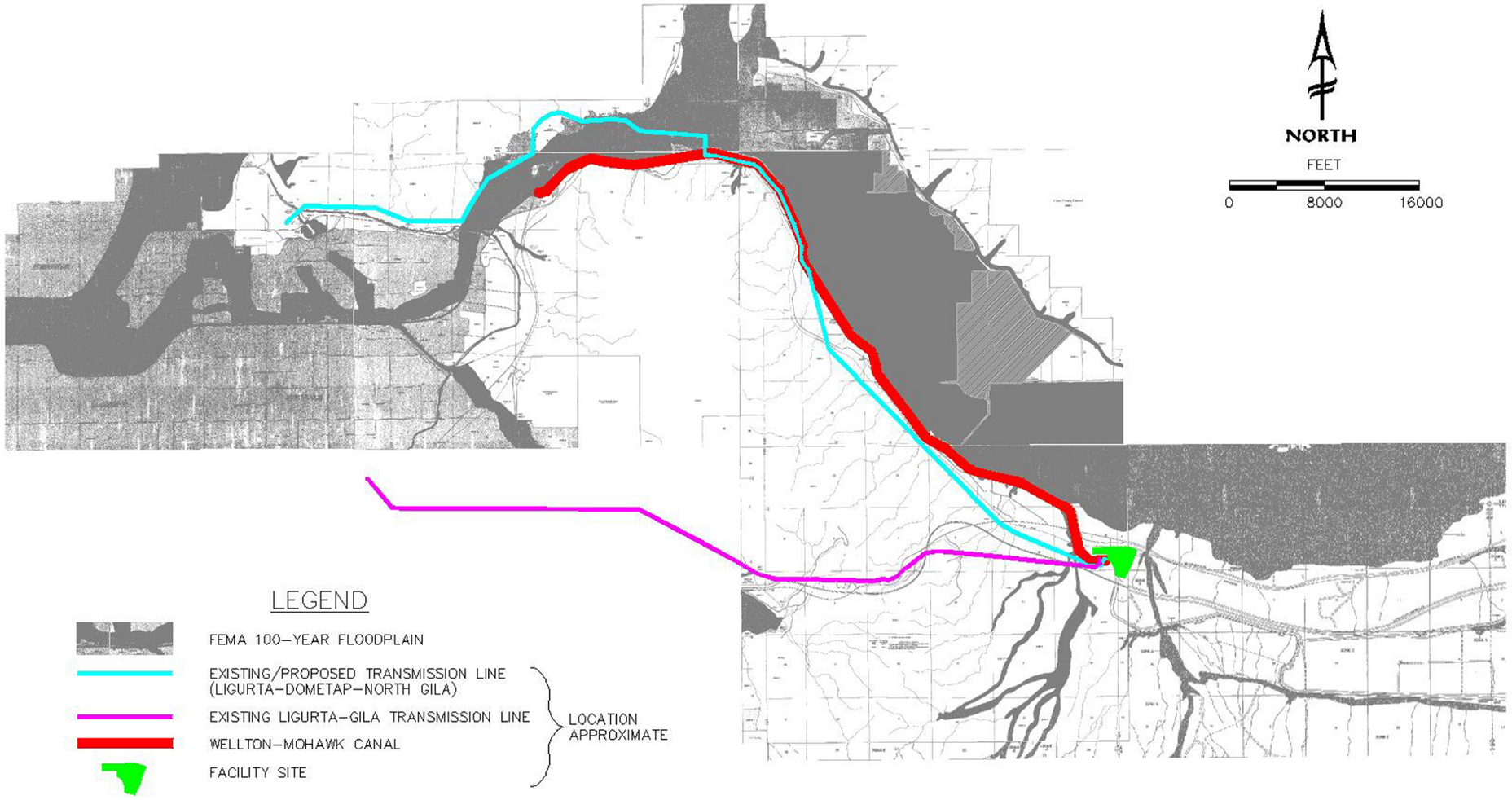


Figure 3.2-1. Federal Emergency Management Agency Floodplains.

Additional localized floodplains for each of the numerous local watercourses also exist along the proposed alignments for the facility natural gas pipeline and transmission lines. These floodplains have not been analyzed or mapped by FEMA or the Applicant.

3.2.2 Groundwater

The hydrology of the Yuma area was described in *Geohydrology of the Yuma Area, Arizona and California* (Olmsted 1973), and also in the ADWR report, *Yuma Area Groundwater Flow Model* (Hill 1993). The summary provided is derived from those sources.

The primary water-bearing units in the Yuma area exploited for groundwater production are the Older and Younger Alluvium, which have been subdivided into the following characteristic hydrologic units:

> ***Wedge Zone.*** Includes the lower portion of the Older Alluvium, and comprises a significant source of groundwater; generally this unit is finer grained at greater depth.
>
> ***Coarse Gravel Zone.*** Very productive, highly permeable alluvial deposits, which overlay the Wedge Zone. Comprises the primary source of groundwater in the Yuma area and consists of highly permeable sands and gravels.
>
> ***Upper Fine Grain Unit.*** The Coarse Gravel Zone is separated from the Upper Fine Grain Unit by laterally extensive clay layers (Clay A and B), which comprises the lower portion of the Upper Fine Grain Unit. The Upper Fine Grain Unit includes much of the Younger Alluvium, includes clays to fine sands, and represents a minor component of the groundwater production.

The ROI for groundwater is the aquifer underlying the Gila Valley, westward from the proposed WMGF site. The boundary of the aquifer is the Gila and Muggins mountains, north and west of the proposed WMGF site. In the Proposed Project area, a review of well logs indicates that the underlying units probably represent the Upper Fine Grain Unit and the Coarse Gravel Unit, with a series of sands and gravels interbedded with silts and clays. None of the logs suggest that an extensive clay layer (Clay A or B) is present, and no well logs indicated crystalline bedrock.

3.2.2.1 *WMGF Site Hydrology*

Well logs for the area near the proposed WMGF show that the wells are completed in the Upper Fine Grain Unit and Coarse Gravel Zone. The extensive clay layers (Clay A and B) are not clearly evident in logs for wells near the site. A well log for a domestic well drilled to 120 feet in 1996 just east of the site (ADWR Registration No. 55-555606) indicates the well was tested at 25 gallons per minute with no drawdown and is perforated in a sand and gravel layer. Water level recorded for this well in 1996 was 65 feet below land surface (ADWR 2003). Another well completed in 1985 just northeast of the proposed WMGF (ADWR Registration No. 55-512368) was drilled to 165 feet and was also perforated in a sandy zone. No pumping tests were recorded for this well, and groundwater was encountered 39 feet below land surface (ADWR 2003). A review of map data shows that almost all of the wells near the proposed WMGF are located up gradient from the proposed WMGF.

3.2.2.2 *Groundwater Flow*

Groundwater near the proposed WMGF site generally flows parallel to the axis of the Gila River Valley or northwest to the Dome Narrows area. Figure 3.2-2 illustrates water level measurements from November 1992, which was the latest available data to construct a groundwater map for the area. Based on the information presented, the groundwater elevation at the proposed WMGF site in 1992 was approximately 190 to 195 feet, which would correspond to a depth to water of approximately 65 to 70 feet below land surface. The groundwater gradient is relatively flat and is estimated as 0.00062 feet per foot near the site.

The hydraulic characteristics for the Upper Fine Grain Unit vary, depending upon the nature and extent of clay deposits. Since few wells exploit this layer for water production exclusively, little hydraulic testing has been completed for this unit. The ADWR, in conjunction with Reclamation, completed several pump tests for the fine sand component of the Upper Fine Grained Unit in 1991 in the Yuma area as part of the development of the Yuma Area Groundwater Flow Model. These tests indicated a hydraulic transmissivity of 5,000 to 10,000 cubic feet per foot per day, which represents a hydraulic conductivity of 170 to 670 feet per day.

The Coarse Gravel Unit has been extensively exploited for groundwater production throughout the Yuma area. Reported values of hydraulic transmissivity vary from 20,000 to 100,000 cubic feet per foot per day. Hydraulic conductivity values for the Coarse Gravel Unit have been reported in the range of 200 to 1,000 feet per day.

In general, both of these hydrologic units are highly transmissive productive units. Well yields are generally high, although surface water from the Colorado River supplies the majority of water used in the Yuma area.

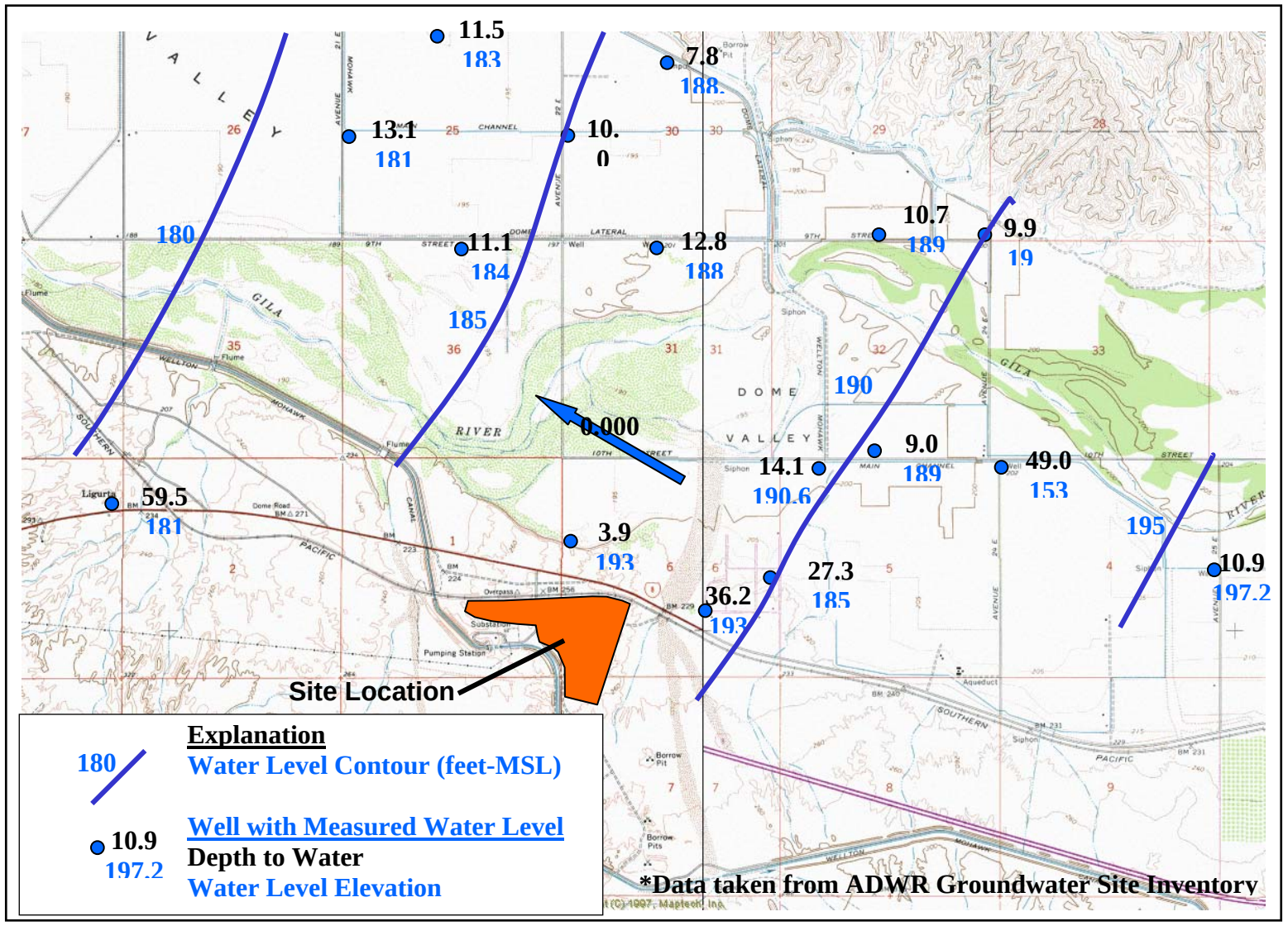


Figure 3.2-2. 1992 Groundwater Elevations at Wellton-Mohawk Generating Facility.

3.2.2.3 *Water Quality*

Water quality in the aquifer near the proposed WMGF site is relatively poor, with a high total dissolved solids content throughout the Yuma area. A sample was collected at the Ligurta well (ADWR Registration No. 55-630854) in 1971 after the well was completed, with the quality as shown in table 3.2-1.

Table 3.2-1. Water Quality at Ligurta Well.

Attribute	Concentration
Total Dissolved Solids	1,200 mg/L
Total Hardness	170 mg/L
Calcium	43 mg/L
Magnesium	15 mg/L
Sodium	243 mg/L
Chloride	440 mg/L
Fluoride	0.4 mg/L
Nitrates	2 mg/L
Sulfates	240 mg/L

mg/L = milligrams per liter.

This well is approximately 2 miles west of the proposed WMGF, and is likely representative of water quality near the proposed WMGF site. In general, the dissolved inorganics are high, and this water would be considered relatively salty. Water from this well exceeds the EPA secondary standard for total dissolved solids of 500 milligrams per liter (ADWR 2003).

3.3 AIR RESOURCES

This section describes the affected environment relative to air resources. The primary factors that determine the air quality of a region are the location of air pollution sources, the type and magnitude of pollutant emission, and the local meteorological conditions. For this analysis, only the four regulated pollutants that will be emitted from the proposed WMGF are discussed (NO_2, CO, PM_{10}, and SO_2).

Clean Air Act

The Clean Air Act of 1970 (CAA) established ambient air quality standards to protect public health and welfare. These standards are referred to as the National Ambient Air Quality Standards (NAAQS). Areas with air quality cleaner than these standards are referred to as attainment areas. Areas with air quality not meeting the NAAQS are referred to as nonattainment areas. Areas where the air quality is not clearly defined as either attainment or nonattainnment are designated unclassified. In 1977, the CAA was amended, and provisions intended to prevent deterioration of air quality in relatively pristine areas of the country were established. These provisions, referred to as the Prevention of Significant Deterioration (PSD) rule, established Class I and Class II areas. This regulation establishes stringent increments to limit the deterioration of air quality. The increments are more stringent in Class I areas.

In 1990, additional amendments to the CAA set forth additional emphasis on the protection of visibility in Class I areas, and encouraged the EPA to establish new standards for ozone and particulate matter with an aerodynamic diameter smaller than 2.5 microns or $PM_{2.5}$. At this time new standards for ozone and $PM_{2.5}$ have not been established, and are therefore not addressed in this analysis.

3.3.1 Region of Influence

The air quality ROI assumed for this Proposed Poject is a circle with a radius of approximately 30 miles to include all of the nearby Class II wilderness areas. In the ROI, air quality is considered to be good to excellent, with a visual range (based on data for Joshua Tree National Park) of nearly 155 miles. The area is in attainment with all of the NAAQS. The NAAQS are established by the EPA to protect public health and welfare. The Arizona Ambient Air Quality Standards (AAAQS) are analogous to the NAAQS. Table 3.3-1 presents the background concentration values provided by the ADEQ for the area in the vicinity of the Proposed Project. The background, or air quality prior to the addition of the Proposed Project, is well below the applicable AAAQS except for particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}). The background concentrations of $PM_{10,}$ which result from natural sources and anthropogenic sources already operating in the area, are still in compliance with the standard, but are greater than 75 percent of the standard.

The City of Yuma (25 miles west of the proposed WMGF site) has been designated as nonattainment for PM_{10}; however, monitoring data has demonstrated compliance with the standard since 1990. The Proposed Project is located in an attainment area; however, the effect the Proposed Project would have on the State of Arizona's plans to assure the Yuma area reaches attainment with the AAAQS is being evaluated as part of the air permit process.

Table 3.3-1. Arizona Ambient Air Quality Standards.

Pollutant	Averaging Period	Primary ($\mu g/m^3$)[1]	Secondary ($\mu g/m^3$)[1]	Background ($\mu g/m^3$)[1]
NO_2	Annual	100 (mean)	100 (mean)	4
CO	1 Hour	40,000 (max)		582
	8 Hour	10,000 (max)		582
PM_{10}	24 Hour	150 (mean)	150 (mean)	114
	Annual	50 (mean)	50 (mean)	39
SO_2	3 Hour		1300 (max)	246
	24 Hour	365 (max)		45
	Annual	80 (mean)		6

1 $\mu g/m^3$ = micrograms per cubic meter

Criteria Pollutants - The pollutants that have an ambient air quality standard are referred to as criteria pollutants. Criteria pollutants include: SO_2, PM_{10}, carbon monoxide (CO), and NO_2.

Noncriteria Pollutants - Other regulated pollutants that do not have a federally established ambient air quality standard are referred to as noncriteria pollutants. The noncriteria pollutants include: fluorides, sulfuric acid mist, and hydrogen sulfide.

Other projects in the region affecting the air quality in the vicinity of the Proposed Project include the APS Yucca Power Plant and the Yuma Cogeneration Association Plant. Both facilities are located on the west side of Yuma, approximately 25 miles west of the proposed WMGF site. Since the background concentration is estimated as the ambient concentration occurring without the influence from any specific sources, emissions from these sources are considered to be added to the background value described above.

Existing emission sources also affect the air quality in the vicinity of the Proposed Project. These sources include the emissions from the diesel electric locomotives operating along the railroad, traffic on Interstate 8 (I-8), open burning and other agricultural operations, and air pollution carried into the area from other regions. Emissions from these sources are considered to be included in the background concentrations listed in table 3.3-1.

3.3.2 Prevention of Significant Deterioration Classification

Congress established the PSD regulations to prevent significant deterioration of existing air quality. Congress established Class I areas for National Parks and Monuments, affording them special protection, and classified the remainder of the country as Class II.

Joshua Tree National Park is the nearest PSD Class I area and is located approximately 106 miles northwest of the Proposed Project. None of the tribal reservations in the ROI for this project have applied for designation as a Class I area.

Class I and Class II Areas

Class I Areas - The CAA Amendments of 1977 established mandatory Class I areas defined as national parks that exceed 6,000 acres in size existing on the date of enactment of the CAA Amendments of 1977. In accordance with the CAA, other areas of the country (as defined below) can apply to be designated as Class I areas based on the need to prevent further deterioration of the existing air quality and several factors. The CAA provides the means for the following areas to apply for, and be designated as, Class I:

1. An area that exceeds 10,000 acres in size and is a national monument, national primitive area, national preserve, national recreation area, national wild and scenic river, national wildlife refuge, national lakeshore or seashore, or
2. A national park or national wilderness area established after the date of enactment of the CAA that exceeds 10,000 acres in size, or
3. Lands within the exterior boundaries of reservations of federally recognized Indian Tribes.

Class II Areas - The CAA of 1977 established all other areas of the country as Class II areas unless re-designated.

To prevent the deterioration of air quality in these areas, increments were established to limit the allowable change that occurs after an established baseline date. The available increment is affected by formal changes at major sources (major sources are fixed emission sources that have the potential to emit 100 tons per year or more of any criteria air pollutant) after the major source baseline date. The available increment is also affected by all changes to emission sources both minor and major after the minor source baseline date. The major source baseline date was established by Congress and the minor source baseline date is established when a major source permit affects the area. For Mohave, Yuma, and La Paz counties, the minor source baseline dates are already established for PM_{10}, SO_2, and NO_2. Table 3.3-2 designates the minor source baseline date and the facility that triggered the date.

Table 3.3-2. Minor Source Baseline Date.

Pollutant	Minor Source Baseline Date	Triggering Facility
PM_{10}	7/15/98	South Point Generating Station
SO_2	3/15/99	North Star Steel
NO_2	4/10/91	Mohave Pipeline Operating Co.

Source: ADEQ 2004.

The emissions from vehicles along I-8 can consume or expand some of the Class II increment and the change in these emissions (since the minor source baseline date) was included in the dispersion modeling for comparison to the increment standards. Increment expansion occurs when emissions from an existing source are decreased.

3.3.3 Regional Classification

The Proposed Project site is located in an area classified by the PSD Program as Class II. There are four wilderness areas within the vicinity of the proposed WMGF site that are also located in Class II areas. These areas are too small to be automatically classified as Class I areas, and the managing Federal agencies have not pursued a change in classification. Even though classified as Class II, the following areas are considered sensitive relative to visibility and other indicators of air quality:

- Muggins Mountains Wilderness (approximately 3 miles north of the Proposed Project site)
- Kofa Refuge Wilderness (approximately 30 miles north of the Proposed Project site)
- Imperial Refuge Wilderness (approximately 40 miles northwest of the Proposed Project site)
- Trigo Mountains Wilderness (approximately 40 miles northwest of the Proposed Project site)

3.3.4 Climate and Meteorology

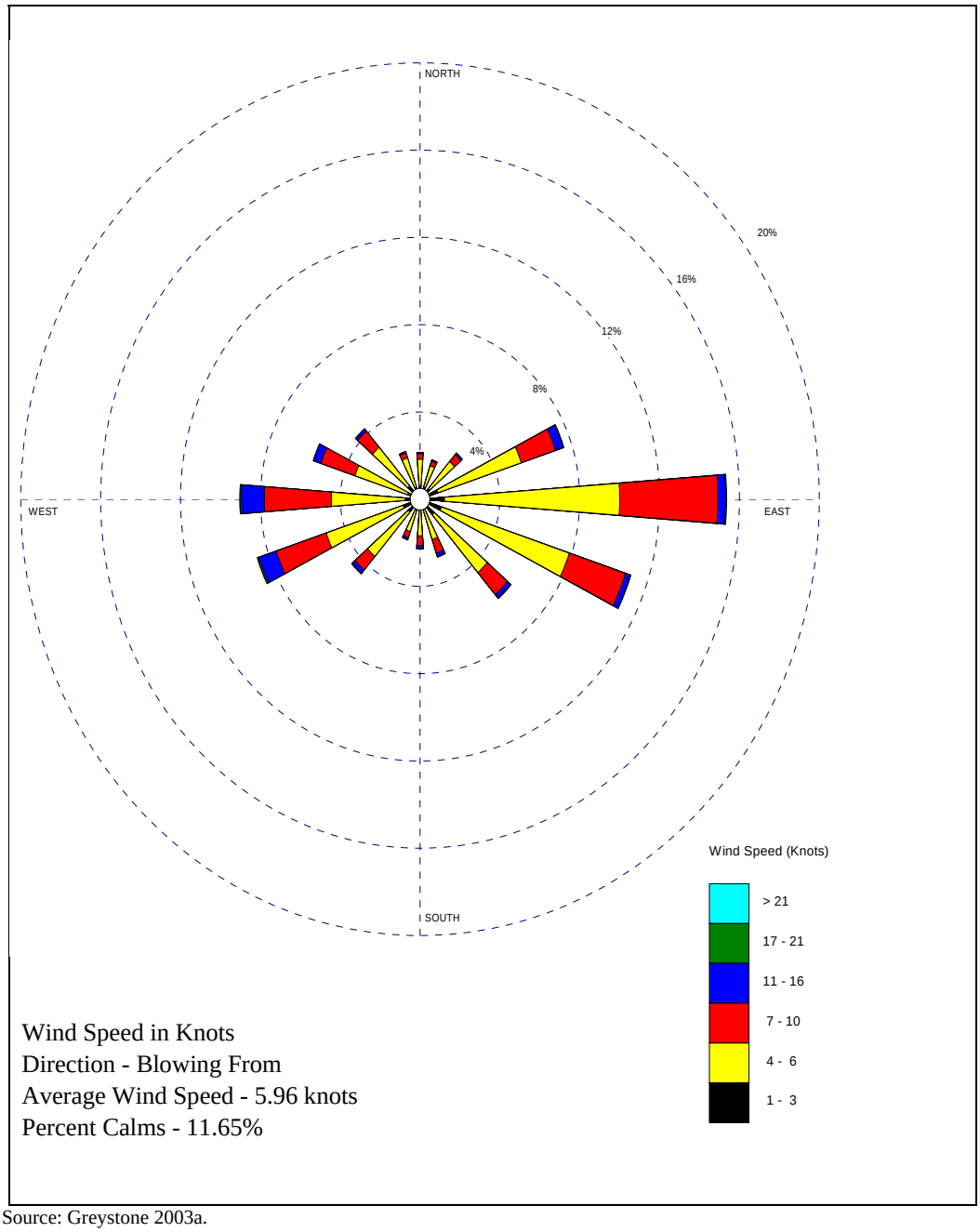
Yuma is one of the warmest and sunniest cities in the United States. It has a classic low desert climate with extremely low relative humidity and very high summer temperatures. Average summer highs exceed 100°F for 4 months; winter average maximum temperatures range from 60°F to 80°F. Yuma receives less than 4 inches of precipitation annually. This often comes in several strong showers. Although very rare, maximum rain events have exceeded 3.5 inches in 1 day (Desert 2003). Table 3.3-3 lists the climate data for Yuma, Arizona.

Table 3.3-3. Climate Data for Yuma, Arizona.

	Annual Average	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
High °F	87.9	68.7	74.4	78.9	86.3	94.2	103.3	106.6	105.3	100.5	90.3	77.4	68.5
Low °F	60.5	44.2	46.9	50.8	56.5	63.8	72.0	80.7	80.1	73.2	62.2	50.9	44.3
Avg °F	74.2	56.5	60.7	64.9	71.4	79.0	87.6	93.7	92.7	86.8	76.2	64.2	56.4
Rain (in)	3.17	0.35	0.22	0.21	0.14	0.04	0.02	0.26	0.64	0.31	0.29	0.24	0.45

Source: Desert 2003.
Note: Period of record is from 1/1948 to 7/2003.

The dispersion modeling analysis was completed based on 5 years of surface meteorological data (1987 through 1991) from Phoenix, Arizona. Meteorological data is often influenced by the general terrain in the vicinity, especially the orientation of the dominant hydrographic drainages. The Phoenix meteorological data set was selected as preferable to available data in Yuma due to the proximity of the Salt River Drainage. The Salt River, located near the Sky Harbor Airport has an orientation that is generally east/west, and is similar to the topography near the proposed WMGF site. The Yuma meteorological data is influenced by the north/south orientation of the Colorado River. In some cases, the ADEQ will request 1 year of onsite data. For this Proposed Project, however, ADEQ advised that 5 years of data collected from a location with a similarly oriented drainage, such as Phoenix, would provide sufficient representative meteorology (Hyde 2003). Figure 3.3-1 represents the wind speed and direction data.



Source: Greystone 2003a.

Figure 3.3-1. Wind Rose for Phoenix, Arizona.

3.3.5 Allowable Air Quality Deterioration Increments

Table 3.3-4 presents the maximum increment deterioration allowed under the PSD regulations for Class I and Class II areas.

Table 3.3-4. Summary of Maximum Increment Deterioration Allowed.

Pollutant	Averaging Period	Class II PSD Increment (%)	Class I PSD Increment (%)
NO_2	Annual	25	2.5
PM_{10}	24-Hour	30	8
	Annual Mean	17	4
SO_2	3-Hour	512	25
	24-Hour	91	5
	Annual	20	2

Source: 40 CFR 52.21.

3.3.6 Air Quality Regulatory Thresholds

The ADEQ requires onsite ambient air monitoring data if specific impact thresholds are exceeded. Similarly, the PSD regulations have specific requirements if potential emissions of various pollutants exceed either the significant emissions rate or the significant impact values. Emissions from existing sources are included if they are likely to effect the same areas where the Proposed Project would likely exceed the significant impact level, as shown in table 3.3-5.

Table 3.3-5. Summary of Regulatory Thresholds.

Pollutant	Averaging Period	PSD Significant Emission Rates (tons per year)	PSD Significant Impact Levels ($\mu g/m^3$)	Monitoring Threshold ($\mu g/m^3$)
NO_2	Annual	40[a]	1	14
CO	1-Hour		2,000	-
	8-Hour		500	575
	Annual	100	-	
PM_{10}	24-Hour		5	10
	Annual	15	1	-
SO_2	3-Hour		25	-
	24-Hour		5	13
	Annual	40	1	-

Source: 40 CFR 52.
[a] Total nitrogen oxides emitted, expressed as NO_2.
$\mu g/m^3$ = micrograms per cubic meter; PSD = Prevention of Significant Deterioration.

Emissions that are short term and temporary, such as the particulate that would be created during the construction activities, are not regulated by the ADEQ.

3.3.7 Global Warming (Greenhouse Gas Emissions)

The combustion of fossil fuels, including natural gas, results in the emission of carbon dioxide (CO_2) to the atmosphere. Scientific experts that believe that increased CO_2 emissions are contributing to a global temperature increase may have an adverse effect on our environment.

3.3.8 Visibility, Regional Haze, and Acid Rain

The burning of natural gas results in the emissions of pollutants that can contribute to the formation of small particles, which in turn can reduce visibility and also aid in the formation of acidic compounds in the atmosphere. Under certain circumstances, these compounds can affect the acidity of precipitation and can have negative effects on soils and vegetations. New sources with significant emissions of these pollutants (SO_2 and NO_x) are required to file a Certificate of Representation with the Acid Rain Program administered by the EPA. The purpose is to assure that the total emissions of these pollutants do not exceed specific limits. To monitor this, allowances (based on previous emission reductions) are established for emissions resulting from each new unit, and annual emission reporting is required.

Visibility impacts can be predicted using EPA-approved dispersion modeling techniques. Federal land managers have established review procedures documented in the *Federal Land Managers Air Quality Related Values Workgroup Phase I Report* (FLAG 2000), referred to as the FLAG report. Basically, this document indicates that Federal land managers are not likely to object to the visibility impacts associated with a proposed project if the change in extinction (reduction of visual range) is less than 5 percent. The EPA has proposed regulations that are intended to reduce the formation of fine particulates that can contribute to regional haze. At this time, regional haze regulations are not final.

3.3.9 Hazardous Air Pollutants

Fossil fuels combustion can result in the emission of hazardous air pollutants (HAPs). HAPs expected to be emitted as a result of the combustion of natural gas are as follows:

- 1,3 Butadiene
- Acetaldehyde
- Acrolein
- Benzene
- Ethlybenzene
- Formaldehyde
- Napthalene
- Polycyclic aromatic hydrocarbons (PAH) (as Benzo(a)pyrene)
- Propylene Oxide
- Toluene
- Xylene

In addition, ammonia, which is not classified as a HAP, is a hazardous material that would be emitted by the proposed WMGF. The ammonia would be used to reduce other potential air pollutants, but some unreacted ammonia would escape.

3.4 BIOLOGICAL RESOURCES

The ROI for assessing direct and indirect impacts to vegetation is the area that would be directly disturbed by construction and operation of the Proposed Project. Vegetation would be affected only in the immediate area of disturbance from construction and operation. The ROI for assessing impacts to wildlife extends 0.5 mile beyond the areas of construction and operation because some wildlife species could be affected within this larger area.

3.4.1 Vegetation

Vegetation in the ROI consists mostly of desertscrub communities growing on a typical desert landscape with some areas of desert pavement, washes, and sand deposits. Wetlands and riparian areas are present along the Gila River. Extensive agricultural lands are adjacent to the ROI in Dome Valley.

3.4.1.1 *Wellton-Mohawk Generating Facility*

The proposed WMGF would be located within the creosote bush-white bursage (*Larrea tridentata–Ambrosia dumusa*) community type, the most arid and widespread Sonoran desertscrub community in Arizona (Brown 1982, Brown 1994). This community is characterized by a sparse, open shrub canopy of creosote bush and white bursage (figure 3.4-1 [all referenced vegetation figures are grouped at the end of section 3.4]). Other common species also present at low densities include brittlebush (*Encelia farinosa*), mesquite (*Prosopis sp.*), big galleta grass (*Hilaria rigida*), and ocotillo (*Fouquieria splendens*). In dry washes, the diversity of shrubs increases. Common species include catclaw acacia (*Acacia greggii*), paloverde (*Cercidium floridum*), smoketree (*Psorothamnus spinosa*), and ironwood (*Olneya tesota*). Existing disturbance at the proposed WMGF site is considerable because of its past uses (section 2.2.1.1).

A regionally endemic shrub, dyeweed (*Psorothamnus emoryii*) is present on the proposed WMGF site. Dyeweed is host to a rare parasitic plant (*Pilostyles thurberi*) (BLM 2003b). Field surveys of the proposed WMGF site and adjacent areas (appendix E) found *Pilostyles thurberi* parasitizing 86 dyeweed plants at four locations on the proposed WMGF site. About 25 percent of the dyeweed plants hosting *Pilostyles thurberi* were dead, presumably as a result of parasitism. Dyeweed surveys conducted outside of the proposed WMGF site found *Pilostyles thurberi* to be abundant at five of the six sites surveyed (appendix E).

Dyeweed is rather common in southeastern California, Arizona, and adjacent Mexico. However, *Pilostyles thurberi* parasitized dyeweed has only been reported in a few areas (Reiser 1994). *Pilostyles thurberi* is not listed as a sensitive species by the Bureau of Land Management (BLM) nor is it protected under the Arizona Native Plant Law (ARS 2003b); however, BLM indicates that its status needs to be reevaluated because of its rarity and vulnerability due to development in the ROI. Reiser's 1994 treatise shows *Pilostyles thurberi* to be found in the Superstition Mountains in Arizona and several locations in Southern California plus Sonoran, Mexico, and he indicated that there may be many other populations because the plant is ". . . a minute cryptic species which may not superficially appear to be a flowering plant. . . . its cryptic nature allows it to be readily overlooked" (Reiser 1994).

Most of the desert plants in Arizona fall into one of five groups protected from theft, vandalism, and unnecessary destruction under the Arizona Native Plant Law. This includes all of the cacti,

most of the trees, and many of the smaller plants. Protected plants can be removed only with permits from the Arizona Department of Agriculture. All plants protected under the Arizona Native Plant Law must be salvaged if they would be destroyed by the Proposed Project. Five categories of protected native plants are:

Highly safeguarded native plants - Plants whose prospects for survival in the state are in jeopardy or which are in danger of extinction throughout all or a significant portion of their ranges, and those native plants that are likely in the foreseeable future to become jeopardized or in danger of extinction throughout all or a significant portion of their ranges.

Salvage restricted plants - Plants that are not included in highly safeguarded category but are subject to high potential for damage by theft or vandalism.

Export restricted plants - Plants that are not included in the highly safeguarded category but are subject to over depletion if their exportation from the state is permitted.

Salvage assessed plants - Plants that are not included in the highly safeguarded or salvage restricted categories but have sufficient value if salvaged to support the cost of salvage tags and seals.

Harvest restricted plants - Plants not included in the highly safeguarded category but are subject to excessive harvesting or overcutting because of the intrinsic value of their byproducts, fiber, or woody parts.

3.4.1.2 *Facility Natural Gas Pipeline*

The proposed 12.7-mile natural gas pipeline would be constructed primarily within WMIDD's existing Wellton-Mohawk Canal ROW, from the proposed WMGF site to the intersection with Highway 95. The Wellton-Mohawk Canal ROW contains areas of mesquite and tamarisk on sites with higher moisture content on the floodplain of the Gila River, and desertscrub communities on upland sites. Construction and maintenance activities associated with the Wellton-Mohawk Canal have disturbed habitats along this route. There are large spoil banks located along both sides of the Wellton-Mohawk Canal from construction and maintenance of the canal. By regulation, the pipeline must be buried in undisturbed soil; therefore, it would be located far enough away from the canal to avoid the spoil piles.

3.4.1.3 *Transmission System Additions*

Western's existing Ligurta-Gila Transmission Line traverses the Gila Mountains west over Telegraph Pass. The creosotebush-white bursage desertscrub community characterizes the area. Desertscrub communities consist primarily of Sonoran Desert-adapted shrubs and trees such as brittlebush, white bursage, creosotebush, ironwood, foothill paloverde (*Cercidium microphyllum*) and saguaro (*Carnegiea giganteus*). The elephant tree (*Bursera microphylla*), a species listed as Highly safeguarded under the Arizona Native Plant Law, grows at Telegraph Pass (BLM 2003b). No elephant trees were found during a survey of the ROW; however, one tree was found in the vicinity of the ROW.

The existing Ligurta-Gila Transmission Line is adjacent to I-8. Habitat along the existing transmission line ROW contains areas of disturbance, associated primarily with transmission

towers, access roads, and I-8. The proposed upgrades would occur within the existing transmission line ROW.

The proposed Ligurta-North Gila ROW crosses desert pavement and desertscrub communities (figures 3.4-1 and 2) along the foothills of the Gila Mountains. At the point where the existing Ligurta-Dome Tap Transmission Line crosses the Gila River (figure 3.4-3), the proposed transmission line would leave the existing ROW and continue west for approximately 1 mile to an existing WMIDD firebreak along the Wellton-Mohawk Canal and the Gila River.

Habitat within the 600-foot-wide Gila River channel consists of terraces of increasing moisture content with plants adapted to wetland growing conditions on the lowest terraces in the river channel. Riparian vegetation includes tamarisk (*Tamarix* spp.), cottonwood (*Populus fremontii*), willow (*Salix* spp.), honey mesquite (*Prosopsis glandulosa*), arrow weed (*Terraria sericea*), and desert broom (*Baccharis sarothroides*). Common reed (*Phragmites australis*), cattail (*Typha dominguensis*), and flat sedges (*Cyperus* spp.) are the most abundant vegetation within the wet low-flow channel. This low-flow channel is approximately 250 feet wide and runs perennially from Dome, which is located about 0.5 mile upstream from the proposed transmission line crossing of the river, to the confluence with the Colorado River. The Gila River has a major diversion approximately 90 miles upstream from Dome, and the channel would be dry except for the agricultural return flows from water imported from the Colorado River. Most, if not all, wetland vegetation along the Gila River may occur because of wet conditions caused by the return flows of Colorado River agricultural diversions. Without irrigation return flows, natural flows in this channel would run only intermittently during flood events. The low flow channel is periodically cleared of all vegetation by WMIDD as part of the USACE's ongoing Gila River Channel Project. Only existing willows and cottonwoods are left undisturbed.

The new ROW between the Gila River crossing and North Gila Substation would cross the Laguna foothills through the creosote bush-white bursage-desertscrub community.

The BLM has a regulatory requirement to determine the health of the public rangelands and assess the impact of any authorized projects on public land health. BLM was contacted and reported that BLM lands in the vicinity of the Proposed Project meet the Arizona BLM's public land health standards (BLM 2005).

3.4.2 Noxious Weeds

Noxious weeds are invasive plants, usually not indigenous, that spread aggressively and replace desirable native vegetation. Noxious weeds often invade sites where the native vegetation and soils were removed or disturbed. The Arizona Noxious Weed Law (ARS 2004) lists noxious weeds for the state (table 3.4-1) and authorizes actions that may be necessary to control, suppress or eradicate noxious weeds. Invasive species, including noxious weeds, are also addressed as an alien species in Executive Order (EO) 13112 *Invasive Species*. This EO directs Federal agencies to prevent introduction of invasive species; provide for their control; and minimize economic, ecological, and human health impacts. Under this EO, Federal agencies cannot authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species, unless all reasonable measures to minimize risk of harm have been analyzed and considered.

A noxious weed survey conducted on the proposed pipeline ROW on March 18, 2004, found three noxious weed species on the pipeline ROW and one in the Wellton Mohawk Canal (table 3.4-1) (Graystone 2004b). The three noxious weed species found on the pipeline ROW are located throughout the area. The noxious weed found in the Wellton Mohawk Canal, Giant Salvinia (*Salvinia molesta)* is currently being removed by WMIDD and Reclamation to prevent clogging of the canal. The noxious weed survey for the transmission line would be done in conjunction with the BLM permitting for the transmission line ROW. Noxious weeds observed on the pipeline ROW, and the complete Arizona Noxious Weed List is shown in table 3.4-1. Tamarisk (Tamarisk sp.) is considered an invasive noxious weed in many western states, but has not been so classified in Arizona.

Table 3.4-1. Arizona Noxious Weeds.

Scientific Name	Common Name	Noxious Weeds Observed on Pipeline Right-of-Way	Noxious Weeds Potentially Present in Yuma County
Acroptilon repens	Rusian knapweed		X
Aegilops cylindrica	Jointed goat grass		X
Alhagi pseudalhagi	Camelthorn	X	
Alternanthera philoxeroides	Alligator weed		
Cardaria pubescens	Hairy whitetop		X
Cardaria chalapensis	Lens podded hoary cress		
Cardaria draba	Globed-podded hoary cress (white top)		X
Carduus acanthoides	Plumeless thistle		
Cenchrus echinatus	Southern sandbur		X
Cenchrus incertus	Field sandbur		
Centauria calcitrapa	Purple starthistle		
Centaurea iberica	Iberian starthistle		
Centaurea squarrosa	Squarrose knapweed		
Centaurea sulphurea	Sicilian starthistle		
Centaurea solstialis	Yellow starthistle (St. Barnaby's thistle)		X
Centaurea diffusa	Diffuse knapweed		X
Centaurea maculosa	Spotted knapweed		X
Chondrilla juncea	Rush skeletonweed		
Cirsium arvense	Canada thistle		X
Convolvulus arvensis	Field bindweed		X
Coronopus squamatus	Creeping watercress (coronopus)		X
Cucumis melo var. dudaim	Dudiam melon (Queen Anne's melon)		
Cuscuta spp.	Dodder		X
Drymaria arenarioides	Alfombrilla (lightningweed)		X
Eichornia azurea	Anchored waterhyacinth		X
Eichornia crassipes	Floating waterhycinth		X
Elytrigia repens	Quackgrass		X
Euphorbia esula	Leafy spurge		X
Euryops subcarnosus sbsp. Vulguris	Sweet resinbush		
Halogeton glomeratus	Halogeton		X
Helianthus ciliaris	Texas blueweed		X

Table 3.4-1. Arizona Noxious Weeds. (*continued*)

Scientific Name	Common Name	Noxious Weeds Observed on Pipeline Right-of-Way	Noxious Weeds Potentially Present in Yuma County
Hydrilla verticillata	Hydrilla (Florida-elodea)		X
Isatis tinctoria	Diars woad		X
Linaria genistifolia var. dalmatica	Dalmation toadflax		X
Medicago polymorpha	Purple loosestrife		X
Nassella trichotoma	Burclover		X
Onopordum acanthium	Scotch thistle		X
Orobanche ramosa	Branched broomrape	X	
Panicum repens	Torpedo grass		
Peganum harmala	African Rue (Siberian rue)		X
Portulaca oleracea	Common purslane		X
Rorippa austriaca	Austrian fieldcress		
Salvinia molesta	Giant salvinia	X*	
Senecio jacobaea	Tansy ragwort		
Solanum carolinense	Carolina horsenettle		X
Sonchus arvensis	Perennial sowthistle		
Solanum viarum	Tropical soda apple		
Stipa brachychaeta	Puna grass		X
Striga spp.	Witchweed		
Trapa natans	Water-chestnut		
Tribulus terrestris	Punctureveine	X	

Source: ADA 2004. * Occurs in the Wellton-Mohawk Canal.

3.4.3 Wildlife

Wildlife habitat in the ROI includes sparse, dry Sonoran desertscrub communities on flat, upland areas, desert pavement, dry washes with a higher diversity of tall shrubs, and riparian-wetland complexes along the Gila River. Common wildlife species known, or likely to be present, in the ROI are listed in table 3.4-2. Scientific names related to the wildlife and special status species are included in tables 3.4-2 through 3.4-4 that follow.

Table 3.4-2. Common Wildlife Species Known or Likely to be Present in the Region of Influence.

Common Name	Scientific Name
Mammals	
Coyote	*Canis latrans*
Blacktailed jackrabbit	*Lepus californicus*
Desert cottontail	*Sylvilagus auduboni*
Merriam's kangaroo rat	*Dipodomys merriami*
White-throated woodrat	*Neotoma albigula*
Raccoon	*Procyon lotor*
Arizona cactus mouse	*Peromyscus eremicus*
Round-tailed ground squirrel	*Spermophilus tereticaudus*

Table 3.4-2. Common Wildlife Species Known or Likely to be Present in the Region of Influence (*continued*).

Common Name	Scientific Name
Birds	
Gambel's quail	*Callipepla gambelii*
Roadrunner	*Geococcyx californianus*
White-winged dove	*Zenaida asiatica*
Turkey vulture	*Cathartes aura*
Snowy egret	*Egretta thula*
Great egret	*Ardea albus*
Osprey	*Pandion haliaetus*
Golden eagle	*Aquila chrysaetos*
Red-tailed hawk	*Buteo jamaicensis*
Mourning dove	*Zenaida macroura*
LeConte's thrasher	*Toxostoma lecontei*
Northern mockingbird	*Mimus polyglottos*
Lesser nighthawk	*Chordeiles acutipennis*
Cactus wren	*Campylorhynchus brunneicapillus*
Black-tailed gnatcatcher	*Polioptila melanura*
Phainopepla	*Phainopepla nitens*
Black-throated sparrow	*Amphispiza bilineata*
Reptiles and Amphibians	
Gopher snake	*Pituophis melanoleucus*
Western diamond back rattlesnake	*Crotalus atrox*
Western whiptail	*Cnemidophorus tigris*
Common kingsnake	*Lampropeltis getulus*
Woodhouse's toad	*Bufo woodhousei*

Source: Brown 1982 and Elliot 2003.

3.4.4 Fisheries

Although there are no managed fisheries in the ROI, there are viable fish populations in the Gila River and Wellton-Mohawk Canal. No fishery surveys have been conducted for these waters and fishing is not encouraged; however, recreational fishing does take place (AGFD 2003d). Fish present, in the canal and/or the segment of the Gila River west of Dome, include striped mullet (a land-locked ocean fish that survives in the Gila River due to increased salinity from irrigation return flows), bluegill, gambusia, tilapia, carp, largemouth bass, channel catfish, and striped bass.

3.4.5 Special-Status Plants

Special-status plants that may occur in the ROI were identified through databases of the Arizona Game and Fish Department (AGFD), BLM, and U.S.Fish and Wildlife Service (USFWS) (AGFD 2001, AGFD 2003a, Wellton-Mohawk 2003d). Based on habitat features of the ROI, and habitat affinities of special-status plants, sand food, Schott's wire-lettuce, blue sand lily, and scaly sandpoint have the potential to occur in the ROI (table 3.4-3). All of these species are associated with windblown sand deposits in the Yuma Desert (figure 3.4-4). Windblown sand deposits are present on the proposed WMGF site and on the southern portion of the transmission line and pipeline routes. These deposits are one to 3 feet deep, deposited over coarse gravel. The AGFD's Heritage Data Management System (2001 and 2003) records indicate that Schott's wire-lettuce and blue sand lily have been found on sand deposits on or within 3 miles of the Proposed Project. Scaly sandpoint is not known to occur in Yuma County, but suitable habitat is

present at the proposed WMGF site and adjacent areas. Sand food is known to occur in southern Yuma County along the Mexican border (Reclamation 2000). Elephant tree is another special-status plant that occurs in the ROI. Its preferred habitat is rocky dry slopes of desert mountains. Field surveys were conducted, and only one elephant tree was found near Telegraph Pass. However, it was located outside of the Ligurta to Gila Transmission Line ROW.

Table 3.4-3. Special-Status Plant Species That May Occur in the Region of Influence.

Common Name	Scientific Name	Status	Habitat
Sand food	*Pholisma sonorae*	S, HS	Sandy soil in low desertscrub; up to 1,000 feet elevation; flowers April – June
Schott wire-lettuce	*Stephanomeria schottii*	S	Sandy desert in dunes or unstabilized sand; 400 to 800 feet elevation; flowers mid-March to mid-May
Blue sand lily	*Triteleiopsis palmeri*	S, SR	Sand dunes in creosote desertscrub; 250 to 1,600 feet elevation; flowers February – May
Scaly sandpoint	*Pholisma arenarium*	HS	Sand dunes, associated with roots of shrubs; elevations below 1,000 feet
Elephant tree	*Bursera microphylla*	HS	Sonoran desertscrub, on alluvial fans, and rocky talus slopes. Known from Telegraph Pass, Gila Mountains

HS = Arizona Native Plant Law - highly safeguarded; S = BLM – sensitive; SR = Arizona Native Plant Law - salvage restriction.

3.4.6 Special-Status Animals

Special-status animals that may occur in the ROI were identified through databases of the AGFD (AGFD 2001, AGFD 2003a), BLM, USFWS (Wellton-Mohawk 2003d), and Western Area Power Administration's (Western) Biological Assessment (Western 2003d). Based on habitat features of the ROI and habitat affinities, special-status animals that may occupy the ROI are listed in table 3.4-4.

Table 3.4-4. Special-Status Animal Species That May Occur in the Region of Influence.

Common Name	Scientific Name	Status	Habitat
	Mammals		
Sonoran pronghorn	*Antilocapra americana sonoriensis*	E, WSC	Sonoran desert and mountain valley grasslands; with mixed desertscrub
Spotted bat	*Euderma maculatum*	S, WSC	Dry desertscrub and riparian areas, often near cliffs and water
California leaf-nosed bat	*Macrotus californicus*	S, WSC	Desertscrub, roosts in mines, caves, and rocks
Cave myotis (bat)	*Myotis velifer*	S	Desertscrub, roosts in caves, mines, under bridges, and buildings, usually near water
Small-footed myotis (bat)	*Myotis ciliolabrum*	S	Breeds and roosts in caves, rock crevices, and mines
Fringed myotis (bat)	*Myotis thysanodes*	S	Desertscrub and riparian areas; roosts in caves and buildings
Arizona myotis (bat)	*Myotis lucifugus occultus*	S	Near permanent water, usually riparian forest

Table 3.4-4. Special-Status Animal Species That May Occur in the Region of Influence (*continued*).

Common Name	Scientific Name	Status	Habitat
	Birds		
Southwestern willow flycatcher	*Empidonax trailii extimus*	E, WSC	Riparian areas with dense mesquite, cottonwood, willow, or tamarisk
Yuma clapper rail	*Rallus longirostris yumanensis*	E, WSC	Marshes with dense vegetation; requires mudflats, sandbars, and woody vegetation for nesting
Bald eagle	*Haliaeetus leucocephalus*	T, WSC	Winters along rivers and reservoirs with abundant prey or carrion and large trees or cliffs
Cactus ferruginous Pygmy-owl	*Glaucidium brasilianum cactorum*	E, WSC	Riparian areas with dense mesquite, cottonwood, or willows and Sonoran desertscrub
California brown pelican	*Pelicanus occidentalis*	E	Pacific coast and islands; winter transient on lower Colorado River
California black rail	*Laterallus jamaicensus conturniculus*	WSC	Marshes associated with the Colorado River
White-faced ibis	*Plegadis chihi*	S	Marshes and flooded fields
Great egret	*Ardea alba*	WSC	Marshes, nests in trees and shrubs
Loggerhead shrike	*Lanius ludovicianus*	S	Desert scrub and riparian vegetation
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	C, WSC	Riparian areas with dense mesquite, cottonwood, or willow
Western least bittern	*Ixobrychus exilis hesperis*	WSC	Marshes and wetlands
Snowy egret	*Egretta thula*	WSC	Marshes; nests in trees and shrubs
Western burrowing owl	*Athene cunicularia hypugea*	S	Treeless plains and desert with burrows made by rodents and badgers; nests in burrows underground
	Fish		
Razorback sucker	*Xyrauchen texanus*	E, WSC	Rivers and lakes, generally not in fast-moving water; Lower Colorado River and reservoirs
	Amphibians and Reptiles		
Desert rosy boa	*Charina trivirgata*	S	Rocky desert shrublands
Sonoran desert tortoise	*Gopherus agassizii*	WSC	Sonoran desertscrub with rock crevices and loose soil
Flat-tailed horned lizard	*Phrynosoma mcallii*	WSC	Sandy areas in desertscrub west of Gila Mountains
Cowles fringe-toed lizard	*Uma notata rufopuntata*	S, WSC	Fine sand deposits west of Gila Mountains
Mojave fringe-toed lizard	*Uma scoparia*	WSC	Fine sand deposits (dunes and sandy plains)
Banded Gila monster	*Heloderma suspectum suspectum*	WSC	Desertscrub communities with gravelly or sandy soil
Lowland leopard frog	*Rana yavapaiensis*	WSC	Streams and wetlands
	Invertebrates		
Cheeseweed moth lacewing	*Oliarces clara*	S	Creosotebush communities. Known from Telegraph Pass, Gila Mountains
MacNeill sooty wing skipper	Hesperopsis gracielae	S	Feeds only on quailbush (*Atriplex lentiformis*)

E = endangered under ESA; S = BLM sensitive; T = threatened under the ESA; WSC = Arizona State Wildlife Species of Concern.
C = candidate under the ESA

Special-status animal species listed in table 3.4-4 include the following seven species listed under the Endangered Species Act of 1973 (ESA): California brown pelican (endangered), cactus ferruginous pygmy-owl (endangered), razorback sucker (endangered), Sonoran pronghorn (endangered), Yuma clapper rail (endangered), southwestern willow flycatcher (endangered), and the bald eagle (threatened). The western yellow-billed cuckoo is a candidate for listing under the ESA.

Sonoran pronghorn (Endangered)

The Sonoran pronghorn was historically distributed in Sonoran desertscrub and grassland habitats in southwestern Arizona, California, and adjacent Mexico. The range of the Sonoran pronghorn has been greatly reduced by habitat alteration and fragmentation from highways, irrigation canals, residential areas, and other impediments to movement. Currently, kidding areas have been documented south of I-8 in the Mohawk Dunes and the foothills of the Sierra Pinta, Mohawk, Bates, Growler, and Puerto Blanco mountains. I-8 is a significant movement barrier to the pronghorn and there have been no documented occurrences north of I-8 since 1990 (Western 2003d). Critical habitat has not been designated for the Sonoran pronghorn.

The ROI north of I-8 is characterized as poor habitat for the pronghorn. With the exception of the Wellton-Mohawk Canal and Gila River crossing, approximately 7 miles north of I-8, the ROI offers little forage, no free water, and no physiographic features that provide thermal cover. It is unlikely that existing conditions within the ROI would attract Sonoran pronghorn across I-8 into the northern portion of the ROI.

Bats (BLM Sensitive and/or Arizona Species of Concern)

Six special-status bat species may occur in the ROI (as listed in table 3.4-4). These species typically roost in abandoned mines, caves, rock crevices, buildings, and under bridges. Most forage for insects over a diversity of habitats, but some also feed on nectar. Water bodies provide drinking water for bats; riparian areas and wetlands are productive sources of insects, the primary food of most bats in the ROI. Rock crevices and caves, suitable as day roosts and hibernacula for bats, are present in the Gila Mountains bordering the western edge of the project. Suitable day roosts may also be present under highway and railroad bridges near the Proposed Project site to Dome Tap. The AGFD Heritage Data Management System (AGFD 2003a) indicates that the California leaf-nosed bat has been documented on, or within, 3 miles of the ROI.

Southwestern willow flycatcher (Endangered)

The southwestern willow flycatcher breeds in riparian areas along rivers, streams, or other wetlands where dense trees and shrubs are found near surface water or underlain by saturated soil. Historical records indicate the former range of the southwestern willow flycatcher in Arizona included portions of all major river systems (Colorado, Salt, Verde, Gila, Santa Cruz, and San Pedro rivers) and major tributaries, such as the Little Colorado River and headwaters, and White River. Critical habitat has not been designated for the flycatcher; however, USFWS published Proposed Critical Habitat in the *Federal Register*, dated October 12, 2004 (64 FR 60705). None of the proposed critical habitat is within the ROI.

The AGFD Heritage Data Management System (AGFD 2003a) indicates that the southwestern willow flycatcher has been documented on or within 3 miles of the ROI; however, recent surveys (May, June, and July 2003) by the AGFD (appendix B – Supporting Materials #2) did not detect any willow flycatchers. The AGFD determined that habitat along the Gila River is not potential southwestern willow flycatcher habitat because of the low stature of the vegetation, absence of moist soil within the tree patches, and absence of other resident willow flycatchers in the area.

Yuma clapper rail (Endangered)

Yuma clapper rail habitat includes both freshwater and brackish marshes with dense vegetation. Nesting is typically from March through early July. Nests are constructed in marsh vegetation at the edge of the water. Crayfish are their primary prey.

Yuma clapper rails have been documented to nest within the ROI in wetlands along the Gila River (appendix B – Supporting Materials #2). Recent studies (May 30, 2003) conducted by the AGFD identified a breeding pair of Yuma clapper rails in a strip of tall cattails on the south side of the Gila River channel, about 100 feet downstream from the existing power line crossing of the river. The strip of habitat used by this pair of rails includes the area immediately under the existing power line.

Bald eagle (Threatened, Proposed for Delisting)

Bald eagles nest near open waters, including coastal areas, estuaries, inland waters, and some arid regions of the western and southwestern regions of the United States. There is a small resident breeding population in central Arizona. A wintering population of bald eagles is found in central and northern Arizona, including the Colorado River. Bald eagle wintering habitats generally have adequate food supplies, perches and/or roosts and are isolated from human activities. Perches are generally near open water with tall trees or cliffs. There are no known records of bald eagles nesting or wintering in the ROI. Critical habitat has not been designated for the bald eagle.

Cactus ferruginous pygmy-owl (Endangered)

The range of the cactus ferruginous pygmy-owl is limited to Sonoran desertscrub and riparian habitats below 4,000 feet elevation in central and southern Arizona. The majority of observations in Arizona are from the northwestern Tucson area, Organ Pipe National Monument, and the Altar Valley. The ROI is not within the current range of the owl according to the Draft Recovery Plan (USFWS 2003) for the species. Riparian habitats in the ROI along the Gila River are marginally suitable for the cactus ferruginous pygmy-owl because of the plant species composition and vegetation structural diversity. Critical habitat has been designated for the owl; however, none is located within the ROI. No cactus ferruginous pygmy-owls have been documented in the ROI, and they are unlikely to be present.

California brown pelican (Endangered)

The range of the California brown pelican is generally along the lower Colorado River and on coastal islands, but may occasionally be found on Colorado River reservoirs. The ROI does not include suitable nesting or foraging habitat for this species; however, it may pass through the ROI.

California black rail and western least bittern (Arizona Species of Concern)

Suitable nesting habitat for the California black rail and western least bittern may be present in the riparian vegetation and wetlands associated with the Gila River. Breeding habitat for California black rails is similar to that used by Yuma clapper rails. The best habitats for California black rails are estuaries and marshes along the California coast; however, there are a few records for this species at inland locations in California and Arizona along the Colorado River. Population numbers in the mid-1970s were estimated at 100 to 200 individuals for the area between the Imperial National Wildlife Refuge, California, and Mittry Lake, Arizona (Reclamation 2000). No California black rails have been documented in the ROI. Least bitterns nest and forage in riparian and wetland habitats but have not been documented in, or near, the ROI.

Great egret (Arizona Species of Concern), snowy egret (Arizona Species of Concern), and white-faced ibis (BLM Sensitive Species)

The great egret and snowy egret are present in the ROI in riparian and wetland habitats along the Gila River and in adjacent agricultural areas. Egrets are colonial breeders, usually constructing nests in trees or shrubs, but sometimes on the ground. These species were observed foraging along the perennial channel of the Gila River in July 2003 (figure 3.4-5), but no nests were observed. They appeared to selectively feed in areas along the river channel that had been disked to remove vegetation. The exposed mudflats and open water created by the semi-annual vegetation removal were commonly frequented by both species of egret, where they forage for fish and invertebrates.

Transient wintering white-faced ibises are present along the Gila River, where they forage in wetlands, riparian areas, and agricultural areas. They feed on crayfish, other invertebrates, and small fish. Ibises are gregarious, often feeding in flocks with other ibises, herons, and egrets (Sibley 2001). They are not known to nest in the ROI.

Loggerhead shrike (BLM Sensitive Species)

Suitable nesting and foraging habitat for this species is present in the ROI (Wellton-Mohawk 2003d). This species typically occupies open habitats, where it perches on shrubs, trees, and other elevated structures. It preys on small birds, insects, lizards, and small mammals. Field surveys in July 2003 documented the presence of loggerhead shrikes on the Proposed Project site along the proposed new transmission line ROW in desertscrub habitat.

Western yellow-billed cuckoo (Candidate)

The western yellow-billed cuckoo breeds and forages in dense riparian shrub and tree communities dominated by cottonwoods and willows. Marginally suitable habitat may exist for the yellow-billed cuckoo along the low-flow channel of the Gila River, west of the existing Western 161-kV transmission line river crossing. However, this species is not expected to occur due to the low density of cottonwood/willow communities and lack of heavily vegetated areas adjacent to riparian or mesquite woodlands that may serve as alternative habitat.

Western burrowing owl (BLM Sensitive Species)

Western burrowing owls are present in the ROI in areas with rodent burrows, in which this owl typically nests. Burrowing owls nest in the spoil piles deposited along the Wellton-Mohawk Canal from construction and periodic maintenance activities (Greystone 2003b); however, nest numbers and locations have not been recorded.

Razorback sucker (Endangered)

In southwestern Arizona, isolated populations of the razorback sucker occur in the lower Colorado River and reservoirs. Historically, the razorback sucker was also present in the Gila River, but has not been documented for many years due to habitat modifications that have greatly altered flows and habitats within the Gila River. There is no designated critical habitat for the razorback sucker in the ROI.

Desert rosy boa (BLM Sensitive Species)

The desert rosy boa inhabits rocky shrublands and deserts, and does not require permanent water. It is chiefly nocturnal, feeding on small mammals and birds. The desert rosy boa has been documented on or within 3 miles of the ROI (AGFD 2003a). Habitat within, and adjacent to, the ROI is suitable for this species.

Sonoran desert tortoise (Arizona Species of Concern)

Marginally suitable habitat for the Sonoran desert tortoise is present in the creosote bush-white bursage community, adjacent to the lower slopes of the Gila Mountains. In the Sonoran Desert, tortoises tend to live on steep, rocky hillsides in palo verde and saguaro cactus communities. To avoid extremes of heat and cold, the desert tortoise digs underground burrows. The Sonoran desert tortoise spends about 95 percent of its life in burrows. Desert tortoises are generally active March 1 through November 1. Desert tortoises, or their burrows, were not observed during reconnaissance studies nor have they been recorded within 3 miles of the ROI based on data provided by the AGFD Heritage Data Management System.

Flat-tailed horned lizard (Arizona Species of Concern), Cowles fringe-toed lizard (BLM Sensitive Species and Arizona Species of Concern), and Mojave fringe-toed lizard (Arizona Species of Concern)

The flat-tailed horned lizard is restricted to desert habitats with loose, fine, windblown sand deposits (figure 3.4-4). It is rare on large dunes, usually occurring around packed sand or desert pavement overlain with fine blown sand. It is commonly associated with creosote bush and white bursage.

The AGFD Heritage Data Management System (AGFD 2003b) indicates that the flat-tailed horned lizard has been documented on or within 3 miles of the Proposed Project. It is known to occur in the ROI only west of the Gila Mountains (AGFD 2003c). Suitable habitat (i.e., wind-blown sand deposits) for the flat-tailed horned lizard is present on the northern one-third of the proposed WMGF site, extending into adjacent areas for about 1 mile. Field surveys indicate that the proposed transmission line route extending west of the Gila Mountains to the North Gila Substation does not traverse suitable habitat for this species.

The Cowles fringe-toed lizard and Mojave fringe-toed lizard have not been recorded in the ROI, but have been recorded west of the Gila Mountains in the Yuma Dunes (Reclamation 2000). The dunes on the proposed WMGF site and along the southern part of the proposed new transmission line and pipeline may be suitable for these species; however, these sand dunes are isolated, occupy a relatively small area (about 20 to 30 acres in the ROI), and are not continuous with the Yuma Dunes.

Banded Gila monster (Arizona Species of Concern)

The range of the banded gila monster includes western Arizona, southeastern Nevada, southwestern Utah, and southeastern California (Stebbins 1985). This large lizard typically inhabits areas with desertscrub vegetation but also can be found in riparian areas. It spends a lot of time in underground burrows, which it excavates or appropriates from other animals. This species has not been documented in the ROI, but there is suitable habitat in the ROI, and the ROI is within the range of the species.

Lowland leopard frog (Arizona Species of Concern)

Suitable habitat for this species may be present in wetland habitats associated with the Gila River; however, its presence has not been documented. Semi-annual vegetation removal activities along the channel and lower floodplains of the Gila River as a flood control measure (i.e., removal of tamarisk and other vegetation to allow unimpeded flood flows) probably limits habitat values for leopard frogs in the ROI.

Cheeseweed moth lacewing and MacNeill sooty wing skipper (BLM Sensitive Species)

The cheeseweed moth lacewing, closely associated with creosote bush, has been documented in Yuma County. Larvae of this insect inhabit the root mass of creosote bush. Although infrequently observed, the moth lacewing may exist at many undocumented sites in the arid southwest. The fleeting, localized nature of adult emergence complicates efforts to assess the population status of the species. Suitable habitat for this species is present in the ROI. In 1983, this species was collected at Telegraph Pass in the Gila Mountains (Reclamation 2000).

The MacNeill sooty wing skipper, a butterfly, has not been documented in the ROI; however, it is associated with desertscrub plant communities, where the larvae feed only on quailbush (*Atriplex lentiformis*). Being obligately linked to quailbush as a food source, the MacNeill sooty wing skipper occurs only where this plant is present. Quailbush is common in the ROI (Wellton-Mohawk 2001b). The MacNeill sooty wing skipper has been recorded at one location in California and at one site in Cochise County, Arizona (Reclamation 2000).

Figure 3.4-1. Desertscrub Community on Wellton-Mohawk Generating Facility Site.

Figure 3.4-2. Typical Desert Pavement on Transmission Line Route.

Figure 3.4-3. Transmission Line Crossing of Gila River.

(Note: Disturbance is caused by clearing of riparian vegetation for river channel maintenance.)

Figure 3.4-4. Low Sand Dunes on Wellton-Mohawk Generating Facility Site.

Figure 3.4-5. Egrets Feeding in Gila River.

3.5 CULTURAL RESOURCES

3.5.1 Introduction

Cultural resources are those aspects of the physical environment that relate to human culture, society, and cultural institutions that hold communities together and link them to their surroundings. Cultural resources include past and present expressions of human culture and history in the physical environment, such as prehistoric and historical sites, buildings, structures, objects, districts, natural features, and biota, which are considered important to a culture, subculture, or community. Cultural resources also include aspects of the physical environment that are a part of traditional lifeways and practices, and are associated with community values and institutions.

3.5.1.1 *Cultural Resource Types*

Cultural resources include prehistoric and historical sites and ethnographic resources. Prehistoric and historical sites are the tangible remains of past activities that show use or modification by people. They are distinct geographic areas that can include artifacts, features such as hearths, rock alignments, trails, rock art, railroad grades, canals, and roads; landscape alterations; or architecture. In general, prehistoric and historical sites are the loci of purposeful human activity that have resulted in the deposition of cultural materials beyond the level of a few accidentally lost artifacts. Objects or artifacts that do not meet these criteria may still be cultural, but are described as isolated occurrences. Prehistoric archaeological sites show use or modification by people before the establishment of a European presence in the Lower Colorado River Valley in the late 17th century. Historical sites show use or modification since the arrival of Europeans in the region.

Site significance is evaluated in terms of eligibility for nomination to the National Register of Historic Places (NRHP). The NRHP is a listing of buildings, structures, sites, districts, and objects that are considered significant at a national, state, or local level. Cultural resources listed on the NRHP or recommended as eligible for listing on the NRHP under the NRHP criteria for evaluation (36 CFR 60.4), are called historic properties.

Significant cultural resources must meet one or more of the following criteria:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) that are associated with the lives of persons significant in our past; or

(c) that embody the distinctive characteristics of a type period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) that have yielded, or may be likely to yield, information important in prehistory or history.

Cultural resources that have a direct association with a living culture may be considered ethnographic resources. Ethnographic resources are associated with the cultural practices, beliefs, and traditional history of a community. Examples of ethnographic resources include: places in oral histories or myths, such as a particular rock formation, the confluence of two rivers, or a rock cairn; large areas, such as landscapes and viewscapes; sacred sites and places used for religious practices; social or traditional gathering areas, such as dance areas; natural resources such as plant materials or clay deposits used for arts, crafts, or ceremonies; and places and natural resources traditionally used for non-ceremonial uses, such as trails or camping locations. The components of an ethnographic resource can be man-made, natural, or both.

If a resource has been identified, through ethnographic research, to have importance in traditional cultural practices and the continuing cultural identity of a community, it may be considered a traditional cultural property (TCP) and may be eligible for the NRHP. A TCP is generally defined as a cultural resource "that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community (Parker and King 1998)". Generally, TCPs are eligible for the NRHP under criterion "a" or "b". TCPs are historic properties and effects to these resources by any Federal undertaking must be considered.

Other ethnographic resources may also need to be considered in consultation and coordination with Native American tribes. These may be sacred areas, traditional use areas, or other areas of traditional concern that may need to be considered under the American Indian Religious

Freedom Act of 1978 (AIRFA, 42 U.S.C. 1996 and 1996a), EO 13007, or other guidelines and regulations addressing Native American rights or trust responsibilities.

3.5.1.2 *Cultural Resources and the Law*

A number of Federal statutes address cultural resources and associated Federal responsibilities. There is a long history of legal jurisdiction over cultural resources, dating back to 1906 with the passage of the Antiquities Act (16 U.S.C. 431-433). Foremost among these statutes is the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470). Section 106 of this statute requires Federal agencies to take into account the effect of Federal undertakings on any property that is included in or eligible for inclusion in the NRHP. The regulations that implement section 106 (36 CFR Part 800) describe the process for the identification and evaluation of cultural resources, assessment of effects of Federal actions on historic properties or TCPs, and consultation to avoid, reduce, or mitigate adverse effects. The NHPA does not require preservation of cultural resources, but does ensure that Federal agency decisions concerning the treatment of these resources result from meaningful consideration of cultural and historic values, and identification of options available to protect the resources. The Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa - 470mm) is the principal Federal statute protecting archaeological resources located on Federal and Indian lands. The regulations implementing the National Environmental Policy Act (NEPA) also require that federal agencies prepare EISs concurrently with and integrated with the identification and evaluation of cultural resources required by the NHPA (40 CFR 1502.25).

A Programmatic Agreement (PA) has been developed for the Proposed Project in accordance with the stipulations of 36 CFR 800.14(b). The PA was developed by Western in consultation with BLM, Reclamation, Arizona State Land Department (ASLD), State Historic Preservation Officer (SHPO), the Applicant, interested tribes, Arizona State Museum, the National Park Service, and USACE. The signed PA takes the place of procedures outlined in 36 CFR Part 800 to implement section 106 of the NHPA. The PA outlines the steps to be taken: to identify cultural resources; to evaluate them to determine if they are eligible for listing on the NRHP; to identify potential adverse effects; to develop measures to avoid, reduce, or mitigate adverse effects; and to address inadvertent discoveries. It also assigns roles and responsibilities for implementation of the PA, which ensures that all interested parties are involved in decisions regarding the treatment of historic properties and TCPs that may be affected by the Proposed Project.

3.5.1.3 *Tribal Consultation*

The Federal government recognizes its unique relationship with Native American tribal governments and respects tribal sovereignty and self-government. Federal statutes establish and define a trust relationship with tribes. Western, BLM, and Reclamation acknowledge their responsibilities to conduct government-to-government consultation with tribes for proposed Federal government actions. These agencies understand that meaningful consultation and coordination with Native American tribes are not only good practice, but also lead to better government decisions. Specific statutes, regulations, and EOs guide consultation with Native Americans to identify cultural resources important to tribes and to address tribal concerns about potential impacts to these resources. These include the NHPA, American Indian Religious

Freedom Act of 1978 (42 U.S.C. 1996 and 1996a), Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001), EO 13007 *Indian Sacred Sites* (61 FR 26771), and EO 13175 *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249). These statutes and regulations direct agencies to consult with Native American tribal leaders and others knowledgeable about cultural resources that are important to them and their way of life. Consultation is conducted for Federal actions, such as decisions about the Proposed Project, that have the potential to affect locations of traditional concern, areas where religious ceremonies are conducted, areas of traditional cultural uses, archaeological sites, and other modern and ancestral tribal resources. Western, BLM, and Reclamation take government-to-government consultation very seriously, and initiated consultation with tribes at the beginning of the EIS process. Consultation has continued throughout development of the EIS and is on-going for the Proposed Project (sections 1.4.4 and 3.5.5).

3.5.2 Area of Potential Effects and the Region of Influence

The PA required Western to consult with the cooperating agencies (BLM and Reclamation), the Applicant, and the SHPO to determine the APE. It was determined that the APE would be the area of potential direct effect within which a systematic cultural resource inventory would be required. In contrast, the ROI is equivalent to the analysis area, or area of potential indirect effects. The ROI includes nearby previous investigations and known sites to provide a more complete local context for NEPA evaluations, and provides baseline information for most potential indirect effects. Table 3.5-1 lists the APE and ROI for each Proposed Project component.

The systematic inventory included a Class I records search, a Class III archaeological field survey, and an ethnographic study. On-going cultural resource investigations described in the draft report, *Archaeological Investigations for the Transfer Title to Facilities, Works, and Lands of the Gila Project, Wellton-Mohawk Division to Wellton-Mohawk Irrigation and Drainage District, Yuma County, Arizona* (Vanderpot and Altschul 2004a) also provided information on cultural resources of the general area.

The Class I records search to identify known cultural resources, including prehistoric sites and historical structures such as railroads, roads, trails, irrigation structures, and transmission lines, was conducted for the ROI listed in table 3.5-1. Class III archaeological field surveys were conducted that covered 100 percent of the APE listed in the table.

The ethnographic study, while focusing on the APE, also included resources located outside the ROI if a concern for impacts to those resources was expressed by tribal representatives. Tribal representatives were not restricted to the 1-mile area around the APE when expressing concerns about the impacts of the Proposed Project. The extent of the ethnographic study was specific to tribal perceptions of each resource and the role it plays in each tribe's traditional culture.

Table 3.5-1. Area of Potential Effects and Region of Influence for the Proposed Project and No Action Alternative.

Project Component	Area of Potential Effects (APE)	Region of Influence (ROI)
WMGF	119 acres	1 mile surrounding site
Existing Transmission Line Upgrade (Ligurta-Gila)	300-foot corridor, centered on transmission line	1 mile on each side of centerline
New Transmission Line (Ligurta-North Gila)	300-foot corridor, centered on transmission line	1 mile on each side of centerline
Associated Access Roads	50-foot corridor, centered on access road	1 mile on each side of centerline
Facility Natural Gas Pipeline	800-foot corridor, centered on Wellton-Mohawk Canal	1 mile on each side of Wellton-Mohawk Canal

The results of the Class I records search for the APE and Class III archaeological field surveys are in two reports (Huber et al. 2004, Foster et al. 2004), and the ethnographic study is in a third report (O'Mack 2004b). Western submitted the records search and field survey reports to the Arizona SHPO and other signatories for comment to comply with the PA and section 106 of the NHPA. Concurrence from the SHPO and other signatories will be obtained before Proposed Project construction can start.

3.5.3 Previous Work in the Project Area

The class I records search found many previous archaeological field surveys in the general region of the Proposed Project. Many of the surveys were for narrow, linear ROWs, such as pipelines and transmission lines. These linear investigations provide narrow cross-sections of the resources present in the area. Concurrent archaeological field surveys and ethnographic studies have been conducted at the Luke Air Force Base, Barry M. Goldwater Range (Doolittle, et al 2004a, 2004b; Vanderpot and Altschul 2004a, 2004b) south of the Proposed Project, the Yuma Proving Ground (Duff and Huber 2002; Vanderpot and Ahmet 2003; Vanderpot and Altschul 1999) north of the Proposed Project, and at Antelope Hill (Schneider and Altschul 2000) east of the Proposed Project. Extensive on-going cultural resource investigations, including archaeological field surveys and an ethnographic study, are being conducted for Reclamation's proposed transfer of title for up to 57,418 acres of withdrawn and acquired lands to the WMIDD (Vanderpot and Altschul 2004a; O'Mack 2004c). The results of this work, which have not yet been fully reported, should provide important additional information on the prehistoric and historic use of the region.

Forty-one field surveys that included portions of the ROI are listed in the agency records consulted for this class I records search. Most of these surveys were conducted for transmission lines, pipelines, and highway ROWs. Portions of 29 of these linear surveys cross the APE and the overlap is limited to approximately 5 percent of the total area of the APE (Huber et al. 2004, Foster et al. 2004). No previous ethnographic studies have been reported for specific resources or areas within the ROI. Thus, only a small sample of the cultural resources located in the ROI is available from these linear surveys.

There are 116 known prehistoric and historical sites in the ROI. Prehistoric resources include cleared areas, rock features such as rings or piles, trail segments, intaglios, scatters of stone and ceramic artifacts, and rock art. Intaglios (a type of geoglyph) are images or shapes that are dug or carved into a lag gravel or desert pavement surface by scraping away surface stones to expose underlying sediments, or by trampling the stones into the surface. Historical resources include trash dumps, trails, roads, railroads, features associated with Reclamation's historic Gila Project, the Wellton-Mohawk irrigation system, habitations, towns, cemeteries, power transmission systems, the Butterfield Overland Mail Route, the Southern Emigrant Trail, the Gila Trail, and the Juan Bautista de Anza National Historic Trail.

Forty-one of the 116 known prehistoric and historical sites fall entirely or partially within the APE (Foster et al. 2004, Huber et al. 2004). These sites are listed separately for each portion of the APE in tables 3.5-2, 3.5-3, 3.5-4, and 3.5-5. Extensive linear sites, such as the Wellton-Mohawk Canal, the Southern Pacific Railroad, and Old Highway 80, are only counted once in the number of known sites but may appear in more than one of the tables. Some of these resources were relocated and re-recorded during the current field surveys of the proposed WMGF, transmission lines, and pipeline. Some of the previously recorded resources were not found because of discrepancies in mapped locations or destruction of resources by past actions. No previously identified ethnographic resources are known within the ROI; however, on-going ethnographic consultations with Native American tribes for the Proposed Project have identified several locations of concern.

3.5.4 Prehistoric and Historical Sites in the APE

The APE was surveyed to identify prehistoric and historical sites (Huber et al. 2004, Foster et al. 2004). The field surveys covered more area than would be used by the construction and operation of the Proposed Project. This was done: (1) to identify nearby resources that may be subject to indirect impacts, and (2) to allow for minor changes in the design of the Proposed Project to avoid impacts to these or other resources without the need for additional cultural resource surveys. The prehistoric resources identified include cleared areas, stone circles and piles, trail segments, intaglios, artifact scatters, and rock art. Historical resources include features associated with Reclamation's historic Gila Project and Wellton-Mohawk irrigation systems, Old Highway 80, the historic Southern Pacific Railroad (now the Union Pacific Railroad), and power transmission systems.

Segments of three historic trails, the Juan Bautista de Anza National Historic Trail, the Butterfield Overland Mail Route, and the Gila Trail, follow the same general route as portions of the Proposed Project, skirting east through the pass between the Gila Mountains and the Laguna Mountains and following the Gila River to the south and east. The approximate locations of these trail segments are known from historical documents. During the field survey, no physical evidence of the trails or associated elements, such as camps, was identified within the APE (Foster et al. 2004). Physical evidence of these trails in the APE has likely been obliterated by erosion, including meanders of the Gila River; by agricultural development along the Gila River; and by historical and modern improvements to transportation and infrastructure systems.

All of the identified resources were fully recorded and evaluated for eligibility for listing on the NRHP. Resources that are eligible are afforded consideration under the NHPA. If a Federal action will affect an eligible resource, then measures must be considered to avoid, reduce, or

mitigate the effect. The current eligibility recommendations are those proposed by the field archaeologists. The status of consultations regarding eligilibity recommendations, or the final recommendations will be included in the Final EIS.

3.5.4.1 *Wellton-Mohawk Generating Facility*

A Class I records search was conducted of the proposed WMGF site and the ROI of the site. A Class III intensive field survey was conducted of the 119-acre WMGF site and an additional 195 acres surrounding the site (Huber et al. 2004). Some of the resources identified are small, and others are extensive linear resources with multiple elements. A good example of the latter is the Wellton-Mohawk Canal and related facilities, which is very long and includes the canal, Ligurta Substation, power distribution lines, Pumping Plant Number 2, and a tunnel under the railroad.

Ten archaeological and historical sites and 17 isolated occurrences were identified during the Class III survey. They include both prehistoric and historical resources. None of the isolated occurrences are recommended as eligible for listing on the NRHP. Four of the prehistoric and historical sites are recommended eligible: the Wellton-Mohawk Canal and related facilities (AZ X:3:338 [ASM]), the Southern Pacific Railroad (AZ Z:2:40 [ASM]), a segment of Old Highway 80 (AZ FF:9:17 [ASM]), and a prehistoric site that includes two trails, a cleared area, a small cluster of rocks, and a concentration of ceramic sherds (AZ X:7:59 [ASM]). All of the resources are listed in table 3.5-2, along with their eligibility recommendations, criteria and ownership. These eligibility recommendations are preliminary pending the results of further consulatations with the tribes and agencies.

Table 3.5-2. Prehistoric and Historical Sites Identified Within or Near the Wellton-Mohawk Generating Facility Site Survey Area.

Resource # (ASM)	Description	Ownership	NRHP Recommendation (criteria)*
AZ FF:9:17	Old Highway 80	BLM	Eligible (d)
AZ X:3:338	Wellton-Mohawk Canal and related facilities	Reclamation, Western	Eligible (a, c)
AZ X:3:434	Dome Tap-Ligurta 161-kV Transmission Line	Western	Not eligible
AZ X:7:56	Historical road segment, cans, glass, and domestic debris	Reclamation	Not eligible
AZ X:7:57	Historical concrete processing plant	Reclamation	Not eligible
AZ X:7:58	Historical artifact scatter	Reclamation	Not eligible
AZ X:7:59	Prehistoric trails, cleared area, rock cluster, and ceramics	Reclamation	Eligible (a, c, d)
AZ X:7:110	Ligurta-Gila 161-kV Transmission Line	Reclamation, operated by Western	Not eligible
AZ X:7:111	Rock ring	Reclamation	Not eligible
AZ Z:2:40	Southern Pacific Railroad	Private	Eligible (a, c)
IO 1	Historical can scatter	Reclamation	Not eligible
IO 2	Stone flake	Reclamation	Not eligible
IO 3	Brass survey marker, dated 1950	Private	Not eligible
IO 4	Dirt road segment	Reclamation, private	Not eligible
IO 5	Prehistoric lithic scatter	Reclamation	Not eligible

Table 3.5-2. Prehistoric and Historical Sites Identified Within or Near the Wellton-Mohawk Generating Facility Site Survey Area (*continued*).

Resource # (ASM)	Description	Ownership	NRHP Recommendation (criteria)*
IO 6	Brass survey marker, dated 1950	Reclamation	Not eligible
IO 7	Historical can and glass scatter	Private	Not eligible
IO 8	Historical pile of milled lumber	Reclamation	Not eligible
IO 9	Brass survey marker, dated 1949	Reclamation	Not eligible
IO 10	Historical pile of milled lumber	Reclamation	Not eligible
IO 11	Historical pile of milled lumber and cans	Reclamation	Not eligible
IO 12	Historical pile of construction debris and cans	Reclamation	Not eligible
IO 13	Brass survey marker, dated 1934	Reclamation	Not eligible
IO 14	Brass survey marker, dated 1927	Reclamation	Not eligible
IO 15	Brass survey marker, no date	Reclamation	Not eligible
IO 16	Historical can and glass scatter	Reclamation	Not eligible
IO 17	Historical cans, glass, and automotive parts	Reclamation	Not eligible

* NRHP criteria are described in Section 3.5.1.1 Cultural Resource Types

3.5.4.2 *Facility Natural Gas Pipeline*

A Class III intensive field survey was conducted of the pipeline corridor APE (Foster et al. 2004). The pipeline ROW would parallel the Wellton-Mohawk Canal from the proposed WMGF site to Highway 95. The exact placement of the facility natural gas pipeline had not been determined at the time of the Class III survey, so the survey was completed on both sides of the canal. This allows design of the pipeline in a manner that minimizes potential impacts to cultural resources without the need for additional cultural resource survey. A corridor 800 feet wide and centered on the middle of the canal was surveyed.

Six prehistoric and historical sites and four isolated occurrences were identified by the Class III survey. None of the isolated occurrences are recommended as eligible for listing on the NRHP. Five of the prehistoric and historical sites are recommended eligible: the Wellton-Mohawk Canal and related facilities (AZ X:3:338 [ASM]); the historic Southern Pacific Railroad (AZ Z:2:40 [ASM]); a segment of Old Highway 80 (AZ FF:9:17 [ASM]); a lithic scatter with an- intaglio, rock art, cleared areas, trails, and rock features (AZ X:3:52 [ASM]); and an artifact scatter (AZ X:7:104 [ASM]). The site that contains an intaglio and rock art is also recommended eligible as a TCP. The resources are listed in table 3.5-3, with their eligibility recommendations, criteria and ownership. These eligibility recommendations are preliminary pending the results of further consultations with the tribes and agencies.

Table 3.5-3. Prehistoric and Historical Sites Identified Within the Facility Natural Gas Pipeline Survey Corridor.

Resource # (ASM)	Description	Ownership	NRHP Recommendation (criteria)**
AZ X:3:52*[a]	Lithic scatter, rock art, intaglio, cleared areas, trails, pebble-covered mounds, and rock rings	Reclamation	Eligible (a, d)
AZ X:3:338	Wellton-Mohawk Canal and related elements	Reclamation	Eligible (a, c)
AZ X:3:434	Dome Tap-Ligurta 161 kV Transmission Line	Western	Not eligible
AZ X:7:104	Sherd, chipped stone and ground stone scatter with buried bone; historical glass and a can	Reclamation	Eligible (d)
AZ Z:2:40	Southern Pacific Railroad	Private	Eligible (a, c)
AZ FF:9:17	Old Highway 80	BLM	Eligible (a, c, d)
IO 3	Sherd and lithic scatter	Reclamation	Not eligible
IO 14	Modern rock ring	BLM	Not eligible
IO 15	Rock-lined hearth	Reclamation	Not eligible
IO 16	Modern rock ring	BLM	Not eligible

ASM = Arizona State Museum; County = Yuma County; NRHP = National Register of Historic Places; Reclamation = Bureau of Reclamation; Western = Western Area Power Administration; BLM = Bureau of Land Management.
* This site is eligible as a traditional cultural property due to the presence of rock art and an intaglio.
a This site would not be affected by the proposed pipeline location.
** NRHP criteria are described in Section 3.5.1.1 Cultural Resource Types

3.5.4.3 *Existing Transmission Line*

A Class III intensive field survey was conducted of the APE of the transmission line corridor (Foster et al. 2004). The proposed transmission line ROW is 125 feet wide, and a 300-foot-wide corridor centered on the transmission line was surveyed. Fifteen prehistoric and historical sites and eleven isolated occurrences were identified during the survey. None of the isolated occurrences are recommended as eligible for listing on the NRHP. Five of the prehistoric and historical sites are recommended eligible: the Wellton-Mohawk Canal and related facilities (AZ X:3:338 [ASM]), the Southern Pacific Railroad (AZ Z:2:40 [ASM]), a segment of Old Highway 80 (AZ FF:9:17 [ASM]), a gas station associated with Old Highway 80 (AZ X:7:47 [ASM]), and a prehistoric site that includes features and artifacts (AZ X:7:45 [ASM]). Prehistoric features on the latter site are 17 cleared areas, eight trail segments, and nine rock features. The rock features include small rock clusters, rock rings, and small rock alignments. Prehistoric artifacts include 32 chipped stone flakes and cores, and one biface. All of the resources, their eligibility recommendations, criteria and their ownership are listed in table 3.5-4. These eligibility recommendations are preliminary pending the results of further consultations with the tribes and agencies.

Table 3.5-4. Prehistoric and Historical Sites Identified Within the Ligurta-Gila Transmission Line APE.

Resource # (ASM)	Description	Ownership	NRHP Recommendation (criteria)*
AZ FF:9:17	Old Highway 80	BLM	Eligible (a, c, d)
AZ X:3:338	Wellton-Mohawk Canal and related facilities	Reclamation	Eligible (a, c)
AZ X:7:42	Parker-Gila 161-kV Transmission Line	Western	Not eligible
AZ X:7:45	Prehistoric lithics, trails, rock clusters, rings and alignments	BLM	Eligible (d)
AZ X:7:47	Gas station foundation and artifacts	BLM	Eligible (a, d)
AZ X:7:102	Cleared areas, rock ring, rock clusters, and rock alignment	BLM	Not eligible
AZ X:7:105	Lithic scatter and rock ring	BLM	Not eligible
AZ X:7:106	Cleared area	BLM	Not eligible
AZ X:7:107	Rock ring	BLM	Not eligible
AZ X:7:109	Commemorative marker to B-17 crash	BLM	Not eligible
AZ X:7:110	Ligurta-Gila 161-kV Transmission Line	Reclamation, operated by Western	Not eligible
AZ X:7:113	Rock enclosure, trail, rock rings	Private	Not eligible
AZ X:7:114	Trail	Reclamation	Not eligible
AZ X:7:115	Trail	BLM	Not eligible
AZ Z:2:40	Southern Pacific Railroad	Private	Eligible (a, c)
IO 1	Historical can scatter and rock cairn	BLM	Not eligible
IO 2	Historical can scatter	BLM	Not eligible
IO 6	Mining prospect	Private	Not eligible
IO 7	Embedded drill bit (possible marker)	BLM	Not eligible
IO 8	Burned utility pole stump and anchors	BLM	Not eligible
IO 9	Embedded drill bit (possible marker)	BLM	Not eligible
IO 21	Modern pet cemetery	Reclamation	Not eligible
IO 24	Cleared area	BLM	Not eligible
IO 25	Flake and core fragment	BLM	Not eligible
IO 26	Modern rock ring and trail	BLM	Not eligible
IO 27	Possible cleared area	BLM	Not eligible

ADOT= Arizona Department of Transportation; ASLD= Arizona State Land Department; ASM= Arizona State Museum; BLM= Bureau of Land Management; County= Yuma County; IO = isolated occurrence; NRHP= National Register of Historic Places; Reclamation= Bureau of Reclamation; Western= Western Area Power Administration.

* NRHP criteria are described in Section 3.5.1.1 Cultural Resource Types

3.5.4.4 *New Transmission Line*

A Class III intensive field survey was conducted of the transmission line corridor APE (Foster et al. 2004). The transmission line ROW would be 125 feet wide, and a 300-foot wide corridor centered on the transmission line was surveyed. From the Ligurta Substation to the Dome Tap Substation, the centerline of the corridor was 105 feet south and west of the existing Ligurta-Dome Tap Transmission Line. From the Dome Tap Substation to the North Gila Substation, the corridor extended cross-country away from existing transmission structures.

The Class III survey identified 23 prehistoric and historical sites, and 12 isolated occurrences. None of the isolated occurrences are recommended as eligible for listing on the NRHP. Eleven

of the prehistoric and historical sites are recommended to be eligible: the Wellton-Mohawk Canal and related facilities (AZ X:3:338 [ASM]); the historic Southern Pacific Railroad (AZ Z:2:40 [ASM]); a segment of Old Highway 80 (AZ FF:9:17 [ASM]); the Gila Gravity Main Canal (AZ X:7:20 [ASM]); a rock art and trail site (AZ X:3:15 [ASM]); a lithic scatter with trails and cleared areas (AZ X:7:10 [ASM]); a ceramic scatter with trails, a cleared area, a rock ring and a rock cairn (AZ X:7:70 [ASM]); a ceramic scatter with cleared areas, rock cairns, rock rings, and rock alignments (AZ X:7:71 [ASM]); a lithic scatter with cleared areas, trail segment, and rock art (AZ X:7:72 [ASM]); a site with trails, a rock cairn, rock art, and a cleared area (AZ X:7:91 [ASM]); and a site with cleared areas that previously included an intaglio (AZ X:7:118 [ASM]). Four of these sites that include rock art or previously included an intaglio, are also recommended to be eligible as TCPs. All of the resources are listed in table 3.5-5, with their eligibility recommendations, criteria and ownership. These eligibility recommendations are preliminary pending the results of further consultations with the tribes and agencies.

Table 3.5-5. Archaeological and Historical Sites Identified Within the New Transmission Line Survey Corridor.

Resource # (ASM)	Description	Ownership	NRHP Recommendation (criteria)**
AZ FF:9:17	Old Highway 80	BLM	Eligible (a, c, d)
AZ X:3:15*	Petroglyphs, grinding slick, and trail; historical claim cairn	Reclamation	Eligible (a, d)
AZ X:3:338	Wellton-Mohawk Canal and related facilities	Reclamation	Eligible (a, c)
AZ X:3:434	Dome Tap-Ligurta 161-kV Transmission Line	Western	Not eligible
AZ X:7:10	Lithic scatter with trails and cleared areas	Reclamation	Eligible (d)
AZ X:7:20	Gila Gravity Main Canal (also AZ X:3:81)	Reclamation	Eligible (a, c)
AZ X:7:30	Lithic scatter with trails and cleared areas	Reclamation	Not eligible
AZ X:7:31	Three lithic scatter and two cleared areas	Reclamation	Not eligible
AZ X:7:36	Lithic scatter with a trail and rock piles	Private	Not eligible
AZ X:7:42	Parker-Gila 161-kV Transmission Line	Western	Not eligible
AZ X:7:70	Ceramic scatter, trails, cleared area, cairn, and rock ring	Reclamation, BLM	Eligible (d)
AZ X:7:71	Ceramic scatter, cleared areas, rock cairns, rock rings, and rock alignments	BLM	Eligible (d)
AZ X:7:72*	Lithic scatter, cleared areas, trail, and rock art	Reclamation	Eligible (a, d)
AZ X:7:88	Trails, lithic scatter and a rock alignment; historical prospects	Reclamation	Not eligible
AZ X:7:90	Trails and rock cairns and a flake	Reclamation	Not eligible
AZ X:7:91*	Trails, petroglyph, and cleared area; historical prospect and cairn	Reclamation	Eligible (a, d)
AZ X:7:103	Lithic tool and cleared area	BLM	Not eligible
AZ X:7:108	Trail and cleared areas	Reclamation	Not eligible
AZ X:7:112	Historical can and glass clusters	Reclamation	Not eligible
AZ X:7:116	Cleared areas, rock cairn, and lithics	BLM	Not eligible

Table 3.5-5. Archaeological and Historical Sites Identified Within the New Transmission Line Survey Corridor. (*continued*)

Resource # (ASM)	Description	Ownership	NRHP Recommendation (criteria)**
AZ X:7:117	Cleared areas and trail	Reclamation	Not eligible
AZ X:7:118*	Cleared areas and a destroyed intaglio	BLM	Eligible (a)
AZ Z:2:40	Southern Pacific Railroad	Private	Eligible (a,c)
IO 4	Lithic scatter	Reclamation	Not eligible
IO 5	Historical can scatter	Reclamation	Not eligible
IO 10	Metal conduit cover	Reclamation	Not eligible
IO 12	Aqua glass fragments	BLM	Not eligible
IO 13	Glass insulator fragments	ASLD	Not eligible
IO 14	Modern rock ring	BLM	Not eligible
IO 18	Lithic scatter	Reclamation	Not eligible
IO 19	Rock pile	ASLD	Not eligible
IO 20	Glass scatter	ASLD	Not eligible
IO 22	Two milk cans	Reclamation	Not eligible
IO 23	Meat can	Reclamation	Not eligible
IO 28	Three modern rock piles	BLM	Not eligible

ASM= Arizona State Museum; BLM= Bureau of Land Management; County= Yuma County; IO= isolated occurrence; NRHP= National Register of Historic Places; Reclamation= Bureau of Reclamation; Western= Western Area Power Administration; ASLD = Arizona State Land Department.
* These sites are eligible as traditional cultural properties due to the presence of rock art or intaglios.
**NRHP criteria are described in Section 3.5.1.1 Cultural Resource Types

3.5.5 Ethnographic Resources Identified in and Near the Proposed Project

An ethnographic study has been conducted for the Proposed Project (O'Mack 2004b). The ethnographic study has four objectives: (1) to identify and document the traditional occupancy and use of the ROI by Native American peoples; (2) to identify and document Native American TCPs, sacred places, and cultural landscapes within the ROI; (3) to elicit from Native American representatives concerns for potential impacts on these resources from the Proposed Project; and (4) to identify mitigation measures to address impacts. The ethnographic study includes both a review of the ethnographic and historical literature about Native American tribes with traditional, cultural, or historical ties to lands in the ROI, and information from contacts with tribal representatives. Contacts with tribal representatives have included telephone conversations, letters, e-mails, meetings, tribal monitors participating in field surveys, and field visits to archaeological sites in the ROI.

3.5.5.1 *The Ethnographic Study*

Twenty-two Native American tribes were identified as potentially interested in the Proposed Project and were contacted for this ethnographic study. The tribes that were contacted are listed below. The tribes were selected based on similar ethnographic studies conducted in the region for Antelope Hill (Schneider and Altschul 2000) and the Wellton-Mohawk Title Transfer EIS

(Reclamation 2003b). The Fort McDowell Yavapai Tribe, Kaibab Paiute Tribe, Tonto Apache Tribe, and the Apache community of the Yavapai-Apache Nation declined to participate in the ethnographic study. The Campo Band of Kumeyaay Indians, Hopi Tribe, and Pascua Yaqui Indian Tribe, while having an interest in the project region, deferred to tribes closer to the ROI.

Interested Tribes:

- Ak-Chin Indian Community
- Chemehuevi Indian Tribe
- Cocopah Indian Tribe
- Colorado River Indian Tribes
- Fort Mojave Indian Tribe
- Fort Yuma Quechan Indian Tribe
- Gila River Indian Community
- Hia-C'ed O'odham Alliance
- Hualapai Indian Tribe
- Navajo Nation
- Salt River Pima–Maricopa Indian Community
- San Carlos Apache Tribe
- Tohono O'odham Nation
- Viejas Band of Kumeyaay Indians
- Yavapai Prescott Indian Tribe

Tribes That Have Deferred to Others or Declined to Participate:

- Campo Band of Kumeyaay Indians
- Fort McDowell Yavapai Tribe
- Hopi Tribe
- Kaibab-Paiute Tribe
- Pascua Yaqui Indian Tribe
- Tonto Apache Tribe
- Yavapai-Apache Nation

Several meetings and field visits to the APE have been conducted with interested tribes. Table 3.5-6 lists these meetings by date, type of consultation, and which tribes were represented.

Table 3.5-6. Meetings and Field Visits Attended by Tribes as Part of the Ethnographic Study.

Date	Type of Consultation	Tribes Represented
July 16, 2003	Meeting	Tohono O'odham Nation, Gila River Indian Community, Ak-Chin Indian Community, Pascua Yaqui Indian Tribe, Salt River Pima-Maricopa Indian Community
August 27 & 28, 2003	Archaeological Survey Monitoring	Fort Mojave Indian Tribe
September 15, 2003	Meeting	Yavapai-Prescott Indian Tribe
September 16, 2003	Meeting	Fort Yuma Quechan Indian Tribe
September 16, 2003	Meeting	Cocopah Indian Tribe
September 17, 2003	Field Visit	Tohono O'odham Nation
September 18, 2003	Meeting	Fort Mojave Indian Tribe, Colorado River Indian Tribes
September 24, 2003	Meeting	Tohono O'odham Nation, Gila River Indian Community, Ak-Chin Indian Community, Pascua Yaqui Indian Tribe, Salt River Pima-Maricopa Indian Community

Table 3.5-6. Meetings and Field Visits Attended by Tribes as Part of the Ethnographic Study. (*continued*)

Date	Type of Consultation	Tribes Represented
April 14, 2004	Field Visit	Campo Band of Kumeyaay Indians, Cocopah Indian Tribes, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Gila River Indian Community, Manzanita Band of Kumeyaay Indians
April 16, 2004	Field Visit	Colorado River Indian Tribes
April 22, 2004	Meeting	Hopi Tribe
April 27, 2004	Field Visit	Ak-Chin Indian Community, Tohono O'odham Nation
May 10, 2004	Meeting	Ak-Chin Indian Community, Cocopah Indian Tribe, Colorado River Indian Tribe, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Gila River Indian Community, Navajo Nation, Salt River Pima-Maricopa Indian Community, Tohono O'odham Nation
May 11, 2004	Field Visit	Navajo Nation
May 12, 2004	Field Visit	Salt River Pima-Maricopa Indian Community
September 30, 2004	Meeting	Colorado River Indian Tribes, Hualapai Indian Tribe

Visits to the ROI and to specific cultural sites were attended by 21 tribal members representing the following 10 tribes: Ak-Chin Indian Community; Campo Band of Kumeyaay Indians; Cocopah Indian Tribe; Colorado River Indian Tribes; Fort Mojave Indian Tribe; Fort Yuma Quechan Indian Tribe; Gila River Indian Community; Navajo Nation; Salt River Pima–Maricopa Indian Community; and Tohono O'odham Nation. Five of the 27 Native American cultural sites identified within the APE, have been visited by representative of the tribes. These sites were selected because they contain feature types that are representative of the sites found in the APE. These feature types are cleared areas, trails, rock rings, rock piles, rock art, and intaglios. The sites that were visited are listed in table 3.5-7.

Table 3.5-7. Cultural Sites Visited By Tribal Representatives During the Ethnographic Study.

Resource # (ASM)	Description	Ownership
AZ X:3:15	Rock art and trail	Reclamation
AZ X:3:52*	Lithic scatter, rock art, intaglio, cleared areas, trails, rock rings, and pebble-covered mounds	Reclamation
AZ X:7:45	Lithics, trails, rock clusters, rings and alignments	BLM
AZ X:7:59	Trails, cleared area, rock cluster, and ceramics	Reclamation
AZ X:7:104	Sherd, chipped stone and ground stone scatter; historical glass and a can	Reclamation

ASM = Arizona State Museum; Reclamation = Bureau of Reclamation; BLM = Bureau of Land Management;

*The location of the proposed pipeline was routed so that this site is no longer in the pipeline corridor.

A report documenting tribal contacts and concerns expressed by the tribal representatives (O'Mack 2004a) was submitted to the tribal representatives for their review and comment. This progress report was used to provide information included in this EIS.

3.5.5.2 *Status of the Ethnographic Study*

The ethnographic study has been completed. At the request of the tribes and in accordance with the PA, copies of the archaeological survey reports (Huber et al. 2004, Foster et al. 2004) were provided to all 22 tribes initially contacted regarding the ethnographic study. Two objectives of sending the reports to the tribes were: (1) for the tribes to review the reports and provide comments, and (2) for the tribes to use the information contained in the reports to assist them during the ethnographic study. Report-specific comments received from the tribes are or will be being addressed. Also, any appropriate information gained through the ethnographic study that would influence the NRHP evaluations of specific sites will be added to the reports prior to their submittal to the SHPO.

The ethnographic study focused on the four objectives described at the beginning of this section. The information contained in the archaeological survey reports aided the tribes in determining their concerns about the cultural resources. Additional, ongoing consultation with the tribes may include meetings, field visits, and telephone conversations. Consultation under the ethnographic study includes identification of potential impacts by the Proposed Project and any measures that would be appropriate to avoid, reduce, or mitigate those impacts. The completed ethnographic study report was provided to the tribes for their review. Appropriate information in the ethnographic study process has been added to the archaeological survey reports and will be incorporated into the Final EIS.

3.5.5.3 *Cultural Landscape*

The ethnographic study has revealed that the Proposed Project is located within a larger, more encompassing ethnographic cultural landscape of importance to the Native American tribes of the region. Cultural landscapes are geographic areas that include both cultural and natural resources. The National Park Service defines an ethnographic cultural landscape as "a landscape containing a variety of natural and cultural resources that associated people define as heritage resources (Birnbaum 1994)." The individual natural and cultural elements within the landscape can be either static or dynamic; however, a dynamic quality to the relationship between the landscape as a whole and the associated people is characteristic.

An extensive study of the same ethnographic cultural landscape within which the Proposed Project is located was conducted for Antelope Hill, located 15 miles east of the Proposed Project (Schneider and Altschul 2000). The lands surrounding the Colorado and Gila rivers embody the cultural development of the native peoples of the region, and a special sense of the sacred is centered in the natural geography of the area. The importance of this cultural landscape, and the individual places connected within, derives from its sacredness and from its role in the historical traditions of the regional tribes, two aspects of importance that are themselves bound together. Within this region, Native Americans "see a landscape full of cultural relevancy and significance that should be left undisturbed" (Hogan 2000).

In a Native American perspective, Antelope Hill is connected to other prominent landscape features, such as Pilot Knob and Muggins Peak and the Gila Mountains, as through a web along which spiritual power flows (Cachora 2000). Included along this web are other topographical features as well as natural, religious, sacred, and traditional areas, and together these form the cultural landscape. Locations within this landscape that are connected by this spiritual web

include "places where their tribe originated, places where spirits live, places that have power, places where culture heroes performed feats, and places where their ancestors lived" (Hogan 2000). There are special places within this landscape where tribal members perform their religious practices and experience their beliefs; however, native peoples consider their religious practices to encompass large areas of the landscape. Although each location may have importance individually, they are also important for their position and role within this web. "It is important that the continuity of the flow of power is maintained, and, in the sense that power flows along the web from one node to another, the web itself is sacred" (Hogan 2000). The landscape of this web also has its own importance. This idea is expressed well by a tribal author in the Antelope Hill study:

> …locations where important incidents occurred, both in the spiritual realm and within the time of the existence of the people in this region, are imbued with spiritual power. A web of continuity of power or spirituality connects these locations with other features in the landscape that may be less powerful, spiritually, but have their own importance in that the major focal points of the web (i.e., almost as nervous-system nuclei) are visible. . . Because the web of spirituality and power runs along the paths of conductivity, all are connected, when there is a break in the web, it affects the entire cosmos. For this reason, although peaks are most important, the valleys between the peaks, and the desert pavements, are also important in that they are pathways for the web that must run through them from one peak to others (Cachora 2000).

Most of the tribal representatives who have commented so far about the Proposed Project do not have firsthand experience with the ROI or specific information about past use of particular locations in the ROI by members of their communities. Nonetheless, they do know that the general landscape of the ROI has been important in the history of their communities, and they consider the archaeological sites in the ROI to be a part of their history and cultural heritage, even if the original purpose of specific sites is unknown. Numerous comments about the cultural significance of particular sites in the ROI indicate that tribes maintain a meaningful connection to this landscape and the sites there. The cultural landscape is important, and the individual locations within that landscape share that importance.

Tribal representatives stressed repeatedly that the area of the ROI has long been a crossroads of Native American culture because it is so close to the confluence of the Colorado and the Gila rivers. Both river valleys have served as Native American transportation corridors for thousands of years, and have been a focus of Native American settlement in the region. The pass around the north end of the Gila Mountains has also been an important corridor. There is general concern that the cultural resources within the ROI be viewed not just within the narrow limits of the Proposed Project, but from a perspective that recognizes the connection of the ROI to a wider landscape. Archaeological sites are considered unique and irreplaceable by the tribes, and once they are harmed, they are lost forever. Each archaeological site is a piece in the historical puzzle of the tribes, it is the physical record of that history, and each time a site is neglected or harmed, it means that another part of the puzzle has been destroyed, making the puzzle incomplete. Understanding the significance of individual archaeological sites within the ROI requires understanding the interconnectedness of important places throughout the cultural landscape, which together with the sites, define a much wider cultural and historical context than the limits of the Proposed Project.

Several tribes commented that the area of the ROI was once part of their traditional use area and that it continues to be an important place in their cultural and historical traditions. This area is part of the traditional territory of the Quechan and is prominent in Quechan historical tradition. It is within a larger area of great importance to the Quechan, marked by Muggins Peak in the east and Pilot Knob in the west, places that figure significantly in the Quechan creation history, and the area of the ROI continues to be an important place in the Quechan cultural landscape. This landscape also falls within the ancestral lands of the Tohono O'odham and Hia Ced O'odham. Both groups confirmed that O'odham villages were located in the Dome Valley as late as the 1800s and that important places associated with these villages are believed to still exist in the area. The Yavapai traditional use area extends into portions of this landscape from the Gila River Valley to the north. The landscape figures prominently in Yavapai historical tradition, with the Gila Mountains and the Gila River valley playing particularly significant roles. The area was regularly visited or inhabited by the Yavapai: Yavapai trails run through the area to connect the traditional Yavapai territory with Mexico; major Yavapai battles were fought along the Gila River; and the Gila River Valley was an important trade route for the Yavapai. The Navajo also have a place important to their historical traditions located somewhere in this cultural landscape. It is a natural feature traditionally visited by the Navajo, though the exact location has not been identified by the current ethnographic study.

Although Native American cultures have changed and some traditional knowledge has been lost, there is a strong continuity in ethnic identity, and "many aspects of traditional culture have been maintained; there is a continuing struggle to preserve ethnic distinctiveness and to pass on native cultures to younger generations" (Hogan 2000). Tribal representatives emphasized that many tribes have a traditional connection to this cultural landscape and to specific locations within the ROI, and that to assume a particular site or location belongs to one group over another would be a mistake. The native peoples of the lower Colorado and Gila rivers share a belief system and common ancestry; they share an ideology and cosmology that encompasses the entire region. "All of the river peoples need to be incorporated into any decision-making regarding the cultural landscape of the region" (Cachora 2000).

3.5.5.4 *Traditional Cultural Properties*

Comments from tribal representatives concerning the cultural significance of particular sites have confirmed that tribes maintain a specific, meaningful connection to the ROI, and as a result to the sites located within it. However, there is no documented current use of these sites by tribal members. Some site features were useful in providing the tribal representatives with insight to the sites' functions. Rock art and intaglios were described as being very important for the roles they play in tribal traditions, ceremonies, and history. The functions of sites with these features are both ceremonial and historical, and the settings of these sites were identified as an important characteristic of the sites and essential to the continued function of the sites. Sites identified in the ROI with these types of features are recommended as eligible to the NRHP as TCPs for their cultural importance to historical traditions (tables 3.5-4 and 3.5-5). These sites are AZ X:7:72 (ASM), AZ X:7:91 (ASM), AZ X:7:118 (ASM), AZ X:3:15 (ASM), and AZ X:3:52 (ASM).

Rock art examined by the tribes during field visits was recognized as having motifs that are common at sites throughout the region, tying together individual locations in the cultural landscape. Several functions of the petroglyphs were suggested. The motifs may be

representations of parts of traditional songs, and their presence indicates that people came to the location repeatedly to sing. Their particular meanings may be lost, but their significance to traditional songs remains. It was also suggested that the petroglyphs may represent important stories associated with the area, or may mark the beginning or ending point of a ceremony. Petroglyphs along trails may also have served as a universal language for travelers, marking important locations, such as a water source or a fork in the trail. Universal symbols would be necessary for an area that was used by multiple groups speaking different languages. Rock art is present at AZ X:7:72 (ASM), AZ X:7:91 (ASM), AZ X:3:15 (ASM), and AZ X:3:52 (ASM).

Site AZ X:3:52 (ASM) also includes an intaglio, and is considered by many tribal representatives to be ceremonial in nature, a place where dancing and singing occurred. They felt that this was indicated by the presence of the intaglio, as well as the presence of a petroglyph and an unusually wide trail segment. This indicated to the tribal representatives that the intaglio might be a dance path.

Site AZ X:7:118 (ASM) was first recorded in 1982 and at that time this site also included an intaglio. Construction of a transmission line through the site in 1984 destroyed the intaglio. However, intaglios may mark locations of special significance or power, and the site may retain its traditional cultural importance even without the intaglio. Therefore, the site is recommended as eligible as a TCP.

3.6 LAND USE AND RECREATION

The Proposed Project would be constructed in the southwest part of Arizona within Yuma County. Yuma County is comprised of approximately 3,530,637 acres of primarily Sonoran Desert with low desert hills along with inclusions of rugged mountains.

The ROI for land use consists of acreage in the vicinity of the proposed WMGF, facility natural gas pipeline, and transmission system additions. In addition, land use and recreation information from other areas in Yuma County outside of the ROI are provided to the extent that such information assists in understanding the affected environment of the Proposed Project.

The valley regions within Yuma County contain arable land, which is irrigated with Colorado River water. The Muggins Mountains Wilderness (BLM) is to the north, in the north end of Dome Valley about 3 miles from the proposed WMGF. The Gila Mountains are to the west. Agriculture, tourism, military, and government are Yuma County's principal industries. This acreage accounts for approximately 4.8 percent of Arizona's land base and supports approximately 3 percent (160,026 people) of the State of Arizona's population. Population density in Yuma County averages 29 people per square mile. During the winter months, the population grows considerably with part-time residents (Yuma 2003). Approximately 84 percent of the land is under Federal control, 6 percent under state control, and 10 percent in private ownership. Land jurisdiction in the vicinity of the Proposed Project involves the BLM, Reclamation, the State of Arizona, and private landowners as shown in figures 3.6-1, 3.6-2, and 3.6-3.

In a regional context, Yuma County has many recreational opportunities, including bird watching, camping, hunting, hiking, horseback riding, bicycling, recreational shooting, hobby

rock collecting, and off-highway vehicle driving. Additionally, noncommercial trapping in accordance with state and Federal laws is permitted on BLM-administered land, including most wilderness areas. The region is visited by a large number of recreational users. However, the specific area of the Proposed Project as a whole receives very little recreational use.

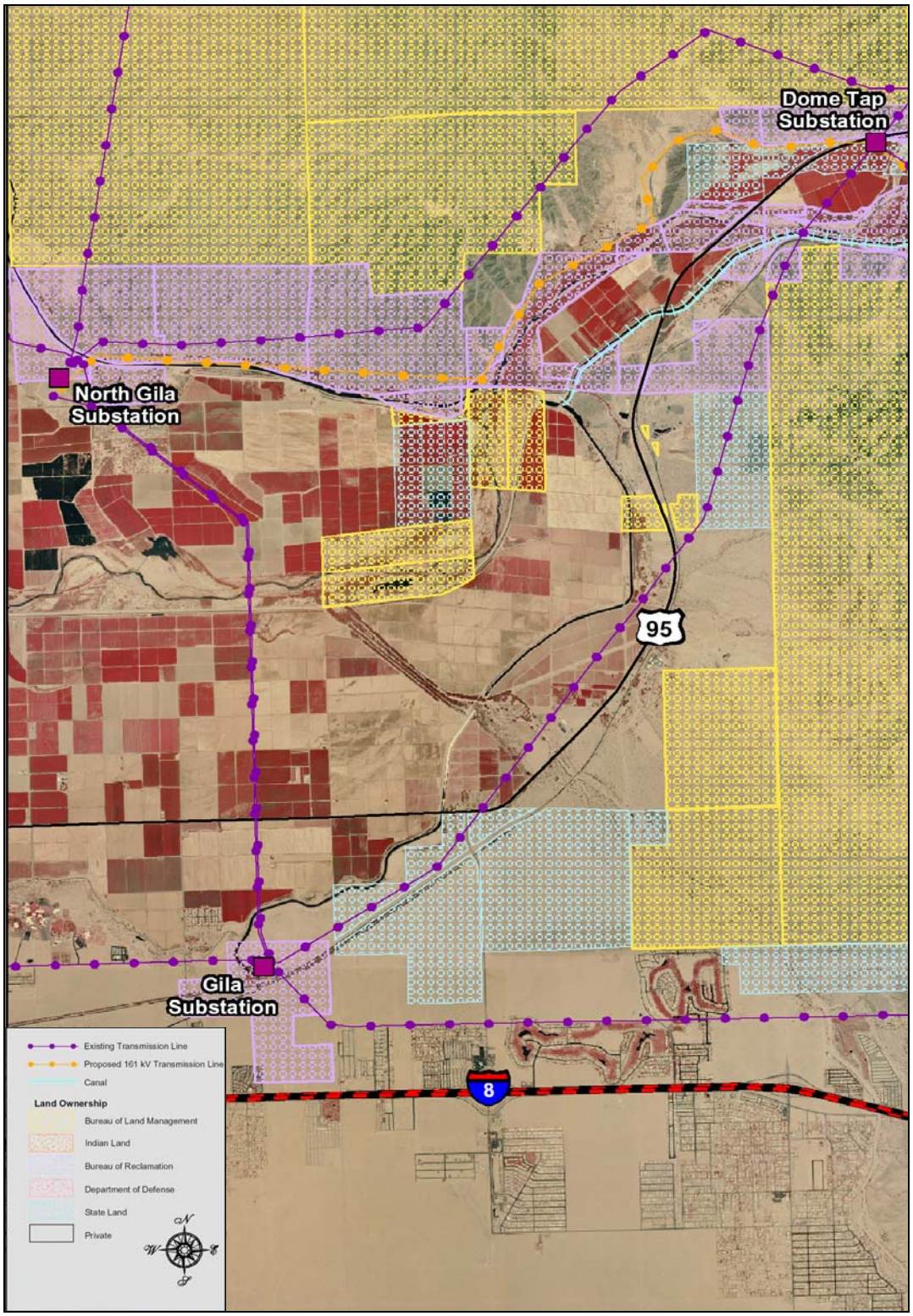
The BLM Yuma Field Office manages a diverse combination of land and resources, encompassing 1.2 million acres of southwestern Arizona and southeastern California. The area includes 155 miles of the lower Colorado River, a destination for hundreds of thousands of visitors seeking water-related recreation year-round. During winter, the desert becomes populated with long-term campers escaping the northern winter. The Proposed Project area provides suitable habitat for a number of common wildlife species described in table 3.4-2. Historic trails that once crossed the Proposed Project area are discussed in section 3.5.4. The BLM Yuma Field Office provides land for several rapidly growing communities and manages agricultural and residential permits and leases along the Colorado River (BLM 2003a).

Land use controls for rural non-Federal land in Yuma County include the Yuma County Zoning Ordinance and the Yuma County 2010 Comprehensive Plan. The Yuma County 2010 Comprehensive Plan recognized the WMIDD Rural Planning Area as an entity with operating plans and policies consistent with those of the county. All of Yuma County has been designated as an Enterprise Zone by the State of Arizona. The Enterprise Zone designation provides eligibility to the owner of a business for state income tax credits (GYEDC 2003a). Federal land in the Proposed Project area is administered by BLM and Reclamation, both of which have specific land management directives, as discussed in section 1.2. There are no BLM grazing permits on any of the lands involved in the Proposed Project.

3.6.1 Wellton-Mohawk Generating Facility

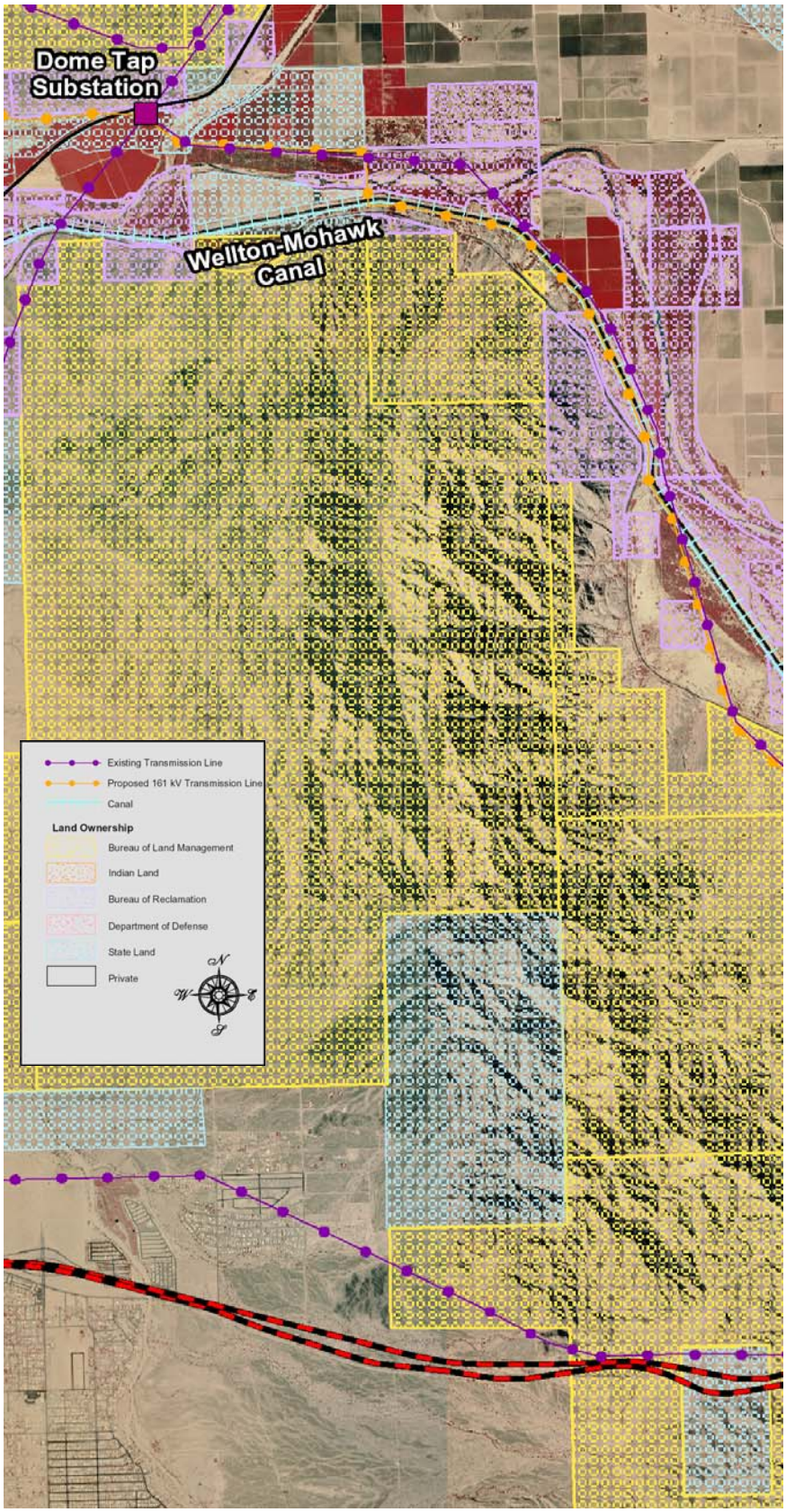
The proposed WMGF would be built on a 119-acre parcel immediately east of the existing Ligurta Substation. The land was previously disturbed from past activities associated with a concrete batch plant formerly on the site, construction of the Ligurta Substation, and construction of WMIDD facilities (including the Wellton-Mohawk Canal and pumping stations) in the 1940s. The proposed WMGF site does not contain any structures and is currently vacant, unused land. Of the 119 acres of land that would be used by the Applicant for the proposed WMGF, 96 acres are Federal land currently managed by WMIDD and owned by Reclamation (section 1.2.2). The remaining 23 acres are private land that would be acquired by WMIDD. Upon transfer of title of the 96 acres to WMIDD (section 2.1.2), development of the proposed WMGF would be under the jurisdiction of Yuma County, as well as subject to conditions imposed by the Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC) (section 2.4.1.1).

Existing industrial and transportation uses in the vicinity of the proposed WMGF site include the Ligurta Substation, Wellton-Mohawk Canal and pump stations, I-8, and the Union Pacific Railroad. The nearest residence is a single house approximately one-quarter mile north of the proposed WMGF site. The southeast corner of a residential development, Ligurta Foothills, is approximately one-half mile northeast of the northeast corner of the proposed WMGF site, and a residential development is located approximately 2 miles west of the proposed WMGF site.



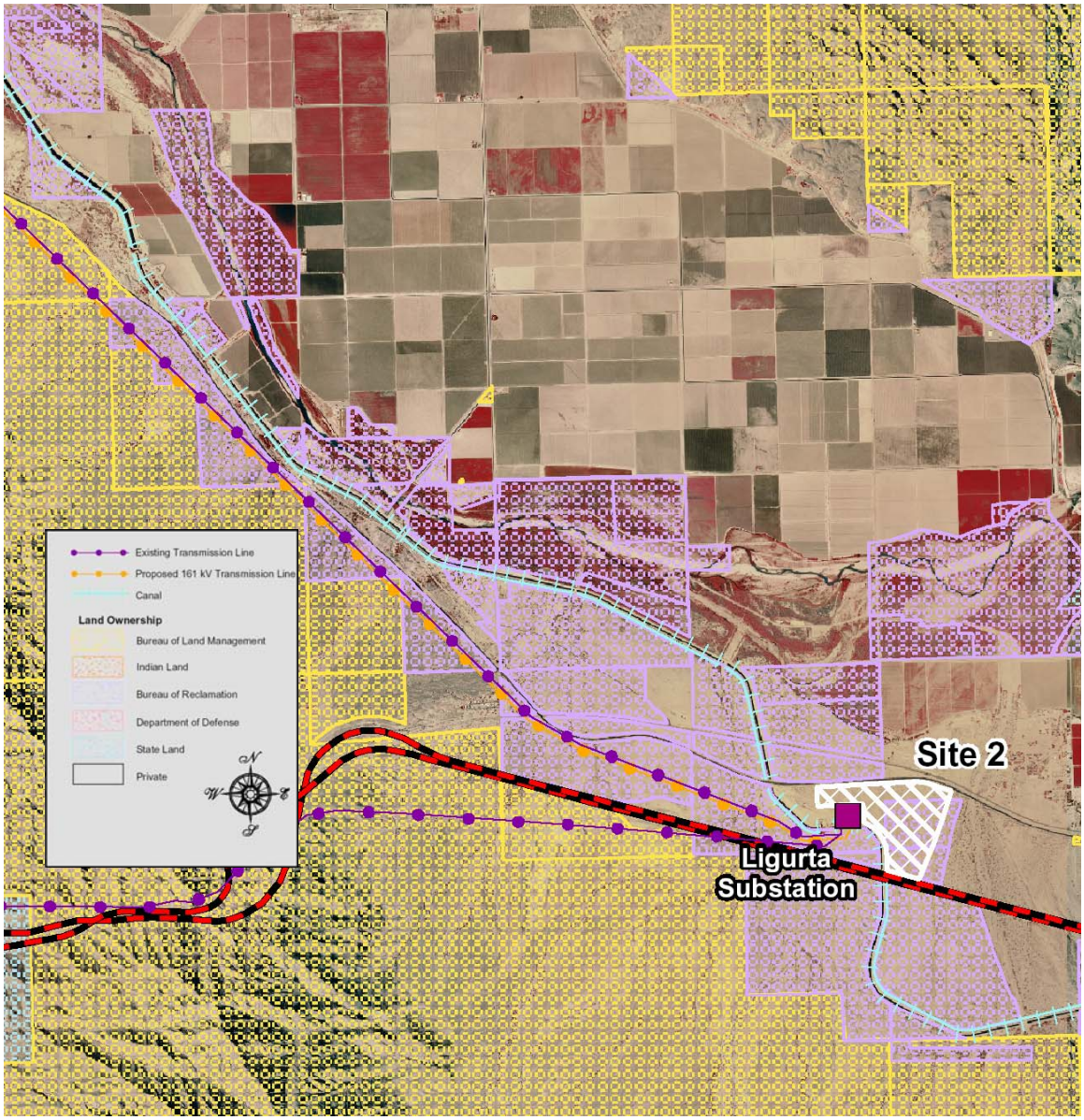
Source: Greystone 2003d.

Figure 3.6-1. Land Jurisdiction near the North Gila Substation.



Source: Greystone 2003d.

Figure 3.6-2. Land Jurisdiction near the Dome Tap Substation.



Source: Greystone 2003d.

Figure 3.6-3. Land Jurisdiction near the Ligurta Substation.

Yuma County's zoning designates this area as Rural Area with 40-acre minimum parcels (RA-40). Section 601.03L of the Yuma County Zoning Ordinance allows "public or private utility installation" as a special use on RA-designated parcels. Coordination with Yuma County has been initiated and presently continues to designate the proposed WMGF site and surrounding area as a Commercial and Industrial Planning Area. Yuma County Zoning Ordinance 601.06 states that structures shall not exceed 50 feet in height except as provided in section 1103.00 of the Yuma County Zoning Ordinance. Additional height regulations regarding RA-40-designated lands limit specific types of structures to a height not to exceed 100 feet unless the structure is set back from the lot line at least 1 foot for each foot of additional height above the height limit. Because the proposed WMGF stack height is approximately 160 feet, a variance application under section 1103.00 is required. The Yuma County Variance Application and Special Use Permit (SUP) Application for the proposed WMGF were both submitted to the Yuma County Department of Development Services in January 2003 and were approved for issuance in June 2003.

There are no wild and scenic rivers, BLM areas of critical environmental concern, or national or state parks on or adjacent to the proposed WMGF site. In a site specific context, the proposed WMGF site and contiguous lands have little recreational use (Wellton-Mohawk 2001a).

3.6.2 Facility Natural Gas Pipeline

As described in section 2.2.2, the two routing options for the facility natural gas pipeline, depend on the future location of the regional natural gas pipeline to which the facility natural gas pipeline would connect. Option 1 of the proposed natural gas pipeline would be mostly within WMIDD's existing Wellton-Mohawk Canal ROW for its approximately 12.7-mile length. The route follows the southern side of the Wellton-Mohawk Canal for a little over half of the distance and then it crosses under the canal and proceeds along the northern side for the remainder of the distance (figures 2.2-3 and 2.2-4). The existing use of this area is primarily for maintenance access to the canal from roads on either side of the canal, and maintenance access to the existing transmission line and the Union Pacific Railroad in the area. Option 1 crosses a combination of Reclamation, State of Arizona, and private land. Option 2 involves an interconnection just south of the proposed WMGF site near I-8. Option 2 would involve construction of less than one-quarter mile of pipeline across the proposed WMGF site, the Wellton-Mohawk Canal, and the I-8 ROW. Option 2 for the facility natural gas pipeline traverses Reclamation land and I-8. The ROW requirements for Options 1 and 2 are described in section 2.2.2. In a site specific context, the existing recreational use in this area is limited (Wellton-Mohawk 2001a).

Expanding needs for natural gas in the Dome and Wellton valleys, as well as regional gas suppliers' plans to supply the Phoenix area with natural gas from Mexico, could result in main natural gas pipelines being constructed in the Wellton area in the absence of the Proposed Project.

3.6.3 Transmission System Additions

Construction of a new 18.7-mile transmission line between the Ligurta Substation and APS's North Gila Substation north of Yuma, and interconnection of this line at the North Gila Substation would be required. This new line would be in a parallel, and partially overlapping, ROW with the existing Ligurta-Dome Tap 161-kV line. It crosses a combination of BLM,

Reclamation, State of Arizona, Yuma County, and private land. A ROW grant would be required from BLM where the new line crosses Federal lands (section 2.2.3.4). The existing use of this area is primarily for maintenance access to the canal on roads on each side of the canal, and maintenance access to the existing transmission line and Union Pacific Railroad in the area, although limited recreational use may occur. In addition, there is a public shooting range north of Highway 95 that is within 0.25 mile of the Ligurta-North Gila Transmission Line, west of Dome Tap Substation.

The transmission line upgrade from the Ligurta to Gila substations would replace an existing transmission line within an existing ROW. The existing land use is primarily as an infrastructure ROW, although limited recreational use may occur.

3.7 TRANSPORTATION

The ROI for transportation is defined as the roads in the vicinity of the Proposed Project that would be used for delivery of construction equipment, construction worker access, and delivery and employee access during operation of the Proposed Project. The roads within the ROI include I-8, Dome Valley Road, Old Highway 80, Highway 95, and existing access roads in the vicinity of the Wellton-Mohawk Canal and existing Ligurta-Gila Transmission Line.

3.7.1 Wellton-Mohawk Generating Facility

There is an existing transportation infrastructure in the vicinity of the proposed WMGF ROI. The major transportation corridor adjacent to the proposed WMGF site is I-8, generally running east to west, located adjacent to the south boundary of the proposed WMGF and classified as the principal corridor for interstate and statewide travel. Old Highway 80 runs to the north of the proposed WMGF site and primarily collects traffic from local roads. Old Highway 80 has a direct access road leading to the proposed WMGF site. The Union Pacific Railroad is also located to the north of the proposed WMGF and parallels Dome Valley Road/County 3rd Street. Dome Valley Road can be accessed from Highway 95, and meets Old Highway 80 just east of the Ligurta Substation and I-8 at Exit 21 (just west of the proposed WMGF).

3.7.2 Facility Natural Gas Pipeline

There are access roads on both sides of the Wellton-Mohawk Canal that run parallel to the Wellton-Mohawk Canal from the proposed WMGF site to Highway 95. The Union Pacific Railroad, located near the Wellton-Mohawk Canal, also has an existing access road. WMIDD controls and operates the access roads for the Wellton-Mohawk Canal and pump stations (Wellton-Mohawk 2003a).

3.7.3 Transmission System Additions

There is an existing road that provides access to most of the existing Ligurta-Gila Transmission Line, except the portions that have been rendered inaccessible by construction of I-8. In addition, approximately ten structures on the Ligurta-Gila Transmission Line are inaccessible to most land-based vehicles due to the construction of I-8 and the terrain in the vicinity of Telegraph Pass.

In the vicinity of the proposed Ligurta-North Gila Transmission Line, there are existing access roads for the Wellton-Mohawk Canal and Union Pacific Railroad. Between the Dome Tap and North Gila substations, there is a road to an existing transmission line, as well as a road for a public shooting range that connects with Highway 95.

3.7.4 Traffic

The Yuma Metropolitan Planning Organization of the Arizona Department of Transportation (ADOT) conducted a 24-hour Traffic Count Program for the Yuma Metropolitan area in 2004. ADOT's most recent annual average daily traffic counts for the regional transportation system near the Proposed Project are shown in table 3.7-1, and figure 3.7-1.

Table 3.7-1. Annual Average Daily (24-hour) Traffic Counts.

Route Name	Description	Site	Traffic Count for the Year 2004
Dome Valley Road	Northwest of Old Highway 80	8	549
Los Angeles Avenue (Old Highway 80)	West of Center Street	7	1,520
Avenue 29E	North of I-8	6	2,036
Los Angeles Avenue (Old Highway 80)	East of Williams Street	5	3,025
Average of All Four Count Sites			**1,783**

Source: Yuma Metro Planning 2005

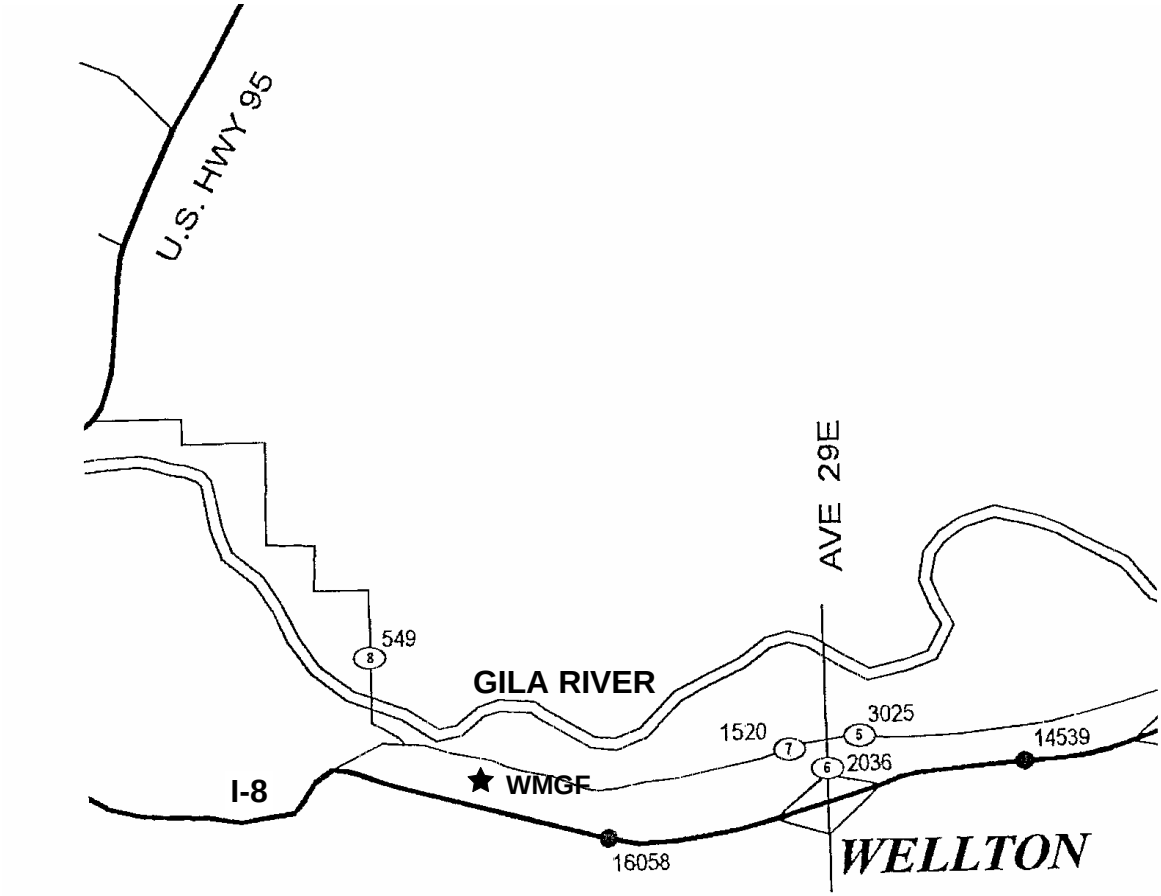


Figure 3.7-1. Annual Average Daily (24-hour) Traffic Counts

3.8 VISUAL RESOURCES

This section discusses the existing visual resources in the vicinity of the Proposed Project. The discussion includes evaluation of the quality of the existing landscape and the sensitivity of the existing visual resources to changes associated with the Proposed Project.

In evaluating the visual quality of, and modifications to, the existing landscape, the following aesthetic values are considered:

- Form—topographical variation, mountains, valleys
- Line/Pattern—canals, roads, and transmission line corridors
- Color/Contrast—brightness, diversity
- Texture—vegetation, buildings, disturbed areas

The sensitivity of the existing visual resources to changes associated with the Proposed Project is based upon a number of factors:

- The extent to which the existing landscape is already altered from its natural condition.
- The number of people within visual range of the area, including residents, highway travelers, and those involved in recreational activities.
- The degree of public concern or agency management directives for the quality of the landscape.

The Proposed Project area is south of the Gila River and east of the Gila Mountains. The area is characterized by an alluvial valley along the course of the Gila River. Away from the river, the terrain gradually rises through older, elevated river terraces and up to terrace and ridge systems. The broad terraces and plains are punctuated by low, very rugged, southeast/northwest-trending mountain ranges separated by broad alluvial valleys characteristic of the southern basin and range physiographic province (Huber at al. 2004).

The vicinity of the Proposed Project is within an area where there is little undisturbed vegetation due to past and ongoing activities, including the Ligurta Substation and connecting transmission lines, the Wellton-Mohawk Canal and pump stations, the Union Pacific Railroad and I-8. The vegetation in the area is sparse and low to the ground, consisting of scattered creosote and mesquite, and a slightly denser cover that includes grasses and some palo verde in the drainage cuts. The valley regions, and Dome Valley (the location of the proposed WMGF site) specifically, contain many agricultural areas, such that the landscape is altered from its natural state.

3.8.1 Wellton-Mohawk Generating Facility

The proposed WMGF would be built on 119 acres that do not currently contain any structures. It is immediately east and north of the Ligurta Substation. The Ligurta Substation contains a network of steel structures that are mostly about 30 feet tall, with several structures up to approximately 65 feet in height. The proposed WMGF site was previously disturbed during construction of the Wellton-Mohawk Canal and pump stations in the 1940s. The existing scenic integrity (degree of intactness or wholeness of the natural landscape) is low, as the area appears moderately altered from its natural state. The proposed WMGF site is in the foreground for travelers as they pass by on I-8, though partially blocked by the raised berm that follows the interstate. Multiple residences are within the viewshed of the proposed WMGF, the closest of which are as follows: (1) a single residence approximately one-quarter mile north of the proposed WMGF site; (2) a residential development known as Ligurta Foothills approximately one-half mile northeast of the proposed WMGF site, with 79 lots, some of which are undeveloped; and (3) a residential development approximately 2 miles west of the proposed WMGF site along Old Highway 80.

There are no Arizona state byways or wild and scenic rivers in the surrounding area, and there is no substantial recreational use in the immediate vicinity of the Proposed Project. For a discussion of the potential to visually impact significant cultural resources in the Proposed Project vicinity, see Section 3.5 Cultural Resources. For a discussion of recreational activities in the Proposed Project vicinity see Section 3.6 Land Use and Recreation.

Five key observation points were selected for preparation of photo simulations of the proposed WMGF (refer to section 4.8.2 for the photo simulations). These five points were selected to best represent a range of viewing distances from the proposed WMGF from likely viewing areas, and

to include points of local interest from which viewers may have a high concern for the visual quality of the landscape:

1. Foreground view (within one-half mile) of the proposed WMGF from I-8, selected as the closest viewing point from which large numbers of travelers would see the proposed WMGF.

2. Middleground view (at a distance of approximately 1 mile) of the proposed WMGF from I-8, selected because it provides the most open view of the proposed WMGF from a distance where details would be discernible to large numbers of travelers on I-8.

3. Middleground view (at a distance of approximately one-half mile) of the proposed WMGF from near the edge of the group of residences to the northeast.

4. Background view (at a distance of approximately 15 miles) of the proposed WMGF from Antelope Hill, elevation 815 feet, a local point of interest for its cultural significance, including an abundance of petroglyphs (rock images), in elevated terrain to the east.

5. Background view (at a distance of approximately 4.5 miles) of the proposed WMGF looking east from Telegraph Pass (with a summit of 893 feet), a local point of interest for its recreational significance.

3.8.2 Facility Natural Gas Pipeline and New Transmission Line

The Wellton-Mohawk Canal runs northwest from the south boundary of the proposed WMGF. The facility natural gas pipeline will be buried parallel to the canal within 100 to 300 feet of the centerline of the canal. Much of the area along the Wellton-Mohawk Canal is cleared of vegetation due to canal cleaning activities. The proposed new Ligurta to North Gila Transmission Line will parallel the existing Ligurta to Dome Tap 161-kV Transmission Line until the 161-kV line approaches the Gila River Crossing. At this point the new transmission line will continue west about one mile before crossing the river on a more perpendicular course in an existing firebreak, adjacent to an existing distribution line. Once across the river, it again parallels the existing 161-kV line to the Dome Tap Substation.

The overall existing scenic integrity between the Ligurta and Dome Tap substations is low, given the canal, transmission lines, associated access roads, and off-road vehicle tracks. However, the approximately 600-foot-wide Gila River corridor is a relatively intact linear feature of the visual landscape, except for an existing distribution line and the existing firebreak the new transmission line would use. Also, the 250-foot-wide low flow channel is semiannually cleared of vegetation for flood control purposes (figure 3.4-3 shows the crossing site), and the visual impact at the semiannual vegetation clearing.

The proposed transmission line continues west from the Dome Tap Substation to the North Gila Substation in an area that contains an existing 500-kV transmission line, the APS 500-kV switch yard, the Gila Gravity Main Canal, and a recreational shooting range. The existing scenic integrity in this section is moderate, as the area appears slightly altered from its natural state. The existing transmission line from Ligurta to Dome Tap Substation is visible to travelers on I-8 as it leaves the Ligurta Substation. The existing line is visible from Highway 95 in the vicinity

of Dome Tap Substation, immediately adjacent to Highway 95. Multiple residences are located within the viewshed of the existing and proposed transmission line.

3.8.3 Transmission Line Upgrade

Western's existing 161-kV transmission line (on wooden H-frame structures) from Ligurta to Gila Substation would be upgraded. The existing scenic integrity in the vicinity of this transmission line is moderate to low, given the alterations from the natural state. The entire length of this existing line is visible from I-8 in the foreground, and also from Highway 95 and smaller collector roadways. Multiple residences are located within the viewshed of the proposed transmission line upgrade. Telegraph Pass also has twelve communication towers which detract from the scenic quality of this portion of the route.

3.9 NOISE

Noise-sensitive areas are land use areas associated with indoor and outdoor human activities that may be subject to stress or significant interference from ambient noise. Such areas include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities, and libraries. Industrial, commercial, and agricultural land uses, and undeveloped land generally are not considered sensitive to ambient noise. The ROI relative to a noise source can be viewed as two separate areas: (1) nearby, or areas directly impacted by the noise resulting from the construction and operation of the Proposed Project; and (2) regional, or sensitive areas in the region that may be impacted directly or indirectly by the proposed construction and operation of the Proposed Project.

3.9.1 Fundamentals of Acoustics

In March of 1974, the EPA Office of Noise Abatement and Control published a document entitled *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA 1974). Much of the information below is adapted from this document, and from the publication *Protective Noise Levels*, which was produced to compliment the material in the above reference (EPA 1979).

Noise is generally defined as loud, 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 environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise, its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations, which travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by a number of variables including frequency and intensity. When the source stops vibrating, the sound waves are no longer created and the sound ceases. The human ear is extremely sensitive to these pressure fluctuations. Sound is generally characterized by a number of variables including amplitude (perceived as loudness) and frequency (perceived as pitch).

Amplitude

Amplitute is the sound pressure measured as the difference between atmospheric pressure (with no sound present) and the total pressure (with sound present). Although there are other measures of sound amplitude, sound pressure is the fundamental measure and the basic ingredient of the various measurement descriptors.

The unit of sound pressure is the decibel (dB). A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 55 dB. Sound levels above approximately 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels. The minimum change in the sound level of individual events that an average human ear can detect is approximately 3 dB. An increase, or decrease, in sound level of about 10 dB is usually perceived by the average person as a doubling, or halving, of the sound's loudness, and this relation holds true for loud sounds or for quieter sounds.

The dB scale is logarithmic, and because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. For example:

60 dB + 60 dB = 63 dB, and
75 dB + 75 dB = 78 dB

Frequency

Frequency describes the sound's pitch and is the rate, or number of times per second, that a sound source vibrates, and in turn makes a pressure change wave in the air or other medium. The frequency is typically measured as cycles per second, or Hertz (Hz). Hertz is the number of times each second that the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. A particular tone that makes the drum skin vibrate 100 times per second generates a sound pressure wave that is oscillating at 100 Hz. The human ear has a wide range of response and most humans can identify sounds with frequencies from about 16 Hz to 20,000 Hz.

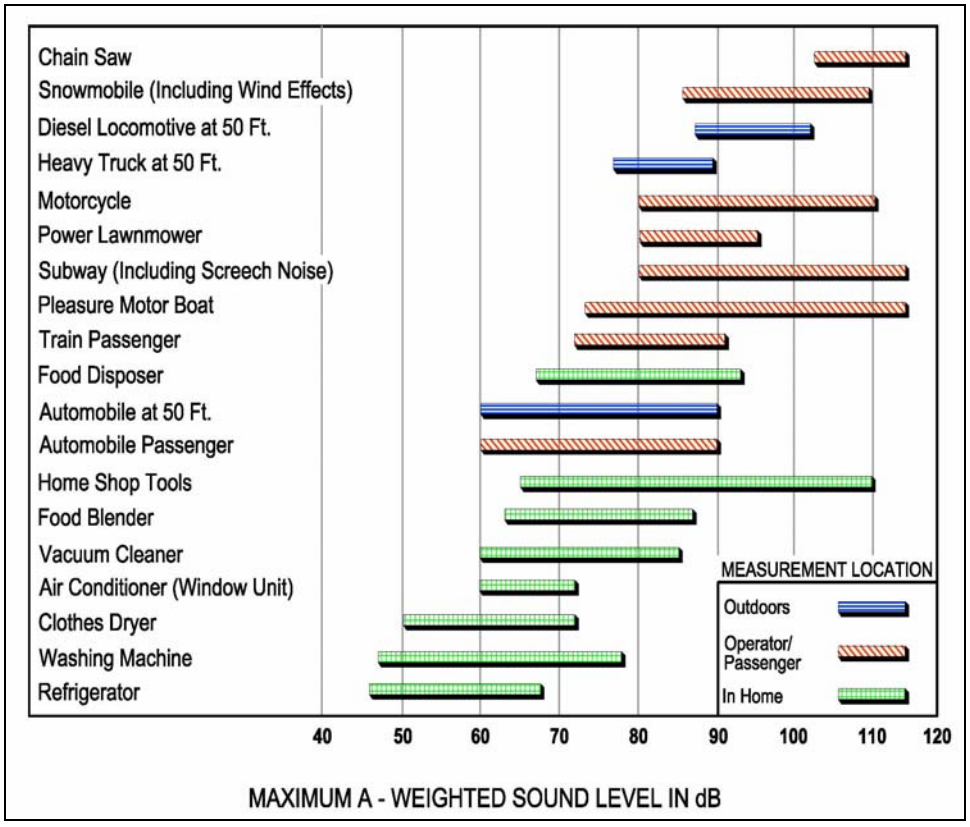
3.9.2 Environmental Noise

Sound from a tuning fork (a pure tone) contains a single frequency. In contrast, most sounds one hears in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. People hear sounds most readily when the predominant sound energy occurs at frequencies between 1,000 and 6,000 Hz. Sounds at frequencies above 10,000 Hz (such as high-pitched hissing) are much more difficult to hear, as are sounds at frequencies below about 100 Hz (such as a low rumble). To measure sound on a scale that approximates the way it is heard by people, more weight must be given to the frequencies that people hear more easily. This is called "A" weighting, and the resulting decibel level is called the A-weighted sound level (dBA). Typical ranges of common sounds are presented in figure 3.9-1.

There is a difference in sudden or startling sound and continuous levels of sound. This temporal nature of sound may be described in terms of its pattern over time and change in sound pressure

level. To describe the time varying characteristics of environmental noise, the statistical noise descriptors L_{10}, L_{50}, and L_{90} are commonly used. They are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of the stated time. Sound levels associated with the L_{10} typically describe transient or short-term events, while levels associated with the L_{90} describe the steady-state (or most relevant) noise conditions.

Most environmental noise includes a conglomeration of noise from distant sources that creates a relatively steady background noise in which no particular source is identifiable. To account for this, a single descriptor called the equivalent sound level (L_{eq}) is used. L_{eq} is the energy-mean A-weighted sound level during a measured time interval. It is the "equivalent" constant sound level that would have to be produced by a given source to equal the fluctuating level that was measured. In addition to the L_{eq}, it is often desirable to know the acoustic range of the noise that occurred during the same time. This is accomplished through the L_{max} and L_{min} indicators. These represent the root-mean-square maximum and minimum noise levels which occurred during the monitoring interval. The L_{min} value obtained for a particular monitoring location is often called the acoustic floor for that location.



Source: EPA 1979.

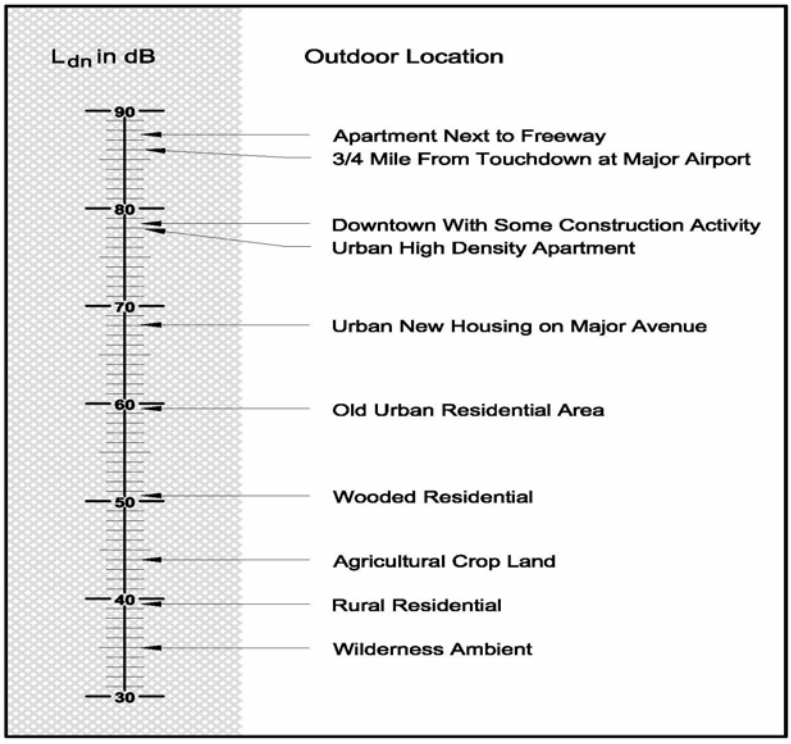
Figure 3.9-1. Typical Ranges of Common Sounds.

The major virtue of the equivalent sound level is that it correlates reasonably well with the effects of noise on people, even for wide variations in environmental sound levels and time patterns. It is used when only the durations and levels of sound, and not their times of occurrence (day or night), are relevant.

The day-night average noise level (L_{dn}) is defined as the A-weighted average sound level for a 24-hour day. 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 are provided in figure 3.9-2 using the L_{dn}.

In residential areas of the United States, major contributions to outdoor noise come from transportation, industrial, construction, human, and animal sources. Inside homes, appliances, radio, and television, as well as people and animals, are predominant noise sources. On the job, workplace equipment can create moderate to extremely high levels of noise. The daily noise exposure of people depends on how much time they spend in different outdoor and indoor locations and on the noise environments in these places.

The noise environment outside residences in the United States can be highly variable. Outdoor day-night sound levels in different areas vary over a range of 50 dB. Levels occur as low as L_{dn} equal to 30 to 40 dB in wilderness areas and as high as L_{dn} equal to 85 to 90 dB in urban areas.



Source: EPA 1979.

Figure 3.9-2. Typical Sound Levels.

Most Americans live in areas with a much smaller range of outdoor noise levels. For urban dwellers (roughly 135 million people, more than half the U.S. population), 87 percent live in areas of L_{dn} equal to 48 and higher from traffic noise alone. Rural populations enjoy average outdoor sound levels generally lower than L_{dn} equal to 50 dB.

3.9.3 Noise Within the Region of Influence

Vehicular traffic along I-8, on the south side of the Proposed Project, and both Old Highway 80 and the Union Pacific Railroad along the north boundary of the proposed WMGF site contribute to the existing noise levels in the area. A pump station located along the Wellton-Mohawk Canal contributes additional noise. The nearest sensitive noise receptor (a residence) is located approximately one-quarter mile northeast of the closest noise source at the proposed WMGF site.

Appendix F of the proposed WMGF's SUP Application (Wellton-Mohawk 2003b) reported that noise sampling was performed at this nearest residence. The location for the sampling was at the nearest residence on the north side of the Union Pacific railroad track just north of the proposed WMGF. This testing showed average background noise levels below 52 dBA except for specific noise events such as a train (explanation of A-weighted decibels in section 3.9.1). During these events the noise levels typically exceeded 76 dBA. Due to the frequency of the trains (26 during the 24-hour test), the overall average noise level was reported as 60 dBA.

The Yuma County Planning and Zoning Ordinance restricts the type of development in certain noise zones,(i.e., zones where existing noise levels exceed 65 dBA, in the vicinity of an airport, etc.) but does not have any noise-related restrictions in the vicinity of the Proposed Project.

3.10 SOCIOECONOMICS

Yuma County was one of the original four counties designated by the First Territorial Legislature. In the mid-1880s, steamboats on the Colorado River carried passengers and goods to mines, ranches, and military outposts in the area. The City of Yuma, the county seat, had its origins as a fort established in 1849, and it became a gateway to California when the Southern Pacific Railroad bridged the river at that site.

The Town of Wellton, founded in 1878 and incorporated in 1970, lies 34 miles east of Yuma and 9 miles east of the proposed WMGF. Wellton (originally Well Town) was named for water wells that were drilled to service the old steam-powered engines of the Southern Pacific Railroad (Town of Wellton 2003).

For the purposes of this EIS, the ROI is Yuma County because the proposed WMGF and its associated components would be located completely within county limits. Additionally, the communities within commuting distance of the proposed WMGF and its associated components fall within county limits. It is expected that the majority of proposed WMGF employees would reside in the Town of Wellton or City of Yuma.

3.10.1 Population Trends and Demographic Characteristics

Yuma County, now classified as a Metropolitan Statistical Area, is one of the fastest growing counties in Arizona, and it was the third fastest growing Metropolitan Statistical Area in the entire United States during most of the 1990s (GYEDC 2003a). In the last decade, net migration resulted in more than 53,131 new residents to the area, an increase of almost 50 percent in 10 years. The City of Yuma is also growing very rapidly. As shown in table 3.10-1, the population increased from 54,923 in 1990 to 77,515 in 2000, a net increase of 41 percent during the 10 year period. Except for the Town of Wellton, population growth has remained strong in the 2000 to 2003 time period.

Table 3.10-1. Historical Population Trends.

Area	2003 Estimate[a]	2000 Census[a]	1990 Census[b]	% 1990 -2000	% 2000 - 2003
Arizona	5,629,870	5,130,632	3,665,228	40.0	9.7
Yuma County	175,045	160,026	106,895	49.7	9.4
City of Yuma	83,330	77,515	54,923	41.1	7.5
Town of Wellton	1,880	1,829	1,066	71.6	2.8

a Source: Community Profile 2002.
b Source: Census 1990.

As shown in table 3.10-2, in Yuma County the population is 68.3 percent white, with 50.5 percent of persons reporting themselves as being of Hispanic (including Latino) origin. American Indian and Alaska Native persons comprised 1.6 percent of the Yuma County population in 2000.

Yuma County, the City of Yuma, and the Town of Wellton have almost equal numbers of men and women in the population. The county's population is relatively young, with a median age of 33.9 years. Median age in the Town of Wellton was 46.9, which when combined with the rapid growth rates, indicates a significant influx of retired people. More than 16 percent of the county's population was 65 or over, while almost 28 percent of Wellton's population was 65 or older. The average age of Wellton's population is expected to increase and continue to be a significant demographic factor as more retirees move to the area as full-time residents. Just over 65 percent of the Yuma County population over 25 years old has graduated from high school, compared with more than 81 percent of all Arizona residents, indicating a less educated labor force than in other parts of the state. Twenty-four percent of the county's population is foreign born, almost twice the percentage for Arizona residents as a whole. More than 45 percent of county residents speak a language other than English at home.

Table 3.10-2. State, County, and Local Demographic Characteristics, 2000.

Demographic Characteristic	Arizona	Yuma County	City of Yuma	Town of Wellton
Gender				
Male	49.9%	50.5%	49.8%	49.6%
Female	50.1%	49.5%	50.2%	50.4%
Age				
0-14	22.5%	24.4%	25.1%	19.5%
15-24	14.3%	14.6%	16.5%	11.1%
25-44	29.5%	25.6%	27.1%	17.4%
45-64	20.9%	18.9%	17.5%	14.9%
65 and over	13.0%	16.5%	13.9%	27.9%
Median age	34.2 years	33.9 years	31.2 years	46.9 years

Table 3.10-2. State, County, and Local Demographic Characteristics, 2000 (*continued*)

Demographic Characteristic	Arizona	Yuma County	City of Yuma	Town of Wellton
Race				
White - alone	75.5%	68.3%	68.3%	68.2%
Hispanic - of any race[a]	25.3%	50.5%	45.7%	40.7%
Black - alone	3.1%	2.2%	3.2%	2.0%
Native American - & Alaska Native alone	5.0%	1.6%	1.5%	1.4%

[a] The U.S. Census Bureau complies with the Office of Management and Budget's standards for maintaining, collecting, and presenting data on race, which were revised in October 1997. They generally reflect a social definition of race recognized in this country. They do not conform to any biological, anthropological or genetic criteria. In accordance with the Office of Management and Budget definition of ethnicity, the Census Bureau provides data for the basic categories in the Office of Management and Budget standards: Hispanic or Latino and Not Hispanic or Latino. In general, the Census Bureau defines ethnicity or origin as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. People who identify their origin as Spanish, Hispanic, or Latino may be of any race. According to the revised Office of Management and Budget standards noted above, race is considered a separate concept from Hispanic origin (ethnicity).

Source: Census 2002a.

3.10.1.1 *Housing*

Yuma County

According to the 2000 Census, there were 74,140 housing units in Yuma County, almost 12 percent of which were multiple family units. More than 72 percent of the housing units are owner-occupied with an average of 2.86 persons residing in each household. Because of the significant number of part-time residents (both seasonal retirees and agricultural workers), the U.S. Census Bureau estimates that 27 percent of all dwelling units in Yuma County were vacant on April 1, 2000. The median value of an owner-occupied housing unit in 2002 was $85,100, compared to $121,300 for the state as a whole. The median value of a new private housing unit was $96,295 in 2000.

City of Yuma

The 2000 Census reports there were 34,475 housing units in the City of Yuma. Of the 26,649 occupied housing units, more than 63 percent were owner-occupied, with 37 percent being renter-occupied. On average, 2.79 persons live in each household. The vacancy rate is between 2 percent for owner-occupied units and 12.3 percent for rentals.

Town of Wellton

The 2000 Census reports that there were 1,144 housing units in the Town of Wellton, only 700 were occupied during April 2000, indicating the seasonal nature of the retiree population. Of the 700 occupied housing units, over 86 percent were owner-occupied, with less than 14 percent being renter-occupied. On average, 2.76 persons live in each year-round household. The vacancy rate is almost 2 percent for owner-occupied units and almost 9 percent for rentals indicating that the majority of the 444 unoccupied units are not available for rent.

The Town of Wellton is zoned for residential, commercial, industrial, and agricultural uses. The majority of Wellton is zoned for 6,750 square foot lots with one house permitted on each lot (Town of Wellton 2003).

3.10.1.2 *Education*

In 2000, there were five public high schools in Yuma County with a total enrollment of approximately 8,000 students. There are 23 public elementary schools with a total enrollment of over 20,000 students. The Town of Wellton has one elementary school with another elementary school and high school in the surrounding area.

The Arizona Western College is a multi-campus community college granting Associate of Arts and Applied Science degrees. Northern Arizona University, the University of Arizona, and the University of Phoenix all have campuses or outreach programs in Yuma offering four-year degree programs.

3.10.1.3 *Community Services and Public Safety*

Yuma County provides a variety of municipal type community services including public housing, public health, a roads department, and the solid waste utility. The Sheriff's Department is also a Yuma County public safety service.

The City of Yuma provides the full range of community services to its residents including water, sanitary sewer and solid waste utilities, law enforcement, fire protection, recreation and library services.

The Town of Wellton provides a full slate of community services: water, sanitation service, fire protection, police protection, municipal court, medical facility, library, community center, two parks, community swimming pool, golf course, and a skate park (Town of Wellton 2003).

Utilities

Major suppliers of electrical services in Yuma County are APS and WMIDD. Natural gas is supplied by Southwest Gas Corporation. Qwest is the major provider of telephone services (Community Profile 2003a).

Health Care

The Yuma Regional Medical Center provides a full range of specialty medical services. The 277-bed acute care facility offers 24-hour emergency service.

3.10.2 Economic Resources

Yuma County, despite the population growth it's experiencing, is still an economically challenged area, primarily because of the seasonal nature of agricultural employment. Major employment sectors include agriculture, tourism, and the military. The Arizona Department of Commerce estimates that agriculture is a billion-dollar industry when all components are included. Principal field crops include grain, hay, and cotton. Lettuce is the principal vegetable crop, while lemons are the primary fruit crop. The county also supports an active livestock production operation, which focuses on selling cattle and feed (GYEDC 2003b).

Tourism is a major and growing economic sector in Yuma County as well as the rest of Arizona. Winter visitors and international shoppers constitute the major travelers to the area. The Yuma County Chamber of Commerce reports that annual taxable sales during 2001 in touristic

activities, including retail stores, restaurants, bars, hotels and motels, exceeded one billion dollars. (Yuma COC 2005).

The military also contributes substantially to the local economy. The U.S. Marine Corps Air Station in Yuma and the U.S. Army Yuma Proving Grounds contribute directly to the economy via wages paid and goods and services purchased. In addition, many retired Navy and Marine Corps personnel live within a 40-mile radius of Yuma. Their combined retirement income exceeds $29 million per year (GYEDC 2003a).

The State of Arizona designated Yuma County as an Enterprise Zone to provide for business development incentives such as state income and property tax credits to encourage industrial development in the area (GYEDC 2003a).

WMIDD, which would provide the land for the proposed WMGF, is also one of the largest employers in the county. WMIDD is a political subdivision of the State of Arizona that provides irrigation water, power, drainage, and flood protection for the residents and lands in the Wellton-Mohawk Valley. WMIDD is part of the Gila Project authorized by Congress in 1947 to be built by Reclamation. The project was completed and operation was transferred to WMIDD in 1951 (Resources 1997).

3.10.2.1 *Employment*

Agriculture is the major employment sector in Yuma County, accounting for over 35 percent of all jobs. Yuma County's top private sector employers are Dole Fresh Vegetables, Salyer American Fresh, Yuma Regional Medical Center, Gowan Company, and Shaw Industries. Major public sector employers include the City of Yuma, U.S. Army Yuma Proving Grounds, Yuma Elementary Schools, U.S. Marine Corps Air Station, and Yuma County (Community Profile 2005). Table 3.10-3 shows 2002 employment by industry in Yuma County.

Table 3.10-3. Employment by Industry, Yuma County, 2002.

Industry	Average Annual Employment	Total Percent
Agriculture	22,902	35.3
Mining	0	0
Construction	2,825	4.4
Manufacturing	1,950	3.0
Transportation, Communications and Utilities	1,625	2.5
Trade	11,300	17.4
Finance, Insurance, and Real Estate	1,350	2.1
Services	10,575	16.3
Private business	52,527	81.1
Government	12,275	18.9
Total all industries	**64,802**	**100.0**

Note: Totals may not add due to nondisclosure of confidential industry data or to rounding.
Source: Community Profile 2003a.

Government employment is especially important to Yuma County because it is a steady source of "outside" dollars coming into the county, thereby contributing to the economic base. Each outside dollar generates about $2.00 (Nicholson 2002), whereas dollars earned from inside the community generate only $1.00. Employment at the military bases in Yuma County provides important outside dollars.

As shown in table 3.10-4, the unemployment rate of Yuma County is significantly higher than the state unemployment rate. The Greater Yuma Economic Development Corporation attributes this high unemployment rate to the seasonal nature of agricultural work. Workers, many from Mexico, work for a six-month season and then go on unemployment until the beginning of the next season. In addition, some of the older residents who come to the area each winter may apply for unemployment benefits from their previous employers for the duration of their "snowbird" months.

Table 3.10-4. Unemployment Rates in 2003.

Community	Civilan Labor Force	Unemployment Rate
Arizona	2,690,294	5.6%
Yuma County	74,377	23.5%
City of Yuma	39,642	16.3%
Town of Wellton	674	22.8%

Source: Community Profile 2004.

3.10.2.2 *Income*

Personal income is defined as all income received by individuals from all sources, including income from work (labor income or earnings), income from savings and investments (investment income), and income from outside sources such as Social Security or Medicare (transfer payment income).

The agricultural sector in Yuma County, although employing the greatest number of workers in 2003, paid next to the lowest average wage in the county at $7.34 per hour. Table 3.10-5 shows employment and average wages by occupation.

Table 3.10-5. 2003 Employment by Occupation, Average Wages.

Occupation	Employment	Average Hourly Wages[a]
Farming, Fishing & Forestry	8,810	$ 7.34
Office & Administration	6,940	$11.60
Transportation & Material Moving	5,640	$ 8.75
Sales & Related Occupations	4,550	$11.10
Food Preparation & Serving Related	3,920	$ 7.19
Education, Training & Library	3,580	$13.99
Construction & Extraction	3,430	$12.33
Management	1,940	$29.90

Community Profile 2004.

Per capita income is calculated by dividing all personal income received by all permanent county residents by the total county population. Personal income for Yuma County was $2.762 billion dollars in 2001. Per capita income for the county was $16,839 in 2001, while the State of Arizona per capita income was $25,878 (BEA 2003).

Poverty levels indicate what percentage of the population has income below what is necessary for basic necessities (i.e., adequate housing, food, transportation, energy, and health care). The 2000 Census reports that 15.5 percent of Yuma County families and 19.2 percent of individuals were classified as living in poverty based on the national poverty threshold. Table 3.10-6 shows the poverty level in the ROI for 2000.

Table 3.10-6. Poverty Level in the Region of Influence, 2000.

Area	**Percent of Families Below the Poverty Level**	**Percent of Individuals Below the Poverty Level**
Yuma County	15.5	19.2
City of Yuma	12.1	14.7
Town of Wellton	16.1	21.3

Source: Census 2002b.

3.10.2.3 *Government and Public Finance*

The State of Arizona relies on income, property, and sales taxes to meet expenditures. Personal income taxes are patterned after Federal code and are collected via withholding for state payroll taxes. Effective January 1, 2002, the corporate income tax is 6.968 percent or $50, whichever is greater.

The two primary sources of local government revenues are intergovernmental transfers (i.e., funds passed through from Federal and state governments, such as grants-in-aid and payments in lieu of taxes [PILT] for Federally-owned land), and local taxes and assessments.

The property tax is generally the most important local tax, providing money necessary to fund community services, and is constrained in Yuma County by the amount of land being taxed. Only 10.5 percent of the land in Yuma County is privately held and subject to property tax. The State of Arizona controls 7.7 percent of the land, while BLM manages 14.8 percent of the land. Other public entities, primarily the military, control 66.8 percent of the land (GYEDC 2003a). PILT is a program administered by BLM to offset the loss of tax revenues to communities because of tax-exempt Federal land within their jurisdictions (BLM 2001). In 2002, BLM sent $1,585,382 to Yuma County for 1,509,156 acres of tax-exempt land managed by BLM, Bureau of Reclamation, USACE, and USFWS (BLM 2002).

Table 3.10-7 shows that property tax revenues have almost doubled in the past 12 years, due to annual reappraisals of property rather than increases in the property tax rate, which has remained relatively stable during the same timeframe.

Table 3.10-7. Net Assessed Valuations.

Area	1990	2000	2002
Yuma County[a]	$383,123,731	$552,869,545	$615,920,229
City of Yuma[b]	$187,552,327	$256,612,102	$305,708,909
Town of Wellton[b]	$ 2,100,354	$ 2,828,035	$ 3,729,999

Note: Property tax in Arizona is based on assessed valuation which is 25% of market value for commercial property and 10% of market value for residential property.
[a] Source: Wehrle 2003.
[b] Source: Community Profile 2003b.

Local governments use sales taxes as well to fund community services and programs. Table 3.10-8 shows the sales tax by industry sector.

Table 3.10-8. Sales Tax By Industry Sector.

Area	Retail Goods	Restaurant Services	Lodging
Yuma County	7.1%	6.0%	6.6%
City of Yuma	8.8%	10.8%	10.3%
Town of Wellton	8.5%	8.5%	9.1%

Source: Yuma COC 2003.

3.11 ENVIRONMENTAL JUSTICE

Environmental justice has been defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (EPA 2003). Concern that minority and low-income populations might be bearing a disproportionate share of adverse health and environmental impacts led President Clinton to issue an EO in 1994 to address these issues. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The Order is clear that its provisions apply fully to programs involving Native Americans. Native American issues are also addressed within section 3.5. When conducting NEPA evaluations, Western incorporates environmental justice considerations into both its technical analyses and its public involvement program in accordance with EPA guidelines and the CEQ regulations (CEQ 1997).

Impacts on minority or low-income populations that could result from the Proposed Project were analyzed for the geographic areas in which the proposed WMGF and its associated components would be located to determine if they would have a disproportionately high and adverse impact on minority populations. Figure 3.11-1 shows the census tracts surrounding the proposed WMGF and its associated transmission lines and natural gas pipeline. These census tracts were targeted because they capture any potential impacts to the major resource areas/disciplines including geology and soils, water, air quality, biological, cultural, land use and recreation, transportation, visual, noise, socioeconomics, health and safety, and waste management during

both the construction and operations phases of the Proposed Project. In general, these census tracts are sparsely populated; the average population density is 38.5 persons per square mile.

In order to meet current and future power demands in this section of southwestern Arizona, the Proposed Project would need to be located somewhere within this southwestern region. Therefore, the environmental justice analysis focuses on this region, specifically Yuma County, the proposed location for the proposed WMGF. Additionally, due to the large Hispanic population (which, for purposes of this report, includes Latinos) in the southwestern portion of Arizona, Yuma County was chosen as the geographic area of comparison for this analysis.

The nearest Indian reservation, the Fort Yuma Quechan Reservation, is located approximately 3 air miles west of Ligurta to North Gila Transmission Line terminus, the nearest project facility. However, the Proposed Project area and surrounding region have been identified as traditionally and culturally significant to a number of tribes having ancestral ties to this area.

3.11.1 Minority Populations

For the purpose of this WMGF EIS, minority refers to people who classified themselves as Black or African American, Asian or Pacific Islander, American Indian or Alaskan Native, Hispanic of any race or origin, or other non-White races (CEQ 1997) in the 2000 Census. Because the Hispanic population can be either white or non-white, it is not possible to calculate minority population by adding racial minorities to the Hispanic population (an ethnic classification). Therefore, this WMGF EIS includes as minority all racial and ethnic groups other than non-Hispanic whites.

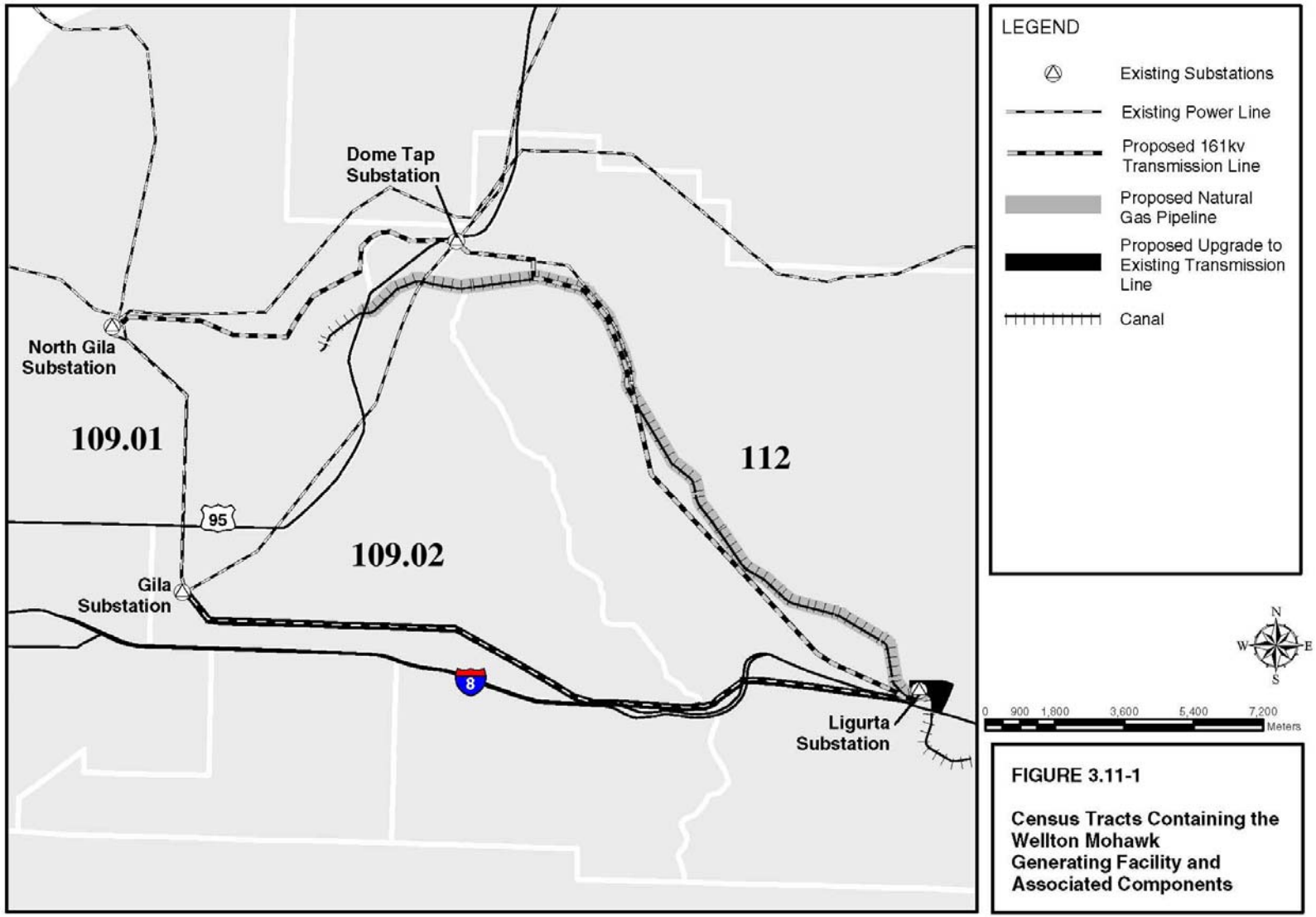


Figure 3.11-1. Census Tracts Containing the Wellton-Mohawk Generating Facility and Associated Components.

Demographic information from the U.S. Census Bureau was used to identify minority populations in the areas crossed by the Proposed Project, and also within the ROI (Yuma County). Information on locations and numbers of minority populations was obtained from the 2000 Census. Census data is reported on the level of census tracts, a geographical area that varies with size depending largely on population density (low-population density census tracts generally cover larger geographical areas).

As shown in table 3.11-1, for Yuma County, the total minority population is 55.7 percent. The 2000 Census data on minority groups for the three census tracts show that minority populations are less than Yuma County as a whole.

Table 3.11-1. Census 2000 Racial and Ethnic Characteristics.

Race	Yuma County	Census Tract 109.01	Census Tract 109.02	Census Tract 112
Total Population, 2000	160,026	6,297	7,714	5,082
Race				
White - alone	68.3%	69.5%	89.7%	70.1%
Black or African American - alone	2.2%	1.7%	0.5%	1.4%
American Indian or Alaska Native - alone	1.6%	1.2%	0.5%	1.5%
Asian - alone	0.9%	0.8%	0.5%	0.2%
Native Hawaiian or Other Pacific Islander - alone	0.1%	0.3%	Less than 0.1%	Less than 0.1%
Some other race alone	23.6%	22.7%	7.0%	23.1%
Two or more races	3.2%	3.8%	1.9%	3.3%
Aggregate of non-white races	31.6%	30.5%	10.4%	29.5%
Ethnicity				
Hispanic – of any race[a]	50.5%	48.1%	15.3%	39.2%
Total Minority[b]	55.7%	52.8%	17.7%	43.0%

[a] The Census Bureau complies with the Office of Management and Budget's standards for maintaining, collecting, and presenting data on race, which were revised in October 1997. They generally reflect a social definition of race recognized in this country. They do not conform to any biological, anthropological or genetic criteria. In accordance with the Office of Management and Budget definition of ethnicity, the Census Bureau provides data for the basic categories in the Office of Management and Budget standards: Hispanic or Latino and Not Hispanic or Latino. In general, the Census Bureau defines ethnicity or origin as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. People who identify their origin as Spanish, Hispanic, or Latino may be of any race. According to the revised Office of Management and Budget standards noted above, race is considered a separate concept from Hispanic origin (ethnicity).

[b] Percentage of population other than white (alone), non-Hispanic.

Source: Census 2003a, Census 2003b

3.11.2 Low-Income Populations

Environmental justice guidance defines low-income using statistical poverty thresholds used by the U.S. Census Bureau. Information on low-income populations was developed from 1999 incomes reported in the 2000 Census. In 1999, the poverty-weighted average threshold for an individual was $8,501 (Census 2001). As shown in table 3.11-2, 19.2 percent of individuals are below the poverty level in Yuma County.

None of the census tracts in the study area meets the criteria for identification as low-income populations. The low-income populations in these census tracts are not meaningfully greater than the corresponding poverty level population in Yuma County.

3.11.3 Migrant Workers and Transient Populations

Agriculture is the major employment sector in Yuma County, accounting for over 35 percent of all jobs. Many of these jobs are seasonal, using migrant workers, many from Mexico, to harvest crops. While actual numbers of migrant workers are difficult to measure because this population is transient in nature, the Arizona Department of Health Services estimates the number of migrant farm workers residing in Yuma County for at least part of the year at 15,000 (ADHS 2004). For the most part, migrant farm workers residing in Yuma County occupy rented trailers or apartments in or near Yuma. The majority of this population would be expected to work in the agricultural areas of the Yuma Valley, west of the Proposed Project area. During peak harvest times, many, if not a majority, of migrant farm workers travel daily to work from Mexico. Up to 30,000 workers per day cross the border at San Luis, south of Yuma (Shipp 2004). Workers then take farmer-provided buses or carpool to worksites. For areas more distant from the ports-of-entry, such as the eastern part of Yuma County east of the Proposed Project area, farmers are more likely to provide housing for migrant workers (Shipp 2004).

During the winter, the Yuma area is a popular destination for transient populations of retirees, commonly referred to as "snowbirds." For the year 2000, the number of snowbirds in Yuma County was estimated at 29,916 (ADHS 2004). Some of these snowbirds maintain residences in the county, while most arrive in motor homes and other recreational vehicles (RVs) which are scattered at RV parks throughout the area. Anecdotal evidence suggests that these transient populations are largely white and above the poverty level. Therefore, this transient population would not require analysis under Environmental Justice.

Table 3.11-2. Percent of Individuals Below Poverty Level.

	Yuma County	Census Tract 109.01	Census Tract 109.02	Census Tract 112
Percent of individuals below the poverty level	19.2%	18.8%	11.4%	18.4%

Source: 2000 Census Reference (Census 2003c)

3.12 HEALTH AND SAFETY

This section discusses the regulation of worker and public health and safety, and the hazards from the construction and operation of the various Proposed Project components. This section also includes a discussion of electric and magnetic field (EMF) effects, corona effects, and safety considerations in the vicinity of transmission lines. Existing conditions related to air quality, water quality, noise, geologic conditions, and transportation systems are discussed in their respective resource sections in this chapter.

Regulatory Considerations

Occupational health and safety issues are primarily the responsibility of the Occupational Safety and Health Administration (OSHA). OSHA regulations applicable to the proposed construction

and operation activities include 29 CFR 1910 (general industry standards) and 29 CFR 1926 (construction industry standards). The State of Arizona has supplemental worker safety requirements, consisting of the Arizona Occupational Safety and Health Act of 1970 and standards adopted under that statute (ARS 2003a). The Arizona Department of Occupational Safety and Health (ADOSH) operates under an approved plan (29 CFR 1910) with the U.S. Department of Labor to retain jurisdiction over most occupational safety and health issues within Arizona.

3.12.1 Wellton-Mohawk Generating Facility

Although the proposed WMGF site was previously disturbed, as described in section 2.2.1.1, there are currently no developed facilities or structures on the site. A Phase 1 Environmental Site Assessment was done for the proposed WMGF site on May 10, 2001. The site inspection found nothing to indicate that there were pre-existing hazardous substances on the site, and a review of the historical use of the site indicated that there was little likelihood that the area would be found to be contaminated (Greystone 2001b). Thus, it is anticipated that no contamination hazards exist on the site which would cause safety hazards for the workers or the public.

3.12.2 Facility Natural Gas Pipeline

The proposed facility natural gas pipeline (Options 1 and 2) is located in the vicinity of the Wellton-Mohawk Canal and existing transmission lines, as described in section 2.2.2. Both the public and routine maintenance workers are occasionally in the immediate vicinity of these facilities. The existing worker or public safety hazards for the proposed facility natural gas pipeline routes are limited to hazards associated with the canal and existing transmission lines. EMF levels and other potential hazards associated with existing transmission lines in the area are discussed in section 3.12.3. Worker health issues related to the Wellton-Mohawk Canal are hazards to occasional maintenance workers, such as trips and falls. In addition, because the canal is not fenced off to the public, there is a risk to the public of accidental drowning in the canal, though these risks are noted by warning signs in the vicinity of the canal.

3.12.3 Transmission System Additions

There are multiple existing transmission lines and connected substations (Ligurta, Gila, North Gila, and Dome Tap) in the vicinity of the proposed transmission system additions, as described in section 2.2.3. Both the public and routine maintenance workers are occasionally in the vicinity of these facilities, although there are gates and locked fences to prevent public entry into the substations. Worker health issues related to the substations are hazards to occasional maintenance workers such as electrocution, trips, and falls. An additional safety concern in the immediate vicinity of transmission lines is associated with the potential for unauthorized persons climbing up the support structures, although this is not a concern for the existing H-frame structures because there are no built-in ladders on the structures.

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 thousand volts (kV), creates an electric field. 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 rapidly weaken with increasing distance from the source.

The possible effects of long-term exposure to electric fields from transmission lines on human health are a controversial subject that has been raised primarily in hearings related to 500-kV and 765-kV transmission lines. These high-voltage lines induce electrical fields at ground levels more than twice the maximum electrical fields for 161-kV transmission lines. Although available evidence has not established that induced electrical fields pose a significant health hazard to exposed humans, the same evidence does not prove there is no hazard. Therefore, in light of the present uncertainty, Western's policy is to design and construct transmission lines that reduce the EMF to the maximum extent feasible.

While considerable uncertainty remains about the EMF health effects issue, the following facts were established from evaluating the results and trends of EMF-related research:

- Any exposure-related health risks to an exposed individual would be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns have been related to magnetic fields.
- The measures employed for field reduction can affect line safety, reliability, efficiency, and maintainability, depending upon the type and extent of such measures.

No Federal regulations have established environmental limits on the strengths of EMF from transmission lines. Some states have set standards on EMF for newly constructed lines, not based on factual health data. Most of Western's existing transmission lines would meet those standards.

Brief summaries of some past and current studies on EMF health impacts follow:

Electric and Magnetic Fields from 60-Hz Powerlines: What do We Know about Possible Health Risks? (Morgan 1989) concluded that 60-Hz EMF do not pose a significant risk to agriculture, animals, or ecosystems.

The Electric Power Research Institute (1998) (along with the Veterans Affairs Medical Center and the Bonneville Power Administration) conducted a four-phase study that exposed sheep to EMF fields from a 500-kV transmission line. The research was done to determine whether long-term exposure to EMF fields impacted melatonin levels, immune function, and animal health. Early phase studies of exposed groups of animals showed no impact on melatonin levels. In later studies, immune cells were monitored in two exposed groups of animals to find out if exposure to fields resulted in immune cells reduction in the exposed animals. Cell reduction would affect immune function and animal health. Final results showed that immune cells were not consistently or significantly reduced in exposed sheep.

A team of Canadian researchers led by McBride reported in the May 1999 issue of the American Journal of Epidemiology that if there is a risk (of childhood leukemia from EMF exposure) it is undetectable through epidemiological studies.

A study sponsored by the National Institute of Environmental Health Sciences (NIEHS) was published in June 1999, *NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields*, stated that all theories concerning biological effects of EMF "suffer from a lack of detailed, quantitative knowledge," and concluded that laboratory data using a variety of animals, such as non-human primates, pigeons, and rodents, are inadequate to conclude that EMF field exposure alters cancer pattern rate and has not been adequately demonstrated for non-cancer health issues (e.g., birth defects) (NIEHS 1999). As a precaution regarding human health issues, the report recommends that the electrical field at the edge of a ROW measured 1 meter above ground not exceed 1 kilovolt per meter (kV/m), and considered this recommendation conservative.

Dr. Sander Greenland, in a 2000 report entitled *A Pooled Analysis of Magnetic Fields, Wire Codes and Childhood Leukemia*, concluded: exposures to fields less than three milligauss (mG) is unlikely to cause leukemia; there is suggestive evidence of a link between childhood leukemia and exposure to fields higher than three mG; and future studies of EMF and childhood leukemia should focus on highly exposed populations.

A paper by Dr. Anders Ahlbom published in the September 2000 issue of the British Journal of Cancer stated they did not find any evidence of an increased risk of childhood leukemia at residential magnetic field levels less than four mG.

A 2002 report by the Department of Health Services, State of California, *An Evaluation of the Possible Risks from Electric and Magnetic Fields from Power Lines, Internal Wiring, Electrical Occupations and Appliances*, was prepared in response to the California Public Utilities Commission. The three preparing scientists agreed, to one degree or another, that EMF can cause some degree of increased risk of childhood leukemia, adult brain cancer, Lou Gehrig's disease, and miscarriage. The scientists were not in universal agreement that EMFs are related to other conditions such as heart disease, Alzheimer's disease, suicide, and adult leukemia.

Existing EMF levels in the vicinity of the Proposed Project are primarily dominated by EMF from the existing transmission lines, and by EMF from common household wiring and appliances for residences and communities in the area. For the existing Ligurta-Gila and Ligurta-Dome Tap 161-kV transmission lines with H-frame structures, the maximum electric field occurs within the ROW is approximately 1.8 kV/m. The electric field at the edge of the ROW is about 0.50 kV/m. The maximum magnetic field in the ROW is about 140 mG, and it reduces to approximately 30 mG at the edge of the 125-foot ROW. Figures 3.12-1 and 3.12-2 graphically illustrate the EMF strengths, of both the electric and magnetic field for these 161-kV transmission lines. The graphs are based on calculations using the average height above ground for the existing conductors. Since these lines are located in areas with little population, exposure is brief and less than typical exposure from household wiring and appliances.

Safety

The potential safety considerations in the immediate vicinity of electric power lines include the potential for electric shock, the clearance of the power lines above ground, unauthorized climbing of the poles, and the interaction of power lines and wildfires.

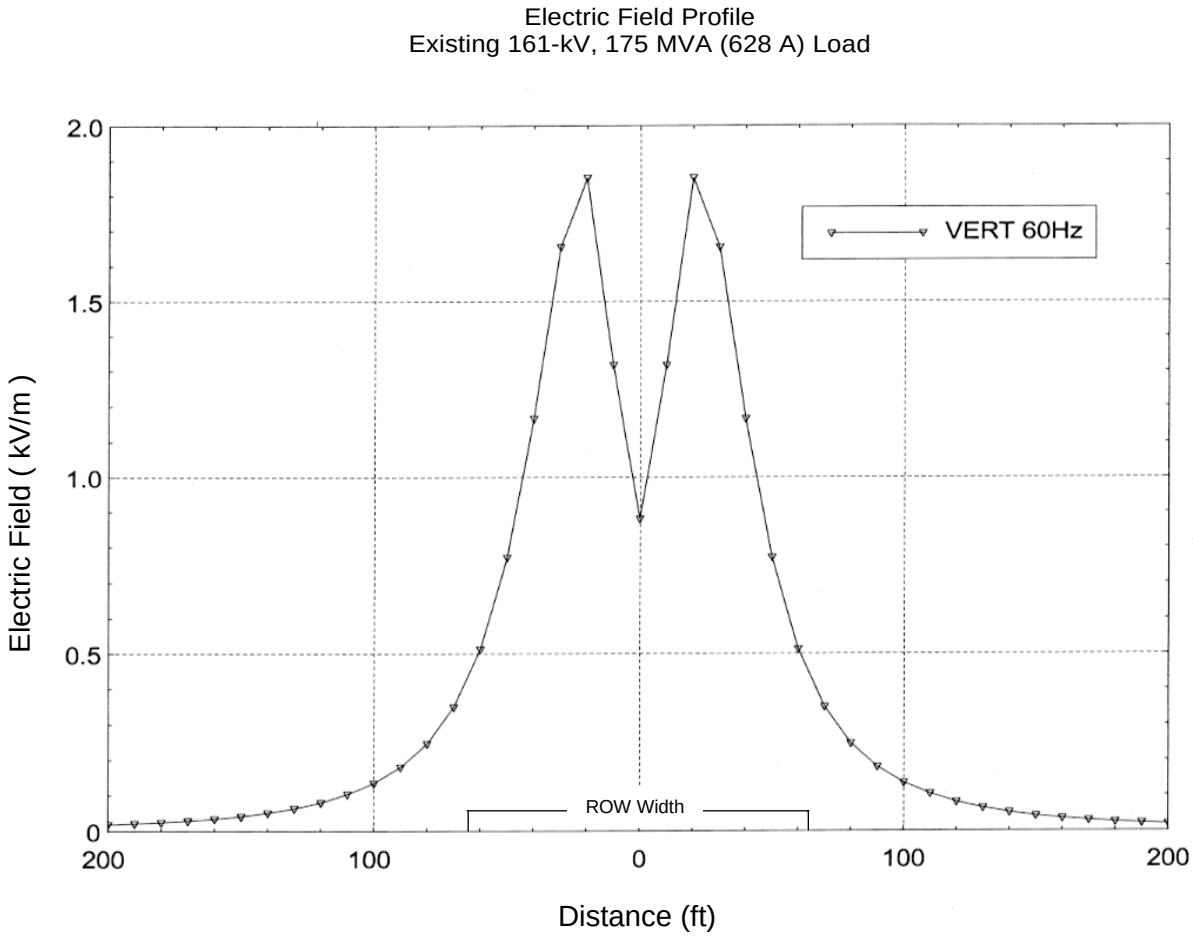


Figure 3.12-1. Electric Field Strength for Existing 161-kV Transmission Lines.

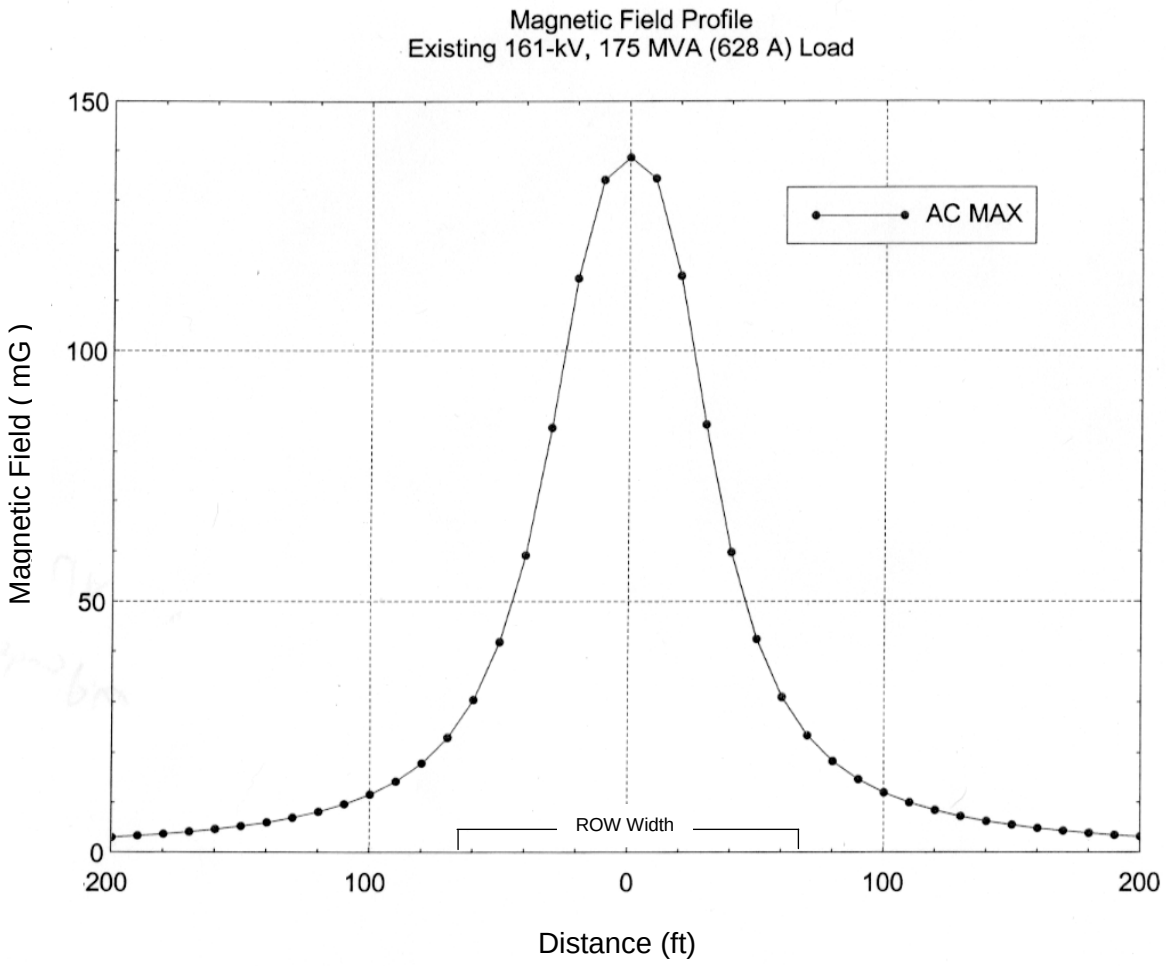


Figure 3.12-2. Magnetic Field Strength for Existing 161-kV Transmission Lines.

The electric field created by a high-voltage transmission line extends from the energized conductors to other conducting objects, such as the ground, towers, vegetation, buildings, vehicles, and persons. Potential field effects can include induced currents, steady-state current shocks, spark discharge shocks, and, in some cases, field perception and neurobehavioral responses.

Induced Currents. When a conducting object, such as a vehicle or person, is placed in an electric field, currents and voltages are induced. The magnitude of the induced current depends on the electric-field strength, size, and shape of the object. The induced currents and voltages represent a potential source of nuisance shocks near a high-voltage transmission line.

Steady-State Current Shock. Steady-state current shocks are those that flow continuously after a person contacts an object, such as a vehicle, and provides a path to ground for the induced current. The effects of these shocks range from involuntary movement in a person to direct physiological harm. Steady-state current shocks occur in instances of direct or indirect human contact with an energized transmission line.

Spark-Discharge Shocks. Induced voltages appear on objects such as vehicles when there is an inadequate ground. If the voltage is sufficiently high, a spark-discharge shock would occur as contact is made with the ground. Spark-discharge shocks that create a nuisance occur in instances of carrying or handling conducting objects, such as irrigation pipe, under transmission lines.

Field Perception and Neurobehavioral Responses. When the electric field under a transmission line is sufficiently strong, it can be perceived by hair raising on an upraised hand. This is the effect of harmless levels of static electricity, similar to the effect of rubbing stocking feet on a carpet.

Corona Effects

Corona is the electrical breakdown of air into charged particles caused by the electrical field at the surface of conductors. Corona is of concern for potential radio and television interference, audible noise (60-cycle hum), and photochemical reactions. Corona can occur on the conductors, insulators, and hardware of an energized high-voltage transmission line. Corona on conductors occurs at locations where the field has been enhanced by protrusions, such as nicks, dust, insects, or drops of water. During fair weather, the number of these sources is small and the corona effect is insignificant. However, during wet weather, the number of these sources increases and corona effects are much greater (DOE 2001).

The Electric Power Research Institute (EPRI) reports that "Corona and arcing activity may occur at numerous points in overhead transmission, substation, and distribution power systems. This activity may result in audio noise or radio interference complaints or indicate a defective component that may be close to failure. If the offending component can be located, it can be replaced." (EPRI 2001)

Audible Noise. Corona-generated audible noise from transmission lines is generally characterized as a cracking or hissing noise. This noise is most noticeable during wet weather conditions. There are no noise codes applicable to transmission lines in Arizona. Audible noise from transmission lines is often lost in the background noise at locations beyond the edge of the ROW.

Radio and Television Interference. Corona-generated radio interference is most likely to affect the amplitude modulation (AM) broadcast band (535 to 1,605 kilohertz); frequency modulation (FM) radio is rarely affected. Only AM receivers located very near to transmission lines have the potential to be affected by radio interference. The potential for interference from corona effects is more severe during damp or rainy weather.

Visible Light. Corona may be visible at night as a bluish glow or as bluish plumes. On the transmission lines in the area, the corona levels are so low that the corona on the conductors usually is observable only under the darkest conditions with the aid of binoculars.

Photochemical Reactions. When coronal discharge is present, the air surrounding the conductors is ionized and many chemical reactions take place producing small amounts of ozone and other oxidants. Approximately 90 percent of the oxidants are ozone, while the remaining 10 percent are composed principally of nitrogen oxides.

3.13 WASTE MANAGEMENT

3.13.1 Waste Management Facilities

The Yuma County Solid Waste Department currently operates two municipal solid waste facilities. The closest facility to the Proposed Project is the Copper Mountain Landfill, approximately 7 miles east of the Town of Wellton. In addition, numerous solid waste facilities are located in Maricopa and Pima counties. The Copper Mountain Landfill does not have a state or local limit on the daily or annual amount of waste processed in the facility. The Copper Mountain Landfill currently has approximately 100 years of remaining capacity left (Copper 2004). It accepts municipal solid waste, including residential and commercial wastes, auto shredder fluff, dried waste water treatment plant sludge, and nonhazardous petroleum contaminated soils.

There are 17 facilities that handle hazardous waste (treatment, storage, and disposal facilities) located in the Phoenix, Arizona (Greystone 2003c). ADEQ regulates all handlers of hazardous waste.

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4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes impacts to the human environment from construction, operation, and maintenance of the Proposed Project after the committed mitigation measures identified in section 2.2.5 have been implemented. Where the committed mitigation does not reduce the potential impacts sufficiently to render them insignificant, the analysis may generate additional mitigating measures. These additional mitigating measures will be considered by the decision-maker(s) of the appropriate agency or agencies who will decide whether to include these measures as a condition of approval. Commitments to additional mitigation measures would be discussed in a Mitigation Action Plan, and in the Record of Decision (ROD) of the respective agencies.

For ease of understanding the impacts and correlating chapters 3 and 4, the document has been prepared so that a resource described in chapter 3 will have the same section number in this chapter; with the exception that geologic hazards are described in Section 3.1 Geology, and the impacts are described in Section 4.12 Health and Safety.

The Proposed Project consists of construction, operation, and maintenance of the proposed Wellton-Mohawk Generation Facility (WMGF) (Phases I and II), facility natural gas pipeline (Options 1 or 2), and transmission system additions. Council on Environmental Quality (CEQ) regulations require that an environmental impact statement (EIS) contain a description of the environmental effects (both positive and negative) of the Proposed Action and any alternatives, and a No Action Alternative. CEQ regulations (40 CFR 1508.8) distinguish between direct and indirect effects. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are reasonably foreseeable effects caused by the action that occur later in time or farther in distance. Both direct and indirect effects are addressed in this chapter.

CEQ regulations also require that an EIS describe the cumulative impacts (40 CFR 1508.7) of the proposed alternatives. CEQ regulations define cumulative impacts as those that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts are addressed in section 4.17.

This chapter presents information on potential environmental effects on geology and soils, water resources, air quality, biological resources, cultural resources, land use and recreation, transportation, visual resources, noise, socioeconomics, minority and low-income populations, human health and environment, and waste management.

4.1 GEOLOGY, MINERALS, PALEONTOLOGY, AND SOILS

4.1.1 Geology and Minerals

4.1.1.1 *Methodology and Significance Criteria*

The geology resource impact analysis is an evaluation of the effects generated by the Proposed Project on specific geologic resources. This section analyzes potential effects to geologic formation features and access to mineral and energy resources as a result of construction of facilities associated with the Proposed Project. The principal measure of the effect on the geologic resource is the presence of geological features that would be impacted by construction

activities. Discussion of possible impacts to project facilities related to geologic hazards is in Section 4.12.2 Health and Safety.

To determine if an action could cause a significant impact, both the context of the action and the intensity of the impact were considered. For the Proposed Project, the context is the locally affected area and significance depends on the impacts to geologic features in the local area. The intensity of the impact is primarily considered in terms of any unique geologic formation or characteristics of the resources in the area and the degree to which the Proposed Action may adversely affect such unique characteristics.

For mineral resources, permanent denial of access would be a significant impact. Temporary denial of access, or changes of access, are not considered significant impacts.

4.1.1.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Geology. There are no unique geological features in the proposed WMGF site. The construction, operation, and maintenance of the proposed WMGF would only impact geological features by the construction of earthern berms and rerouting of drainages around the WMGF site.

Mineral Resources. Sand and gravel are the only known mineral resources that occur on, or near, the proposed WMGF. However, no sand or gravel mining occurs on the proposed WMGF site and there are ample sand and gravel resources in the area. No impact to sand and gravel availability would be expected from construction of the proposed WMGF. There would be no impact to mineral resources from the construction, operation, or maintenance of the proposed WMGF, due to the fact that there are no mineral resources other than sand and gravel, and there are many sand and gravel deposits in the area.

4.1.1.3 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

Geology. Option 1 of the facility natural gas pipeline would follow a route along the west side of the Wellton-Mohawk Canal for approximately 7 miles, then cross under the Wellton-Mohawk Canal and run along the east and north sides of the canal. The area of disturbance for the construction of the natural gas pipeline is assumed to be 100 feet wide at a distance of between 100 and 300 feet from the centerline of the Wellton-Mohawk Canal. There are no unique geologic features within the proposed facility natural gas pipeline right-of-way (ROW). Therefore, no significant impacts to geologic features would occur from the construction, operation, and maintenance of this facility natural gas pipeline option.

Mineral Resources. No impact would occur to mineral resources as a result of the facility natural gas pipeline because there are no mineral resources in the area other than sand, and gravel and there are many sand and gravel deposits in the area.

Option 2

Assessment of Impacts

Geology. Under Option 2, the facility natural gas pipeline would be routed south of the proposed WMGF on the east side of the Wellton-Mohawk Canal for 0.25 mile until it intersects with Interstate 8 (I-8). There are no unique geologic features in the proposed WMGF site. There would be no significant impacts to geologic features from the construction or operation of the facility natural gas pipeline.

Mineral Resources. Sand and gravel are the only known mineral resources within the ROW for the facility natural gas pipeline under Option 2. However, no sand and gravel mining occurs within the ROW and there are ample sand and gravel resources in the area. No impacts to the supply of sand and gravel in the region are expected.

4.1.1.4 *Transmission System Additions*

New Transmission Line

Assessment of Impacts

Geology. Western would construct a new approximately 18.7-mile transmission line between Western's Ligurta Substation and Arizona Public Service's (APS) North Gila Substation north of the City of Yuma. The new Ligurta-North Gila Transmission Line would parallel the existing Ligurta-Dome Tap Transmission Line for most of its length, and would continue to the North Gila Substation. There are no unique geologic features in the proposed Ligurta-North Gila Transmission Line route. There would be no significant impacts to geologic features from the proposed Ligurta-North Gila Transmission Line, since there are no unique geologic features in the region of influence (ROI).

Mineral Resources. No aggregate mining is done along the proposed Ligurta-North Gila Transmission Line routes; therefore, the proposed transmission line construction would not impact future sand and gravel extraction within the proposed ROW.

Upgraded Transmission Line

Assessment of Impacts

Geology. Western would also upgrade its existing 12.7-mile 161-kV Ligurta to Gila Transmission Line to 230-kV. Western proposes to replace the existing wood structures with galvanized light duty steel single-circuit H-frame poles, ranging in height from 70 to 110 feet. New lattice structures would be constructed through Telegraph Pass using helicopters due to limited access. Impacts to geologic features would largely consist of blasting and augering holes for structure footings. There are no unique geologic features in the ROW for the upgraded transmission line. Thus, no significant impacts to geologic features would result from construction, or operation, of the upgraded transmission line.

Mineral Resources. No aggregate mining is done within the proposed transmission line routes, and there is an abundance of sand and gravel resources throughout the region. The grant for the

BLM ROW would not prohibit aggregate mining; however, safety and prudence would dictate that aggregate mining would not occur directly under the transmission lines. Given the great quantity of sand and gravel deposits in the region, and the nonexclusive nature of the ROW grant, the proposed transmission line construction and upgrades would not impact future sand and gravel extraction.

Substation Modifications

Geology and Mineral Resources. Substation modifications would be implemented within the existing footprints of the Ligurta, Gila, Dome Tap, and North Gila substations. No impacts to geologic features or mineral resources would result from the substation modifications. There are no unique geologic features present, and the only mineral is sand and gravel, which is readily available in the region. Also, the substation use of the area already precludes mining operations on those locations.

4.1.2 Paleontological Resources

4.1.2.1 *Methodology and Significance Criteria*

The potential for impacts was determined by considering the presence and type of fossils, along with the location and level of projected disturbance. Determination of the significance of potential impacts is based on the rarity, condition, vulnerability, and possible scientific value of the fossil resources, considered in context with the degree to which the Proposed Project may adversely affect those resources.

An individual fossil is considered scientifically significant if it belongs to a poorly known species; displays preservation of soft tissues or delicate structures; shows pathologies or injuries, or displays unusually large size for the species. A group of fossils or fossil beds containing specimens showing paleoecological relationships (e.g., symbiosis, parasitism, predation), and association with datable materials (e.g., radiometric, paleomagnetic, index fossils), would be considered scientifically significant. Loss of unique specimens and the related scientific knowledge would be considered a significant impact. If the surveys and collections of fossils recommended below are conducted, there would be no significant impact to the fossil resource by the Proposed Project. Construction of the Proposed Project could potentially increase understanding of regional paleontological resources by uncovering fossils that would otherwise remain undiscovered.

4.1.2.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

The proposed WMGF site lies on the westernmost extension of the Wellton Mesa terrace. Fossils have been previously found in these terrace deposits and the field survey of the proposed WMGF site found a number of fossil specimens. Construction of the proposed WMGF on this site would disturb or destroy fossil specimens present. However, since the individual fossils in the older Wellton Mesa deposits occur mostly as incomplete isolated elements showing evidence of being transported between the time of death of the animal and fossilization in riverbed deposits, the Wellton Mesa deposits do not represent a unique fossil bed or source of fossils.

However, these deposits have yielded specimens of several species not previously recognized in the area. Because many of the individual fossil specimens come from broken up animal bodies that were washed downstream and deposited in river sediments, they generally lack value of being whole specimens with a good contextual reference to their environment, and they are not scientifically significant. Nevertheless, the Applicant has agreed to apply the BLM's mitigating measures to construction at the proposed WMGF. These would include additional surveys of impacted areas which would be completed prior to construction to identify the potential for additional unique specimens. Workers would receive training to recognize paleontological resources and, if subsurface fossils were found, they would be required to suspend work until a professional paleontologist can evaluate the find and salvage the fossils. Collection of any additional specimens having scientific value would mitigate the impact of the loss of that information and the impact to paleontological resources at the proposed WMGF site would not be significant.

Additional Mitigation

There is a risk that the workers would not recognize fossils if they are unearthed during blading or excavation activities due to their lack of professional knowledge about paleontology. To overcome that eventuality, an additional mitigation would be to have a professional paleontologist onsite monitoring for fossils whenever blading or excavating occurs in fossil-bearing areas.

4.1.2.3 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

The survey of the area along the Wellton-Mohawk Canal found several isolated fossil specimens; however, the area does not qualify as a unique fossil bed or source of fossils due to the fragmentary and isolated nature of the specimens and likelihood of fluvial transport from other locations prior to fossilization. Under Option 1, construction of the facility natural gas pipeline could disturb or destroy isolated fossil specimens, but could also result in the discovery of fossils that would otherwise not be found and made available for study. Except for unique specimens representing species not previously recognized in the area, or showing unique pathologies, individual specimens found during the survey are not considered scientifically significant. The Applicant has agreed to apply the BLM's mitigating measures to Federal, state, and private lands within the part of the ROW that would be disturbed by construction. Application of those measures would result in no significant impact to fossil resources because any scientifically valuable specimens would be evaluated onsite, collected, and preserved.

Option 2

Assessment of Impacts

Under Option 2, the facility natural gas pipeline would be constructed mainly on the proposed WMGF site. The potential for impacts to individual fossil specimens during construction would not be significant after the application of the mitigating measures identified in Option 1.

4.1.2.4 *Transmission System Additions*

New Transmission Line

Assessment of Impacts

The path of the proposed Ligurta-North Gila Transmission Line lies in part along the path of the proposed facility natural gas pipeline. For this part of the new transmission line path the potential for significant impacts to paleontological resources is the same as discussed for the proposed facility natural gas pipeline. In addition, two fossil specimens were found during the survey of part of the corridor for the new transmission line where it deviates from the pipeline corridor. Upgrade of the existing access roads for construction of the new transmission line could disturb or destroy individual fossil specimens. However, upgrade of existing access roads for construction may also result in discovery of fossils that might otherwise not be found. This would be a beneficial impact to the knowledge of the paleontological resources of the region. Heavy equipment used to install the transmission structures and pull the conductor could uncover or destroy individual fossil specimens. The area does not qualify as a significant paleontological resource due to the fragmentary and isolated nature of the specimens and the likelihood of fluvial transport from other locations. Individual specimens found in the survey are not considered scientifically significant unless they represent species not previously recognized in the area or exhibit unique pathologies. Application of BLM's mitigation measures, and equally thorough mitigations found in Western's Construction Standard 13, would result in the identification of unique or important specimens and their collection before or during construction. Thus, there would be no significant impacts to paleontological resources from the construction of the new transmission line.

Upgraded Transmission Line

Assessment of Impacts

The central portion of the Ligurta-Gila Transmission Line crosses the Gila Mountains through Telegraph Pass. In that section of the line, several steel-lattice structures would be replaced by helicopter due to limited access. The existing access roads for the Ligurta-Gila Transmission Line would be upgraded and used for the upgraded transmission line. The existing transmission line structure locations would be used for the upgraded transmission line structures. The portion of the transmission line requiring steel-lattice tower transmission structures would be constructed on top of bedrock hills or crags. No fossils are expected to be found in the bare bedrock exposed in the Telegraph Pass area.

The western portion of the Ligurta-Gila Transmission Line also crosses over potential fossil-bearing terrace deposits. However, the field survey did not locate any fossils along this portion of transmission line corridor; therefore, no impacts to paleontological resources along this portion of the Ligurta-Gila Transmission Line are expected.

Substation Modifications

The changes to the Western and Arizona Public Service (APS) substations would take place within the existing substation footprints and, considering Western's standard to address any

previously undiscovered paleontological resources, there would not be any significant impacts to paleontological resources.

4.1.3 Soils

4.1.3.1 *Methodology and Significance Criteria*

The soil resource impact analysis is an evaluation of the effects generated by the Proposed Project on soil resources. The principal measure of the effect on the soil resource is the amount and location of soils disturbed during construction and disturbed or occupied during operational activities of the Proposed Action. Additionally, the analysis involves evaluation of potential effects to specific soil attributes, such as increasing the potential loss of topsoil due to erosion; disturbance of prime and unique farmlands; removal of topsoil; compaction and/or mixing of soils; erosion and increased sedimentation; and disturbance of soil structures. Soil resource effects would be on small, discrete areas of land directly disturbed by construction activities.

To determine if an action could cause a significant impact, both the context of the action and the intensity of the impact were considered. For the Proposed Project, the context is the locally affected area and significance depends on the effects in the local area. The intensity of the impact is primarily considered in terms of any unique characteristics of the resources in the area and the degree to which the Proposed Action may adversely affect such unique characteristics.

Permanent disturbance of prime and unique farmlands would be considered significant. Temporary disturbance of prime and unique farmlands would not be considered significant. Unmitigated soil erosion and subsequent loss, compaction and/or mixing of soils would be considered significant. Desert pavement has been observed in the project area, but potential disturbance has not been determined as final locations of transmission line structure sites are not yet known. Therefore, the opportunities for avoidance of desert pavement are not known and impacts cannot be quantified. Impacts to desert pavement would be considered significant if the stone covering would be destroyed and the soils fully exposed to wind erosion, or if the stone covering would be driven into the underlying soil surface by more than 1 inch (this may occur when the underlying soil conditions are not fully dry).

4.1.3.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Construction of the proposed WMGF would result in disturbance of the majority of the 119-acre site. Almost all of the site would be disturbed during construction that would include grading and pouring of the concrete foundations for the solar field and the foundations of the proposed WMGF, including the turbine siting. Approximately 30 percent of the site was previously disturbed from its use as a concrete batch plant during construction of the Wellton-Mohawk Canal and construction of the existing pumping plant and Ligurta Substation. While the Lagunita soils in the area are used for growing irrigated crops, the soils on the site are not used for agriculture. The proposed WMGF site is not considered prime and unique farmland. Soil disturbance during construction of the proposed WMGF has potential to result in erosion, increased sedimentation, compaction, and mixing. Heavy equipment, including brush-hogs, bulldozers, and excavators would be used during proposed WMGF construction activities. Since there are mild slopes and surface water features in the area, soil erosion impacts could occur

during rain events. The Torriothents-Torrifluvents soils present at the proposed WMGF site have only a slight hazard for erosion (section 3.1.2). The Lagunita soils present in the center of the site have a high potential for erosion. Other than the existing pumping station and substation, the land is not currently graded for erosion control. The potential for erosion would increase during construction. However, there would not be significant soil loss because the proposed WMGF would require numerous mitigation measures to lessen the impacts associated with soil disturbance of the site, as outlined below.

The proposed WMGF would require adherence to stormwater control features permitted under the Arizona Pollution Elimination Discharge System (AZPDES). Mitigation measures to be implemented for the proposed WMGF site include those outlined in the Applicant's mitigation 6, plus ACC mitigation 18, requiring compliance with all applicable ordinances, master plans, and regulations of the local, State of Arizona, and Federal authorities. It is expected that the AZPDES permit would have the following kinds of mitigations: topsoil would be stockpiled for reclamation purposes, and placement of erosion control measures, such as earthen catchments, culverts, terracing (if needed), grading, erosion control fencing/screening, and straw bales/wattles would be required. All disturbed areas requiring concrete pads would be completed as soon as possible to reduce potential soil erosion. In areas where clearing is needed, but grading is not necessary, vegetation would be cut off at ground level, leaving root systems intact. Following construction activities, with adherence to the AZPDES, erosion and sedimentation impacts caused by development of the proposed WMGF would be low to moderate. Disturbed areas within the 119-acre proposed WMGF site would be reclaimed and revegetated using native plants/seeds/salvaged plants per the Applicant's mitigation 6. Topsoil removed in excavation activities would be utilized for reclamation of the proposed WMGF site. Impacts to soils within the proposed WMGF site would be transitory and overall would be positive for long-term stabilization. They would not be considered significant. No additional mitigations would be needed.

4.1.3.3 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

Under Option 1, a maximum of 154 acres of soil would be temporarily disturbed by construction of the proposed facility natural gas pipeline. A variety of soil types are encountered in the proposed pipeline alignment. The Option 1 route travels through approximately 5.5 miles of Indio-Lagunita-Ripley complex soils, and approximately 2.7 miles each of Indio silt loam and Carrizo very gravelly sand. The remainder of the soils associated with this pipeline route include, in decreasing order, Torriothents-Torrifluvents complex soils (0.8 mile), Ligurta-Cristobal complex soils (0.5 mile), Glenbar silty clay loam (0.4 mile), and Antho sandy loam (0.1 mile). The soil erosion hazard is moderate for the Indio-Lagunita-Ripley complex, Indio, and Glenbar soils. Approximately 1.5 miles of the soils adjacent to the east side of the canal are considered irrigable, though they are not used for farming. Option 1 would temporarily impact 6 acres of prime and unique farmland.

Trenching for the facility natural gas pipeline would require excavation of a trench approximately 5 feet deep by 4 to 6 feet wide for the entire length of the pipeline (12.7 miles). Heavy machinery required to excavate this trench would access the pipeline ROW via existing access roads. Soils excavated from the facility natural gas pipeline trench would be stockpiled in

spoils adjacent to the excavated trench. Topsoil would be stockpiled separately for later use in reclamation/revegetative finishing.

The proposed construction of the facility natural gas pipeline required a determination from the U.S. Army Corps of Engineers (USACE) that the activities would comply with Nationwide Permit No. 12 for utility line activities administered under section 404 of the Clean Water Act (CWA). Mitigation measures under Nationwide Permit No. 12 include soil erosion and sediment controls. The 404 permit states that appropriate soil erosion and sediment controls must be used and maintained in effective operating conditions during construction, and all exposed soil and other fills, as well as any work below the ordinary high watermark, must be permanently stabilized at the earliest practicable date (appendix D). In addition, the provisions of the AZPDES permit would be implemented to reduce erosion/sedimentation during construction and operation of the proposed facility natural gas pipeline.

Mitigation measures for the proposed facility natural gas pipeline include control measures such as perimeter controls, slope protection, sediment traps and basins, drainage way protection, temporary stabilization, and permanent stabilization. Erosion control measures would include placement of straw wattles or weed-free straw bales on the downstream edges of crossed washes and structural controls, such as straw wattles/bales, waterbars, cross drains, and culverts/ stormwater inlets and outlets. Specific sediment barriers, waterbars, erosion control, and mulching would be implemented as best management practices (BMPs) and chosen according to their effectiveness at reducing soil erosion and sedimentation. Pipeline segments would be constructed as quickly as possible and open trenches would be covered at night. Spoil from the excavated trenches would be used to cover the pipeline with topsoil used to finish. Some mixing of topsoil with trench fill would occur, but would be minimized by segregated piles of soil. Soils would be chiseled or disked to remove compaction prior to reseeding/revegetation in association with recontouring disturbed areas and stabilizing wash banks. The pipeline ROW would be reseeded with BLM-approved native seed mixtures designed to stabilize soils through revegetation.

The Applicant is committed to using the same mitigating measures on State of Arizona and private lands as those that would be applied to Federal lands unless other mitigation measures are negotiated with the landowner. Following the application of mitigation measures for erosion control, impacts to soils within the proposed natural gas alignment are expected to be insignificant because the impacts to the prime and unique farmland would be temporary and the Applicant's mitigation commitments would prevent significant erosion. No additional mitigations would be necessary.

Option 2

Assessment of Impacts

Under Option 2, a maximum of 3.6 acres of soil would be disturbed by construction of the proposed facility natural gas pipeline. The soils of the site along the Wellton-Mohawk Canal are not considered irrigable and are not used for farming. No prime and unique farmlands would be impacted by this routing option. Torriothents-Torrifluvents complex soils are the only soils found along this potential route. Their erosion hazard is slight.

Construction and operation of the pipeline in this option would be the same as Option 1. Similar impacts could be expected; however, they would be far less in magnitude because this alternative is only 0.25 mile long and all of it crosses a soil type with a slight erosion hazard. Thus the impacts to soils for this alternative would not be significant. No additional mitigations would be needed.

4.1.3.4 *Transmission System Additions*

New Transmission Line

Assessment of Impacts

The Ligurta-North Gila Transmission Line would be approximately 18.7 miles long. Assuming that the span length between structures would be between 600 and 800 feet, approximately 150 structures would be required. The temporary disturbance associated with construction of the Ligurta-North Gila Transmission Line would be approximately 128.3 acres. The total permanent disturbance would be approximately 9.2 acres.

Construction of approximately 2.5 miles of new access roads would increase potential for erosion of topsoil where existing vegetation is removed. A variety of soil types are encountered in this proposed alignment. Less than 1 acre of prime and unique farmland would be temporarily impacted by the proposed alignment. Between the Ligurta and Dome Tap substations, the new transmission line would be constructed in areas with Indio-Lagunita-Ripley complex soils (3.6 miles), Ligurta-Cristobal complex soils (2.5 miles), Indio silt loam (2.4 miles), Carrizo very gravelly sand (2.2 miles), Antho sandy loam (0.6 mile), Torriothents-Torrifluvents complex soils (0.4 mile), Lagunita loamy sand (0.4 mile), and Antho fine sandy loam (0.1 mile). Between the Dome Tap and North Gila substations, 6.5 miles of new transmission line would be constructed in areas with Torriothents-Torrifluvents complex soils (2.8 miles), Laposa-Rock outcrop complex soils (2.1 miles), and Indio silt loam (1.6 miles). The proposed Ligurta-North Gila Transmission Line construction would require use of heavy machinery to excavate and grade pole structure locations, create concrete platforms, and for auguring and stringing activities. Impacts to soils within the ROW would be primarily at structure locations. The majority of the area within the ROW would not be used and would be left undisturbed. Spoil material (excavated soil) would be used for backfill where suitable and the remainder would be spread at the structure site. Where the excavated soil is not suitable (too much rock and gravel), concrete backfill would be used.

Mitigation measures would be implemented during construction of the proposed transmission line to control erosion and prevent sedimentation. These measures would include stabilization through the appropriate use of perimeter controls, slope protection, and drainage way protection, such as placement of silt fences or straw wattles/bails, and perpendicular crossings of washes. Additional measures would include structural controls, such as waterbars, cross drains culverts/stormwater inlets and outlets. Concrete platforms and transmission line structures would be constructed as soon as possible following grading/excavating activities. Disturbed areas of the ROW would be recontoured, reseeded/revegetated, with chiseling/disking as needed to mitigate soil compaction. Parts of the ROW would be used for maintenance access and would require permanent stabilization (i.e., waterbars, culverts) to avoid residual soil impacts.

Mitigation measures to reduce soil erosion include reclamation and revegetation as soon as possible following structure completion and the utilization of BMPs for minimizing runoff and erosion. These mitigation measures would reduce impacts to soils to an insignificant level because no prime and unique farmlands are involved and erosion would be minimized.

Desert pavement impacts are unknown due to a lack of knowledge concerning the exact location of desert pavement areas and how many structures must be located in these areas. Structures would be located outside of desert pavement areas to the extent possible. Use of existing access roads would minimize the possibility of disturbance to new areas of desert pavement. Application of the mitigation measures in chapter 2 in the course of designing and constructing the transmission lines would avoid impacts to desert pavement, or at least minimize potential impacts to an insignificant level. No additional mitigations would be needed.

Upgraded Transmission Line

Assessment of Impacts

Upgrade of the Ligurta-Gila Transmission Line would result in approximately 98.3 acres of temporary disturbance and approximately 3.9 acres of permanent disturbance. There are no irrigable lands along the Ligurta-Gila Transmission Line. No prime and unique farmland soils would be disturbed.

A variety of soil types are encountered in this proposed alignment. Between the Ligurta and Gila substations the upgrade would occur in areas with Ligurta-Cristobal complex soils (3.6 miles), Laposa-Rock outcrop complex soils (3.3 miles), Rositas sand (2.5 miles), Carrizo very gravelly sand (1.6 miles), Rosita-Ligurta complex soils (1.4 miles), Torriothents-Torrifluvents complex soils (0.3 mile), and minor areas of Antho fine sandy loam. Heavy machinery would access the existing ROW to replace wooden structures with steel H-frames. Several steel lattice structures would be replaced by helicopter in the Telegraph Pass area due to limited access. Construction activities would include blading, augering, pouring concrete, structure setting, and stringing activities. Impacts to soils in the ROW would result from vehicular travel and disturbance at structure locations. Areas not used within the ROW for transmission line construction would remain undisturbed. Spoil material (excavated soil) would be used as backfill where suitable, and the remainder would be spread around the structure site. Concrete backfill would be used where the excavated soil is too rocky.

Mitigation measures to be implemented during construction of the proposed transmission line upgrade include staying within the permitted ROW (125 feet) and on designated access roads; placement of straw wattles/bales within downstream edges of crossed washes; perpendicular crossings of washes; structural controls, such as waterbars, cross drains, and culverts/stormwater inlets and outlets. Disturbed areas within the ROW would be recontoured and revegetated with BLM-approved native plants/seeds. Areas within the ROW used for maintenance purposes requiring access would require permanent stabilization/erosional control features such as waterbars, culverts, and other BMPs. Following these mitigation measures, impacts to soils as a result of the transmission line upgrade are expected to be insignificant since no prime and unique farmland would be involved and erosion would be minimized. No additional mitigations would be needed.

Substations Modifications

Changes to the Western and APS substations would take place within the existing substation footprints. Construction within substations would follow Western's construction specifications with required mitigation measures; therefore, there would not be any significant impacts to soils.

4.1.4 No Action Alternative

Under the No Action Alternative, each agency (Western, Reclamation, and BLM) could independently determine not to grant the rights the Proposed Project needs, or conceivably none of the Proposed Project components would be granted. Without the ability to interconnect to Western's transmission lines, the Proposed Action would not be feasible and would not be built or operated. Neither the new facility gas pipeline, nor the transmission system additions, would be constructed or operated as part of the No Action Alternative. Under the No Action Alternative, the Proposed Project would not be built.

If the proposed WMGF is not built, there would be no impacts to geologic resources identified. If the proposed WMGF is not built, the site could be used for sand and gravel mining. Without the proposed WMGF, there would be no need for the construction of the facility natural gas pipeline and no related disturbance to geologic resources or soils along the potential facility natural gas pipeline routes.

Under the No Action Alternative, no pole replacement or major reconstruction activities are currently planned for Western's transmission lines in the area for the next 8 to 10 years. Changes to the substations would be limited to maintenance activities and potential equipment changes to improve reliability. No impacts to geologic resources would occur in the transmission line ROW if the No Action Alternative is chosen.

4.2 WATER RESOURCES

4.2.1 Surface Water

4.2.1.1 *Onsite Drainage*

Methodology and Significance Criteria

Using available mapping resources, along with applicable Federal, state, and county regulations, an evaluation of the Proposed Project was performed with respect to onsite drainage. Maps of the proposed WMGF site, facility natural gas pipeline, and transmission lines were compared to recent aerial photographs and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for the area.

Impacts to onsite drainage would be considered significant if any component of the Proposed Project increases the amount of stormwater runoff, or changes or redirects the stormwater runoff to cause adverse effects to adjacent properties.

Wellton-Mohawk Generating Facility

Assessment of Impacts

Stormwater runoff generated on the proposed WMGF site would be retained onsite by grading open areas to serve as storage areas. Construction of retention ponds on the site would contain all water originating on, or up-gradient of, the proposed power-plant boundary. Site drainage facilities would be designed to meet Yuma County Department of Development Services Flood Control District requirements. The proposed WMGF would adhere to the stormwater control features permitted under the AZPDES. Post-development flow rates would not exceed pre-developed rates since the proposed onsite stormwater retention facilities would eliminate any post-development stormwater runoff from discharging from the proposed WMGF site. Onsite runoff design would be addressed as part of the preparation of detailed engineering plans for the proposed WMGF site. At that time, National Pollution Discharge Elimination System (NPDES) permitting requirements would also be addressed. Control of the runoff at the proposed WMGF site would be an improvement over current conditions. No impacts would be expected from stormwater runoff at the proposed WMGF site.

Facility Natural Gas Pipeline

Option 1

Assessment of Impacts. The proposed facility natural gas pipeline would be placed underground. As the result of grading during pipeline construction, there would be local increases in runoff due to the reduction of vegetative cover in the construction ROW. The anticipated width for clearing and grading in the ROW is 100 feet. Much of this disturbance zone has been previously disturbed and stripped of vegetation due to maintenance of the Wellton-Mohawk Canal. An AZPDES permit would be acquired for the proposed facility natural gas pipeline. Mitigation measures to be implemented for the facility natural gas pipeline include placement of stormwater control measures, such as silt fencing, earthen catchment basins, culverts, straw bales/wattles, and reseeding.

Proposed construction of the facility natural gas pipeline required a determination from the USACE that the activities complied with the Nationwide Permit No. 12 for utility line activities administered under section 404 of the CWA. The Nationwide Permit No. 12, in appendix D, includes conditions regarding stormwater. “An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. And the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site…” In addition, the provisions of the AZPDES permit would be implemented to reduce stormwater runoff during construction and operation of the proposed facility natural gas pipeline.

Mitigation measures for the proposed facility natural gas pipeline would include general and specific conditions of the AZPDES permit, and stipulations in the BLM ROW grant. The pipeline ROW would be reseeded with BLM-approved, native seed mixtures designed to

stabilize soils and reduce runoff through revegetation. Maintenance of the Wellton-Mohawk Canal keeps erosion from the access road and the canal banks from being a problem, as any gradual erosion is repaired upon detection. At the time engineering plans are prepared and during construction, NPDES permitting requirements would be addressed. No significant impacts are expected to drainage within the proposed facility natural gas pipeline alignment because the amount of stormwater runoff would not be increased due to the mitigation measures for stormwater control. Due to the existing grading, no runoff from the pipeline construction can reach the canal. No additional mitigation measures are recommended.

Option 2

Assessment of Impacts. Under Option 2, the facility natural gas pipeline would be constructed mainly on the proposed site. The potential impacts to drainages during construction would be the same as those associated for the construction of the proposed WMGF. No significant impacts would occur under Option 2.

Transmission System Additions

New and Upgraded Transmission Lines

Assessment of Impacts. The proposed transmission lines would be constructed primarily within the existing Western transmission line ROW, or the ROW along the existing Wellton-Mohawk Canal, except for a new ROW for the portion of the proposed transmission line between Dome Tap and the North Gila substations. In this Dome Tap to North Gila section of the new transmission line, approximately 2.5 miles of new access roads would be constructed. In addition, existing access roads may also be widened, graded, rerouted to avoid cultural sites, and crossing of washes recontoured in some areas. The section 404 permit application would specifically identify any access road work that would be required in the WUS. In the areas of construction of the proposed transmission lines, and associated access roads, local increases in runoff would result due to the reduction of vegetative cover in the construction ROW. Compliance with section 404 for the transmission system would be done separately from compliance for the proposed WMGF site and the facility natural gas pipeline. Upon completion of a ROD regarding the Proposed Project, Western would apply for a Nationwide Permit No. 12 for utility line activities administered under section 404 of the CWA (appendix D), which would contain general and could contain permit-specific mitigation conditions for areas where the proposed access roads cross designated Waters of the United States (WUS). Western would site the transmission line structures, to the extent feasible, such that they would span across (rather than be located within) any surface water features including jurisdictional waters (section 4.2.1.4). With the mitigation measures in the permit (similar to those discussed above for the facility natural gas pipeline), the impacts to drainages are not expected to be significant (appendix C). No additional mitigations are recommended. At the time engineering plans are prepared and during construction, NPDES permitting requirements would be addressed.

Substation Modifications

The substation modifications would take place within their existing footprint and would not alter their existing drainage. Construction would be done in accordance with chapter 13 of Western's Standard Constructions Specifications which have environmental protection requirements that would result in no net change in runoff. Thus, no significant impacts would be expected.

4.2.1.2 *Flooding*

Methodology and Significance Criteria

Using available mapping resources, along with applicable Federal, state, and county regulations, an evaluation of the Proposed Project was performed with respect to flooding. Maps of the proposed WMGF site, facility natural gas pipeline, and transmissions lines were compared to recent aerial photographs and FEMA Flood Insurance Rate Maps for the area.

Impacts to flooding would be considered significant if any element of the Proposed Action permanently increases the depth or duration of flooding.

Wellton-Mohawk Generating Facility

Assessment of Impacts

According to the FEMA 1998 Flood Insurance Study, the proposed WMGF site is not located within the 100-year floodplain of the Gila River or the floodplains of Red Top Wash, located along the western proposed WMGF site boundary, and Ligurta Creek, located along the eastern proposed WMGF site boundary. Since the proposed WMGF is located outside the 100-year floodplain, no impacts are expected.

Facility Natural Gas Pipeline

Option 1

Assessment of Impacts. The facility natural gas pipeline would be approximately 12.7 miles long and would be located along the Wellton-Mohawk Canal. The facility natural gas pipeline would run west from the generating facility crossing underneath the Wellton-Mohawk Canal before turning north-northwest and running alongside of the west side of the canal (figure 2.2-3). Approximately halfway along its length, the facility natural gas pipeline would cross back under the Wellton-Mohawk Canal and run along the east side for the rest of its length (figure 2.2-4).

The facility natural gas pipeline would be located at a distance of between 100 to 300 feet from the centerline of the canal, and would be adjacent to the canal spoils piles (excavated material taken from the canal). The pipeline would be between the canal and the Gila River where the canal turns westward north of the Gila Mountains. The pipeline would not cross the Gila River. During and following construction of Option 1, minor amounts of vegetation may be removed during grading. As the result of this loss of vegetation, minor localized increases in runoff may occur; any increase in flow depths would be negligible. These minor changes would not be permanent, resulting in no significant impacts to flooding. While the pipeline would not affect flooding a major flood could, however, affect the pipeline by reducing the depth to or exposing it.

Option 2

Assessment of Impacts. The facility natural gas pipeline would be constructed mainly on the proposed site. Potential impacts to flooding during construction would be the same as those associated for the construction of the proposed WMGF. No significant impacts to flooding would occur under Option 2.

Transmission System Additions

New and Upgraded Transmission Lines

Assessment of Impacts. Structures would normally be sited at high points along the alignment to increase span length and conductor clearances. If the structures are located at high points outside the floodplains of the Gila River or any local watercourses, there would be no impacts to flooding. The exception would be those structures that cross the Gila River. The proposed design of the Gila River crossing has the structures on the outside of the levees. While in the floodplain, they would be outside of any potential flood area. Structures located within a floodplain would not be expected to increase flooding depths locally. Potential flooding, from either the Gila River or a local watercourse, would be evaluated along the proposed transmission line during the process of selecting final structure and access road locations. Consideration of potential flooding during siting would facilitate long-term stability and reduce maintenance costs. Western's construction standards and adherence to the USACE's 404 permitting stipulations would assure that there would be no adverse impacts.

Substations Modifications

The substations are located outside of floodplains and the modifications would not result in any changes to their potential for flooding. There would be no impacts.

4.2.1.3 *Jurisdictional Watercourses*

Methodology and Significance Criteria

Using mapping resources, along with applicable Federal regulations, an evaluation of the Proposed Project was performed with respect to jurisdictional watercourses. Federal jurisdictional waters include both wetlands and WUS. Maps of the proposed transmissions lines were compared to recent aerial photographs. In addition, a field investigation to verify the jurisdictional limits was performed.

Impacts to jurisdictional watercourses would be considered significant if any element of the Proposed Action disturbs the watercourses beyond amounts authorized by applicable permits and conditions. The USACE requires mitigation of all disturbed jurisdictional watercourses.

Wellton-Mohawk Generating Facility

Assessment of Impacts

No wetlands occur on or within the immediate vicinity of the proposed WMGF site (appendix C). No impacts to wetland areas are anticipated as a result of construction or operation of the proposed WMGF.

Construction of retention ponds on the site would contain all water originating on, or up-gradient of, the proposed WMGF boundary. The USACE has determined that the construction of the proposed WMGF would not involve WUS (appendix C). Therefore, there would be no impacts to qualifying WUS from the construction or operation of the proposed WMGF.

Facility Natural Gas Pipeline

Option 1

Assessment of Impacts. The portion of the facility natural gas pipeline corridor bisecting the National Wetlands Inventory (NWI)-designated wetland area traverses previously disturbed upland directly adjacent to the Wellton-Mohawk Canal. This wetland area has been disqualified from consideration as a wetland by the USACE (USACE 1997). In addition, none of the three required criteria for qualification as a jurisdictional wetland were met (appendix C). Therefore, construction and operation of the proposed facility natural gas pipeline in the Option 1 corridor is not expected to impact any jurisdictional wetland areas.

The amount of disturbance for each flumed waterway identified as a qualifying WUS along the proposed facility natural gas pipeline Option 1 corridor was estimated using the width and depth of the WUS in conjunction with the width and depth of trenching. The total temporary impact along the proposed facility natural gas pipeline Option 1 corridor is estimated to be 1.07 acres (appendix C). Areas where water collects to cross the flume waterways are periodically cleared of vegetation by WMIDD, so these areas are already heavily disturbed.

All disturbed areas along the construction corridor would be reclaimed, and no permanent disturbance to any qualifying WUS from the construction or operation of the facility natural gas pipeline is anticipated. The USACE determined that the proposed construction and operation of the facility natural gas pipeline complies with the terms of the Nationwide Permit No. 12 for utility line activities (appendix D). The USACE directed that Dome Valley comply with the terms and conditions of Nationwide Permit No. 12 as well as additional Special Conditions. The Applicant has committed to comply with the mitigations outlined in the USACE's Special Conditions for the permit to remain valid (section 2.2.5.3, table 2.2-10) and (appendix C). With these mitigation measures, impacts to the qualifying WUS would be within applicable permit conditions and not be considered significant. No additional mitigation measures would be needed.

Option 2

Assessment of Impacts. Under Option 2, the facility natural gas pipeline would be constructed on the proposed WMGF site. No wetlands or WUS occur on, or within the immediate vicinity of, the proposed WMGF site (appendix C). No impacts to wetland or WUS areas are anticipated as a result of construction or operation of the facility natural gas pipeline in the Option 2 corridor.

Transmission System Additions

New Transmission Line

Assessment of Impacts. The proposed new Ligurta-North Gila Transmission Line would parallel the existing Ligurta-Dome Tap Transmission Line for the first and last parts of its route between the Ligurta and Dome Tap substations. In between, the new transmission line would parallel the Wellton-Mohawk Canal for most of its route, deviating to cross the Gila River approximately 1 mile to the west of the existing crossing. Past the Dome Tap Substation, the

new transmission line would run west, then southwest, and then west to interconnect at the North Gila Substation.

The portion of the new transmission line parallel to the Wellton-Mohawk Canal traverses the wetland area described for the facility natural gas pipeline Option 1 corridor. The transmission structures would be located on the southern canal levee which is in disturbed upland directly adjacent to the Wellton-Mohawk Canal. This upland area was disqualified from consideration as a wetland by the USACE (USACE 1987). The north side structures would be located north of the levee and outside of the riparian and low-flow channel areas. Therefore, construction and operation of the new transmission line is not expected to impact jurisdictional wetland areas.

The transmission line structures for the new transmission line would be located on high points outside the boundaries of qualifying WUS. Access to the new transmission line between the Ligurta and Dome Tap substations would be on existing roads. The new Gila River crossing may require new access roads; however, there are no qualifying WUS within this agricultural area. Primary access to the portion of the new transmission line between the Dome Tap and North Gila substations would be through existing roads; however, approximately 2.5 miles of new road would be constructed. Approximately 0.12 acre within the boundaries of qualifying WUS would be disturbed by the road construction (appendix C).

Compliance with section 404 for transmission system crossings of WUS would be done separately from the compliance for the proposed WMGF site and the facility natural gas pipeline. Western would be responsible for compliance with section 404 for the transmission lines. Upon completion of a ROD regarding the Proposed Project, Western would apply for a Nationwide Permit No. 12 for utility line activities administered under section 404 of the CWA (appendix D), which would contain general and could contain permit-specific mitigation conditions for areas where proposed access roads cross designated WUS . Western would site the transmission line structures, to the extent feasible, such that they would span across (rather than be located within) any jurisdictional waters. With the mitigation measures that would be contained in the permit, impacts to qualifying WUS are not expected to be significant (appendix C). No additional mitigation measures would be needed.

Upgraded Transmission Line

Assessment of Impacts. Access to the upgraded transmission line would be along the existing Ligurta-Gila Transmission Line access roads. No area within the boundaries of qualifying WUS would be disturbed for the upgraded transmission line. Therefore, no impacts to qualifying WUS would result from the construction or operation of the upgraded transmission line.

Substations Modifications

The substations are not located within jurisdictional WUS. Modifications of the substations would not impact WUS.

4.2.2 Groundwater

4.2.2.1 *Methodology and Significance Criteria*

The proposed WMGF water supply source is surface water from the Wellton-Mohawk Canal and would, therefore, not withdraw groundwater from wells as part of the operation. Since groundwater use is not included as part of the proposed action, an evaluation of the impacts of groundwater pumpage and use were not considered.

Assessment of the potential impacts to groundwater resources involves the evaluation of potential changes to the quality of the water in the area from discharges. The proposed WMGF is designed as a zero liquid discharge system, which means that no discharges to groundwater are planned under normal proposed WMGF operations, other than that from an onsite septic system and retained stormwater. The discharge to groundwater from the stormwater retention ponds should be free of pollutants; since the stormwater from the areas of potential contamination would be collected and sent to the oil/water separators and treatment facility before it is utilized in the process or discharged to the evaporation pond. For this reason, the evaluation of potential impacts to the groundwater resources focused on possible water quality changes due to discharges to groundwater from the septic system, possible leaks in the lined evaporation ponds, and spills of chemicals. To determine possible impacts, available water quality data from nearby wells were considered in evaluating general water quality for the groundwater. Water levels and water elevations were also evaluated to determine groundwater flow conditions, and wells registered with the Arizona Department of Water Resources (ADWR) were reviewed to identify possible receptors of groundwater from the proposed WMGF. These data were used to identify potentially impacted areas and users of groundwater, based on estimated possible changes in water quality from proposed WMGF operations.

The proposed WMGF gas supply source includes two options for a new pipeline to interconnect with existing gas transmission facilities. Each pipeline route would require excavation using heavy equipment with the pipeline placed below grade, so assessment of potential impacts to groundwater resources involves evaluation of whether pipeline routes may encounter shallow groundwater. Incidental spills of fuels or lubricants from equipment during excavation would be managed and mitigated as part of construction activities, but spills in areas of shallow groundwater would have much greater potential for adverse groundwater quality changes.

Because groundwater depth is a function of surface elevation changes and subsurface hydraulic conditions, it generally can only be estimated for the proposed routes. The lack of a detailed surface elevation profile and limited available water level information for the area, imply that the depth to water can only be estimated for the routes to approximately 5 to 10 feet.

Impacts to groundwater quality can be considered significant if discharges from construction and operational activities at the proposed WMGF would cause adverse changes in current water quality. These adverse changes would primarily involve rises in inorganic ion concentrations above relevant water quality standards or significant increases in dissolved solids content. Also, spills of organic solvents, lubricants or fuels would be significant if they impacted groundwater and appeared in down gradient domestic wells.

4.2.2.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Because the proposed WMGF would be designed as a zero discharge facility, no environmental impact to groundwater would be expected from normal operation. The proposed WMGF would utilize lined evaporation ponds to discharge water used in cooling operations, with solids periodically removed mechanically. For this reason, no discharges are planned to groundwater from the proposed WMGF. Stormwater would be caught and not leave the site. Stormwater from areas that may be contaminated with oils would be sent to the oil water separator, and after treatment, it would be recycled to the cooling system or elsewhere. Stormwater that was free of oil and other contaminates would be collected in unlined ponds where it would evaporate or sink into the groundwater. This recharge to the groundwater would be clean water, similar to what currently goes into the groundwater from storms at the proposed WMGF site. Septic system water would be processed through a permitted system that is designed to ensure groundwater is not harmed. Therefore, as designed, there would be no significant impact to groundwater from operation of the proposed WMGF.

The evaporation ponds at the proposed WMGF would concentrate solids through continual evaporation, so damage to the pond lining could allow high dissolved solids content water to discharge to the subsurface, which could impact groundwater quality. Three wells which indicate domestic water use are located approximately down gradient of the proposed WMGF site: 55-628124 – Arizona Department of Transportation (ADOT) rest stop on I-8, 55-630854 – Ligurta Well, and 55-506742 – New Ligurta Well. These wells could be affected if a substantial, undetected leak were to develop in the liner, which would discharge high dissolved solids water to the subsurface. The water may also contain concentrated levels of other inorganic ions which could exceed water quality standards, depending on influent water from the Wellton-Mohawk Canal.

The Proposed Action would require an Aquifer Protection Permit (APP) from the ADEQ. The APP process evaluates and formalizes the procedures for maintaining the integrity of the liner, which would prevent leaks to the subsurface. The APP would require measures to monitor and evaluate possible spills of chemicals and leaks from the lined evaporation ponds, including detailed plans for liner inspection and maintenance and the installation of monitor wells to identify potential leaks. Although the possible impact from a spill/leak would depend on the quantity and nature of the released water or chemicals, proper installation of monitoring wells and liner inspection would minimize potential for significant discharges to groundwater. A properly implemented APP would limit the possibility of large scale leaks or spills.

Other impacts to groundwater are possible if spills of chemicals used at the facility were to occur. The preliminary Spill Prevention, Control, Countermeasures and Emergency Response Plan (SPCCERP) prepared on behalf of the Applicant would be updated upon proposed WMGF construction and would limit potential for accidental discharges at the proposed WMGF (Wellton-Mohawk 2003a). There would be no significant impacts to groundwater because the proposed WMGF would be designed for zero discharge and the Applicant is committed to developing and complying with a SPCCERP.

Facility Natural Gas Pipeline

Option 1

Assessment of Impacts. The facility natural gas pipeline would be constructed along the Wellton-Mohawk Canal. Construction of the gas pipeline near the proposed WMGF site would not involve excavation to the depth to groundwater, because the depth to groundwater is more than 60 feet near the site. However, groundwater is considerably shallower along the Gila River to the west, along the facility natural gas pipeline route for Option 1. Depth to groundwater in the Upper fine grain unit is 10 feet or less in locations near the Gila River, west of Dome Narrows. Based on the location of Option 1, groundwater depths should generally be greater than 10 feet, while the depth of excavation should not exceed 6 feet. Thus, construction and operation of the facility natural gas pipeline would not impact groundwater. Additionally, any rupture of the facility natural gas pipeline would not be expected to impact groundwater since the gases would vent upward to the atmosphere.

Mitigation of shallow groundwater issues would be addressed as part of construction activities, since it would affect pipeline installation activities. Spill prevention and controls would mitigate this potential impact. Possible spills and discharges to soils could impact groundwater if not managed or remediated prior to contacting groundwater. A proper spill control plan would be implemented and followed, thus impacts from construction activities would be negligible. No additional mitigations are recommended.

Option 2

Assessment of Impacts. The facility natural gas pipeline would be constructed mainly on the proposed WMGF site. The potential impacts to groundwater during construction would be the same as those associated for the construction of the Option 1 facility natural gas pipeline. No significant impacts to groundwater would occur under Option 2.

Transmission System Additions

New and Upgraded Transmission Lines

Assessment of Impacts. Construction of the transmission structures near the proposed WMGF site would not involve excavation near groundwater because the depth to groundwater is more than 60 feet near the proposed WMGF site. The new transmission line would cross the Gila River and would be routed near the Gila River south of the shooting range (section 2.2.3.2). The structures for the Gila River crossing would be outside of the low flow areas where the groundwater is shallow (about 10 feet). Should groundwater be encountered, a dewatering permit would be obtained and its requirements followed to ensure no impacts to the groundwater in accordance with section 13.16 of the Western's Construction Standard 13. No groundwater resources would be impacted along the alignments of the transmission lines because no planned discharges of liquids would be made, and any spills would be cleaned up.

Substations Modifications

There would be limited excavations associated with making equipment foundations during the modifications to the substations. Should groundwater be encountered, a dewatering permit

would be obtained and its requirements implemented to ensure no impacts to the groundwater in accordance with section 13.16 of the Western's Construction Standard 13. No groundwater resources would be impacted, thus there would be no significant impacts to the groundwater resource.

4.2.3 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be implemented and the current environmental conditions and impacts would continue as described in chapter 3, section 3.2.

4.3 AIR RESOURCES

4.3.1 Arizona Ambient Air Quality Guidelines

4.3.1.1 *Methodology and Significance Criteria*

Potential impacts of the proposed WMGF construction and operation on ambient air quality standards were assessed by first quantifying emissions of all air pollutants (both criteria and noncriteria Hazardous Air Pollutants (HAPs) that are regulated under the Clean Air Act (CAA)) from the primary sources (combustion turbines, duct burners, cooling towers, etc.), using emission factors and vendor information as needed. Fugitive dust generated during construction was also considered. These emission estimates are for both Phase I and Phase II, and they were based on maximum reasonable emission rates, typically represented by full load operation, but also include estimates for startup and shutdown or other short-term periods of operation when the emissions may be greater than full load operation.

Criteria pollutant emission rates were then input to dispersion models approved by EPA, along with meteorological data sets recommended by ADEQ, and topographic data, to predict ambient concentrations of pollutants. Models were also used to assess related visibility and depositional effects on sensitive areas (i.e., Class I, or specific Class II areas with protected air quality values).

Results of the models were compared to Arizona Ambient Air Quality Standards (AAAQS), and impacts were determined based on established "Significant Impact Levels (SILs)" (table 3.3-5), and the magnitude of the model results when combined with the background air quality. If the Proposed Project would cause a pollutant to exceed an AAAQS, this would be considered a significant impact.

Although there are no Class I areas that would be impacted by the Proposed Project, the Class I increments and federally proposed significance levels were used to compare air quality impacts in accordance with the Federal Land Managers' Air Quality Related Values Workgroup (FLAG) report (FLAG 2000).

The determination as to whether an air quality impact would be significant with respect to criteria and HAP concentrations is determined by adding the maximum-modeled air pollutant concentration to the background air pollutant concentration for the respective pollutant. The resulting total is then compared to the appropriate Arizona Ambient Air Quality Guidelines (AAAQG). Pollutant concentrations above the standards would be considered significant.

Significant impact concentrations for Prevention of Significant Deterioration (PSD) are quantitatively assessed by comparing the Class II increment with modeled pollutant concentrations. Exceedance of the increment would be considered a significant impact. As required by EPA, impacts of air-quality-related values are evaluated for Class I airsheds located within 62 miles of the proposed WMGF. A 5 percent change in extinction (a reduction of visibility) would be considered a significant impact.

Other air quality related values include the potential impact to crops and vegetation in the area, and the effects resulting from deposition of sulfates and nitrates. A significant impact would occur if predicted ambient air concentrations would create any damage to the existing crops or vegetation. In addition, a significant impact would occur if predicted deposition of sulfates and nitrates exceed depositional guidelines established by the National Park Service in areas deemed sensitive to acidification.

The proposed WMGF, once both phases are installed and operating, would be a nominal 620-MW power generating facility, consisting of two CTGs and HRSGs. The dispersion modeling analysis is limited to emissions resulting from the operation of the proposed WMGF. The dispersion modeling analyses included the following air pollutant emission sources:

- Two CTGs
- Two HRSGs (one for each CTG) with duct burners
- Two black start generators
- An auxiliary boiler
- A linear mechanical draft wet cooling tower
- A diesel fire pump
- A cooling tower

During operation, all emissions from each CTG and duct burner would vent through the HRSGs, and then exhausted through the stacks. Following the completion of Phase II, there would be two stacks, one for each power generation system, plus emission points for the cooling towers. In addition, the support equipment such as the black start generators, auxiliary boiler, and diesel fire pump were included in the model but would rarely be operating.

Based on the proposed WMGF air quality analysis, there were two options for the CTG manufacturer, General Electric or Westinghouse. The stack temperature and resulting stack exit velocity would vary slightly depending on the unit manufacturer, unit load, and ambient conditions. To account for the various options, a detailed analysis was prepared to determine the worst-case operating conditions for each pollutant and the associated averaging period.

Steady-state emissions and exhaust data from the CTGs were provided by the turbine manufacturers for a range of ambient temperatures and relative humidities. These emissions can vary substantially during the relatively brief periods (30 minutes) of startup and shutdown. However, since all emissions would be treated by the selective catalytic reduction and oxidation catalyst, these emissions would be controlled. To account for these emissions, each load and ambient condition was combined with startup and shutdown emissions and analyzed as described in the supplemental modeling protocol (Greystone 2002).

To assess potential ambient air quality impacts resulting from operation of the proposed WMGF, a screening analysis was conducted to determine the load condition, including the startup and shutdown emissions that would result in the worst-case emissions for the pollutant and the identified averaging period.

4.3.1.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

There would be some localized and short-term impacts to air quality during construction. Although short-term impacts are a concern, the anticipated impacts are limited to fugitive dust and vehicle exhaust emissions. These would be mitigated by the BMPs for fugitive dust control as described in chapter 2, table 2.2-8. Application of BMPs would minimize the impacts to an insignificant level. No additional mitigations would be needed for construction of the proposed WMGF.

Table 4.3-1 shows the anticipated startup and shutdown emission rates during combined-cycle operation.

Table 4.3-1. Startup and Shutdown Emissions Data (lbs/hr).

	NO_x	CO	VOC	SO_2	PM_{10}	Duration (hours)
Startup cold	166.7	557.3	133.4	2.0	25.1	0.4
Startup warm	100.0	561.7	283.9	2.4	26.6	2.5
Startup hot	100.0	740.22	283.3	2.7	27.0	1.5
Shutdown	144.0	1656.0	214.0	4.0	32.0	0.5

For modeling purposes, the Applicant has assumed 320 startups would occur each year. This is comprised of 200 hot starts, 100 warm starts, and 20 cold starts. Each cold startup is associated with the CTG being offline for at least 48 hours. Similarly, each warm start is associated with at least 8 hours offline. A maximum of one cold and five hot startups were assumed to occur in any 24-hour period, and a maximum of one cold and one hot startup was assumed for any eight-hour period. Because of the time offline associated with cold and warm starts, a maximum of one hot start was assumed for shorter periods of time. This is a conservative assumption. A system with a HRSG typically offers a lower cost to produce power than a simple cycle unit and therefore usually serves a more mid-range load, starting only 50 to 100 times a year.

Table 4.3-2 presents the results of the detailed load analysis for combined-cycle operation. This analysis concluded that the following load conditions (LC) resulted in the worst-case ground level concentrations.

Table 4.3-2. Combustion Turbine Generator Exhaust Parameters - Combined Cycle.

Load Condition	LC 1	LC 2	LC 3
Temperature (^oF)	179.3	192.5	183
Velocity (ft/sec)	49.4	69.3	68.2

- Load Condition (LC 1) represents a General Electric (7FA) unit operating at 100 percent load, with duct firing, and no chiller. LC 1 assumes an ambient temperature of 120°F, and relative humidity of 7 percent. Although the emissions represented for this scenario were high, this represents an operating scenario that is outside of normal operation. Normally, at high ambient temperatures, the chiller would be operating to increase the plant output, lower natural gas consumption, and reduce emissions.

- Load Condition (LC 2) represents a Westinghouse (501FD) unit operating at 100 percent load, with no duct firing, and no chiller. LC 2 assumes an ambient temperature of 17°F, and relative humidity of 70 percent. This is a typical "worst case" for emissions. The low ambient temperatures combined with the high humidity increase the mass of the air and provide an ideal condition for maximum firing rate. Low temperatures and high humidity are very uncommon at the proposed WMGF site.

- Load Condition (LC 3) represents a Westinghouse (501FD) unit operating at 100 percent load, with duct firing, and no chiller. LC 3 assumes an ambient temperature of 17°F, and relative humidity of 70 percent. This scenario is very similar to LC2, except it includes operation of the duct burners.

Table 4.3-3 presents the steady-state emissions for the critical load conditions described above.

Table 4.3-3. Steady State Emission Rates.

	Emission Rates (lb/hr)			
Load Condition	**NO_x**	**CO**	**SO_2**	**PM_{10}**
LC 1	15.05	18.32	3.59	23.93
LC 2	22.80	27.75	4.47	32.90
LC 3	22.77	27.72	5.34	32.90

These load conditions (along with several others) were used in the dispersion modeling to predict maximum ground level concentrations (GLC). These conditions resulted in the largest GLC, and therefore, serve as the basis for this analysis.

The air quality analysis identified potential impacts of the proposed WMGF on ambient air quality by modeling the potential ambient air impacts resulting from the proposed WMGF, combined with the existing significant sources in the vicinity and combined with the background concentrations. The existing units in the vicinity included the Yucca Power Plant and the Yuma Generating Station. The Yucca Power Plant is operated by APS, and the sources at this facility include one gas-fired steam unit, five gas- and oil-fired CTG units, and an auxiliary boiler. The Yuma Generating Station is primarily solar and includes only one unit plus a small standby boiler and emergency generator.

As mentioned in chapter 3, a background concentration was provided for each criteria pollutant by ADEQ. Emissions that were assessed for all the combustion sources included NO_x, CO, PM_{10}, and SO_2.

Cooling towers would use water to cool the process water for the steam generation cycle. Air drawn through the cooling tower entrains liquid droplets in this air. Droplets not removed by the

mist eliminators are referred to as "drift." The droplets carried out of the cooling tower would contain some dissolved solids, and following evaporation of the water droplets, the remaining solids in the drift would create particulate matter emissions. The air quality analysis used an estimate of the PM_{10} emissions, based on a total dissolved solids concentration of 7,000 parts per million (ppm) (Wellton-Mohawk 2002, Wellton-Mohawk 2003e). The dissolved solids in the recirculated cooling tower water are controlled by the release of a bleed stream (i.e. some of the water) and the addition of relatively clean make-up water. Based on this dissolved solids concentration, the total drift emissions from the tower were calculated to be 13 tons per year. These particulate emissions are included in the dispersion model.

Using the representative worst-case load conditions for the combined-cycle operation, the dispersion modeling was completed. Table 4.3-4 presents the modeled maximum ambient air impacts.

Table 4.3-4. Modeled Maximum Ambient Air Impacts

Pollutant	Averaging Period	Existing Ambient Background ($\mu g/m^3$) [1]	Modeled Impact ($\mu g/m^3$) [1,2]	Modeled Impact with Background ($\mu g/m^3$) [1]	Relative to AAAQS (percent)
NO2	Annual	4	4.0	8.0	8.0%
CO	1 hour	582	1331.2	1913.2	4.8%
	8 hour	582	300.0	882.0	8.8%
PM10	24 hour	114	8.9	122.9	81.9%
	Annual	39	1.8	40.8	81.7%
SO2	3 hour	246	81.5	327.5	25.2%
	24 hour	45	18.8	63.8	17.5%
	Annual	6	2.4	8.4	10.5%

1 $\mu g/m^3$ = micrograms per cubic meter

2 Modeled impacts include emissions from APS Yucca Power Plant and Yuma Cogeneration Associates in addition to those from WMGF.

The PM_{10} concentrations include background concentrations of 39 micrograms per cubic meter ($\mu g/m^3$) for the annual average period (78 percent of the standard) and 114 $\mu g/m^3$ for the 24-hour average period (76 percent of the standard). The contribution to the ambient particulate concentration resulting from the proposed WMGF is relatively small, and based on the modeling results, all of the predicted impacts are below the ambient air quality standards. Because there is no indication that construction or operation of the proposed WMGF project would cause a violation of the AAAQS, no significant impact to ambient air quality is expected as a result of the proposed WMGF.

4.3.1.3 *Facility Natural Gas Pipeline*

Options 1 and 2

Assessment of Impacts

Either option for construction of the proposed natural gas pipeline would result in similar types of air quality impacts. However, Option 2 is only 0.25 miles, thus the magnitude of the impacts would be far less.

There would be some localized and short-term impacts to air quality during construction of the facility natural gas pipeline; however, much of this would be mitigated by the BMPs for fugitive dust control, such as application of water or dust suppressant to disturbed areas and storage piles (table 2.2-8). In addition, construction activities for the pipeline would move along the line, therefore, the impact to any specific area would only be for a short period of time. Although short-term impacts are a concern, anticipated impacts are limited to fugitive dust and vehicle exhaust emissions. Application of BMPs for fugitive dust control, as described in chapter 2, would minimize impacts to less than a significant level because no regulatory standard would be reached or exceeded.

4.3.1.4 *Transmission System Additions*

New and Upgraded Transmission Lines

Assessment of Impacts

The contribution to the ambient particulate concentration resulting from the construction of the new and upgraded transmission lines would be small and temporary. Although some fugitive dust would be created, it is anticipated that the application of BMPs would minimize the dust, resulting in short-term emissions and preventing exceedances of the AAAQS. Transmission line construction would be accomplished following Western standard construction practices (table 2.2-9), which include BMPs to minimize fugitive dust. In addition, construction activities for the transmission line would move along the line, and therefore the impact to any specific area would only be for a short period of time. Although short-term impacts are a concern, the anticipated impacts are limited to fugitive dust and vehicle exhaust emissions. Application of Western standard construction practices would minimize the impacts to a less than significant level. Therefore, no significant impact to ambient air quality is expected as a result of the construction associated with the proposed transmission line construction because no regulatory standard would be reached or exceeded.

Substations Modifications

Substation modifications would take place within the existing footprint and mostly involve installation of new equipment. Excavation is expected to be minimal. There would be some localized and short-term impacts to air quality from the use of heavy equipment during equipment installation. Although some fugitive dust would be created, it is anticipated that the use of Western construction practices would minimize the dust, resulting in short-term emissions

and preventing exceedances of the AAAQS. Therefore, no significant impact to ambient air quality is expected as a result of the modification of the substations.

4.3.2 Prevention of Significant Deterioration Increments

4.3.2.1 *Methodology and Significance Criteria*

There are no federally designated Class I areas within 100 miles of the proposed WMGF. Table 3.3-4 presents the Class I and Class II increment values established by the PSD regulations. These values reflect the maximum amount of change allowed to the ambient air quality since the baseline date, and cannot be exceeded more than once per year. Because of the long distance, the EPA-approved CALPUFF model was used to predict ambient air contributions attributable to the proposed WMGF at the closest Class I area, which is Joshua Tree National Park, approximately 106 miles away. The Class I increments and EPA-proposed significance levels were used to compare impacts in accordance with the FLAG report (FLAG 2000).

A significant impact would occur if the emissions resulting from the proposed WMGF would cause an exceedance of the Class I or Class II increments. The available increment is affected by formal changes at major sources after the major source baseline date and by all changes to emission sources, both minor and major, after the minor source baseline date.

No other stationary sources were included in the increment consumption analysis. This was due to the relatively small significant impact area (the area where maximum impacts could exceed EPA-established significance values), the distance from other stationary sources, and the lack of changes that have occurred to stationary sources since the minor baseline dates (table 3.3-1). Mobile sources would also affect the increment after the minor source baseline date. To account for this, emissions attributable to the traffic from a portion of I-8 that was within the ROI were included in the increment analysis. Data was obtained from the ADOT for the current traffic levels, but information was not reported on the traffic levels at the minor source baseline date. For a worst-case scenario, it was assumed that all vehicle emissions would affect the increment. This was a conservative approach since only the actual increase in mobile source emissions after the baseline date would consume increment. In general, mobile source emissions are less from newer vehicles equipped with air pollution control equipment. No changes in emissions from the trains in the area are included in the increment consumption.

The parameters shown in table 4.3-5 were selected as "worst-case" parameters estimated to be the highest emissions that could reasonably be expected to occur in any 24-hour period.

Table 4.3-5. Class I Assessment – Worst Case Parameters.

Source	Height (ft)	Velocity (ft/sec)	Temperature (^{0}F)	Diameter (ft)	Emissions (lb/hr)			
					PM_{10}	NO_x	SO_2	SO_4
CT/HRSG Stacks	160	49.4	179.3	19	32.94	85.72	3.55	2.63
Cooling Tower (each cell)	40	21.8	94.7	28	0.5	NA	NA	NA

NA = Not applicable.

4.3.2.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

The area in the vicinity of the proposed WMGF is classified as Class II. The Industrial Source Complex model was used for the assessment of increment consumption for this area. The emission rates and stack parameters used for the ambient air quality analysis were also used for this increment analysis. The results of the CTG screen dispersion modeling analysis indicate that all of the ambient air concentrations resulting from the proposed WMGF are below the established SILs (table 3.3-5). Therefore, no significant impact is expected to Class II increments as a result of the proposed WMGF.

All of the estimated ambient concentrations occurring in the Class I area resulting from this analysis were below the EPA-proposed Class I significance level. Therefore, no significant impacts would occur to the quality of the ambient air at nearby Class I areas as a result of the proposed WMGF.

4.3.2.3 *Facility Natural Gas Pipeline*

Options 1 and 2

Assessment of Impacts

Construction of the facility natural gas pipeline would not impact air quality at nearby Class I areas. The relatively small amount of particulate dust created during construction would be mitigated by BMPs as described in table 2.2-8, measure 12. No additional mitigations would be needed.

4.3.2.4 *Transmission System Additions*

New and Upgraded Transmission Lines

Assessment of Impacts

Construction of the transmission lines would not impact air quality at nearby Class I areas. The relatively small amount of particulate dust created during construction would be mitigated by BMPs as described in Table 2.2-9 Western's Standard Construction Practices. No additional mitigations would be needed.

Substations Modifications

Modifications to the substations would not impact air quality at nearby Class I areas. The relatively small amount of particulate dust created during installation of equipment at the substations would be mitigated by Western construction practices.

4.3.3 Hazardous Air Pollutants

4.3.3.1 *Methodology and Significance Criteria*

HAPs listed in EPA's compilation of emission factors (AP-42 1995) and included in the AAAQG were evaluated using maximum emission rates for 1-hour and 24-hour impacts and annual average emission rates for annual impacts. Exhaust data that were used for the 1-hour impact analysis of CO emissions were used for all the analyses.

4.3.3.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Table 4.3-6 presents the HAP emissions rates used for the combined-cycle analysis. Ammonia is added as part of the advanced control technology, used to control the NO_x emissions from the HRSG. Some of the ammonia is released unreacted, and is reported as part of the HAPs released during operation.

These pollutants typically occur in the environment, but it has been demonstrated that at an elevated concentration they can be harmful. Table 4.3-7 presents the modeled maximum ambient air HAP's for a combined-cycle power plant. Dispersion modeling results (table 4.3-7), indicate that all modeled ambient concentrations are below the applicable AAAQG.

Based on this comparison it is unlikely that any significant impact would result from the HAPs emitted during the operation of the proposed WMGF, because all emissions are less than the regulatory standard limits.

Table 4.3-6. Hazardous Air Pollutant Emission Rates Used for the Analysis.

Pollutant	Emission Rates (tons/yr)	
	Short Term	Annual
1,3-Butadiene	0.000469	0.000432
Acetaldehyde	0.043625	0.040208
Acrolein	0.006964	0.006439
Ammonia	18.615	17.1696
Benzene	0.013534	0.012483
Ethylbenzene	0.034909	0.032149
Formaldehyde	0.7884	0.72708
Naphthalene	0.001419	0.001305
PAH (as Benzo(a)pyrene)	0.0024	0.002212
Propylene Oxide	0.031624	0.029171
Toluene	0.14235	0.1314
Xylene (Total)	0.069642	0.064386

4.3.3.3 *Facility Natural Gas Pipeline*

Options 1 and 2

Assessment of Impacts

The construction of the facility natural gas pipeline would not emit HAPs. There would be no related impacts.

4.3.3.4 *Transmission System Additions*

New and Upgraded Transmission Lines and Substations Modifications

Assessment of Impacts

The construction of the transmission lines would not emit HAPs. There would be no related impacts.

4.3.4 Air Quality Related Values

4.3.4.1 *Methodology and Significance Criteria*

The FLAG criteria were used to assess air-quality-related values, such as visibility, and potential impacts to soils, vegetation, and water quality. EPA specifically delegated the decision of potential impacts to air-quality-related values on federally managed lands to Federal land managers. Based on this, a significant impact could occur if emissions resulting from the Proposed Project would negatively impact air quality related values at a federally-designated Class I area, the closest being Joshua Tree National Park. Other Federal lands having unique values, such as wilderness areas, can receive a Class 1 designation, if the land manager successfully completes the administrative process to gain that classification. However, none of the local Federal lands have been classified as Class I; thus, those lands fall under Class II, as do all of the lands (Federal, state, and private) surrounding all the components of the Proposed Project. Therefore, significant impacts would be limited to those that exceed standards in the Class I areas or exceed the local PSD regulatory thresholds.

Table 4.3-7. Modeled Maximum Ambient Air Hazardous Air Pollutant Impacts - Combined Cycle.

HAP	1-Hour Facility Impact (µg/m^3)	Regulatory Standard 1-Hour (µg/m^3)	24-Hour Facility Impact (µg/m^3)	Regulatory Standard 24-Hour (µg/m^3)	Annual Facility Impact (µg/m^3)	Regulatory Standard Annual (µg/m^3)
1,3-Butadiene	1.70×10^{-1}	7.20	1.23×10^{-2}	1.90	1.21×10^{-4}	6.70×10^{-2}
Acetaldehyde	7.28×10^{-1}	2.30×10^{3}	5.38×10^{-2}	1.40×10^{3}	3.80×10^{-3}	5.00×10^{-1}
Acrolein	6.74×10^{-1}	6.70	4.90×10^{-2}	2.00	8.57×10^{-4}	NA
Ammonia	3.62×10^{1}	2.30×10^{2}	6.29	1.40×10^{2}	1.49	NA
Benzene	4.18×10^{-1}	6.30×10^{2}	2.99×10^{-2}	5.10×10^{1}	1.26×10^{-3}	1.40×10^{-1}
Ethylbenzene	6.93×10^{-2}	4.50×10^{3}	1.20×10^{-2}	3.50×10^{3}	2.79×10^{-3}	NA
Formaldehyde	5.26	2.00×10^{1}	5.07×10^{-1}	1.20×10^{1}	6.53×10^{-2}	8.00×10^{-2}
Naphthalene	2.61×10^{-2}	6.30×10^{2}	1.89×10^{-3}	4.00×10^{2}	1.24×10^{-4}	NA
PAH (as Benzo(a)pyrene)	3.62×10^{-2}	6.70×10^{-1}	2.72×10^{-3}	1.80×10^{-1}	2.08×10^{-4}	4.80×10^{-4}
Propylene Oxide	6.16×10^{-2}	1.50×10^{3}	1.07×10^{-2}	4.00×10^{2}	2.53×10^{-3}	2.00
Toluene	3.21×10^{-1}	4.70×10^{3}	5.23×10^{-2}	3.00×10^{3}	1.14×10^{-2}	NA
Xylene (Total)	1.50×10^{-1}	5.50×10^{3}	2.50×10^{-2}	3.50×10^{3}	5.60×10^{-3}	NA

NA=Not applicable. No annual standard.

4.3.4.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Air quality related values include potential impacts to visibility, water quality (acid rain), soils, and vegetation. Two facets of visibility were considered, the visual impact of the plume itself and the regional haze caused by the chemicals released in the plume. Typically there is little visual impact from the plume. Most plume visibility is associated with steam or condensed water vapor plume resulting from the cooling towers. This is limited to cooler days with temperatures generally less than 50ºF, and is more pronounced on days with higher humidity. Although a visible plume occurs on cool rainy days, it is typically not a visibility issue because normal visual range is limited during these events. Days with cool temperatures and elevated humidity are rare in the Yuma region. This issue is included in the visual impact analysis, section 4.8.

The air quality analysis showed that the proposed WMGF operations would have a maximum effect on the visibility of 3.82 percent change in extinction (Greystone 2001a). Therefore, no significant visibility impact is expected in the closest designated Class I area (Joshua Tree National Park). The air quality analysis also predicted the impact to visibility at the federally designated Class II areas in the vicinity of the Proposed Project. The maximum potential impact occurred at Muggins Mountains Wilderness, where, using overly conservative data, the refined analysis demonstrated that any potential reductions of visibility would occur only 4.63 percent of the time (appendix B #4). This is not considered a significant impact since it is a small percentage, and in any case there are no standards for visibility in Class II areas.

As described in section 3.4, the surrounding area primarily contains desertscrub communities of native vegetation, except to the north of the existing Ligurta-Dome Tap Transmission Line, where there is land in cultivation. Agricultural plants grown near the proposed WMGF include:

- Cotton
- Cereal grains
- Forage
- Vegetables
- Alfalfa
- Bermuda grass
- Sudan
- Okra
- Citrus (lemons, oranges, grapefruit, and limes)
- Pecans

Review of the literature does not indicate that these crops are adversely affected by the levels of air impacts likely to result from the Proposed Project (Vegetation Impacts 2003). None of the studies reported adverse effects resulting from any of the criteria pollutants at levels below the NAAQS. Since dispersion modeling suggests that impacts resulting from the proposed WMGF would not exceed the NAAQS, no adverse impact is expected. Based on the air quality analysis, soils and vegetation would not be significantly impacted by air emissions from the proposed WMGF (Greystone 2001a).

The air quality analysis provided depositional impact information by modeling the deposition of nitrogen and sulfur (components of acid rain). These compounds are often found in commercial fertilizers and to some degree can actually enhance crop production and growth rate in soils, but thin soils or too much acid rain can damage plants and contaminate surface runoff. Extremely high concentrations of nitrogen and sulfur compounds can also dissolve certain metals and increase contamination by releasing additional contaminants. Based on the dispersion modeling analysis (Greystone 2001a), the maximum annual deposition resulting from the proposed WMGF in the federally-managed Class II areas is predicted to be 0.11 pound per acre for total nitrogen, and 0.04 pound per acre for total sulfur. Based on this information, the depositional impacts in the Class II wilderness areas, from the proposed WMGF, would be low and would not contribute significantly to any groundwater acidification.

Concerning the possibility that the deposition may be beneficial to plant growth in the vicinity of the proposed WMGF, soil analyses from the Wellton area indicate that the soils have typical characteristics of soils located in arid regions. The pH of the Wellton soils is slightly alkaline, and they contain a carbonate buffer with the capacity to neutralize nitrogen and sulfur acid deposition until the buffering capacity of the soil is exhausted. In other words, acidity would be added to the soil and neutralized by the carbonates, and the pH of the soil may not be affected until the carbonate buffer becomes depleted. Although there may be no direct benefit from the addition of acids to the soils, the availability of some nutrients may increase as the pH drops. At the same time, lower pH's may result in increased leaching of these nutrients from the soil. Because these soils are located in an arid area, leaching should not occur over the life of the power plant.

The background level for dust is quite high in the area, and the area experiences many more dust storms than rain storms. There would be some deposition of fugitive dust on plants especially near construction activity, but any additional increment above natural levels would be undetectable, and deposition of dust has not been demonstrated to affect plant success. Therefore, there would be no significant impact to the soils and vegetation in the vicinity of the proposed WMGF resulting from the deposition of air pollutants. There would be no significant impact to the air quality related values.

Part of the ACC's justification for approving the proposed WMGF was that the proposed WMGF could potentially generate enough power so that some of the less efficient RMR's could be shut down, with a resulting positive impact to air quality. It is possible that this may happen. However, quantitative analysis is not possible at this time, due to the many variables and uncertainties. For example, which of the RMR's would be shut down? Given the rapidly increasing load demand, would proposed WMGF add enough capacity to retire one or more RMR's? When would WMGF Phase II begin generating power?

4.3.4.3 *Facility Natural Gas Pipeline*

Options 1 and 2

Assessment of Impacts

The construction of the facility natural gas pipeline would create some additional fugitive dust, but the impacts would be short term and minimized through management practices (table 2.2-8).

The quantity of air pollutants emitted from this construction activity is small and temporary and would not affect visibility, soils, vegetation, or water quality. There would be no significant impact to soils and vegetation in the vicinity of the construction of the proposed natural gas pipeline resulting from deposition of air pollutants. There would be no significant impact to the air-quality-related values in federally-designated Class I or Class II areas in the vicinity of the Proposed Project.

4.3.4.4 *Transmission System Additions*

New and Upgraded Transmission Lines

Assessment of Impacts

Construction of the transmission lines would create some additional fugitive dust and result in some engine exhaust emissions, but the impacts would be short term and minimized through BMPs. Normal background dust levels are quite high, and any temporary increment would not be noticeable. Operation would not involve air emissions that would affect visibility or potential impacts to soils, vegetation, or water quality. There would be no significant impact to the soils and vegetation in the vicinity of the construction of the transmission lines resulting from the deposition of air pollutants. There would be no significant impact to the air quality related values in federally-designated Class I or Class II areas in the vicinity of the Proposed Project.

Substations Modifications

Modifications to the substations would create some additional fugitive dust, and result in some engine exhaust emissions, but the impacts would be short term, and minimized through BMPs. The proposed modifications would not involve air emissions that would affect visibility or potential impacts to soils, vegetation, or water quality. There would be no significant impact to the soils and vegetation in the vicinity of the substation resulting from the deposition of air pollutants. There would be no significant impact to the air quality related values in federally-designated Class I or Class II areas in the vicinity of the Proposed Project.

4.3.5 Global Warming (Greenhouse Gas Emissions)

Despite ongoing debate concerning the issues of global warming and the role of greenhouse gases, there is a growing acceptance of the need to stabilize or reduce the production of greenhouse gases. International efforts in response to global warming issues resulted in the Kyoto Protocol. The United States did not approve the protocol because it would require substantial reductions in annual emissions of greenhouse gases. The proposed WMGF would emit less carbon dioxide per unit of power than most natural gas and coal powered plants.

The combustion of fossil fuel results in the emission of CO_2, which is classified as a greenhouse gas. The combustion of natural gas results in approximately 117 pounds of CO_2 per MMBTU. As a comparison, the combustion of coal or wood would result in emission in excess of 200 pounds of CO_2 per MMBTU (EIA 2003).

4.3.5.1 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Although the proposed fuel source (natural gas) is one of the cleanest burning fossil fuel sources, the Proposed Project would emit CO_2. Using the standard emission factors developed by DOE for voluntary reporting of emissions, the CO_2 emission rate for a typical combined-cycle electrical generation project is approximately 952 pounds per megawatt hour. This is significantly less than coal-fired generation, which has been estimated at 1,970 pounds per megawatt hour (Western 1994). More information concerning greenhouse gases resulting from the production of electricity can be found on the DOE website: http://www.eia.doe.gov/oiaf/1605/guidelns.html#vol1. As described in chapter 2, the SEECOT™ system that is part of the Proposed Project is a solar energy based technology that would allow solar energy to be converted into thermal energy, which would be used to increase the output and efficiency of the combined-cycle power plant. The use of this solar component helps to minimize the CO_2 emissions per megawatt hour of electricity produced.

4.3.5.2 *Substation Modifications*

SF_6 (Sulfur Hexafluoride), a potent greenhouse gas, would be used in substation circuit breakers. The equipment would be sealed and certified to not release SF_6 gas. At the time of servicing, SF_6 gas is evacuated using sealed gas containment equipment, thereby remaining totally contained. Western has a program to detect and correct any leaks in SF_6 equipment. Based on manufacturer's certifications and Western's leak detection program, releases of SF_6 gas are not expected.

4.3.6 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be built and operated and the resulting emissions would not occur. Also, the potential opportunity to improve air quality by replacing the RMR's would be lost. Demand for electricity would continue, and would be met by some other supply, which might be more polluting that the Proposed Project.

4.4 BIOLOGICAL RESOURCES

4.4.1 Vegetation

4.4.1.1 *Methodology and Significance Criteria*

Information used in this analysis of potential impacts from the Proposed Project was obtained from field surveys, database records maintained by the Arizona Game & Fish Department (AGFD) Heritage Data Management System, the United States Fish and Wildlife Service (USFWS), published and unpublished technical reports, and personal communications with resource specialists.

To determine if the Proposed Project may cause significant impacts, the context and intensity of the expected effects are considered. For the actions addressed in this EIS, context is the locally affected Proposed Project area, with significance being assessed depending on intensity and duration of predicted effects in the Proposed Project area. Intensity of predicted impacts depends on the characteristics of vegetation in the ROI and the degree to which the Proposed Project may

adversely affect vegetation. Impacts would be considered significant if the Proposed Project were to adversely affect federally-listed or proposed species, threaten viability of local populations of any species, or contribute to listing of sensitive species under the Endangered Species Act of 1973 (ESA). Significance also is assessed relative to the amounts of various plant communities in the region (i.e., southwestern Arizona). For example, removal of portions of abundant, widespread plant communities (e.g., tamarisk, desertscrub) would not be significant because the Proposed Project would represent a small incremental loss both locally and regionally. Significance is also based on the degree of protection plants receive under the Arizona Native Plant Law (ARS 2003b). Losses of highly safeguarded plants (i.e., endangered in Arizona) would be a significant impact. Successful salvage and replanting of plants protected under the Arizona Native Plant Law would reduce impacts to levels of insignificance.

4.4.1.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Construction of the proposed WMGF would permanently remove approximately 119 acres of desertscrub plant communities and associated substrate and replace them with structures and ancillary facilities. Species that would be removed include creosotebush, palo verde, bursage, and cactus species, including one saguaro. The sand deposits on the WMGF site, approximately 20 to 30 acres, are suitable habitat for several special-status plant species (section 4.4.5.1).

Vegetation on a portion (about 30 acres) of the proposed WMGF site has previously been degraded by past industrial development. The loss of the 119 acres of desertscrub habitat and intermittent wind blown sand deposits would not be a significant impact because desertscrub habitat covers extensive areas of southwestern Arizona. The loss of 119 acres would be insignificant compared to the large amount of remaining habitat.

The Arizona Native Plant Law specifies that cacti and other protected species which would otherwise be destroyed by the Proposed Project must be salvaged. A permit would be obtained from the Arizona Department of Agriculture to salvage and transplant cacti and other protected plants. Impacts to plants protected under the Arizona Native Plant Law would be reduced with salvage and replanting; however, not all salvaged plants would be expected to survive. The salvaged plants would be relocated within 1 mile of their original locations. Less than 10 individual cacti would be affected by the proposed WMGF, one of these being a saguaro. Hundreds of shrubs would be salvaged, but not all would survive salvage and replanting. BLM would require the Applicant to salvage and replant a sample of 24 of the 86 dyeweed plants hosting the parasitic plant *Pilostyles thuberi* in order to assess the effectiveness of transplanting the species. Construction disturbance may enhance conditions for dyeweed, which is associated with disturbed sites, and this may indirectly benefit *Pilostyles thuberia.* No additional mitigations would be needed.

4.4.1.3 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

The Option 1 route for the facility natural gas pipeline would run west from the generating facility crossing underneath the Wellton-Mohawk Canal before turning north-northwest and running

alongside of the canal (figure 2.2-3). Approximately halfway along its length, the facility natural gas pipeline would cross back under the Wellton-Mohawk Canal and run along the east side for the rest of its length (figure 2.2-4). The facility natural gas pipeline would be approximately 12.7 miles long and would be located along the Wellton-Mohawk Canal, with a potential disturbance zone 100 feet wide, between 100 and 300 feet from the centerline of the canal. Approximately 154 acres would be temporarily disturbed by construction of this route option.

This option would disturb mostly upland desertscrub vegetation; much of which has already been disturbed by the construction and maintenance of the Wellton-Mohawk Canal. At the northern end of the Gila Mountains, where the Gila River comes closest to the Wellton-Mohawk Canal, the area of temporary disturbance for the facility natural gas pipeline would include between 23 and 39 acres of riparian vegetation, mostly composed of nonnative tamarisk on the outer margin of the Gila River floodplain.

The facility natural gas pipeline is proposed to be constructed as close as possible to the Wellton-Mohawk Canal due to the constricted space. The planned alignment has limited vegetation due to canal maintenance activities. Construction practices and regulations require the pipeline to be built in undisturbed ground. Therefore, to get closer to the canal, the edges of some of the spoils piles would be removed and the pipeline constructed in their place. This would reduce the area of disturbance outside the zone of past and current disturbance. The material removed from the spoil piles would be spread on the ROW which would have been inventoried for natural and cultural resources.

Annual grasses and forbs would colonize soil over the facility natural gas pipeline trench in desertscrub communities within 1 to 2 years, but most perennial vegetation could take 10 or 20 years to establish due to the extreme aridity (less than 4 inches annual precipitation) of the site. In the riparian areas, riparian vegetation, mostly invasive tamarisk, would naturally reestablish in 1 to 2 years. These impacts would be insignificant.

Because Option 1 would follow the Wellton-Mohawk Canal, where past disturbances (e.g., roads, maintenance activities, spoils piles from the canal, and agricultural developments) have altered the native vegetation and soils, there would be little potential for construction of the facility natural gas pipeline to adversely affect sand deposits associated with habitat for sensitive plant species (section 4.4.5.1). Impacts under Option 1 would be minor. With the following proposed mitigation the minor impacts would be further reduced.

Revegetation success of disturbed sites would be enhanced by seeding the areas with BLM-approved weed-free mixtures comprised of native species adapted to local growing conditions. Salvage of plants protected under the Arizona Native Plant Law would reduce but not totally eliminate mortality to affected plants. About 50 percent of the salvaged plants would not be expected to survive replanting, which would result in a loss of plants protected under the Arizona Native Plant Law (ARS 2003b).

Construction activities would initiate the early stages of ecological succession (i.e., establishment of plants adapted to disturbance of soil and vegetation) on a strip of land totaling about 152 acres. The land is primarily desertscrub (75 to 85 percent or 114 to 129 acres) with the remaining 23 to 38 acres being tamarisk-dominated riparian communities. This impact would be insignificant because the desertscrub community is widespread and common in the region and

invasive tamarisk communities are not generally considered valuable or sensitive habitats. Reseeding with locally adapted, native species would speed the rate of revegetation. No additional mitigations would be needed.

Option 2

Assessment of Impacts

Option 2 would be constructed from the proposed WMGF south to I-8, where it would connect with a future regional natural gas supply pipeline. Construction would disturb about 3 acres, most of it previously disturbed from construction and maintenance of the Wellton-Mohawk Canal and industrial activities on the site (i.e., Ligurta Substation and concrete batch plant). No wetlands or riparian areas would be affected. This option would not affect wind-blown sand deposits, which are found as intermittent patches on the northern one-third of the proposed WMGF site. Impacts to vegetation would be insignificant because the area of desertscrub vegetation that would be disturbed is small in comparison to its abundance and wide distribution in southwestern Arizona.

Annual grasses and forbs would colonize soil over the pipeline trench in desertscrub communities within 1 to 2 years, but perennial vegetation could take 10 or 20 years to establish due to the extreme aridity (less than 4 inches annual precipitation) of the site. Proposed mitigations associated with pipeline construction include revegetation.

Revegetation success of disturbed sites would be enhanced by seeding the areas with BLM approved weed-free mixtures comprised of native species adapted to local growing conditions. Like Option 1, mitigation of impacts to vegetation would include salvage of plants protected under the Arizona Native Plant Law. Salvage of plants protected under the Arizona Native Plant Law would reduce impacts to native vegetation; however, about 50 percent of the salvaged plants would not be expected to survive transplanting. Disturbance of 3 acres of desertscrub would be an insignificant impact because this community is common and widespread. No additional mitigations would be needed.

4.4.1.4 *Transmission System Additions*

New Transmission Line

Assessment of Impacts

Vegetation would be disturbed by construction of new transmission line structures and access roads. Construction of structures, pulling sites, and staging areas would temporarily disturb approximately 128 acres of vegetation. Permanent disturbance from structures would be less than 0.2 acre. New access roads would permanently remove approximately 4.3 acres of mostly desertscrub vegetation. Small areas of riparian vegetation (totaling less than 1 acre) may be removed for access roads on the proposed Ligurta-North Gila Transmission Line. This vegetation at the outer edge of the Gila River floodplain is composed mostly of tamarisk.

At the transmission line crossing of the Gila River (figure 4.4-1), structures would be sited on levees at the edge of the riparian zone. Spanning the river and associated wetland and riparian vegetation would limit the amount of riparian vegetation affected along the Gila River.

Tamarisk on the north and south levees would be removed in the ROW for human safety and line reliability.

Operation of the new transmission line would affect vegetation during maintenance activities requiring access to the ROW with heavy equipment. If repairs are needed, disturbance to vegetation would be limited to structure locations and access roads. Periodic clearing of the transmission line ROW at the crossing of the Gila River (mostly tamarisk) would be done to reduce fire hazards and maintain safety standards. The new transmission line would be placed in a firebreak at the Gila River crossing that was constructed and is maintained for an existing WMIDD electrical distribution line. Clearing of the transmission line ROW would widen the firebreak from about 60 feet to about 150 feet.

Revegetation success of disturbed sites would be enhanced by seeding areas with weed-free mixtures comprised of native species adapted to local growing conditions. Revegetation success would also be enhanced by removing invasive tamarisk from the ROW.

Temporary disturbance during construction and the permanent removal of small areas of vegetation around structures would be an insignificant impact because structures would be placed on man-made levees where there is little existing vegetation.

Upgraded Transmission Line

Assessment of Impacts

The existing 161-kV transmission line from the Ligurta-Gila Substation would be upgraded by replacing the conductors to increase capacity, replacing the existing wooden poles with steel H-frame structures, and constructing steel monopole structures at the turning points. No new access roads would be constructed; however, 3.8 acres of existing roads would be upgraded. Conservatively, 5 to 10 percent of the 3.8 acres of disturbance associated with the upgrade of existing roads would involve the removal of vegetation. Between 0.2 and 0.4 acre of vegetation would be permanently disturbed.

Replacement of the existing wooden poles would temporarily disrupt vegetation in the immediate construction area around the bases of structures (approximately 88 acres). Annual grasses and forbs would likely colonize these disturbed areas in 1 or 2 years, but perennial vegetation would colonize slowly due to the aridity of the climate and rocky substrate over much of the transmission line route in the Gila Mountains. Vegetation removed for the upgrade of existing roads, between 0.2 and 0.4 acre, would mostly not reestablish due to periodic traffic.

Operation of the upgraded transmission line would be similar to operation of the new transmission line. Effects to vegetation would be limited to repair and maintenance activities requiring equipment that could crush or remove plants.

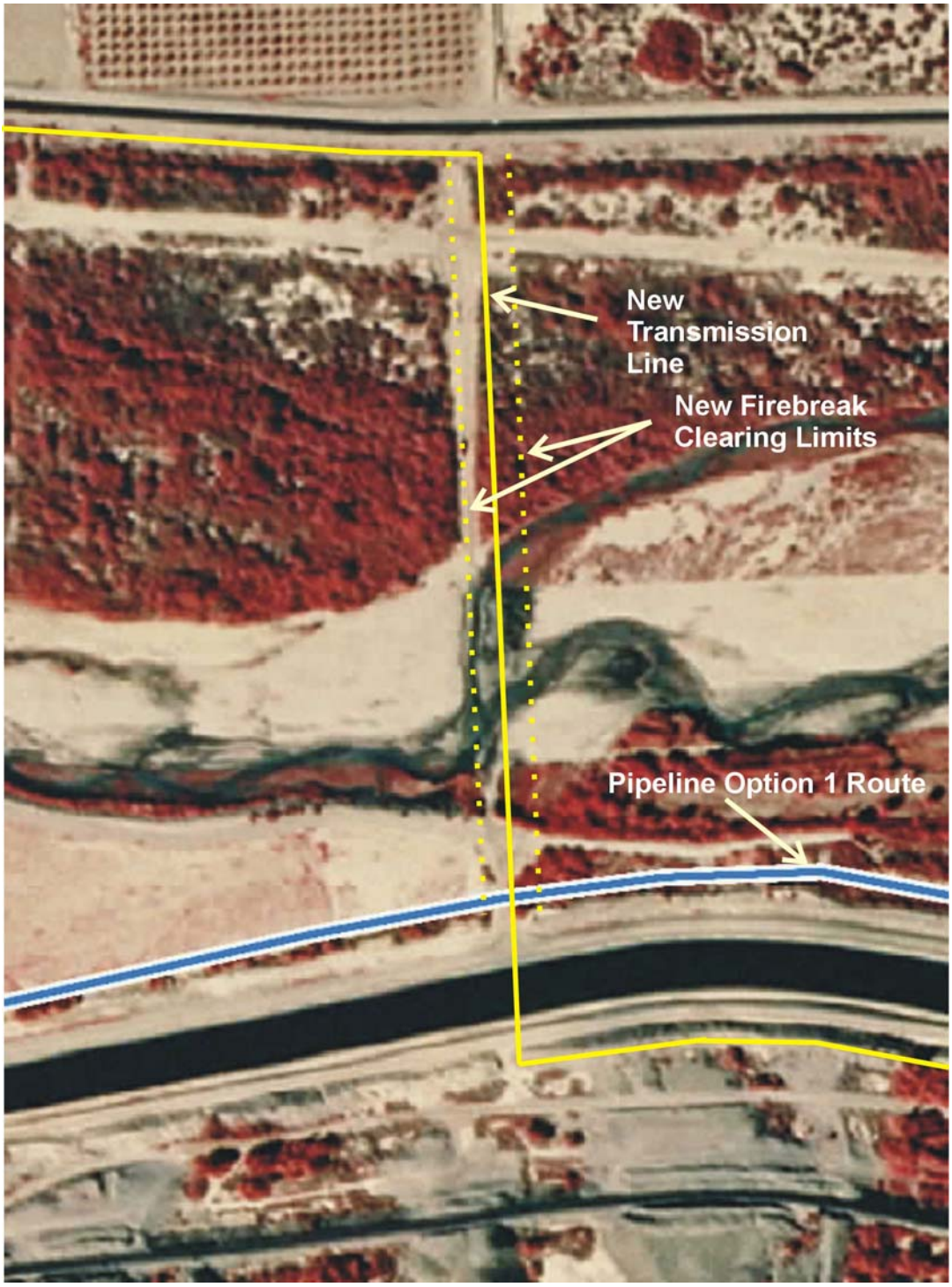


Figure 4.4-1. Proposed New Transmission Line Gila River Crossing.

Revegetation of disturbed sites, other than roads, would be performed in accordance with Western's proposed mitigations (table 2.2-8). Revegetation success of disturbed sites would be enhanced by seeding with BLM-approved weed-free mixtures comprised of native species adapted to local growing conditions. No additional mitigations would be needed.

Temporary disturbance to desertscrub vegetation during construction and removal of up to 0.4 acre for upgrading access roads would be an insignificant impact because this community is abundant and widespread.

There would be no impact to rangeland health of the public lands if the mitigation measures relative to the watershed practices (recontouring, minimizing disturbance, controlling erosion, and revegetation) and preventing and controlling noxious weeds are applied to the construction and maintenance of the transmission system additions.

Substations Modifications

The changes to the Western and APS substations would take place within the existing substation footprints and, therefore, would not result in any impact to vegetation.

4.4.2 Noxious Weeds

4.4.2.1 *Methodology and Significance Criteria*

Noxious weeds present on the Option 1 route for the proposed natural gas pipeline were identified through surveys conducted on March 18, 2004 (Greystone 2004b). The potential for noxious weeds to proliferate was assessed based on the amounts of soil and vegetation that would be temporarily disturbed by construction activities. The inventory found that the area of the Proposed Project components had three species of noxious weeds, Camelthorn, Branched broomrape, and Puncture vine. These three plants are generally found throughout the area, and without proper mitigations could be expected to increase and take control on some disturbed areas if appropriate mitigations are not implemented.

Noxious weed infestations would have significant impacts if they replace native plant communities that harbor sensitive plants and/or plants protected under the Arizona Native Plant Law (ARS 2003b).

4.4.2.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Construction of the proposed WMGF would have little effect on proliferation of noxious weeds. Most of the construction site has experienced past disturbance and most site disturbance would result in permanent removal of soil and habitat that could support noxious weeds.

4.4.2.3 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

Construction of the natural gas pipeline would provide an opportunity for the spread of noxious weeds on areas of the pipeline ROW that would be disturbed by construction activities. Noxious

weeds and other invasive species may colonize soils disturbed by construction of the pipeline and inhibit the establishment of desirable native vegetation. Colonization of the ROW by rapidly growing noxious weeds would increase the risk of fire because many noxious weeds, especially annual grasses, quickly grow and dry out creating a fuel that can carry fire to adjacent plant communities.

Expansion of noxious weeds to the pipeline ROW would be mitigated through a noxious weed control program by the Applicant (table 2.2-7, measure 10), adherence to BLM's ROW Permit Conditions, and the requirements for noxious weed control in the Plan of Development (section 2.2.5.4). Weed control activities (e.g., biological control, and mechanical removal) prior to and following construction would also reduce the potential for noxious weeds to become established on the ROW This would further reduce impacts to levels of insignficance. Seeding disturbed areas with native species that quickly establish themselves into a self sustaining community that can compete with noxious weeds. Seeding of disturbed sites with mixtures of rapidly growing desirable native species and pre- and post-construction weed control measures would reduce impacts from noxious weeds to levels of insignificance.

Option 2

Assessment of Impacts

This option would potentially increase the presence of noxious weeds on the pipeline ROW through disturbance of soil and native vegetation. Because this option would disturb substantially less vegetation (3 acres) than Option 1, Option 2 would have less potential to increase the spread of noxious weeds. Proposed mitigations would be the same as Option 1. Weed control measures would reduce impacts from noxious weeds to levels of insignificance.

4.4.2.4 *Transmission System Additions*

New Transmission Line

Assessment of Impacts

Construction of the new transmission line would increase the potential for noxious weeds to invade disturbed sites. The expansion of noxious weeds to the transmission line ROW would be prevented through a noxious weed control program (table 2.2-8), adherence to BLM's ROW Permit Conditions, and the requirements for noxious weed control in the Plan of Development (section 2.2.5.4). Weed control activities (e.g., biological control, and mechanical removal) prior to and following construction would also reduce the potential for noxious weeds to become established on the ROW. Seeding disturbed sites following construction with mixtures of native species that quickly become a self sustaining community, in conjunction with pre- and post-construction weed control measures, would further reduce insignificant impacts from noxious weeds.

Upgraded Transmission Line

Assessment of Impacts

Upgrading the transmission line would potentially increase the spread of noxious weeds on disturbed sites. Expansion of noxious weeds to the transmission line ROW would be prevented

through Western's noxious weed control program, (Western 2003a) adherence to BLM's ROW Permit Conditions and the requirement for noxious weed control in the Plan of Development (section 2.2.5.4). Proposed mitigations would be the same as the new transmission line. Seeding disturbed sites following construction with mixtures of native species that quickly establish themselves into a self sustaining community, in conjunction with pre-and post-construction weed control measures, would further reduce impacts from noxious weeds to levels of insignificance.

Substations Modifications

Modification of the substations would not increase the potential spread of noxious weeds.

4.4.3 Wildlife

4.4.3.1 *Methodology and Significance Criteria*

Information used in this analysis of potential impacts from the Proposed Project was obtained from field surveys, database records maintained by the AGFD Heritage Data Management System, USFWS, published and unpublished technical reports, and personal communications with resource specialists, all of which are in the reference section.

To determine if the Proposed Project may cause significant impacts, the context and intensity of the expected effects are considered. For the actions addressed in this WMGF EIS, context is the locally affected project area, with significance being assessed depending on intensity and duration of predicted effects in the project area. Intensity of predicted impacts depends on the characteristics of wildlife and wildlife habitat in the ROI and the degree to which the Proposed Project may adversely affect these biological resources. Impacts would be considered significant if the Proposed Project were to reduce viability of local populations of wildlife, or reduce the range of occurrence of any species.

4.4.3.2 *Impacts Common to All Project Facilities*

The Proposed Project would result in short-term effects (i.e., lasting during the period of construction or maintenance) on wildlife due to displacement associated with construction and maintenance of Proposed Project facilities and long-term effects (i.e., lasting the life of the Proposed Project or longer) from loss of habitat from permanent facilities. Direct mortality to individuals of a species could also result from excavations and habitat removal during construction of the proposed WMGF, transmission lines, and facility natural gas pipeline. Burrowing animals such as reptiles, small mammals, and insects would be lost if their burrows were destroyed by construction activities and they were present in the burrows. Birds could also experience increased mortality risk especially if construction were to take place during the nesting season; however, timing construction to avoid the nesting season would minimize this impact. Eggs and nestlings would be vulnerable to mortality from removal of vegetation and from operation of construction and maintenance equipment. Abandonment of nests due to disturbance would also increase mortality to nestlings.

Wildlife such as small mammals, birds, and coyotes would also be displaced during construction from noise, vehicles, and high levels of human activity. Displaced animals can be stressed due to displacement because adjacent habitats are usually fully occupied and cannot readily

accommodate increased population densities. Following construction, most displaced wildlife species would return to remaining suitable habitats.

The small losses of wildlife that would be killed directly from construction activities or displaced would be insignificant in a regional context. Viability of the populations would not be threatened and there would be no measurable long-term effect on population numbers or distribution over a species' range of occurrence.

4.4.3.3 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Construction of the proposed WMGF would permanently remove approximately 119 acres of desertscrub, and sand dune, reducing the capacity of habitat in the area to support existing densities of wildlife. Removal of 119 acres of habitat would have a nondetectable effect on regional wildlife populations because there are extensive areas with desertscrub habitats remaining intact in the region and a portion of the habitat that would be removed has been subjected to a history of disturbance. Development and human activity at the proposed WMGF would result in long-term displacement of wildlife from most of the site.

Construction of the generating facility would potentially destroy burrows, nests, and young of species that utilize underground habitat such as snakes, lizards, and small mammals. These animals are not highly mobile and cannot readily escape large-scale excavations and heavy equipment. Losses of small numbers of small mammals, reptiles, and insects would not affect viability of local populations as wildlife species inhabiting the site of the generating facility are common and widespread.

The proposed WMGF would include an array of solar troughs covering approximately 60 acres. These reflective surfaces could attract migratory birds that mistake solar panels for a waterbody. However, the banks of curved solar reflector surfaces would look different than the "water mirage" heat shimmer effect associated with flat solar panels. Waterfowl migrating at night would be the most likely to mistake the reflective panels for water. Birds attracted to the solar panels would likely discern that the panels are not a waterbody before landing; however, in rare instances some birds might try to land on them. The probability of the solar panels adversly effecting migratory birds is slight and would affect only a few individuals. Additionally, night lighting of the proposed WMGF may attract some migratory birds. However, the highest points on the facility, the two 160-foot tall stacks, will be below normal bird migration flights, and the site is not located in a migration path. The adverse effect on migratory birds from facility lighting is expected to be slight, affecting only a few individuals. If significant mortality is found to occur to night migrating birds, the Applicant will work with AGFD to develop and implement mitigations, such as reduced lighting during certain periods of the year (Dome Valley 2005a).

The proposed WMGF would include a 16.5 acre evaporation pond which could attract migratory birds. The water quality in the evaporation pond will have a high level of TDS, but the exact chemical composition of the water in the evaporation pond will not be known until the facility has been in operation for sometime. The ACC's measure 25 requires that the evaporation pond be monitored with reports to AGFD, the pond be fenced and the shoreline managed in a way to limit the attractiveness to birds

Impacts to resident wildlife species would be insignificant. There is only a small risk that the solar array or the facility would cause increased mortality to sensitive migratory bird populations. Monitoring for effects on migratory birds and subsequent modifications to reduce these impacts would protect migratory birds.

4.4.3.4 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

Construction of this facility natural gas pipeline would cause short-term impacts to wildlife from alteration of habitat on and near the ROW. Excavation would potentially destroy burrows, nests, and young of species that utilize underground habitat such as snakes, lizards, burrowing owls, and small mammals. These animals are not highly mobile and not able to readily escape large-scale excavations and heavy equipment.

Pipeline trenching would affect small mammals and reptiles that fall into open trenches. Losses of small mammals, snakes, and lizards would be mitigated by providing a means of escape from open trenches such as ramps, filling trenches as soon as possible, and inspecting open trenches daily before construction activities begin, to remove animals trapped in the trenches.

Construction would increase the mortality risk for animals on or near the pipeline ROW. The loss of common species such as small mammals from construction activities would have insignificant, nondetectable effects on local and regional populations. Removal of vegetation over the pipeline trench would be insignificant because there are extensive areas with desertscrub habitats remaining intact locally and regionally.

Impacts to nesting birds of concern would be minimized by locating pipeline to avoid riparian areas, to the extent possible. Impacts to birds would be minimized by constructing in the fall and early winter when birds are not nesting and raising young. In the warm climate of southern Arizona, some bird species begin nesting as early as mid-January.

Operation of the facility natural gas pipeline would not affect wildlife unless facility natural gas pipeline repairs required re-excavation. Maintenance activities would be of short duration and would have insignificant effects on wildlife because displacement from habitat would be short term and the mortality risk would be low. The loss of a few common individuals such as small mammals from maintenance activities would not reduce viability of local wildlife populations or reduce the range or occurrence of any species.

Option 2

Assessment of Impacts

Option 2 would remove about 3 acres of desertscrub habitat during construction. Like Option 1, construction would displace wildlife from the immediate construction area and would likely kill small mammals, reptiles, and insects that occupy underground burrows that would be destroyed by pipeline trenching. Impacts to birds would be minimized by constructing in the fall and early

winter when birds are not nesting and raising young. In the warm climate of southern Arizona, some bird species begin nesting as early as mid-January.

Pipeline trenching would potentially affect small mammals and reptiles that fall into open trenches. Losses of small mammals, snakes, and lizards would be mitigated by providing a means of escape from open trenches such as ramps, filling trenches as soon as possible, and inspecting open trenches daily before construction activities begin, to remove animals trapped in the trenches. No additional mitigations would be needed.

4.4.3.5 *Transmission System Additions*

New Transmission Line

Assessment of Impacts

Construction of the new Ligurta-North Gila Transmission Line would temporarily disturb approximately 140 acres of habitat and permanently remove less than 0.4 acre of habitat for structure bases. Construction activities would displace birds and other wildlife, especially larger mammals, from the vicinity of construction sites during periods of activity. The displaced animals would return to the area after the temporary construction disturbance. The loss of habitat from transmission line support structures and access road would be a small loss that would have insignificant effects on regional wildlife populations.

Operation of the transmission line would pose a mortality risk to birds from collisions with the conductors and overhead groundwires, especially at the Gila River crossing. Birds could collide with transmission lines during periods of poor visibility, panic flushes, and during migration. The crossing of the Gila River poses the greatest mortality risk to birds because large numbers of birds feed, breed, and fly along the river.

Design measures to reduce potential collision mortality include alignment of the conductors horizontally over the riparian area of the Gila River and attaching state-of-the-art marking devices to groundwires. No structures are anticipated to require lights for aircraft avoidance, which have been associated with nighttime collisions by birds. Anticipated mortality levels are not expected to result in long-term loss of population viability for any species.

Electrocution of birds is not expected to occur with the new transmission line because the spacing between conductors is greater than the largest local raptors' wingspan. Also, design of the transmission line exceeds the guidelines outlined in *Suggested Practices for Raptor Protection on Powerlines: the State of the Art in 1996* (APLIC 1996). With proposed mitigation measures to reduce mortality to birds, impacts from the transmission line would be insignificant locally and regionally.

Upgraded Transmission Line

Assessment of Impacts

During construction, impacts to wildlife and habitat would be similar to those for the new transmission line, but would affect different amounts of habitat. Upgrading the transmission line would temporarily disturb approximately 98 acres and permanently remove 3.8 acres due to

upgrading of existing access roads. Less than 0.4 acre of habitat would be permanently removed by the structures. Operational impacts would include mortality to birds from collisions with conductors and groundwires. There would be little if any increased risk of bird mortality over current baseline conditions due to collisions; however, mortality from collisions would be reduced by monitoring the transmission line and installing state-of-the-art marking devices at sites where birds are killed through collisions with conductors and groundwires.

Mortality risk to birds and other animals from relatively small amounts of habitat loss and degradation would have insignificant, non-detectable effects on local and regional populations.

Substations Modifications

Changes to the Western and APS substations would take place within the existing substation footprints, and therefore would not result in impact to biological resources from habitat loss.

4.4.4 Fisheries

4.4.4.1 *Methodology and Significance Criteria*

Information on fisheries was obtained from personal communications with a fisheries biologist from the AGFD. (AGFW 2003d).

Impacts to fish and their habitat would be significant if the Proposed Project were to affect fish populations through reductions in water quality or reduced spawning success.

4.4.4.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

The proposed WMGF would not affect fish or habitat in the Wellton-Mohawk Canal or Gila River. Sediment from construction activities would not affect water quality in the canal, which is adjacent to the proposed WMGF. Berms along the canal from excavation of the canal and deposition of material dredged from the canal would block the flow of runoff carrying sediment to the canal. In the event that small amounts of sediment from construction activities enter the canal, there would be insignificant effects on fisheries. Fish in the canal are adapted to relatively high levels of turbidity and suspended sediment and any additions from construction activities would have negligible effects on fish and their habitat.

4.4.4.3 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

Option 1 pipeline construction would occur adjacent to the Wellton-Mohawk Canal, but it is unlikely that sediment from pipeline construction would enter the canal in concentrations high enough to affect fish.

Option 2

Assessment of Impacts

Option 2 would not affect fish or their habitat.

4.4.4.4 *Transmission System Additions*

New Transmission Line

Assessment of Impacts

Construction and operation of the new transmission line would not affect fish and their habitat in the Wellton-Mohawk Canal and Gila River. Small amounts of sediment generated from clearing and construction activities would not degrade water quality or stress fish.

Upgraded Transmission Line

Assessment of Impacts

The upgraded transmission line is not near the Wellton-Mohawk Canal or Gila River and would not affect fish or their habitat. Construction activities associated with upgrading the transmission line would not be near the canal or Gila River. Substation modifications would not affect fish or their habitat.

4.4.5 Special-Status Species

Methodology and Significance Criteria

Special-status species include plants and animals listed as threatened, endangered, or proposed for listing under the ESA; species listed as "sensitive" by BLM; and Wildlife of Special Concern in Arizona (WSCA). A Biological Assessment for the Proposed Project was prepared by Western for the USFWS (Western 2003d). The Biological Assessment addresses the effects of the Proposed Project on listed, proposed, and candidate species. The USFWS concurred with Western's determinations that the Proposed Project would not affect the razorback sucker, California brown pelican, or Sonoran pronghorn. The USFWS concurred in Western's finding of "may affect, but not likely to adversely affect" for bald eagle, cactus ferruginous pygmy-owl, and southwestern willow fly catcher based on "a lack of suitable habitat that could be disturbed or eliminated at the project sites, negative survey data for species occurrence in the vicinity of the project area, and avoidance of nesting periods during construction activities. There is some limited potential for these species to be present in the vicinity of the proposed action, but this risk is insignificant and discountable. For the Yuma Clapper rail, the finding is supported by the lack of suitable habitat that could be disturbed or eliminated at the project site, and avoidance of nesting periods during the construction activities. Yuma clapper rails have been documented approximately 30 yards west of the project site at the Gila River in cattail habitat immediately downstream from the project. Suitable habitat is limited in the immediate upstream area. The presence of contiguous suitable habitat as a retreat for the rails, should construction activities disturb them, reduces the effects to an insignificant and discountable level. (appendix B #5).

Information used in this analysis of impacts of the Proposed Project was obtained from field surveys, database records maintained by the AGFD Heritage Data Management System, published and unpublished technical reports, and personal communications with resource specialists.

To determine if the Proposed Project may cause significant impacts, the context and intensity of the expected effects are considered. For the actions addressed in this EIS, context for special-status species varies with the species and is regional and possibly range wide for listed species, with significance being assessed depending on the intensity and duration of predicted effects. Intensity of predicted impacts is dependent on the characteristics of sensitive biological resources in the ROI (e.g., special-status species and their habitats) and the degree to which the Proposed Project may adversely affect sensitive biological resources. Impacts would be considered significant if the Proposed Project were to adversely affect federally listed or proposed species, reduce viability of populations of special-status species, contribute to listing of sensitive species under the ESA, or destroy occupied habitat of species listed under the ESA. Since the various Proposed Project components would affect different habitats, and have different impacts, possible effects to special-status species are discussed separately for each project component.

4.4.6 Special-Status Plants

Sand food (Arizona Native Plant Law – highly safeguarded, BLM – sensitive), Schott's wire-lettuce (BLM – sensitive), blue sand lily (Arizona Native Plant Law – salvage restricted, BLM - sensitive), and scaly sandpoint (Arizona Native Plant Law – highly safeguarded) may occur in loose sand deposits at the proposed WMGF site and adjacent lands contiguous with the proposed WMGF site. Schott's wire lettuce and blue sand lily have been documented in or within 3 miles of the ROI, growing on sandy deposits. Consequently, these species would have the highest probability of being adversely affected by the Proposed Project. Elephant tree occurs on rocky slopes and may be found along the Ligurta to Gila Transmission Line route. One tree is known, and it is off of the ROW.

4.4.6.1 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Construction of the proposed WMGF would remove 20 to 30 acres of intermittent patches of sand dune habitat, suitable for sand food, Schott's wire lettuce, blue sand lily, and scaly sandpoint. Removal of this habitat could destroy these plants if they are present on the affected area. Surveys to locate special-status species would be conducted prior to construction. The results of these surveys will be used to avoid populations of special-status plants or identify indivuals for transplanting to another location in accordance with Arizona's Native Plant Law. The avoidance or relocation would reduce the potential for impacts to levels of insignificance. Surveys would be performed during times of the year when sensitive species are most easily detected. Sand food, blue sand lily, Schott's wire lettuce, and scaly sandpoint are widely distributed throughout the desert Southwest and Mexico on suitable habitats. Construction of the proposed WMGF would remove a population (86 individuals) of the parasitic *Pilostyles thurberi* and its host plant, dyeweed (*Psorothamnus emoryii*), present on the site. *Pilostyles thurberi,* is known in Arizona only from the proposed WMGF site, a few other nearby locations, and a few locations in the Superstition Mountains (Reiser 1994, BLM 2003b, Greystone 2004a). *Pilostyles thurberi* is small and often overlooked. It is not listed as a sensitive species by BLM nor is it protected under the

Arizona Native Plant Law; however, the BLM indicates that its status needs to be re-evaluated because of its rarity and vulnerability to development in the Proposed Project area.

If loss of the host species plants on the proposed WMGF site were to reduce population viability and increase risk of local extinction of the parasitic species, this impact would be significant. The density of dyeweed shrubs containing *Pilostyles thurberi* was observed to be greatest in previsouly disturbed areas. *Pilostyles thurberi* was detected in abundance on five other sites within a 2-mile radius of the proposed WMGF. All six of the searched sites were directly adjacent to roadways, and many of the host plants harboring *Pilostyles thurberi* were growing on ground disturbed by construction activities (Greystone 2004a). Thus, a loss of dyeweed shrub at the plant site is not expected to reduce population viability

At the request of BLM, the Applicant has agreed to salvage a test sample of 24 of the healthy host plants that harbor *Pilostyles thurberi.* The potential success of salvage operations is not known, and the salvage test would help to determine the potential survival rate for salvaging the species. In any case, *Pilostyles thurberi,* being a parasitic plant, would eventually kill the dyeweed host plant. No additional mitigations would be needed.

4.4.6.2 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts. The facility natural gas pipeline would not likely disturb sand dune habitats harboring sensitive plant species. Most of the facility natural gas pipeline route closely follows the Wellton-Mohawk Canal, which has a broad area of disturbance through the area with the highest density of sand deposits. Potential impacts to sensitive plants would be avoided by conducting surveys, before the routes for the transmission lines and facility natural gas pipeline are finalized, and making route adjustments to avoid any plant colonies identified in wind-blown sand deposits. These surveys would be conducted during times of the year when sensitive species are most easily detected. If sensitive species are found, modifications to construction would be made to avoid disturbing individual plants of Schott's wire lettuce, blue sand lily, sand food, and scaly sandpoint. Impacts would be insignificant with avoidance of special-status species. No additional mitigations would be needed.

Option 2

Assessment of Impacts. The facility natural gas pipeline would be constructed mainly on the proposed WMGF site. Potential for impacts to special-status species during construction would be the same kind as those associated for the construction of the proposed WMGF described above; however, the area would only be about 3 acres of the proposed WMGF site. With the same proposed mitigations, no significant impacts to special-status species would occur. No additional mitigations would be needed.

4.4.6.3 *Transmission System Additions*

New Transmission Line

Assessment of Impacts. Surveys to locate special-status species and suitable habitats for special-status species would be conducted. Surveys would be performed during times of the year when sensitive species are most easily detected. If sensitive species and their habitats are found,

modifications to construction would be made to avoid disturbing individual plants of Schott's wire lettuce, blue sand lily, sand food, scaly sandpoint, and dyeweed, host of *Pilostyles thurberi*. These measures would reduce the potential for impacts to levels of insignificance. No additional mitigations would be needed.

Upgraded Transmission Line

Assessment of Impacts. Elephant tree is a rare species, protected by the Arizona Native Plant Law, that grows in the Telegraph Pass area of the Gila Mountains. Only one tree is known to be near but outside the ROW. No impacts to this species are anticipated.

Substations Modifications

Modifications to the substations would not affect vegetation because the "footprint" of the facilities would not change and the areas immediately around the existing substations have been extensively disturbed by previous construction and industrial activities.

4.4.7 Special-Status Animals

4.4.7.1 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Sonoran pronghorn (Endangered). The proposed WMGF would not affect the Sonoran pronghorn because the species is absent from the Proposed Project area due to the lack of suitable habitat.

Southwestern willow flycatcher (Endangered). The proposed WMGF would not adversely affect the southwestern willow flycatcher because there is no suitable riparian habitat present on the proposed WMGF construction site.

Yuma clapper rail (Endangered). The proposed WMGF would not adversely affect the Yuma clapper rail because there is no suitable wetland habitat on the proposed construction site.

Bald eagle (Threatened, proposed for delisting). The proposed WMGF would not adversely affect the bald eagle because of the presence of poor-quality habitat and absence of observations of this species in the Proposed Project area.

Cactus ferruginous pygmy-owl (Endangered). The proposed WMGF would not adversely affect this species because only marginal habitat is present on the proposed construction site and the distance to the nearest known pygmy-owl population center is considerable.

California brown pelican (Endangered). The proposed WMGF would not affect the California brown pelican; no nesting or foraging habitat for this species would be affected.

Western yellow-billed cuckoo (Candidate). The WMGF would not adversely affect this species because there is no suitable habitat (i.e. riparian vegetation) present on the proposed site.

Razorback sucker (Endangered). The proposed WMGF would not affect the razorback sucker because of lack of suitable habitat and lack of occurrence in the Proposed Project area.

Bats (BLM Sensitive Species and/or Arizona Species of Concern). The proposed WMGF would not affect bats. No roosting, breeding areas, or hibernacula (e.g., caves, abandoned mine shafts, old buildings, or bridges) would be removed or altered by the Proposed Project. Construction and maintenance associated with the proposed WMGF would remove a small amount of marginal foraging habitat for some species, but this loss would have no detectable effect on bats. Extensive areas are available in the region to meet the needs of bat species that rely on insects or nectar.

California black rail and western least bittern (Arizona Species of Concern). The California black rail and western least bittern have not been recorded in the Proposed Project area, and suitable wetland breeding habitat is not present on the proposed WMGF site.

Great egret (Arizona Species of Concern), snowy egret (Arizona Species of Concern), and white-faced ibis (BLM Sensitive Species). The proposed WMGF would not affect the great egret, snowy egret, or white-faced ibis because there is no suitable wetland habitat present on the proposed site.

Loggerhead shrike (BLM Sensitive Species). The loggerhead shrike is present in the Proposed Project area and may forage and nest on the proposed WMGF site. Construction activities that take place in desertscrub habitats would potentially affect loggerhead shrike and their habitat. Removal of vegetation for the proposed WMGF would have insignificant effects on local and regional populations of this species because there are large expanses of suitable desert and riparian habitat in the region.

Western burrowing owl (BLM Sensitive Species). The western burrowing owl does not breed on the proposed WMGF site; however, it may forage in the desertscrub habitat on the site. Removal of desertscrub habitat would not affect the burrowing owl because adequate foraging habitat would remain along the Wellton-Mohawk Canal, where this species is known to nest.

Desert rosy boa (BLM Sensitive Species). The desert rosy boa is a rock dweller and the only recorded occurrence within the ROI is in the Gila Mountains. No impacts to this species are anticipated at the proposed WMGF site.

Sonoran desert tortoise (Arizona Species of Concern). The Sonoran desert tortoise has not been documented in the ROI and is not likely to be present on the proposed WMGF site because habitat is not suitable. Typically, desert tortoises in the Sonoran Desert occupy habitat in steep, rocky terrain with soils suitable for excavation of burrows. The nearest habitat that may be suitable for desert tortoise is west of the proposed WMGF site near the Gila Mountains. Construction of the proposed WMGF would not affect this species.

Flat-tailed horned lizard (Arizona Species of Concern), Cowles Fringe-toed Lizard (BLM Sensitive Species and Arizona Species of Concern), and Mojave Fringe-toed Lizard (Arizona Species of Concern). Of these three lizards, only the flat-tailed horned lizard has been documented in or near the Proposed Project area, but only west of the Gila Mountains. All three species are associated with wind-blown sand deposits, but the flat-tailed horned lizard is associated with low dunes, often deposited over desert pavement. This habitat occurs on the proposed WMGF site and extends north for about 1 mile. The other two species are more commonly found on large, extensive sand dune fields, also west of the Gila Mountains.

Construction of the proposed WMGF would not increase the mortality risk for flat-tailed horned lizards. Although suitable habitat for this species is present in the Proposed Project area, the flat-tailed horned lizard has been documented only west of the Gila Mountains. The WMGF would not affect the flat-tailed horned lizard, Cowles fringe-toed lizard, or Mojave fringe-toed lizard because these species have not been recorded in areas where suitable habitat would be disturbed.

Gila monster (Arizona Species of Concern). The Gila monster was not documented during baseline studies of the proposed WMGF site. The habitat is marginal, being sparsely vegetated, with few rocky outcrops, and a history of site disturbance. Consequently, the proposed construction activities would not likely affect this species.

Lowland leopard frog (Arizona Species of Concern). The proposed WMGF would not affect the lowland leopard frog because no suitable wetland habitat is present on the proposed site.

Cheeseweed moth lacewing and MacNeil sooty wing skipper (BLM Sensitive Species). The cheeseweed moth lacewing was found in the Proposed Project area in 1983 at Telegraph Pass in association with creosote bush. Although this insect has not been found on the proposed WMGF site, its habitat (i.e., creosote bush) is present on the site. Construction of the proposed WMGF would remove habitat for this species but this loss of habitat would be insignificant because creosote bush is an abundant shrub in the region.

The MacNeill sooty wing skipper, a butterfly, has not been documented in the Proposed Project area; however, its host plant, quailbush, is common. The MacNeill sooty wing skipper is obligately associated with quailbush, its primary food. Construction of the proposed WMGF would reduce habitat for the MacNeill sooty wing skipper and would kill larvae and eggs if they are present on quailbush plants that would be removed during construction. The potential for adverse effects on the MacNeill sooty wing skipper would be reduced by conducting surveys of quailbush plants that would be affected to locate larvae and eggs of the sooty wing skipper and transferring them to quailbush plants in undisturbed nearby areas.

4.4.7.2 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

Sonoran pronghorn (Endangered). The natural gas pipeline would not affect the Sonoran pronghorn because of the absence of the species in the Proposed Project area and the lack of suitable habitat.

Southwestern willow flycatcher (Endangered). The natural gas pipeline would remove approximately 23 to 38 acres of riparian vegetation (mostly tamarisk) on the outer floodplain of the Gila River. This riparian habitat may be marginally suitable for willow flycatcher nesting and foraging; however, the willow flycatcher has not been observed in the vicinity of the proposed pipeline. Effects on the southwestern willow flycatcher and its habitat would be insignificant by scheduling construction activities to take place outside of the southwestern willow flycatcher nesting and brood rearing period (March 1 through August 31). Although tamarisk on the floodplain of the Gila River would be removed during construction, this invasive

species would rapidly re-grow on areas disturbed by construction. The area of tamarisk that would be removed by pipeline construction would be insignificant as there are extensive areas of tamarisk along the Gila River that could provide nesting and foraging habitat for the southwestern willow flycatcher, should the species move into the area.

Yuma clapper rail (Endangered). Construction and operation of the natural gas pipeline would not require removal of wetland vegetation; consequently, Yuma clapper rails would not be adversely affected by construction or operation of the proposed pipeline.

Bald eagle (Threatened, proposed for delisting). The pipeline would not adversely affect the bald eagle because of the presence of poor-quality habitat and absence of observations of this species in the Proposed Project area.

Cactus ferruginous pygmy-owl (Endangered). The pipeline would not adversely affect this species because of the presence of marginal habitat and the considerable distance to the nearest known pygmy-owl population center.

California brown pelican (Endangered). The pipeline would not affect the California brown pelican because there is no nesting or foraging habitat for this species.

Western yellow-billed cuckoo (Candidate). Construction and operation of the natural gas pipeline would remove between 23 to 38 acres of riparian vegetation (mostly tamarisk) along the margin of the Gila River floodplain. This is not suitable nesting or foraging habitat for the western yellow-billed cuckoo; consequently, the natural gas pipeline would not adversely affect this species.

Razorback sucker (Endangered). The pipeline would not affect the razorback sucker because of lack of suitable habitat and lack of documented presence in the Proposed Project area.

Bats (BLM Sensitive Species and/or Arizona Species of Concern). The pipeline would not significantly affect bats. No roosting, breeding areas, or hibernacula (e.g., caves, abandoned mine shafts, old buildings, or bridges) would be removed or altered. Foraging habitat in riparian areas along the Gila River would be temporarily disturbed by pipeline construction. Pipeline construction and maintenance would temporarily disturb a small amount of foraging habitat for some species, but this loss would have a nondetectable effect on bats. Extensive areas are available in the region to meet needs of bat species that rely on insects or nectar from desertscrub and riparian habitats.

California black rail and western least bittern (Arizona Species of Concern). Pipeline construction and operation would not require removal of wetland vegetation; consequently, California black rail and western least bittern would not be affected.

Great egret (Arizona Species of Concern), snowy egret (Arizona Species of Concern), and white-faced ibis (BLM Sensitive Species). Pipeline construction and operation would not require removal of wetland vegetation; consequently, the great egret, snowy egret, and white-faced ibis would not be affected.

Loggerhead shrike (BLM Sensitive Species). The loggerhead shrike is present and probably breeds in the Proposed Project area. Construction activities that take place in desertscrub and riparian habitats may affect loggerhead shrike and their habitat. Removal of vegetation for the pipeline would temporarily remove desertscrub foraging and nesting habitat. This amount of habitat disturbance would have insignificant effects on local and regional populations of this species because there are large expanses of suitable desert and riparian habitat in the region.

Western burrowing owl (BLM Sensitive Species). The western burrowing owl is present in the Proposed Project area along the Wellton-Mohawk Canal, where it nests in spoil piles excavated from the canal. The pipeline would affect the burrowing owl and its habitat. The pipeline would closely parallel the canal and spoil piles excavated from the canal. If construction was to take place during the nesting and brood-rearing period, burrowing owls may be displaced from their nests and breeding territories due to noise and human activity associated with excavation and construction. Significant impacts would be avoided by timing construction to avoid the nesting and brood-rearing period (March 1 through August 31). Also, not disturbing spoil piles during pipeline construction would minimize impacts to burrowing owl nesting habitat. Use of one-way doors would displace adult burrowing owls from known burrows in the active construction zone. With one-way doors, birds could exit but not re-enter and would occupy other burrows, thereby reducing impacts to insignificant levels. One-way doors cannot be used during the nesting season or when the young are still in the burrows (March 1 through August 31). At these times the adults must have access to the burrows to hatch the eggs and feed the young birds. If they lose access during this period, any eggs would not hatch and any chicks would starve.

Desert rosy boa (BLM Sensitive Species). The desert rosy boa is a rock dweller and the only recorded occurrence within the ROI is in the Gila Mountains. Construction of the pipeline adjacent to the Gila Mountains is unlikely to adversely affect this species.

Sonoran desert tortoise (Arizona Species of Concern). The Sonoran desert tortoise has not been documented in the ROI and is not likely to be present on the pipeline ROW because habitat is marginal. Typically, desert tortoises in the Sonoran Desert occupy habitat in steep, rocky terrain with soils suitable for excavation of burrows. The nearest habitat that may be suitable for this species is near the Gila Mountains, west of the proposed pipeline.

Flat-tailed horned lizard (Arizona Species of Concern), Cowles fringe-toed lizard (BLM Sensitive Species and Arizona Species of Concern), and Mojave fringe-toed lizard (Arizona Species of Concern). Of these three lizards, only the flat-tailed horned lizard has been documented in or near the Proposed Project area, west of the Gila Mountains. All three species are associated with wind-blown sand deposits, but the flat-tailed horned lizard is associated with low dunes, often deposited over desert pavement. The other two species are more commonly found on large, extensive sand dune fields, also west of the Gila Mountains.

Although suitable habitat for this species may be present near the southern end of the proposed pipeline, the flat-tailed horned lizard has only been documented west of the Gila Mountains; consequently, the natural gas pipeline would not affect the flat-tailed horned lizard, Cowles fringe-toed lizard, or Mojave fringe-toed lizard.

Gila monster (Arizona Species of Concern). Construction activities associated with the pipeline may affect suitable habitat for the Gila monster and cause direct mortality from vehicles and other construction equipment.

Additional Mitigation. Adverse effects on the Gila monster could be avoided by implementing daily surveys, by a qualified biologist, immediately prior to start of construction in order to find and move Gila monsters from areas affected by construction activities.

Lowland leopard frog (Arizona Species of Concern). Construction and operation of the pipeline would not require removal of wetland vegetation; consequently, the lowland leopard frog would not be affected by construction or operation of the proposed pipeline

Cheeseweed moth lacewing and MacNeil sooty wingskipper (BLM Sensitive Species). The cheeseweed moth lacewing was found in the Proposed Project area in 1983 at Telegraph Pass in association with creosote bush. Although not documented, it could also occur in desertscrub habitat along the pipeline route. The amount of creosote bush that would be removed with construction of the pipeline would pose an insignificant risk to the lacewing because creosote bush is abundant and widespread regionally.

The MacNeill sooty wing skipper, a butterfly, is not known to be present in the Proposed Project area. This species is obligately associated with quailbush (*Atriplex lentiformis*), its primary food. Quailbush is common in the ROI and the proposed facility natural gas pipeline could affect this species if it is present. The potential impacts would be insignificant due to the fact that quailbush is common in the area.

Option 2

Assessment of Impacts

Sonoran pronghorn (Endangered). The pipeline would not affect the Sonoran pronghorn because of the absence of the species in the Proposed Project area and the lack of suitable habitat.

Southwestern willow flycatcher (Endangered). The pipeline construction would not affect the southwestern willow flycatcher because there is no suitable riparian habitat present on the proposed construction site.

Yuma clapper rail (Endangered). The pipeline would not affect the Yuma clapper rail because there is no suitable wetland habitat on the proposed construction site.

Bald eagle (Threatened, proposed for delisting). The pipeline would not affect the bald eagle because of the presence of poor-quality habitat and absence of observations of this species in the Proposed Project area.

Cactus ferruginous pygmy-owl (Endangered). The pipeline would not affect this species because only marginal habitat is present on the proposed construction site and the distance to the nearest known pygmy-owl population center is considerable.

California brown pelican (Endangered). The pipeline would not affect the California brown pelican no nesting or foraging habitat for this species would be affected, and there are no occurrence records in the Proposed Project area.

Western yellow-billed cuckoo (Candidate). The pipeline would not affect this species because there is no suitable riparian habitat present on the proposed construction site.

Razorback sucker (Endangered). The pipeline, would not affect the razorback sucker because of lack of suitable habitat and lack of occurrence in the Proposed Project area.

Bats (BLM Sensitive Species and/or Arizona Species of Concern). The pipeline would not significantly affect bats. No roosting, breeding areas, or hibernacula (e.g., caves, abandoned mine shafts, old buildings, or bridges) would be removed or altered by the Proposed Project. Construction of the pipeline would remove a small amount of marginal foraging habitat for some species, but this loss would have no detectable effect on bats. Extensive areas are available in the region to meet the needs of bat species that rely on insects or nectar from desertscrub habitats.

California black rail and western least bittern (Arizona Species of Concern). The California black rail and western least bittern have not been recorded in the Proposed Project area, and suitable wetland breeding habitat is not present on the pipeline construction site.

Great egret (Arizona Species of Concern), snowy egret (Arizona Species of Concern), and white-faced ibis (BLM Sensitive Species). The pipeline would not affect the great egret, snowy egret, or white-faced ibis because there is no suitable wetland habitat present on the proposed construction site.

Loggerhead shrike (BLM Sensitive Species). The loggerhead shrike is present and probably breeds in the Proposed Project area and may forage and nest on the pipeline construction site. Construction activities in desertscrub habitats would potentially affect loggerhead shrike and their habitat. Removal of vegetation for the pipeline would not significantly affect local and regional populations of this species because there are large expanses of suitable desert and riparian habitat in the region.

Western burrowing owl (BLM Sensitive Species). The western burrowing owl does not breed on the construction site; however, it may forage in the desertscrub habitat on the site. Removal of desertscrub habitat would not significantly affect the burrowing owl because adequate foraging habitat would remain locally.

Desert rosy boa (BLM Sensitive Species). The desert rosy boa is a rock dweller and the only recorded occurrence within the ROI is in the Gila Mountains. No impacts to this species are anticipated.

Sonoran desert tortoise (Arizona Species of Concern). The Sonoran desert tortoise has not been documented in the ROI and is not likely to be present on the site of the pipeline, because the habitat is not suitable. Typically, desert tortoises in the Sonoran Desert occupy habitat in steep, rocky terrain with soils suitable for excavation of burrows. The pipeline would not affect the Sonoran desert tortoise.

Flat-tailed horned lizard (Arizona Species of Concern), Cowles fringe-toed Lizard (BLM Sensitive Species and Arizona Species of Concern), and Mojave fringe-toed lizard (Arizona Species of Concern). Of these three lizards, only the flat-tailed horned lizard has been documented in or near the Proposed Project area, but west of the Gila Mountains. All three species are associated with wind-blown sand deposits, but the flat-tailed horned lizard is associated with low dunes, often deposited over desert pavement. This habitat does not occur on the pipeline site. The other two species are more commonly found on large, extensive sand dune fields, also west of the Gila Mountains. The pipeline would not affect the flat-tailed horned lizard, Cowles fringe-toed lizard, or Mojave fringe-toed lizard because these species have not been recorded in the area and suitable habitat is not present.

Gila monster (Arizona Species of Concern). The pipeline would be constructed almost entirely on the proposed WMGF site. The Gila monster was no document during baseline studies of the proposed WMGF site. The habitat is marginal, being sparsely vegetated, with few rocky outcrops, and a history of site disturbance. Consequently, the proposed construction activities would not likely affect this species.

Lowland leopard frog (Arizona Species of Concern). The pipeline would not affect the lowland leopard frog because no suitable wetland habitat is present on the proposed site.

Cheeseweed moth lacewing and MacNeil sooty wingskipper (BLM Sensitive Species). The cheeseweed moth lacewing was found in the Proposed Project area in 1983 at Telegraph Pass in association with creosote bush. Although this insect has not been found on the pipeline route, its creosote bush habitat is present. Construction of the pipeline would remove habitat (7 acres) for this species but this loss of habitat would be insignificant because creosote bush is an abundant shrub in the region.

The MacNeill sooty wing skipper, a butterfly, has not been found in the Proposed Project area. This species is obligately associated with quailbush (*Atriplex lentiformis*), its primary food. Quailbush is common in the ROI. The potential impacts would be insignificant due to the fact that quailbush is common.

4.4.7.3 *Transmission System Additions*

New Transmission Line

Assessment of Impacts

Sonoran pronghorn (Endangered). The new transmission line would not affect the Sonoran pronghorn because of the absence of the species in the Proposed Project area and the lack of suitable habitat.

Southwestern willow flycatcher (Endangered). The new transmission line would not affect the southwestern willow flycatcher because habitat affected by the new transmission line is of poor-quality, the species has not been observed in the ROI, and implementation of the following mitigation measures identified in the biological assessment (Western 2003d) would avoid impacts to the willow flycatcher:

- No construction for the Proposed Project would take place at the Gila River crossing from March 1 through August 31, which is the flycatcher nesting and breeding season.

- If flycatchers are found within the area of the transmission line crossing at the Gila River, construction at this location would cease in the occupied areas and consultation with the USFWS would be re-initiated.
- Disturbance to riparian habitat shall be avoided.
- Western would place state-of-the-art marking devices on transmission lines at the Gila River crossing to minimize bird collisions.

Yuma clapper rail (Endangered). Construction and operation of the new transmission line would not require removal of wetland vegetation at the Gila River crossing, habitat occupied by clapper rails. However, under current Wellton-Mohawk Canal management, all vegetation along 56 miles of river is cleared semi-annually for flood control as part of the ongoing Gila River Channel Project. The clearing is 250-feet wide, and with the exception of existing cottonwood and willows, it removes all vegetation that might impede flood flows. In addition, a firebreak is cleared as part of the ongoing maintenance of the existing electric distribution line and would be widened by about 70 feet for the new transmission line crossing the river. H-frame structures would be placed 100 feet upland of the low-flow channel on a levee. No clapper rail habitat (wetlands with reeds and cattails) would be disturbed by construction or operation of the proposed new transmission line and there is suitable habitat available nearby for dispersal. Conductors and groundwires would span clapper rail habitat without physically disrupting it.

Direct effects to the Yuma clapper rail would include harassment or displacement of individuals caused by use of construction equipment. Rails would be displaced to other available habitat during periods of construction.

To minimize effects to clapper rails, Western would implement the USFWS approved mitigation measures listed above, under the heading for the southwestern willow flycatcher. This would require construction at the river crossing to take place outside of clapper rail breeding and nesting season. Clapper rails would be more likely to disperse to adjacent habitats during nonbreeding times and return to established breeding territories by mid-March.

Because of the mitigating measures found in the Section 7 consultation, adequate quantities of suitable habitat for dispersal within the area, the short duration of construction and noise disturbance, and implementation of construction outside of the breeding and nesting season, the proposed transmission line would not significantly effect the Yuma clapper rail.

Bald eagle (Threatened, proposed for delisting). The new transmission line would not affect the bald eagle because of the presence of poor-quality habitat and absence of observations of this species in the Proposed Project area.

Cactus ferruginous pygmy owl (Endangered). The new transmission line would not affect this species because only marginal habitat is present and the distance to the nearest known pygmy owl population center is considerable.

California brown pelican (Endangered). The new transmission line would not affect the California brown pelican because no nesting or foraging habitat for this species would be affected.

Western yellow-billed cuckoo (Candidate). The new transmission line would not affect this species because there is no suitable riparian habitat present on the proposed ROW.

Razorback sucker (Endangered). The new transmission line would not affect the razorback sucker because of lack of suitable habitat and lack of occurrence in the Proposed Project area.

Bats (BLM Sensitive Species and/or Arizona Species of Concern). The new transmission line would not significantly affect bats. No roosting, breeding areas, or hibernacula (e.g., caves, abandoned mine shafts, old buildings, or bridges) would be removed or altered. Foraging habitat in riparian areas along the Gila River would be temporarily disturbed by construction and maintenance of the transmission line. However, under existing conditions, wetlands and riparian areas along the channel of the Gila River are disturbed each year by removal of vegetation as a flood-control measure. Construction and maintenance associated with the proposed transmission line would alter a small amount of marginal foraging habitat (approximately 0.4 acre at tower sites) for some species, but this would have an insignificant effect on bats. Extensive areas are available in the region to meet needs the needs of bat species that rely on insects or nectar from desertscrub habitats.

California black rail and western least bittern (Arizona Species of Concern). The California black rail and western least bittern have not been recorded in the Proposed Project area, although suitable breeding habitat may be present along the Gila River. Construction of the transmission line ROW across the Gila River would span potential California black rail and western least bittern habitat (reed and cattail wetlands). Timing construction and maintenance to avoid the Yuma clapper rail breeding and brood-rearing periods would also avoid potential adverse effects on California black rail and western least bittern habitat. Proposed mitigation measures for the southwestern willow flycatcher and Yuma clapper rail would minimize potential effects to levels of insignificance for the California black rail and western least bittern habitat because the nesting and brood-rearing period would be avoided, wetlands habitat would not be directly affected, and state-of-the-art marking devices would be attached to overhead groundwires at the Gila River crossing.

Operation of the new transmission line would have the potential to adversely affect the California black rail and western least bittern by increasing mortality risk from collisions with transmission line conductors and towers. Rails and bitterns are not strong and frequent fliers. They do, however, fly during long-distance dispersals or when frightened. The new transmission line at the Gila River crossing would pose a slight risk to these species from collisions with towers and conductors. However, this risk would be insignificant with horizontal alignment of conductors and installation of state-of-the-art marking devices on groundwires.

Great egret (Arizona Species of Concern), snowy egret (Arizona Species of Concern), and white-faced ibis (BLM Sensitive Species). Great egrets and snowy egrets feed and probably nest in the wetland and riparian habitats along the Gila River. Construction of the transmission line across the river would likely displace egrets from the immediate vicinity of the crossing while active construction is taking place. No nesting egrets have been reported at this location, therefore it is unlikely that nesting and brood rearing would be affected. Timing construction and maintenance activities to take place in fall and winter would eliminate adverse effects on great egret nesting and brood rearing (March 1 through August 31).

Operation of the transmission line could increase the risk that egrets would be killed by collisions with conductors and towers. However, this risk would be reduced to an insignificant level by aligning the conductors horizontally at the Gila River crossing and attaching state-of-the-art marking devices on the groundwires.

The white-faced ibis is a transitory winter resident along the Gila River. Construction of the transmission line crossing of the Gila River would likely displace the white-faced ibis from the immediate vicinity of construction activities. Displacement would be short term and would only affect habitat adjacent to construction sites. Undisturbed habitats along the Gila River would likely provide suitable feeding and resting areas for the white-faced ibis with little competition among individuals.

Operation of the transmission line could increase the risk that white-faced ibises would be killed by collisions with conductors and towers. However, this risk would be reduced by aligning the conductors horizontally at the river crossing and placing state-of-the-art marking devices on the groundwires.

Loggerhead shrike (BLM Sensitive Species). The loggerhead shrike is present and probably breeds in the Proposed Project area. Transmission line construction activities that take place in desertscrub and riparian habitats would potentially affect the loggerhead shrike and its habitat. Removal of vegetation for the proposed new transmission line towers would temporarily disturb desertscrub foraging and nesting habitat and small amounts of riparian habitat associated with tower and an expanded firebreak (approximately 2.3 acres). This amount of habitat disturbance would have insignificant effects on local and regional shrike populations because there are large expanses of suitable desert and riparian habitat in the region.

Loggerhead shrike would be unlikely to collide with transmission line conductors or towers. They typically perch on conductors and towers.

Western burrowing owl (BLM Sensitive Species). The western burrowing owl is not known to breed on the new transmission line ROW; however, it may forage in the desertscrub habitat on and adjacent to the site. Removal of desertscrub habitat would not significantly affect the burrowing owl because adequate foraging habitat would remain along the Wellton-Mohawk Canal, where this species is known to nest.

Desert rosy boa (BLM Sensitive Species). The desert rosy boa is a mostly nocturnal rock dweller and the only recorded occurrence within the ROI is in the Gila Mountains. Construction of the new transmission line is unlikely to adversely affect this species.

Sonoran desert tortoise (Arizona Species of Concern). The Sonoran desert tortoise has not been documented in the ROI and is not likely to be present on the new transmission line ROW because habitat is marginal. The nearest habitat that may be suitable is in the Gila Mountains, west of the proposed new transmission line.

Flat-tailed horned lizard (Arizona Species of Concern), Cowles fringe-toed lizard (BLM Sensitive Species and Arizona Species of Concern), and Mojave fringe-toed lizard (Arizona Species of Concern). Of these three lizards, only the flat-tailed horned lizard has been documented in or near the Proposed Project area, but west of the Gila Mountains. All three species are associated with wind-blown sand deposits, but the flat-tailed horned lizard is

associated with low dunes, often deposited over desert pavement. The other two species are more commonly found on large, extensive sand dune fields, also west of the Gila Mountains.

Construction of the new transmission line would not affect the flat-tailed horned lizard, Cowles fringe-toed lizard, or Mojave fringe-toed lizard because these species have not been recorded in the area and their habitat would not be disturbed.

Gila monster (Arizona Species of Concern). The Gila monster has not been documented during baseline studies on the new transmission line ROW; however, it may be present in the area affected by construction of the new transmission line.

Additional Mitigation. Adverse effects on the Gila monster could be avoided by implementing daily surveys, immediately prior to construction, by a qualified biologist to find and move Gila monsters from areas affected by construction activities.

Lowland leopard frog (Arizona Species of Concern). The new transmission line would not affect the lowland leopard frog because no suitable wetland habitat would be affected. Construction of the crossing of the Gila River would not disturb wetlands because the transmission line would span the channel of the river and associated wetlands.

Cheeseweed moth lacewing and MacNeil sooty wingskipper (BLM Sensitive Species). The cheeseweed moth lacewing was found in the Proposed Project area in 1983 at Telegraph Pass in association with creosote bush. Although not documented, it could also occur in desertscrub habitat along the new transmission line. The small amount of creosote bush that would be removed with new transmission line construction would pose an insignificant risk to this species. Creosote bush is abundant and widespread regionally and only small acreages (0.5 acre) would be permanently disturbed by the transmission line.

The MacNeill sooty wing skipper, a butterfly, has not been found in the Proposed Project area. This species is obligately associated with quailbush (*Atriplex lentiformis*), its primary food which is common in the ROI. The new transmission line would pose a risk to the MacNeill sooty wing skipper through removal of quailbush. The potential impacts would be insignificant due to the fact that quailbush is common.

Upgraded Transmission Line

Assessment of Impacts

Sonoran pronghorn (Endangered). The upgraded transmission line would not affect the Sonoran pronghorn because of the absence of the species in the Proposed Project area and the lack of suitable habitat.

Southwestern willow flycatcher (Endangered). The upgraded transmission line would not affect the southwestern willow flycatcher because there is no suitable riparian habitat present on the proposed construction site.

Yuma clapper rail (Endangered). The upgraded transmission line would not affect the Yuma clapper rail because there is no suitable wetland habitat on the proposed construction site.

Bald eagle (Threatened, proposed for delisting). The upgraded transmission line would not affect the bald eagle because of the presence of poor-quality habitat and absence of observations of this species in the Proposed Project area.

Cactus ferruginous pygmy-owl (Endangered). The upgraded transmission line would not affect this species because only marginal habitat is present along the proposed ROW and the distance to the nearest known pygmy-owl population center is considerable.

California brown pelican (Endangered). The upgraded transmission line would not affect the California brown pelican because no nesting or foraging habitat would be affected and there are no recorded occurrences in the Proposed Project area.

Western yellow-billed cuckoo (Candidate). The upgraded transmission line would not affect this species because there is no suitable riparian habitat present along the proposed ROW.

Razorback sucker (Endangered). The upgraded transmission line would not affect the razorback sucker because of lack of suitable habitat and lack of occurrence in the Proposed Project area.

Bats (BLM Sensitive Species and/or Arizona Species of Concern). The upgraded transmission line would not significantly affect bats. No roosting, breeding areas, or hibernacula (e.g., caves, abandoned mine shafts, old buildings, or bridges) would be removed or disturbed. Construction and maintenance associated with the upgraded transmission line would remove a small amount of marginal foraging habitat for some species, but this loss would have a nondetectable effect on bats. Extensive areas are available in the region to meet the needs of bat species that rely on insects or nectar from desertscrub habitats.

California black rail and western least bittern (Arizona Species of Concern). The California black rail and western least bittern have not been recorded in the Proposed Project area, and suitable wetland breeding habitat is not present along the upgraded transmission line ROW; consequently, these species would not be affected.

Great egret (Arizona Species of Concern), snowy egret (Arizona Species of Concern), and white-faced ibis (BLM Sensitive Species). The upgraded transmission line would not affect the great egret, snowy egret, or white-faced ibis because there is no suitable wetland habitat present on the proposed construction site.

Loggerhead shrike (BLM Sensitive Species). The loggerhead shrike is present and may forage and nest on the area proposed for construction of the upgraded transmission line. Construction activities that take place in desertscrub habitats would have the potential to affect loggerhead shrike and their habitat. Removal of vegetation for access road improvements (3.8 acres) would have insignificant effects on local and regional populations of this species because there are large expanses of suitable desertscrub and riparian habitat in the region.

Western burrowing owl (BLM Sensitive Species). The western burrowing owl does not breed in habitat that would be affected by the upgraded transmission line; however, it may forage in the desertscrub habitat on the site. Removal of desertscrub habitat would not significantly affect the burrowing owl because adequate foraging habitat would remain along the Wellton-Mohawk Canal, where this species is known to nest.

Desert rosy boa (BLM Sensitive Species). The desert rosy boa is a mostly nocturnal rock dweller and the only recorded occurrence within the ROI is in the Gila Mountains. The upgraded transmission line crosses the Gila Mountains at Telegraph Pass. Most of the construction and maintenance activity would occur during the day and is unlikely to impact the desert rosy boa. However, in rocky areas near Telegraph Pass blasting would be required for structure foundations. If rosy boas are present near blasting sites they would likely be stressed and may possibly be killed.

Additional mitigation. Surveys conducted immediately prior to blasting by a qualified biologist to find and move rosy boas to safe locations would lower the probability of affecting this species to insignificant levels.

Sonoran desert tortoise (Arizona Species of Concern). The Sonoran desert tortoise has not been documented in the ROI and is not likely to be present on the upgraded transmission line ROW. Typically, desert tortoises in the Sonoran Desert occupy habitat in steep, rocky terrain with soils suitable for excavation of burrows. Although the upgraded transmission line traverses the Gila Mountains, roads and structures are located in terrain with large amounts of exposed bedrock which is unsuitable for the desert tortoise because this habitat is not suitable for construction of burrows. The upgraded transmission line would not affect the Sonoran desert tortoise.

Flat-tailed horned lizard (Arizona Species of Concern), Cowles fringe-toed lizard (BLM Sensitive Species and Arizona Species of Concern), and Mojave fringe-toed lizard (Arizona Species of Concern). Of these three lizards, only the flat-tailed horned lizard has been documented in or near the Proposed Project area, but west of the Gila Mountains. All three species are associated with wind-blown sand deposits, but the flat-tailed horned lizard is associated with low dunes, often deposited over desert pavement. The other two species are more commonly found on large, extensive sand dune fields, also west of the Gila Mountains. Habitat suitable for these three lizards would not be affected by the upgraded transmission line; consequently, the flat-tailed horned lizard, Cowles fringe-toed lizard, and Mojave fringe-toed lizard would not be affected.

Gila monster (Arizona Species of Concern). Construction activities associated with the upgraded transmission line may affect suitable habitat for the Gila monster and cause direct mortality from vehicles and other construction equipment. Adverse effects on the Gila monster would be avoided through daily surveys, immediately prior to construction, by a qualified biologist to find and move Gila monsters from areas affected by construction activities.

Lowland leopard frog (Arizona Species of Concern). The upgraded transmission line would not affect the lowland leopard frog because no suitable wetland habitat is present on area that would be affected by construction and operation.

Cheeseweed moth lacewing and MacNeil sooty wingskipper (BLM Sensitive Species). The cheeseweed moth lacewing was found in the Proposed Project area in 1983 at Telegraph Pass in association with creosote bush. Because the upgraded transmission line is located in Telegraph Pass, there is the potential for creosote bush, the obligate host for this insect to be affected by construction activities. Adverse effects on the cheeseweed moth lacewing and its habitat would be insignificant if creosote bush were avoided during construction activities. Prior to construction activities, creosote bush in Telegraph Pass would be flagged and avoided.

The MacNeill sooty wing skipper, a butterfly, has not been found in the Proposed Project area. This species is obligately associated with quailbush (*Atriplex lentiformis*), its primary food. Quailbush is common in the ROI. The potential impacts would be insignificant because quailbush is common in the area.

Substations Modifications

The proposed substation modifications would not pose a risk to any special-status animal species. Substation modifications would occur within the existing substation footprints, which lack any habitat for the wildlife species discussed earlier.

4.4.8 No Action Alternative

Under the No Action Alternative, construction of the Proposed Project would not take place, and none of the impacts of the Proposed Action would occur.

4.5 CULTURAL RESOURCES

Methodology and Significance Criteria

Potential impacts to cultural resources were assessed for the Proposed Action and No Action Alternatives. Descriptions of activities that would occur as part of the Proposed Project were used to analyze potential direct and indirect effects to cultural resources. The analysis of impacts takes into account the standard mitigation measures, including standard mitigation measures of the Federal agencies and measures required by the Arizona Corporation Commission (ACC), described in section 2.2.5. Specific mitigation measures from that section are referenced in this discussion by table number and mitigation measure number. Optional mitigation measures, in addition to standard mitigation measures, and resulting decreasd impacts, are presented at the end of each project activity discussion. Negotiation and consensus regarding which optional mitigation measures would be implemented, if the Proposed Project were selected, will occur through the process outlined in the Programmatic Agreement (PA) and followed by the signatories. Decisions regarding mitigation measures that would be implemented will be documented in the agency RODs.

Types of Impacts

The locations of cultural resources identified in the archaeological surveys and ethnographic study were compared to the defined ROI (section 3.5.2) and the Proposed Project activities. The potential for direct or indirect impacts by project activities was then assessed. However, consultations with the PA signatories continue to further define the type and intensity of impacts. The types of activities analyzed are listed below and categorized as direct or indirect impacts:

Direct Impacts	Indirect Impacts
• Construction • Demolition • Maintenance • Transfer of ownership	• Erosion • Off-road vehicle traffic • Vandalism, artifact collecting, unintentional damage • Visual and auditory intrusions

Potential direct impacts can include physical damage resulting from surface-disturbing activities, access to construction areas by large machinery, improvement of existing access roads and stormwater control features, demolition activities, use of staging areas for storage of equipment and supplies, removal of borrow, and future maintenance activities. These physical impacts can occur to both known sites and subsurface sites that could be discovered and disturbed during surface disturbing activities. Transfer of resources out of Federal ownership or control is also a direct impact due to the removal of Federal protections from those resources, unless adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the resources are put in place.

Indirect impacts to cultural resources are often not quantifiable and can occur to cultural resources both within and outside the Proposed Project area of potential effects (APE) described in section 3.5.2. Potential indirect impacts can include changes in erosion patterns that are caused by construction, compaction of the soil, or vegetation removal. Other possible indirect impacts may include off-road vehicle traffic. This off-road traffic may be associated with construction, maintenance, or recreational activity. Increased vandalism including illegal artifact collection is also possible due to increased access to the area. Other potential indirect impacts can be introduction of visual or auditory elements out of character with a resource which disrupts the setting of a resource. These impacts can result from introducing modern structures and associated auditory emissions into an otherwise rural or natural setting. The disruption can detract from religious or sacred sites and their use in traditional activities.

Significance Criteria

Section 106 of the NHPA requires that the Agency Official take into account the effect of an undertaking on historic properties and provide the Council an opportunity to comment. Historic property, as defined by the regulations implementing section 106 (36 CFR 800.16 [l][1], ". . . means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. . . . The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria." Potential impacts to cultural resources were assessed using the “criteria of adverse effect” (36 CFR Part 800.5[a][1]), as defined in the implementing regulations for the NHPA. "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." The analysis of impacts using these criteria is limited to those resources that are listed in the NRHP or have been recommended as eligible. There are five broad categories of effect: (1) physical destruction or alteration of a property or relocation from its historic location; (2) isolation or restriction of access; (3) change in the character of the property's use, or of physical features within the property's setting, or the introduction of visible, audible, or atmospheric elements out of character with the significant historic features of the property; (4) neglect leading to deterioration or vandalism; and (5) transfer, sale, or lease from Federal to non-Federal control without adequate and legally enforceable restrictions or conditions to ensure preservation of the historic significance of the property. For this EIS, a significant impact is equivalent to an adverse effect.

4.5.1 Ethnographic Resources

The potential for adverse effects to ethnographic resources that are not recommended as eligible for listing on the NRHP, but were identified as important to tribes, and for effects to traditional cultural properties (TCPs), was based on tribal concerns identified during the ethnographic study. Potential effects to religious and sacred sites were addressed in the context of the American Indian Religious Freedom Act (42 U.S.C. 1996), which provides for Federal protection and consideration of religious practices that might be impacted under the alternatives. Potential adverse effects, or significant impacts, could include physical damage to religious or sacred sites, visual impacts, noise impacts, loss of access to sites, and burdens on the practice of religion by traditional practitioners. In some cases TCPs are already significantly impacted by existing developments, and in some cases a Project component may be the first major intrusion.

4.5.2 Archaeological and Historical Sites

Construction, operation, and maintenance of the proposed WMGF, the new and upgraded transmission lines, and the facility natural gas pipeline (including ROW and access roads) have the potential to adversely affect cultural resources or result in the inadvertent discovery of unknown resources. Avoidance of cultural resources is the preferred and recommended means of mitigation. However, if avoidance is not possible, other measures to reduce or mitigate potential adverse effects must be developed and implemented. In the following discussions, optional mitigation measures are presented, along with the resulting decrease in impacts. Under the terms of the PA, if the Proposed Action is selected, the signatories will consult concerning which optional mitigation measures will be used. Decisions regarding mitigation measures that would be used will be documented in the agency RODs, which will make them binding on the Applicant.

If the Proposed Action were selected, any newly identified or unsurveyed APEs, such as access roads or staging areas, would be surveyed for cultural resources. Additional eligible sites could be found through these surveys. If additional sites were evaluated as eligible, similar mitigation measures would be applied.

Segments of the Juan Bautista de Anza National Historic Trail, Butterfield Overland Mail Route, and Gila Trail are located along the same general routes as the facility natural gas pipeline and new transmission line portions of the Proposed Project. No physical evidence of the trails has been found in the Proposed Project area (Foster et al. 2004). There is currently no definitive evidence that these facilities would actually cross contributing segments of these trails. The importance of the historic trails is their interpretive value. They provide a glimpse of the historical use of the region, and, in this particular area, demonstrate the importance of the transportation route between the Gila and Laguna mountains and along the Gila River. The trails' interpretive value is in their setting in relation to the natural features of the landscape such as the Gila River floodplain and surrounding mountains. The Proposed Project area already contains many man-made visual intrusions onto these natural features, particularly in the river valley, such as irrigation and drainage systems, power transmission systems, agricultural fields, railroads, communication towers, and roadways. The Proposed Project would add a transmission line and a power generation facility, both located next to existing man-made intrusions. The impact of these additions to the already affected region would be cumulative, and the trail

corridors and the natural features would retain their interpretive value. The addition of the Proposed Project facilities would not be considered an adverse effect.

4.5.2.1 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

The proposed WMGF site contains one archaeological site located on Reclamation land that is recommended as eligible for the NRHP (AZ X:7:59 Arizona State Museum (ASM)). The site consists of two trail segments, a cleared area, a small cluster of rocks, and a small concentration of Colorado Buff Ware ceramic sherds. The resource has been disturbed by trucks and off-road recreational vehicles, and by grading at the southern edge likely associated with an existing distribution line. However, enough integrity remains that the site is recommended as eligible for its archaeological potential. Three additional resources are located adjacent to the proposed WMGF site and are recommended as eligible for the NRHP: a segment of the Wellton-Mohawk Canal (Reclamation) and related Ligurta Substation (Western); a segment of the Southern Pacific Rail Road (SPRR), now the Union Pacific Railroad (private); and a segment of Old Highway 80 (Yuma County). These resources are recommended as eligible for their associations with regional history and engineering.

Construction

Construction of the proposed WMGF would directly impact the archaeological site, AZ X:7:59 (ASM), which is located at the edge of the proposed solar field. Construction would damage the site, impacting the information potential and physical integrity of the site and rendering it ineligible for listing on the NRHP. This would be an adverse effect. This site would also be impacted by the transfer of the proposed WMGF facility parcel from Reclamation to WMIDD ownership, removing Federal protections from the site.

Construction of the proposed WMGF would likely have no direct or indirect impacts to archaeological and historical sites adjacent to the project area. The Wellton-Mohawk Canal and Ligurta Substation, and segments of the SPRR and Old Highway 80 are active modern features that would be avoided by project construction. It is unlikely that erosion, off-road driving, vandalism, artifact collecting, or unintentional damage would impact these resources. Also, the proposed WMGF site construction area would be permanently fenced, making access to adjacent resources difficult (table 2.2-6, mitigation 24). Because the area surrounding the proposed WMGF site is a built environment already, including I-8, multiple transmission lines, the Ligurta Substation, the Wellton-Mohawk Canal segment, and Pumping Plant No. 2, additional visual impact to cultural resources outside the surveyed area from construction of the proposed WMGF would be negligible.

Operation

Direct impacts to prehistoric and historical sites from maintenance activities are unlikely because these activities would take place within areas already disturbed by construction. Operation of the proposed WMGF would likely have no indirect impacts to prehistoric and historical sites adjacent to the project area for the same reasons described above for construction of the facility. Similarly, because the area surrounding the proposed WMGF site is a built environment already, including I-

8, multiple transmission lines, the Ligurta Substation, the Wellton-Mohawk Canal segment, and Pumping Plant No. 2, additional visual impact to cultural resources outside the surveyed area from operation of the proposed WMGF would be negligible. Additional auditory impacts from operation of the proposed WMGF would also be negligible due to the surrounding built environment, and noise from the proposed WMGF would not substantially increase current noise levels (table 2.2-6, mitigation 22).

Additional Mitigation Measures

Construction of the proposed WMGF solar collection field would directly impact site AZ X:7:59 (ASM). Specific treatment measures will be developed through the process outlined in the PA. One treatment option would be to modify the solar field design to avoid the site area, or undisturbed portions of the site, and to construct a fence around the site as protection from inadvertent damage. To minimize subsequent damage from operation and maintenance, a conservation easement with enforceable stipulations would be set up, and the protective fence would be permanently maintained.

The site is very large, approximately 185 by 100 meters, and may be difficult to avoid entirely with the design of the solar field. As an alternative, the portion of the site containing a segment of undisturbed portions of the trails and all of the non-trail features, could be fenced and protected. In this case data recovery would be completed on portions of the site area outside the fence under the terms of a specific approved treatment plan developed in accordance with Stipulation III of the PA. If it was not feasible to redesign the solar field to avoid and protect the entire site during construction, and to guarantee subsequent protection of the site within this facility during operation and maintenance, a specific treatment plan would be developed under the terms of the PA and implemented before construction. Because this site has been evaluated as eligible for its potential to yield information important in prehistory, systematic data recovery would mitigate the adverse impact of damage to or destruction of the site. Data recovery could include detailed surface mapping, artifact collection, and excavation in the cleared area to search for and recover any shallowly buried artifacts or cultural features. Data recovery could also include recording of Native American traditions and perspectives on sites and features of this type. The data recovery itself would be an impact to the site, but if it were carried out under the stipulations of an approved data recovery plan, it would be considered no adverse effect under the NHPA (ACHP 1999). While not an adverse effect under the law, this approach may still be considered a significant impact by the tribes.

4.5.2.2 *Facility Natural Gas Pipeline*

Option 1

Assessment of Impacts

Both sides of the Wellton-Mohawk Canal were surveyed for archaeological and historical sites. The proposed pipeline corridor location was then designed to minimize disturbance to cultural sites. Five historic properties were found in the APE by the survey. Prehistoric site AZ X:3:52 (ASM) would be avoided by both options of the pipeline corridor.

The facility natural gas pipeline corridor, as proposed for Option 1, contains four historic properties. A segment of the Wellton-Mohawk Canal (AZ X:3:338 (ASM)), owned by Reclamation, is crossed by the corridor twice, first west of the proposed WMGF and again approximately halfway along its length. A segment of Old Highway 80 (AZ FF:9:17 (ASM)), owned by BLM, is crossed by the corridor north of the proposed WMGF site. A segment of the SPRR (AZ Z:2:40 (ASM)), which is privately owned, passes through the corridor at six different locations, for a different length at each location. These resources are recommended as eligible for their associations with regional history and engineering. Site AZ X:7:104 (ASM), an artifact scatter, is located on Reclamation land within the corridor. This site is recommended as eligible for its archaeological potential.

Construction

Construction of the proposed facility natural gas pipeline in the Option 1 corridor would directly impact site AZ X:7:104 (ASM). It would damage a portion of the site that includes three artifact concentrations. This would impact the information potential of the site. Construction would have no effects on the historic canal, railroad, or road. When crossing the Wellton-Mohawk Canal, Old Highway 80, and the SPRR segments, the facility natural gas pipeline would be bored underneath to prevent any damage. In those portions of the corridor parallel to the railroad, the railroad would be avoided.

Construction of the facility natural gas pipeline would be unlikely to have indirect impacts to segments of the canal, railroad, or road. Standard mitigation measures would ensure low potential for indirect impacts to any remaining undisturbed portions of AZ X:7:104 (ASM). Standard mitigation measures that would be carried out after construction would include: ground surface restoration techniques and reseeding to control erosion (table 2.2-7, mitigation 6); off-road and off-corridor driving would be minimized by marking the edges of the work area and restricting activities to those areas (table 2.2-7, mitigation 2); access to the facility natural gas pipeline corridor would be limited to existing roads and designated routes (table 2.2-7, mitigation 1); temporary access roads created during project construction would be modified after construction to discourage further use (table 2.2-7, mitigation 9), minimizing a potential increase of traffic into the area resulting in vandalism, artifact collecting, or unintentional damage to cultural resources. These measures would also help to protect any unknown resources, those located outside the corridor that was surveyed for cultural resources, from erosion, off-road driving, vandalism, artifact collecting, and unintentional damage.

After construction, the disturbed construction zone would be noticeable. However, this corridor would be next to the canal, which already presents a vegetation-free visual intrusion into the area, thus the additional visual impact to cultural resources outside the surveyed corridor would be negligible. After construction, ground surface restoration techniques and reseeding would take place (table 2.2-7, mitigation 6), vegetation would eventually grow back, and the visual impact would be reduced over time.

Operation

Direct impacts from operation of the facility natural gas pipeline would be unlikely because maintenance activities would occur within areas already disturbed by construction. Operation of the pipeline would likely have no indirect impacts to prehistoric and historical sites located

within or outside the surveyed corridor because of implementation of the standard mitigation measures, described above for construction.

Additional Mitigation

The construction ROW for the facility natural gas pipeline extends from 100 feet to 300 feet from the centerline of the Wellton-Mohawk Canal, and construction of the pipeline would directly impact much of site AZ X:7:104 (ASM). There are three options to address this impact.

First, the site could be avoided during all construction and maintenance activities by limiting the construction zone to the area between the canal and the site. This option could include completely enclosing the site with temporary fencing prior to construction, and leaving the fencing in place during construction. In addition, a qualified archaeological monitor could be present during construction near this site. During maintenance activities that require surface disturbance, the site could be temporarily fenced and an archaeological monitor could be present. Fencing, monitoring, and limiting the construction zone would help to prevent physical damage to the site. The site would retain its information potential and physical integrity, and adverse effects would be avoided.

A second option would be to develop and implement an approved treatment plan for the site before construction under the terms of the PA. This option would mitigate the damage to the site by recovering important information before construction. Data recovery would still impact the site, but if it were carried out under the stipulations of an approved data recovery plan, it would be considered no adverse effect under NHPA (ACHP 1999).

A third option would be to conduct limited testing to verify the depth and extent of the site, and to avoid the site by boring under it. Boring would begin a safe distance outside the site area and pass well under the maximum depth of site materials, and would not effect the site. After further consultation with the tribes, a decision on this site will be reached and included in the agency RODS.

Option 2

Assessment of Impacts

Option 2 for the facility natural gas pipeline corridor would run approximately 0.25 mile from the power plant south along the east side of the Wellton-Mohawk Canal to I-8. The pipeline corridor is within the proposed WMGF boundaries. There are no historic properties in this corridor. A segment of the Wellton-Mohawk Canal, owned by Reclamation, is adjacent to the corridor.

Construction

Construction of the new facility natural gas pipeline under Option 2 would not adversely affect any historic properties. In addition, no changes or impacts would occur to the nearby historic canal segment.

Construction of the facility natural gas pipeline would not indirectly impact the canal segment. No other prehistoric or historical sites are anticipated near the corridor. The area east and north of the corridor was included in the proposed WMGF site survey and no resources were located.

I-8 is located adjacent to the southern survey boundary, and it is unlikely that intact resources remain in that area. The canal segment is located to the west. Indirect impacts to cultural resources outside the corridor are not anticipated. Access to the facility natural gas pipeline corridor would be across the proposed WMGF site, with no improvement of access into the area. Therefore, construction of the facility natural gas pipeline would not result in a long-term increase of traffic into the area and would not result in an increase in vandalism, artifact collecting, or unintentional damage to prehistoric and historical sites.

Once construction is completed, the disturbed construction zone south of the proposed WMGF plant would be noticeable. However, this corridor would be next to the canal, which already presents a vegetation-free visual intrusion into the area, thus the additional visual impact to cultural resources outside the surveyed area would be negligible. After construction, ground surface restoration techniques and reseeding would take place (table 2.2-7, mitigation 6), vegetation would eventually grow back, and the visual impact would be reduced over time.

Operation

Direct impacts from operation of the facility natural gas pipeline would be unlikely due to the location of the pipeline within the proposed WMGF site, which would be fenced (table 2.2-6, mitigation 24), the absence of prehistoric or historical sites in the corridor, and the location of maintenance activities within areas already disturbed by construction. Operation of the pipeline would likely have no indirect impacts to prehistoric and historical sites located within or outside the corridor for the same reasons presented above for construction.

Additional Mitigation

No adverse effects to historic properties would occur as a result of the construction and operation of the facility natural gas pipeline under Option 2. Therefore, no additional mitigation measures are needed.

4.5.2.3 *Transmission System Additions*

Upgrade Existing Transmission Line

Assessment of Impacts

The upgraded transmission line corridor contains five historic properties. A segment of the Wellton-Mohawk Canal and the related Ligurta Substation (owned by Reclamation and Western respectively), a segment of Old Highway 80, owned by ADOT on BLM land, and a segment of the historic SPRR, privately owned, are each crossed once by the corridor. These resources are recommended as eligible for their associations with regional history and engineering. Site AZ X:7:45 (ASM) is a prehistoric lithic scatter with cleared areas, trails, rock rings, rock clusters, and rock alignments, located on BLM land and ADOT ROW for I-8. The site extends completely across the corridor. This site is recommended as eligible for its archaeological information potential. Site AZ X:7:47 (ASM), located on BLM land, is a gas station foundation and artifacts associated with Old Highway 80. This site lies one-quarter of the way across the corridor. This site is recommended as eligible for its archaeological information potential and its association with regional history.

Construction

Removing the existing transmission line infrastructure and constructing the upgraded transmission line would not cause any direct impact to segments of the canal, the railroad, the road, or the substation. The average span between structures would be between 600 and 800 feet, and the area of disturbance around the base of any structure would be a 100-foot radius. When crossing these resources, Western believes that the transmission structures could be placed away from them to easily span the resources (table 2.2-8, mitigation 21). Associated access roads and staging areas would also be located so that these resources are not damaged (table 2.2-8, mitigation 8).

Site AZ X:7:45 (ASM) is a long narrow site perpendicular to the corridor. The site consists of 17 cleared areas, eight trail segments, small rock clusters, rock rings, rock alignments, and 33 flaked quartz artifacts. The site extends completely across the survey corridor, and also extends south across the interstate highway. The portion within the corridor is 300 feet wide. Site AZ X:7:47 (ASM) extends about one-quarter of the way across the APE and is up to 150 feet wide in the corridor. Both of these sites would be spanned by the transmission line and structures would be placed no closer than 150 feet from the site boundaries (table 2.2-8, mitigation 21). The current transmission line has no structures within either of these sites, so avoidance is feasible. Site AZ X:7:47 (ASM) is located in the Gila Mountains. The steep terrain would restrict structure locations, and it is likely that new structures would be placed in the same locations as the current structures. The locations are well outside of the site boundaries on top of nearby promontories. Also, the site is located adjacent to the pavement of the I-8 eastbound lanes, and a structure would not be placed there. No direct impacts would occur from construction of the transmission line.

To the extent possible existing access roads would be used. However, current access roads cross both of these sites. These roads would be closed and rerouted around the sites, and staging areas and other extra work areas would also be located so that these resources are not damaged. Rerouting roads away from sites may reduce vandalism and unintentional damage resulting in a positive effect of the project.

Construction of the upgraded transmission line would have no indirect impacts to segments of the canal, railroad, road, or the substation. Implementation of standard mitigation measures would minimize the potential for indirect impacts to the two archaeological sites. After construction, ground surface restoration techniques would be implemented to control erosion (table 2.2-8, mitigation 4). Off-road and off-corridor driving would be minimized by marking the edges of the work area and restricting activities to those areas (table 2.2-8, mitigation 2), and by closing segments of existing access roads that pass through sites. Prior to construction, all construction personnel would be instructed on the protection of cultural resources (table 2.2-8, mitigation 7). Because this is an existing transmission line and existing access roads would be used to the extent possible, an increase of traffic into the area and a subsequent increase in vandalism, artifact collecting, or unintentional damage to cultural resources is unlikely. These measures would also protect any unknown resources located outside the surveyed corridor. Once construction is completed, the disturbed construction zone at the base of the structures would be noticeable. However, because this is an existing transmission line, which already presents a visual intrusion into the area, the additional visual impact to cultural resources outside the surveyed corridor would not be significant. After construction, ground surface restoration and

reseeding would be implemented (table 2.2-8, mitigation 4), vegetation would eventually grow back, and the visual impact would be reduced over time. Use of steel towers to replace wooden ones would present a new visual element in the area; however, considering that this is an existing transmission line that follows I-8, this impact would be negligible.

Operation

Additional direct impacts from maintenance of the upgraded transmission line and access roads would be unlikely since most maintenance activities would take place within areas already disturbed by construction activities. Implementation of standard mitigation measures would minimize the potential for indirect impacts to prehistoric and historical sites from the operation and maintenance of the line. There would be no new auditory impacts to archaeological or historical sites within or outside of the corridor because this is an existing transmission line. Additionally, the new transmission line would have higher conductor clearance and longer spans, which should reduce their intrusion on sites and TCPs. Also, since the new transmission line would likely require less maintenance than the old existing line, there would be less maintenance traffic.

New Transmission Line

Assessment of Impacts

The APE of the proposed new transmission line contains 11 historic properties and also crosses the routes of three historic trails, the Juan Bautista de Anza National Historic Trail, the Butterfield Overland Mail Route, and the Gila Trail. Four of the historic properties are also recommended eligible as TCPs: AZ X:3:15 (ASM), AZ X:7:72 (ASM), AZ X:7:91 (ASM), and AZ X:7:118 (ASM). Because of the number of resources, and potential complexities involved in the treatment of TCPs for this project component, the discussion below is organized by types of resources rather than by types of impacts.

Construction

A segment of the Wellton-Mohawk Canal, owned by Reclamation, is crossed twice by the corridor. A segment of Old Highway 80, owned by BLM and ADOT, is crossed by the corridor once just north of the proposed WMGF site. A segment of the SPRR, privately owned, is crossed once, and is within the corridor twice for various lengths. The Gila Gravity Main Canal, owned by Reclamation, is crossed by the corridor once, just north of the North Gila Substation. These resources are recommended as eligible for their associations with regional history and engineering. Construction of the new transmission line would not cause any direct impact to these resources. The average span between structures would be between 600 and 800 feet, and the area of disturbance around the base of any structure would be a 100-foot radius. When crossing these resources, Western believes that the transmission structures would be placed away from them to easily span the resources (table 2.2-8, mitigation 21). The access road associated with the neighboring transmission line would be used for access to the extent practicable, and additional access roads and staging areas would be designed to avoid these resources. Also, construction of the new transmission line would be unlikely to have indirect impacts on these resources.

No physical evidence of the historic trails has been identified in the APE or by other nearby cultural resource investigations. Based on currently available information there are no

contributing segments of these trails within or near the APE, and the Proposed Project would have no adverse effect on these resources.

Site AZ X:3:15 (ASM) is a rock art and trail site on Reclamation land. This site is recommended as eligible for its archaeological information potential and as a TCP because it contains rock art. It is a long narrow site located in a steep foothills area adjacent to the Gila River floodplain and within the western edge of the corridor. The site is within the western edge of the survey corridor and also extends outside the corridor. The nearest point of intersection (PI) of the transmission line ROW is northeast of the site area and east of the road in the Gila River floodplain. This portion of the transmission line will be along the road east of and topographically below the site. There will be no direct impacts to the site.

The existing access road is also outside of the site boundaries and, because the new transmission line will not pass through the site, no new access roads would be required within site boundaries. Western would also locate any staging areas, pulling or tensioning sites, and lay-down areas away from the site.

The presence of structures and a transmission line near the site would be a visual and auditory intrusion to the setting of the resource, an indirect impact. The setting has been identified as a characteristic essential to the continued functioning of the resource as a TCP. Impacts to the setting could impact the use of the site as a traditional resource. This would be an adverse effect. However, there are many visual and auditory intrusions in the nearby portion of the Gila River Valley, and the addition of this transmission line would not be a significant addition to those existing impacts.

Standard mitigation measures would help to prevent other indirect impacts from construction of the new transmission line to this site. Before construction, all construction personnel would be instructed on the protection of cultural resources (table 2.2-8, mitigation 7). Construction near the site would be monitored by a qualified archaeologist to assure that mitigation measures are followed and to prevent unintentional damage or vandalism to rock art during construction. Access to the corridor would be limited to existing roads and any new designated routes (table 2.2-8, mitigation 1). Off-road and off-corridor driving would be prevented during construction by marking the edges of the work area and restricting activities to those areas (table 2.2-8, mitigation 2). After construction, ground surface restoration techniques would be carried out to control erosion (table 2.2-8, mitigation 4). As planned, the new transmission line would minimize the increase in new access roads (2.5 miles of new access would be required), helping to minimize an increase of traffic into the area and any subsequent increase in vandalism, artifact collecting, or unintentional damage to cultural resources.

Site AZ X:7:10 (ASM) is a large lithic scatter with trails and cleared areas located on a dissected alluvial terrace on Reclamation land. This site is recommended as eligible for its archaeological information potential. The site area is north of the Gila Gravity Main Canal. The corridor is located adjacent to the Gila Gravity Main Canal on the north side. It turns south to cross the canal immediately west of site AZ X:7:10 (ASM). The majority of the site area is north of and outside the corridor; however, the portion that is inside the corridor extends all the way across the corridor. The portion of the site within the corridor is 400 feet wide. There is a structure that supports a turn in the transmission line located within the southern end of the site. This structure location is in the bottom of a broad wash that does not contain any in situ cultural materials. The

alluvial terraces within the site boundaries to either side of this structure location would be spanned by the transmission line. No contributing portion of the site would be affected and there would be no direct adverse impact.

The existing access road is outside of the site boundaries and, because the contributing portion of the site could be spanned, no new access roads would be required within site boundaries. Western would also avoid locating staging areas, pulling or tensioning sites, and lay-down areas within the site boundaries. Erosion impacts to the site would be prevented or minimized by either leaving vegetation in place, or by performing surface restoration (measures 3 and 4 -table 2.2-8). Potential impacts from off-highway vehicles and vandalism would be minimized by carrying out the cultural resource mitigation requirements described in section 2.2.5.4. There would also be low potential for indirect construction impacts to site AZ X:7:10 (ASM).

Site AZ X:7:70 (ASM), located on Reclamation and BLM land is a ceramic scatter with trails, a cleared area, a cairn, and a rock ring. This site is recommended as eligible for its archaeological information potential. It is a long narrow site that lies perpendicular to the corridor and one end of the site extends into the corridor. The site extends approximately halfway across the corridor and this portion of the site is 130 feet wide. Western would span this site and the structures would be placed no closer than 150 feet to the site boundaries (table 2.2-8, mitigation 21). This would prevent physical impacts to the site.

A small portion of an existing access road is within the site boundaries. This segment of the road would be blocked off and rerouted outside the site boundaries. Western would avoid locating staging areas, pulling or tensioning sites, and lay-down areas within the site. As described for AZ X:3:15 (ASM), carrying out the same mitigation measures would minimize the potential for indirect impacts from construction of the new transmission line to site AZ X:7:70 (ASM).

Site AZ X:7:71 (ASM), located on BLM land, is a ceramic and lithic scatter with four cleared areas, a rock cairn, a rock ring, and a rock alignment. This site is recommended as eligible for its archaeological information potential. This site is partially within the transmission line corridor, extending halfway across the width of the corridor. Site AZ X:7:71 (ASM) is located in a relatively flat area, and the portion of the site that would need to be spanned is only 150 feet wide. This site would be spanned by the transmission line and structures would be placed no closer than 150 feet from the site boundaries (table 2.2-8, mitigation 21). This would prevent direct impacts to the site.

An existing access road runs through the middle of the site. This segment of the road would be blocked off and rerouted outside the site boundaries. No staging areas, pulling or tensioning sites, and lay-down areas would be located on the site. As described for AZ X:3:15 (ASM), implementation of standard mitigation measures would minimize the potential for indirect impacts from construction of the new transmission line to site AZ X:7:71 (ASM).

Site AZ X:7:72 (ASM), is a lithic scatter with a trail, cleared areas, and rock art, located on Reclamation land. This site is recommended as eligible for its archaeological information potential and as a TCP, because it contains rock art. It is a long, narrow site perpendicular to the corridor. One end of the site extends a short distance (45 feet) into the corridor and measures 80 feet at its widest. This site would be spanned by the transmission line and structures would be

placed no closer than 150 feet to the site boundaries (table 2.2-8, mitigation 21). This would prevent physical impacts to the site.

The existing access road is outside of the site boundaries and no new access roads would be required. No staging areas, pulling or tensioning sites, and lay-down areas would be located on the site. If standard mitigation measures are implemented to avoid and protect nearby sites, there be no direct adverse impact to this site.

The existing transmission line is located approximately 200 feet east of site AZ X:7:72 (ASM). The new transmission line would be 100 feet east. The addition of another transmission line near the site, especially one that is closer, would be an additional visual intrusion to the setting of the resource, an indirect impact. The setting has been identified as a characteristic essential to the continued functioning of the resource as a TCP. Mitigation measures for this impact would be developed in consultation with tribal representatives under the terms of the PA.

As described for AZ X:3:15 (ASM), implementation of standard mitigation measures would minimize the potential for other indirect impacts from construction of the new transmission line to site AZ X:7:72 (ASM).

Site AZ X:7:91 (ASM) includes trails, rock art, and cleared areas on Reclamation land. This site is recommended as eligible for its archaeological information potential and as a TCP, because it contains rock art. The site extends across the corridor and the widest part that would need to be spanned is 390 feet wide. This site would be spanned by the transmission line and structures would be placed no closer than 150 feet from the site boundaries (table 2.2-8, mitigation 21). This would prevent direct impacts to the site.

The existing access road is outside of the site boundaries and no new access roads would be required. No staging areas, pulling or tensioning sites, and lay-down areas would be located on the site. If standard mitigation measures described previously for Site AZ X:3:15 (ASM) were carried out, there would be no direct adverse impact to this site.

The presence of a transmission line over site AZ X:7:91 (ASM) and nearby structures would result in visual and auditory intrusions on the setting of the resource, which would be indirect impacts. A determination of the significance of these impacts will be made in consultation with the PA signatories. The setting has been identified as a characteristic essential to the continued functioning of the resource as a TCP, and intrusions on the setting could impact the use of the site as a traditional resource. A specific mitigation plan would be developed in consultation with tribal representatives under the terms of the PA. As described for AZ X:3:15 (ASM), implementation of standard mitigation measures would minimize the potential for other indirect impacts from construction of the new transmission line to site AZ X:7:91 (ASM).

Site AZ X:7:118 (ASM) consists of cleared areas and also included an intaglio that was destroyed prior to the most recent field survey. The existing transmission line runs through the site and there is one existing structure within the site's boundaries. Although the intaglio was destroyed during construction of the existing transmission line, the site retains its importance as a TCP. Intaglios are believed by some to be locations where spirits came out of the earth, and are locations of spiritual power. Even if the intaglio is damaged or destroyed, the power remains. This site is recommended as eligible as a TCP. It is located on BLM land and extends only 15 feet west past

the existing transmission line. The proposed transmission line will not cross directly over the site. There would be no direct impacts from construction of the transmission line.

The existing access road runs through the site under the existing transmission line. Because the road is within a larger disturbed area, and the remaining site features are not located near the road, use and potential improvement of this road would not introduce any new adverse impact to the site. Western would not locate staging areas, pulling or tensioning sites, and lay-down areas in this area. If standard mitigation measures were carried out, there would be no direct adverse impact to contributing features of this site.

The addition of another transmission line near site AZ X:7:118 (ASM) would be a visual intrusion to the setting of the resource, an indirect impact. A determination of the significance of that impact will be made in consultation with the PA signatories. The setting has been identified as a characteristic essential to the continued functioning of the resource as a TCP, and an additional intrusion on the setting would further impact the use of the site as a traditional resource. If tribes concur that this is a TCP, a specific mitigation plan for this indirect impact would be developed in consultation with tribal representatives under the terms of the PA.

As described for AZ X:3:15 (ASM), carrying out standard mitigation measures would minimize the potential for other indirect impacts from construction of the new transmission line to site AZ X:7:118 (ASM).

No direct physical impacts to resources outside the corridor would occur because all activities would be limited to the corridor (table 2.2-8, mitigation 2). Implementation of standard mitigation measures and minimization of new access roads would minimize the potential for indirect impacts to cultural resources located outside the survey corridor. When construction is complete, the disturbed construction zone around the transmission structures and staging areas would be noticeable. However, ground surface restoration and reseeding would be conducted after construction (table 2.2-8, mitigation 4), the vegetation would eventually grow back, and the visual impact would be reduced over time.

Operation

Additional direct impacts to any historic properties from maintenance of the new transmission line and access roads would be unlikely, because maintenance activities would take place within areas already disturbed by construction activities. If maintenance activities required surface-disturbance ground surface restoration and reseeding would be conducted upon completion (table 2.2-8, mitigation 4), and vegetation would grow back to reduce indirect impacts from erosion and visual contrast.

Operation of the new transmission line would result in low-level noise from current running through the line. This man-made auditory intrusion would be an indirect impact to the setting of the TCPs. The setting has been identified as a characteristic essential to the continued functioning of the resources as TCPs. All four TCPs already have auditory intrusions from either an existing transmission line (AZ X:7:72 [ASM] and AZ X:7:118 [ASM]) or from the canals and associated access roads (AZ X:3:15 [ASM] and AZ X:7:91 [ASM]). The auditory impact would be cumulative at all four TCPs and would further impact the use of the sites as traditional resources. This could be an adverse effect. If the tribes concur that these sites are TCPs and that

they would be adversely impacted in this way, a specific treatment plan for this indirect impact would be developed in consultation with tribal representatives under the terms of the PA.

Additional Mitigation

Potential adverse effects of the new transmission line after implementation of standard mitigation measures are identified above. Direct impact to the cultural sites by structures, access roads, staging areas, pulling sites, tensioning sites, lay down areas and other extra work areas will be avoided by treating all sites as avoidance areas. As specified in Stipulation IV D of the PA, once preliminary engineering designs are complete, Western will know if there are any potential impacts to any identified sites. If additional impacts will occur to historic properties, Stipulation III of the PA specifies that the Historic Properties Treatment Plan (HPTP) will identify specific treatment measures for those impacts. Indirect impacts could occur to the four archaeological sites that may be TCPs. The potential impacts are visual and auditory intrusions to the settings of the TCPs. If the tribes concur that these sites are TCPs and that they would be adversely impacted in this way, specific treatment measures for this indirect impact would also be developed in consultation with tribal representatives. One of the objectives of the ethnographic study is to identify possible mitigation measures to address potential significant impacts (section 3.5.5).

Substations Modifications

Alterations to the Ligurta, Gila Dome Tap and North Gila substations would be conducted within the fenced substation boundaries and would not result in direct impacts to any prehistoric or historical sites. The character and appearance of the substations would remain the same, thus there would also be no new visual impacts to archaeological or historical sites nearby the substations. Thus, there would be no impacts to archaeological or historical sites as a result of modifications to the four substations.

4.5.3 Ethnographic Resources

4.5.3.1 *Cultural Landscape*

Many of the concerns about the Proposed Project expressed by the tribal representatives during the ethnographic study reflected a concern for Native American cultural resources within the region, or cultural landscape, as a whole. Tribal representatives emphasized that, while impacts from the Proposed Project to individual resources are important to address, a major focus of impact assessment should be on the landscape. In general, the Proposed Project would have significant impacts on the cultural landscape and the resources contained therein.

Potential Impacts

Tribal representatives believe that construction and maintenance of the Proposed Project would impact individual resources through physical damage, and through intrusions into the settings of the resources. They are also concerned about all of the Native American resources located on the proposed WMGF parcel that would be transferred from Reclamation to WMIDD. The loss of Federal protection for these sites would put them at risk for impacts, either under the Proposed Project or for some future project. The tribes do not believe that the Applicant could be trusted to protect these sites. Because each resource is part of a whole (the landscape) every impact to

an individual resource would also be an impact to the landscape, and the impact would affect all of the resources that are a part of that landscape.

When considering the potential impacts to the landscape, tribal representatives expressed concerns about the general impact of increased development that the Proposed Project could foster, and how that development would add cumulatively to the attrition of cultural resources in the landscape. The infrastructure that already exists in the area has altered the nature of the landscape, and has impacted cultural resources. Tribal representatives suggested that the Proposed Project would cause more changes to the landscape, not only through its construction, but also through the growth it could enable. By encouraging growth in the area, the Proposed Project would jeopardize the preservation of cultural resources on a large scale (at the landscape level) beyond its direct impacts on a particular piece of ground. These broadly defined long-term impacts would be a concern for any project that builds infrastructure for future development.

Tribal representatives asserted that too much emphasis is placed on the short-term financial costs of the Proposed Project to the Applicant and the agencies, and that the focus should be put on the larger, long-term costs being imposed by the Proposed Project on tribal cultural resources. Potential impacts to cultural resources that have existed for centuries and that have an enduring importance to the tribes are impossible to express in financial terms. Disturbance of ancestral lands and ancestral sites would disturb the tribes as a people, and these impacts would be significant. Individual sites make up the historical fabric of who the tribes are, where they come from, and what is important to them. Impacts to one of these sites would impact the entire fabric and the traditional historical record of these tribal cultures. The addition of more modern developments the power generation facility, pipeline, and transmission lines would impact the nature and sacredness of the landscape not only through visual intrusions, but also through their presence within the landscape. These facilities would impact the functioning of the landscape by interrupting the continuity of the web and the flow of power and spirituality. The changes and impacts to the cultural landscape and the resources within that landscape would affect the role of the landscape within the tribal sacred and historical traditions, and would change how the tribes use the landscape. All of these are seen by the tribal representatives as adverse effects.

Mitigation Measures

The tribal representatives stressed that the descendants of the people who created the Native American cultural resources in the ROI still live in the region, and they are dedicated to the preservation of these sites as a part of their heritage. Native Americans have a constant struggle to save the places that are important to them in the face of development. The tribes prefer that all potential impacts to Native American cultural resources be avoided to the extent possible; however, they do realize that development will inevitably occur and that some resources will be lost.

For the tribes, all sites within the landscape should be protected, as they are components of a traditional historical and sacred landscape. An impact to one site is actually an impact to all of the sites within that landscape. A tribal author wrote for the Antelope Hill study that ". . . it is impossible to 'mitigate' impacts to a specific location when that location is part of a whole - the 'web of continuity of power and spirituality' - and cannot be considered a single location the way that a religious structure, such as a church, can be . . ." (Cachora 2000). Shifting elements of the

Proposed Project may avoid specific archaeological sites, but the impact of the presence of the Proposed Project in the general area would not change.

The Proposed Project would result in additional impacts to the cultural landscape and the cultural resources contained therein. Specific measures to avoid, reduce, or mitigate such impacts have not yet been identified. One of the objectives of the ethnographic study was to identify possible mitigation measures to address potential adverse effects (section 3.5.5). It will not be possible to fully mitigate the impacts of the Proposed Project on the cultural landscape. A possible treatment measure in response to unavoidable impacts to portions of the landscape may be to document the affected resources along with Native American perspectives on those resources and the cultural landscape of which they are a part. Any mitigation measures identified during the ethnographic study process would be considered along with others discussed in this EIS and specific treatment measures would be identified in a HPTP, as specified in Stipulation III of the PA.

4.5.3.2 *New Transmission Line Area of Cultural Sensitivity*

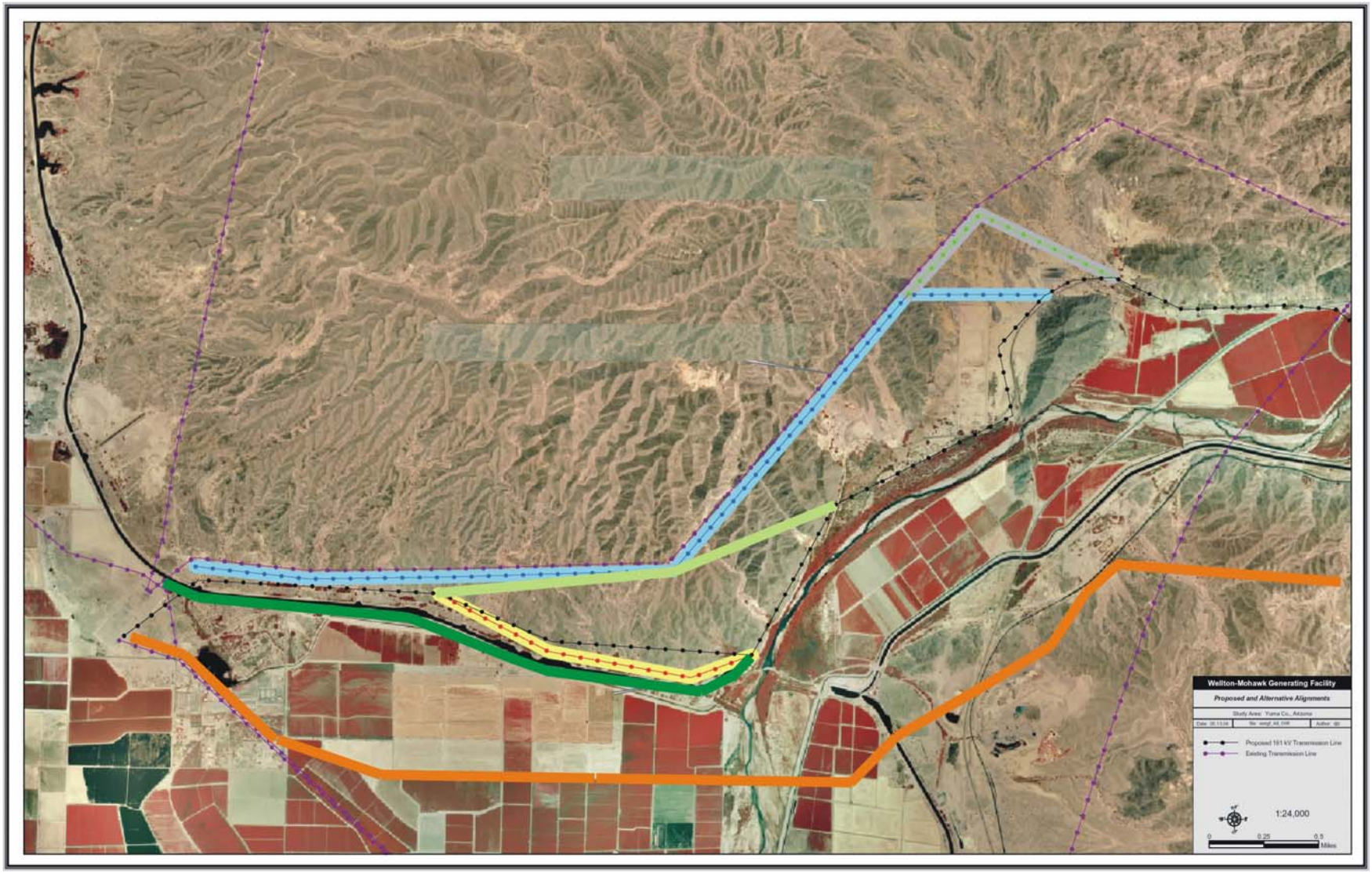
The ethnographic study has identified strong concerns by the interested tribes about the proposed location of the new transmission line in the area between the North Gila Substation and McPhaul Bridge, where the corridor crosses a number of north-south bearing ridges at the southern end of the Laguna Mountains. The Class I records searches and the Class III field surveys for the Proposed Project have revealed that this area contains a high density of archaeological resources, many of which are eligible for the NRHP. Based on the ethnographic study, two TCPs, AZ X:7:91 (ASM) and AZ X:3:15 (ASM) are also located along this portion of the corridor. The area north of this portion of the corridor, for approximately 0.5 mile, was recently surveyed for Reclamation's proposed transfer of title for up to 57,418 acres of withdrawn and acquired lands to the WMIDD. Information from the field survey has confirmed the high density of archaeological sites. Based on the ethnographic study, the high density of sites in this area, and the two individually important TCPs within the larger tribal cultural landscape, makes this entire portion of the ROI an area of particular cultural sensitivity to the tribes.

During several separate field visits to sites in this area, representatives of many of the tribes expressed concerns about the location of the new transmission line corridor over the sites in this culturally sensitive area. They believe that overhead transmission lines, whether directly over the sites or nearby, would detract from the area's cultural value, thereby impacting their use of the resources in the area. Suggestions for mitigation of this impact were to move the corridor as far as possible to avoid the area so the sites within it would not be physically or visually impacted. Tribal suggestions for relocating the transmission line included moving the new transmission line down into the river valley, or moving the line approximately 0.5 mile north adjacent to the corridor currently used by the Arizona Public Service (APS) 500-kV transmission line. The latter suggestion was proposed as a way to avoid having an entirely new corridor, because one already exists there. Various tribes requested that a meeting be held with Western's design engineers to look at possible mitigation routes that would avoid impacting this culturally sensitive area.

A meeting was held with tribal representatives and Western's environmental staff and design engineers on May 10, 2004 (section 3.5.5, table 3.5-6). Tribal representatives again expressed concern that even if no direct physical impacts occurred to the sites in this area, the presence of an overhead transmission line and nearby structures would detract from its value as an important

place for Native Americans. This would be a major impact because of the introduction of visual elements out of character with the resource and it would affect use of the sites in the area. Tribal representatives requested that the transmission line corridor be moved to a less sensitive location.

For reasons of system safety and reliability, Western avoids constructing transmission lines in a riverbed or flood plain. However, in response to the concerns expressed by the Tribes, several different options for routing the new transmission line in this area were developed and studied as potential mitigation measures. These different mitigation routing options are described below.



Note: Light gray and light blue = APS Transmission Line Routing Options; Yellow = North Side of Canal Transmission Line Routing Option; Dark green = South Side of Canal Transmission Line Routing Option; Orange = Southwestern Transmission Line Routing Option; Light green = NG5 to A21 Segment Routing Option

Figure 4.5-1. Alternative Transmission Line Routes.

APS Transmission Line Routing Option

The APS 500-kV transmission line route enters the ROI north of the Dome Tap Substation from the north (figure 4.5-1). Approximately 0.3 mile north of the Dome Tap Substation, the APS 500-kV transmission line route turns to the west-northwest for about 1.2 miles, then southwest for approximately 2 miles, turns west crossing the ridges of the Laguna Mountains for approximately 2 miles, before turning to the southwest crossing the Gila Gravity Main Canal and interconnecting with the North Gila Substation. The potential routing suggested as mitigation for the proposed new transmission line location would involve routing the western portion of the Dome Tap to North Gila segment of the new transmission line parallel with the APS 500-kV transmission line from a point west of the Dome Tap Substation to the North Gila Substation.

The APS 500-kV transmission line route was surveyed for cultural resources before construction in 1983 by ACS, Inc. (Effland and Green 1983). Only two sites were recorded in this segment, one of which is crossed by the current proposed mitigation route. However, a number of features that today would be recorded as sites, such as cleared circles and trails, were recorded as isolated finds at that time. Preliminary findings of the recent survey for Reclamation's proposed title transfer EIS (Vanderpot and Altschul 2004) suggest that cultural resource sites are numerous throughout the area between the new transmission line corridor and the APS 500-kV transmission line.

The ROW for this optional route would add slightly to the existing APS 500-kV transmission line ROW. The environmental impacts associated with this potential route would mainly be associated with access roads and construction of structures. The existing APS 500-kV transmission line, a much larger line than the proposed new transmission line, has tall lattice steel structures and long spans between structures. The longer distance between structures allows many of the ridges in the Laguna Mountains to be spanned. Western's 230-kV transmission line would have smaller structures and shorter spans between structures. With a 600- to 800-foot span, there would have to be a structure on nearly every ridge. Since ridge-tops are likely places for the presence of cultural resource sites, and there is often not room to move the structures to different locations, it is likely that cultural resources would be impacted by construction of new structures along this route.

The existing APS transmission line access roads would be used wherever possible, but additional roads would have to be constructed to structures on every ridge that does not currently have an APS transmission line structure. Approximately five additional miles of new access roads would have to be constructed for this routing option. Current limited land use in the area consists of recreation and off-road vehicles; however, there has been little public access to the area due to lack of roads. Construction of access roads would likely enable an increase in public access, resulting in increased off-road driving, vandalism, artifact collecting, and unintentional damage to cultural resources. While the access roads would be constructed to avoid direct impact to cultural resources where possible, direct impacts may not be avoidable to sites on the narrow ridge tops, and indirect impacts to cultural resource sites would also likely occur. Construction of the new roads would also have direct and indirect impacts on soil stability and native plant communities.

While there would be an increase in the number of structures along this potential route, the new structures associated with the optional route transmission line would have negligible additional

visual impacts. The existing 500-kV transmission line has larger structures that already impact the viewshed along this route and the number of observation points is limited.

The impacts to cultural resources associated with this mitigation route would be the same, or possibly greater than for the original proposed route. There would be much more road impact in general, and the roads and structures would have to be located on ridges, in an area with a high density of archaeological resources, where it is likely they would directly impact cultural resources. Because this area has not been 100 percent surveyed, it is not known how many TCPs may be affected. Since the impacts to cultural resources associated with this potential route would not be less than those projected for the original proposed route, this potential route does not qualify as mitigation for the potential cultural impacts of the proposed alignment.

North Side of Canal Transmission Line Routing Option

Another potential routing option suggested by tribal representatives as mitigation for the proposed new transmission line location is to locate part of the transmission line at the base of the ridges where they meet the Gila Gravity Main Canal access road on the north side of the canal (figure 4.5-1). Canal maintenance activities are conducted from the south side of the canal in this area, so there would be no conflict with a north side route.

The toes of the ridges along the north side of the canal are close to the canal road, steep, and about 20 to 30 feet high. In many locations there is insufficient room to accommodate a transmission line between the ridges and the canal road. In addition, where the canal road turns a corner around the toe of a ridge, the transmission line conductors would not clear the ridges. Placing transmission structures at the tip of these ridges is possible; however, the ridges are too tall to work from the canal road and too steep for construction and maintenance vehicles.

Western also considered routing the transmission line on the lower portions of the ridges, south of the proposed alignment. The canal road, while providing access to the area, would not provide access to the structure locations on the ridges. The slopes of the ridges are too steep for road construction. Access roads to these alternative structure locations would have to wind their way from the canal maintenance road up drainage cuts between the ridges. When they reached the tops of the ridges, they would have to go back south along the ridges through the currently proposed structure locations to the alternative locations lower on the ridges. The access roads for this option would impact not only sites along the proposed route that the option is trying to avoid, but would also impact additional cultural resources on the slopes and ridgetops. This option would result in an increased length of access road for each structure and a greater likelihood of adverse effects to cultural resources than the proposed alignment. The location of the transmission line for this mitigation route would also be very close to the original proposed transmission line; thus, the visual impact to the cultural resources in the area would be similar.

Impacts to cultural resources associated with this mitigation route would be no less, and likely greater than for the original proposed route. There is more road impact in general, and the roads would go through the sites identified along the original alignment before reaching the new structure locations. The visual impacts would be similar and may be greater since the transmission line would be lower on the ridges, and more in the foreground from the sites and TCPs in the area. Since impacts to cultural resources associated with this potential route would

not be less than those projected for the original proposed route, this potential route does not qualify as a mitigation for the potential cultural impacts of the proposed alignment.

South Side of Canal Transmission Line Routing Option

Another routing option considered was to follow the original proposed transmission line route as it follows the Gila River, but cross the Gila Gravity Main Canal where the canal intersects the Gila River, then turn west and parallel the south side canal access road (figure 4.5-1). There is enough room on the south side of the canal for the transmission structures and there are no ridges to span. The access road for this suggested route would be the south side canal road and the route would require fewer new access roads than the proposed transmission line. Western conducted field reconnaissance to look at a number of possible south side routes where the transmission line would cross the canal at different points. All of these routes had the same general characteristics and potential impacts, so they are considered as one routing option here.

Because the canal is lined on the bottom and south side, and there are numerous runoff inlets along the north side, the south side canal road is where canal maintenance activities take place. Heavy equipment used for maintenance includes large cranes with booms that could hit the transmission lines, a serious safety hazard as well as a transmission line reliability risk. Western looked at routing the transmission line some distance south of the south side access road to avoid conflict with canal maintenance activities. Depending on placement of structures, likely along property boundaries or section lines, current agricultural access roads could be used for some of the needed access. New access roads would have to be constructed to the rest of the structure locations. ROW for this routing option and the access roads would have to be negotiated with the private landowners.

Cultural surveys have not been conducted for the areas to the south of the canal. The area is used for intensive, irrigated agriculture and has been heavily disturbed. Any cultural resources that existed in this area have likely been heavily impacted by these agricultural activities.

Environmental impacts associated with this potential mitigation route are mainly associated with safety and existing land use. This potential routing would directly impact intensively cultivated prime and unique cropland, interfering with irrigation equipment and patterns, and could pose a substantial hazard to aerial applicators. To avoid conflicts with canal maintenance equipment, the transmission line would have to be located some distance into the fields, posing a substantial new safety risk to crop-dusting aircraft. Impacts to cultural resources, however, would be less than for the original proposed route. Construction activities associated with this route would not likely impact cultural resources that have not already been heavily impacted. The location of the transmission line for this mitigation route would be away from the sites in the culturally sensitive area, though still visible. Thus, impacts from visual intrusions would be reduced.

This potential route would require the construction of new roads in intensively cultivated areas. Construction of the new roads would remove prime and unique cropland from production and could affect irrigation and farming practices. This has been defined as a major impact. The construction would have little additional direct or indirect impact on the soils and erosion in the area. The plant communities are those associated with the agricultural activities. Impacts to visual resources would increase in that the transmission structures would be seen by a larger number of viewers. The safety risk to crop dusters would be significantly increased.

Southwestern Transmission Line Routing Option

A southwestern routing option was considered where the transmission line route would not cross the Wellton-Mohawk Canal and Gila River southeast of the Dome Tap Substation as with the proposed Ligurta-North Gila alignment, but would stay south of the Wellton-Mohawk Canal and cross over the north end of the Gila Mountains. The potential mitigation route would then cross the Gila River west of the Gila Mountains, and would run west through the agricultural areas along existing roads approximately 0.5 mile south of the Gila Gravity Main Canal (figure 4.5-1). The access roads for this suggested route would be the existing access roads in the agricultural area and in the mining area west of the north end of the Gila Mountains, with new access roads needed in the Gila Mountains.

Cultural surveys have not been conducted for the areas to the south of the Gila Gravity Main Canal. These areas are used for intensive, irrigated agriculture and have been heavily disturbed. Any cultural resources that existed in this area have likely been heavily impacted. This potential routing would impact land use along part of the ROW, directly impacting intensively cultivated prime and unique cropland, interfering with irrigation equipment and patterns, and would pose a substantial hazard to crop dusters. In the foothills area there are active gravel and inactive gold mining areas that would have to be avoided, but these areas are previously disturbed, and there are existing access roads that could be utilized. Impacts to undisturbed cultural resources in this area are also unlikely. The location of the transmission line for this optional route would be away from the sites in the culturally sensitive area, though still visible. Thus, impacts from visual intrusions would be reduced.

The environmental impacts associated with this potential route are mainly associated with the access roads in the mountains and river crossings. Although few surveys have been conducted in the area where the optional route would cross the Gila Mountains, it is likely that cultural resources do exist in the area. The Gila Mountains have special significance to several area tribes, so cultural resources and/or TCPs may exist in the area. This potential route would require the construction of approximately 5 miles of new access roads in the northern foothills of the Gila Mountains. While access roads would be constructed to avoid direct impact to cultural resources wherever possible, direct impacts to cultural resources may be unavoidable in the constrained areas common in hilly and mountainous areas, and indirect impacts to cultural resource sites would also likely occur. There has been little public access to the area due to lack of roads. Construction of access roads would likely result in an increase in public access, subsequently resulting in increased off-road driving, vandalism, artifact collecting, and unintentional damage to cultural resources. Construction of the new roads would also have direct and indirect impacts on soils and erosion in the area as well as plant communities. Impacts to visual resources would increase in that the transmission structures would be seen by a larger number of viewers as compared with the original proposed route.

NG5 to A21 Segment Routing Option

The option with the fewest differences from the original proposed route involves rounding off the corner in the proposed new transmission line where the Gila River and Wellton-Mohawk Canal meet at the siphon (figure 4.5-1). The optional route is the same as the original proposed route except that the optional route would strike west-southwest from structure location labeled NG5 along the edge of the Gila River floodplain southwest of Adair Park to the point where the

APS 500-kV transmission line changes course to the west. From this corner, the new transmission line would join the proposed Ligurta-North Gila alignment at the structure location labeled A21. This would place this part of the route farther north than the original proposed route. For this part of the route, longer access roads would be required.

Cultural resources surveys have been conducted along portions of this alignment as part of Reclamation's proposed transfer of title EIS. A Class I records search was completed for the entire area, and a Class III level survey was performed for a large amount of the area through which the potential route would pass.

Initial results of these surveys indicate that at least five archaeological sites would be crossed by this potential routing segment. Although it is possible that some of these sites would be avoided by construction of the line, there would be moderate visual impacts to these sites and sites nearby. Because this optional route would be very close to the original route, the visual impact to the culturally sensitive area would be similar. This potential route would require the construction of approximately 3 miles of additional new access roads into an area where few roads exist and there is little public access. While the roads would be constructed to the extent possible to avoid direct impact to cultural sites, because of the terrain, routing alternatives for the roads would be constrained. There would be increased potential for direct impacts because most of the sites are located along the ridge tops, which is where the roads would need to be located. Indirect impacts would likely occur due to an increase in public access, off-road vehicle traffic, vandalism, artifact collecting, and unintentional damage to cultural resources. Because of the number of sites in the area and the need for longer access roads, it is likely that this mitigation routing would result in more impacts to cultural resources than the original proposed route.

Mitigation Routing Options Conclusions

Western evaluated each of the routing options described above for construction feasibility, potential for impacts to cultural resources, and overall level of environmental impact to further mitigate potential impacts to cultural resources between the Dome Tap and North Gila substations. The routing options developed are not feasible from a construction standpoint, pose substantial safety risks to canal maintenance and crop dusters, and/or have potential impacts to cultural resources that are equal to or higher than the proposed Ligurta-North Gila Transmission Line route. As none of the several developed options offer clear benefits to cultural resources compared with the proposed route, Western has concluded that the proposed route, with careful siting of structure locations and access roads and active monitoring by tribal representatives, will be the one presented in this draft EIS. However, Western, as specified in their standard construction practices (table 2.2-8, mitigation 8) and under the terms of the PA, will continue to work with the public and tribes on alternatives to minimize impacts to sensitive cultural resources in this section of the proposed Ligurta-North Gila Transmission Line. The results of this continued coordination will be included in the final EIS, or in the agencies' RODs.

4.5.4 No Action Alternative

Under the No Action Alternative, construction and operation of the Proposed Project would not take place. Impacts described above in sections 4.5.2 and 4.5.3 would not occur under the No Action Alternative.

Access by the public onto the proposed WMGF site has led to impacts to site AZ X:7:59 (ASM) from off-road and recreational vehicles. Under the No Action Alternative, this access and impact would continue. However, under the Proposed Action, various mitigation measures have been proposed for site AZ X:7:59 (ASM) to protect the site or to mitigate impacts.

Access roads that are currently used by maintenance crews to access existing transmission lines and by the public cross sites AZ X:7:70 (ASM), AZ X:7:71 (ASM), AZ X:7:45 (ASM), and AZ X:7:47 (ASM), thereby allowing direct continuing impact to these sites. Under the No Action Alternative, use of these roads in their current location would continue. Under the Proposed Action, standard mitigation measures have been proposed to help prevent further impact to these sites from the access roads or to mitigate the ongoing impact.

4.6 LAND USE AND RECREATION

4.6.1 Methodology and Significance Criteria

The methodology used for assessing land use and recreation impacts is comparative in nature. Construction and operation of the proposed WMGF, facility natural gas pipeline, and transmission line upgrade and addition, as well as their predicted effects, were compared against existing land use categories for the areas that would be influenced by such actions. Impacts were identified based on determinations of compatibility among land use reasonably anticipated to occur as a result of the Proposed Project and existing adjacent land uses, in addition to management plans, policies, and practices. Federal land use controls in Yuma County are administered by BLM and Reclamation; however, BLM is responsible for granting the ROW. State of Arizona land in the Proposed Project area is primarily Trust land managed by the state for revenue production (Reclamation 2003b). Private land is subject to the planning and zoning jurisdiction of Yuma County.

There are specific land use provisions associated with each component of the Proposed Project that are defined by each administrative agency. Consistency and compatibility of future land use with Federal and non-Federal agencies' plans, policies, regulations, and practices were assessed. The plans for Federal lands administered by the BLM are found in the Yuma District Resource Management Plan and the policies, regulations and practices stem from the Federal Land Policy & Management Act of 1976 as amended, 43 USC 1701 *et seq.* Non-Federal plans and polices include the Yuma County Zoning Ordinance and the Yuma County 2010 Comprehensive Plan (Yuma County 2003b, Yuma 2003). Significance of impacts was judged based on the violation of or degree of deviation from the governing land use guidance or regulation and the ability for the Applicant or Western to mitigate the deviations.

To determine if an action may cause a significant impact, both the context of the Proposed Project and the intensity of the impact were considered. For the Proposed Project, the context is the locally affected area and significance depends on the effects in the local area. The Proposed Project would have a significant adverse land use impact if it:

- Conflicts with adopted environmental plans and goals
- Displaces a large number of people
- Disrupts or divides the physical arrangement of an established community

- Conflicts with established recreational, educational, religious, or scientific uses
- Permanently converts prime agricultural land to non-agricultural use or permanently impairs agricultural productivity of prime agricultural land
- Conflicts with Federal, regional, state, or local land use plans, policies, and controls
- Conflicts with existing or proposed uses at the periphery of the facility or with local land use plans
- Results in nuisance impacts attributable to incompatible land uses

For the purposes of this land use and recreation analysis, construction and operations were assumed to have similar impacts with one exception. Due to health and safety considerations, the recreational user would be temporarily precluded from using pipeline and transmission line corridors undergoing construction. Once construction is completed the recreational user would again be able to access and use these areas in compliance with the appropriate and designated land use provisions.

4.6.2 Wellton-Mohawk Generating Facility

Assessment of Impacts

The land under consideration for title transfer is the 96 acres of publicly owned land that would become part of the proposed WMGF site. Transfer of title of Reclamation land to WMIDD would result in development of this land subject to Yuma County planning and zoning requirements. Approval of a Special Use Permit (SUP) from Yuma County changed land use designation for the 96 acres proposed for the proposed WMGF site from open and undeveloped to industrial use. However, land use for other acreage in the vicinity of the proposed WMGF would not change substantially and would be similar to existing industrial use. Currently there is an electrical substation with incoming and outgoing transmission lines. Formerly there was a concrete batch plant on the land, and the adjacent land contains a pumping station associated with operation of the Wellton-Mohawk Canal. Approximately 23 acres of private land would be acquired by WMIDD for the proposed WMGF site. The land has soils that are suitable for farming; however, the land has never been farmed because it is not suitable to receive Colorado River water. The land use designation for the 23 acres of private land proposed for the proposed WMGF would change from open desert to industrial use. Land use on nearby areas would not be affected. Yuma County approved the change of use on June 2, 2003, and the construction and operation of the Proposed Project would be in compliance with local planning. Mitigations addressing land use would not be required.

The growth pattern in the local area would not likely change as a result of the construction and operation of the proposed WMGF. Section 3.10, Socioeconomics, discusses the status of population growth in Yuma County and section 4.10, Socioeconomics, evaluates impacts of the proposed WMGF and other elements of the Proposed Action on population growth in Yuma County. The Yuma County 2010 Comprehensive Plan would be the guiding plan that would influence or dictate the appropriate land use and future growth patterns in Yuma County.

There are no Wild and Scenic Rivers, BLM areas of critical environmental concern, or national or state parks on or adjacent to the project site. The nearest wilderness area is BLM's Muggins Mountain Wilderness. Its closest point to the Proposed Project is about 3 miles, and there would be no impacts to it or any other the wilderness area. The contiguous lands in close proximity to the proposed WMGF site have little recreational use (Wellton-Mohawk 2001a). Therefore, there would be no impact to recreational use.

4.6.3 Facility Natural Gas Pipeline

The ROW for the Wellton-Mohawk Canal involves lands owned or managed by Reclamation, the State of Arizona, and private landowners. Where the Wellton-Mohawk Canal crosses lands owned or managed by Reclamation there is no existing formal ROW as the canal is a Reclamation facility. For these lands a new ROW would have to be issued for the facility natural gas pipeline.

Where the canal crosses State of Arizona or private land there are existing formal ROW. Where these existing formal ROW are wide enough to accommodate the 100-foot-wide disturbance zone projected for the facility natural gas pipeline, the ROW would have to be amended and reissued to include the facility natural gas pipeline. Where these existing formal ROW are not wide enough to accommodate the 100-foot-wide disturbance zone, the existing ROW would have to be expanded as well as amended and reissued for the facility natural gas pipeline. All of the ROW would be within areas of compatible use. The impacts to land use would be insignificant because most of the lands are currently dedicated to use as ROW and the gas pipeline would not conflict with those uses.

On Federal lands, BLM would issue any changes to the ROW for this pipeline corridor. The BLM grant would be 50 feet wide plus the width of the pipe. An additional temporary use permit would be authorized to cover the full width of disturbance, which is planned to be 100 feet. Reclamation would determine whether to concur. Upon approval, the facility natural gas pipeline would be in compliance with existing land use regulations.

Table 4.6-1 shows the ROW that would be needed for Options 1 and 2 of the facility natural gas pipeline, based on the length of each option on Reclamation, state, and private lands.

Table 4.6-1. Right-of-Way Needs for Facility Natural Gas Pipeline Options (miles).

	Reclamation Land	State of Arizona Land		Private Land	
	New ROW Required	Amended ROW	Widened & Amended ROW	Amended ROW	Widened & Amended ROW
Option 1	10	0.0	1.0	0.4	1.3
Option 2	0.25	0.0	0.0	0.0	0.0

Option 1

Assessment of Impacts

The proposed natural gas pipeline would start on the west side of the Wellton-Mohawk Canal in Reclamation's existing Wellton-Mohawk Canal ROW. A little over half way it would shift to

the east or north side of the canal. Thus, this land would continue to be used as the Wellton-Mohawk Canal ROW, but would also include a gas pipeline that would be buried below ground. Seventeen acres of prime and unique farmland would be temporarily affected during construction without any permanent effect occurring. The Applicant would negotiate with the landowner to mitigate the temporary loss of crops. The contiguous lands in close proximity to the proposed WMGF site have little recreational use (Wellton-Mohawk 2001a). Therefore, there would be no impacts to recreation.

Option 2

Assessment of Impacts

Option 2 is only 0.25 mile long and it involves crossing I-8, the Wellton Mohawk Canal, and the proposed WMGF site. This option would have the same impacts as the proposed WMGF site; however, it would be limited to about 3 acres of disturbance. The impacts are minor and temporary and would not be significant because almost all of the land would be on the land Yuma County has rezoned as industrial for the proposed WMGF.

4.6.4 Transmission System Additions

New Transmission Line

Assessment of Impacts

The ROW for the new Ligurta to North Gila Transmission Line would involve lands managed by Reclamation, BLM, the State of Arizona, Yuma County, and private landowners. Between the Ligurta and Dome Tap substations, the new line would be primarily parallel to the existing Ligurta-Dome Tap Transmission Line ROW. Where the new line deviates from the Ligurta-Dome Tap ROW it would be within the existing Wellton-Mohawk Canal ROW. Where the new transmission line parallels the existing transmission line, the new line would be constructed 105 feet west of the existing transmission line. The new 125-foot-wide transmission line ROW would overlap the existing 125-foot-wide ROW by 20 feet (figure 2.2-6). Therefore, addition of the new transmission line would require two separate ROW to allow expansion of the existing 125-foot ROW to a total of 230 feet wide. Where the new transmission line lies within the Wellton-Mohawk Canal ROW, the canal ROW would have to be amended to include the new transmission line. The new transmission line would cross 0.2 mile of irrigable land resulting in the temporary disturbance of up to 0.7 acre and permanent disturbance of up to 0.001 acre of prime farmland. About 43 square feet of irrigable land would be permanently disturbed by one structure. The amount is so small that the impact is negligible. Table 4.6-2 presents the breakdown of ROW that would be required for the new Ligurta-North Gila segment, including the Ligurta-Dome Tap segment. All of the ROW would be within areas of compatible use. The impacts to land use would be insignificant.

Table 4.6-2. Right-of-Way Needs for Proposed Ligurta-North Gila Transmission Line (length in miles).[a]

	Reclamation Land				BLM Land	State Land		County Land	Private Land
Segment	**Parallel ROW to existing trans-mission line ROW**	**ROW along Canal**	**Across Gila River**	**New ROW**	**Parallel ROW to existing trans-mission line ROW**	**Parallel ROW to existing trans-mission line ROW**	**New ROW**	**New ROW**	**Parallel ROW to existing trans-mission line ROW**
Ligurta-Dome Tap	6.5	2.4	0.3	0.0	1.4	0.3	0.0	0.0	1.3
Dome Tap-North Gila	0.0	0.0	0.0	3.9	0.0	0.0	1.1	1.5	0.0
Total	**13.1**				**1.4**	**1.4**		**1.5**	**1.3**

a See section 4.6.4 for a description of the ROW width.

The transmission line would continue for approximately an additional 6.5 miles between the Dome Tap Substation and the APS North Gila Substation. New ROW grants would be required for crossing Reclamation, State of Arizona, and Yuma County land. Land use would be similar to existing conditions since there are other ROW along the route, and upon BLM issuance of a grant, the ROW would be in compliance with land use regulations. Western would negotiate with landowners for transfer, purchase, or easement for non-BLM and non-Reclamation land (i.e., State of Arizona and Yuma County) associated with extension of the new 6.5-mile transmission line segment between the Dome Tap Substation and the APS North Gila Substation. If negotiations fail, Western would acquire lands through condemnation procedures discussed in Section 2.2.3.4, Right-of-Way Needs. The entire ROW would be within areas of compatible use due to the presence of other ROW along the same general route. The impacts to land use would be negligible.

Given the limited recreational use in the area of the transmission system additions, there would be minimal impact on recreational activities. The public shooting range north of Highway 95 that is within 0.25 mile of the Ligurta-North Gila Transmission Line would not be impacted by the proposed transmission line. The new transmission line would be constructed to the south and east of the shooting range out of the line of fire.

Upgraded Transmission Line

Assessment of Impacts

The transmission line upgrades would take place on an existing transmission line from Ligurta Substation to Gila Substation within an existing ROW. The proposed line upgrades would be compliant with Yuma County land use regulations. There would be no impacts to land use since this component of the Proposed Project is an upgrade of an existing transmission line.

Substations

Assessment of Impacts

Because construction at the affected substations would occur within the existing fenced areas, there would be no land use or recreational impacts associated with any of the substations modifications.

4.6.5 No Action Alternative

Under the No Action Alternative, title to the 96 acres of Reclamation land at the proposed WMGF site would not be transferred to WMIDD and the proposed WMGF would not be constructed at this location. Interconnection with Western's transmission lines and the granting of new or changed ROW for a facility natural gas pipeline and the transmission line additions would not occur. However, management of the vacant Federal land would be governed by the existing authorizations, policies, and practices of Reclamation and BLM, under which the following projections can be made. The vacant Reclamation site proposed for the WMGF would continue to be administered by Reclamation for an interim period. Transfer of title to the larger area of land in the area by Reclamation (section 2.1.2) could still occur. Considering local constraints on land use and the patterns for development identified in the 2010 Plan, it is anticipated that this land would be in the same category as lands identified as candidates for development.

4.7 TRANSPORTATION

4.7.1 Methodology and Significance Criteria

The transportation impact analysis includes the potential effects on transportation in the Proposed Project area from the construction and operation of the Proposed Project. The analysis is based on review of existing transportation in the Proposed Project area and project access requirements during construction and operation. Construction activities represent the principal means by which a temporary impact on transportation (e.g., building of new access roads, traffic disruption) could occur. Impacts to transportation are determined relative to the affected environment described in section 3.7.

To determine if an action may cause a significant impact, both the context of the Proposed Project and the intensity of the impact are considered. The context considers the impact of the Proposed Project on traffic and transportation in and around the Proposed Project area. The intensity of a transportation impact would primarily consider any unique characteristics of the area (e.g., high use traffic areas), and the degree to which the Proposed Project may adversely affect such unique characteristics. Impacts would be significant if the Proposed Project would permanently change the transportation system or would have extensive short-term effects during construction.

4.7.2 Wellton-Mohawk Generating Facility

Assessment of Impacts

Construction

Construction of the proposed WMGF would last approximately 12 to 18 months. Activities would typically take place 5 days a week during daylight hours. Average employment levels would vary from 50 to 200 workers. A maximum of 300 employees may be required at peak construction. Traffic during construction is expected to be generated by employee vehicles and transportation of heavy equipment and materials trucks to the proposed WMGF. An average of 125 employees would be dispersed over a minimum of two shifts. Construction traffic would be generated in Yuma County primarily from employees traveling from the City of Yuma and the Town of Wellton. Other areas in the region where employees may reside include the towns of Tacna and Dateland to the east of the proposed WMGF site in the Mohawk Valley.

The primary access route to the proposed WMGF for the majority of workers would be I-8 to Dome Valley Exit 21 at Old Highway 80 to the WMGF. Some employees may access the proposed WMGF site by traveling west via Old Highway 80 from the Wellton-Mohawk Valley area. Other employees may use Highway 95 to access Dome Valley Road/County 3rd Street, which parallels the Union Pacific Railroad.

Equipment needed for construction and installation of the proposed WMGF would include heavy equipment, such as bulldozers, cranes, graders, track-hoes, backhoes, trenchers, front-end loaders, and heavy- and light-duty trucks. Traffic during construction (i.e., equipment delivery and employee traffic) would result in a 10 to 15 percent increase in the average daily traffic. This increase would temporarily impact the transportation system in the area surrounding the proposed WMGF during the 12 to 18 month construction period.

Several measures would be used to help mitigate the increase in traffic. Heavy equipment would be transported to the site primarily during the off-peak traffic hours. Heavy hauls would be conducted in accordance with ADOT regulations and guidelines. There are no bridges beyond freeway overpasses or on/off ramps that would be utilized for heavy equipment deliveries. All heavy equipment and heavy- and light-duty trucks would use the Dome Valley Exit 21 and exit Old Highway 80 to the proposed WMGF. Old Highway 80 is in good paved condition and would be able to accommodate heavy equipment and trucks. In addition, the proposed WMGF would use traffic control plans, flagmen, and signage as appropriate during equipment delivery periods. The access road to the proposed WMGF would be paved to control dust. Standard construction practices would be implemented on the project site to reduce dust emissions (Section 4.3, Air Resources). Therefore, there would be no significant impacts to transportation from traffic increase resulting from construction of the WMGF because it would not result in extensive short-term traffic increase. No additional mitigations are recommended.

Operation

As part of the Proposed Project, the expected traffic impact during the normal operation of the proposed WMGF would include WMGF employees and commercial traffic. There would be approximately 25 permanent employees to staff the proposed WMGF. The proposed WMGF

would be continually manned 24-hours a day in two 12-hour shifts of three employees. The remaining 13 employees would work Monday to Friday, 8 hours a day (normal workday), with a total of 15 employees onsite during the normal workday. A conservative estimate was used to reflect the maximum number of vehicle trips per day to the proposed WMGF. Employees traveling to and from the proposed WMGF site would generate 54 vehicle trips per day. This number is based on the conservative assumption that all employees would travel to the proposed WMGF in a separate personal vehicle and each vehicle would make two total trips per day (one round trip). A summary of average daily traffic increase resulting from normal plant operation is shown in table 4.7-1.

Table 4.7-1. Estimated Average Daily Traffic Increase from Normal Plant Operation.

Average daily traffic for all four count sites	1,881
Maximum number of vehicle trips per day	60
Adjusted average daily traffic count	1,941
Percent increase from exiting average daily traffic of 1,881	3.2

Source: Wellton-Mohawk 2003b.

There would be daily, monthly, quarterly, and annual commercial traffic to the proposed WMGF site. All commercial traffic, including delivery of hazardous materials, would be directed to use the Dome Valley Exit 21 and would exit Old Highway 80 to the proposed WMGF site. The delivery of hazardous materials would occur by tanker truck, tote, or drum depending on the substance. Bulk substances such as caustics, acid, and ammonia would be delivered by tanker truck. The daily commercial traffic would average four total trips (two round trips) per day. The weekly commercial traffic to the proposed WMGF site would average eight total trips (four round trips) per week. The monthly traffic would average 16 total trips (eight round trips) per month. The quarterly traffic would average eight total trips (four round trips) per quarter. The annual traffic would average 428 total trips (214 round trips) per year. A summary of commercial traffic is shown in table 4.7-2. The maximum number of vehicle trips per day resulting from normal proposed WMGF operation would be 60 vehicle trips per day. Long-term traffic levels associated with proposed WMGF operation would have minimal impact on the surrounding neighborhoods.

Table 4.7-2. Summary of Commercial Deliveries.

	Types of Delivery	Average Trips Per Day
Daily	U.S. Mail	4
	Overnight delivery providers	
Weekly	Bottled water	
	Garbage/waste pickup	
	Ammonia tanker truck	
	Caustic acid	
	Other treatment chemicals	
	Uniform delivery	
	Equipment deliveries	
	Cleaning service	
	Water treatment consultant	1.14*
	General visitor/sales persons	
Monthly	Pest control	0.53*
	Tanker truck bulk chemical	
Quarterly	Specialty gas	
	Stack testing truck	0.13*
Annually	Outage support labor	
	20-ton crane	
	5-ton flatbed truck general services	1.65*

Source: Wellton-Mohawk 2003b.

* Average daily trips for the time period in the left column, calculated using a seven day week.

Truck traffic associated with normal proposed WMGF operations (Wellton-Mohawk 2003a) is shown in table 4.7-2. The total increase in traffic due to deliveries is estimated to be 7.5 trips per day. Adding the estimated delivery trips to the normal employee traffic, it is estimated that a maximum of 60 trips per day would be generated by normal operations. There would be temporary occasions of higher employment during major maintenance of equipment, where an increased number of employees would result in temporary increase levels of traffic along Old Highway 80. The additional traffic generated by normal proposed WMGF operations would only create a 3.2 percent increase in average daily traffic in the Proposed Project area. This level of increase is not generally considered a significant impact by ADOT. Operation of the proposed WMGF would not significantly impact normal traffic levels nor cause a permanent change in the transportation system.

Traffic counts on I-8 in the vicinity of the Proposed Project are an average of 12,286 vehicles per day, and the service class is estimated to be an “A”. Along I-8 in the vicinity of Yuma, the I-8 traffic increases to about 30,000 vehicles per day, and the service class is a “C”. The operation of the proposed WMGF is not expected to have a significant impact to normal traffic levels on I-8 traffic, because there would not be any permanent change to the transportation system and there would only be a 10 to 15 percent temporary increase in traffic during construction.

4.7.3 Facility Natural Gas Pipeline

Option 1

Assessment of Impacts

Construction of the pipeline between the proposed WMGF and Highway 95 would take approximately 6 to 8 weeks.

Access to the new pipeline would be from the two existing roads on either side of the Wellton-Mohawk Canal that run parallel to the canal from the proposed WMGF site to Highway 95. A side road off of Old Highway 80 would be used as a third access road and has an existing railroad crossing.

In order to get pipe trucks onto all areas, some roads would have to be re-graded and/or re-sloped to soften the existing steep areas. Re-grading/re-sloping activities may temporarily disrupt traffic on the roads being re-graded or re-sloped due to road closures.

Pipeline construction activities under Option 1 may temporarily disrupt traffic on some roads due to road closures and the use of flagmen, but is not anticipated to have a significant impact to transportation in the area because it would not permanently change the transportation system, nor would the short-term effects be extensive.

Option 2

Assessment of Impacts

For Option 2, depending on which side of I-8 the regional gas pipeline would be located, the facility natural gas pipeline may involve boring under I-8. Traffic on I-8 would not be impacted by construction activities associated with boring a pipeline underneath it. Pipeline construction activities under Option 2 would be 0.25 mile in length and located primarily on the proposed WMGF site. Disruption to traffic is not anticipated and no changes to the transportation system would occur. Therefore, impacts to transportation would be insignificant.

4.7.4 Transmission System Additions

New and Upgraded Transmission Lines

Assessment of Impacts

Access to the new Ligurta-North Gila Transmission Line would be on existing access roads and on new access roads totaling approximately 2 miles in length that Western would construct. Access to the structures located within the valley of the Gila River would be via existing bladed access roads. WMIDD owns and operates the access roads to the existing substation, and as a participant in the Proposed Project, would allow use of the roads for the Proposed Project. Because access needs to be granted to use existing access roads, roads are not heavily traveled and traffic disruptions such as road closures would be minor. As described in section 4.5.2.3, portions of existing access roads would be rerouted to avoid further impacts to four cultural resources sites.

Access to the upgraded Ligurta-Gila Transmission Line would be primarily on the road that currently provides access to the existing Ligurta-Gila Transmission Line. There are approximately 10 structures on the Ligurta-Gila Transmission Line that are largely inaccessible to land-based vehicles due to terrain and the construction of I-8. Helicopter construction techniques would be employed for these sites. There is currently no designated fly/structure assembly yard for the helicopter, but it would be located near an existing access road.

The peak workforce that would be required for the construction phase is estimated to be about 50 workers. Construction of transmission lines would require approximately 1 year to complete.

Heavy construction vehicles and equipment would be required at the site of each new transmission structure along the ROW, but not along the entire length of the ROW between structures. Wherever possible, access to each structure along the ROW would be via existing roads and trails. Some of the roads and trails would be within the existing ROW and some would detour from the ROW. Existing access roads through cultural resources sites will be rerouted to avoid further impact to these sites. In locations where the roads or trails cross steep slopes, broken terrain, and drainage ways, improvements may be required to allow passage of the required construction equipment. In addition, pole structures would be delivered from staging areas to structure locations using flatbed trucks.

Where no roads or trails exist, and terrain and soil conditions are stable, access would be via overland travel, preferably along the ROW. Where the terrain along the ROW is steeper than 12 to 15 percent, access to structure sites would be, where possible, by overland travel on more gentle adjacent terrain outside the ROW. Where no adjacent gentler terrain exists within reasonable proximity, new graded access trails would be constructed. In all cases, routes would be surveyed for cultural and biological resources before use.

Short-term construction-related traffic impacts would be expected. Pole deliveries would have a short-term light increase in traffic if major highways are used. Western would consult with ADOT prior to construction to determine if any temporary re-routing of traffic would be necessary. Construction crews would move along the ROW and would not be at a given location for the full length of the construction period. Because existing access roads and trails would be used whenever possible and mitigation measures would be employed, construction and operation of the transmission system additions is not anticipated to significantly impact transportation in the area.

The upgrade of the existing Ligurta-Gila Transmission Line would use the existing roads and trails. Access to the structures located within the valley of the Gila River would be via existing bladed access roads.

Substations Modifications

Modifications to the substations would involve minor temporary increases in traffic during the installation of equipment. The traffic would consist of employees and heavy equipment delivery and construction vehicles. Construction of the substation modifications would require approximately 3 months. There would be a small, temporary increase in traffic, which would be considered insignificant.

4.7.5 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be constructed or operated. There would be no transportation impacts associated with the No Action Alternative. Current traffic patterns and trends would be expected to continue.

4.8 VISUAL RESOURCES

4.8.1 Methodology and Significance Criteria

The visual quality of the existing landscape in the vicinity of the Proposed Project is discussed in section 3.8. The existing visual quality is based on evaluation of the natural landscape and existing modifications of form, line, pattern, color, contrast, and texture. Sensitivity of existing visual resources to change associated with the Proposed Project depends on whether an area already contains modifications (in this case, buildings or transmission lines), and the degree of public concern or agency management directives for changes to the visual landscape.

The visual features that would be modified by the Proposed Project during construction and operation were evaluated for potential impacts. The discussion includes the physical or visual relationships that influence the visibility of the proposed landscape changes, such as whether the Proposed Project would be in the background or foreground for viewers. In addition, five photo simulations were prepared from key observation points of the proposed WMGF, selected to best represent a range of viewing distances and to include points of local interest from which viewers may have a higher concern for the visual quality of the landscape.

Public scoping comments received concerning visual resources included the potential glare from solar panels, visual impacts of the stacks, light pollution at night, and impacts to the view from Telegraph Hill. Each of these issues is analyzed in the context of the proposed mitigation measures that are part of the Proposed Project to assess the impact to visual resources.

The significance of impacts to visual resources is dependent upon the existing character of the resource and the amount of change to that resource. For visual resources that are unaltered from their natural state or for resources of high public value such as rare or special landscapes, any visual changes beyond minor changes would be a significant impact. The most significant visual impacts would occur in existing high-quality landscapes that have a high sensitivity to change, such as areas of particular public concern or specially protected areas. For areas where the existing visual resources are already altered from their natural state, visual changes that substantially modify the overall visual character of an area would be a significant impact.

4.8.2 Wellton-Mohawk Generating Facility

Assessment of Impacts

The proposed WMGF would be built on 119 acres that do not currently contain any structures. It is immediately east of the Ligurta Substation. The land on the proposed WMGF site was previously disturbed during construction of the WMIDD in the 1940s. As described in section 3.8.1, the existing scenic integrity (degree of intactness or wholeness of the natural landscape) is low, as the area appears moderately altered from its natural state. The Ligurta Substation and existing transmission lines next to the proposed WMGF site are alterations in the middleground

view of the proposed WMGF site. As shown in figure 4.8-1, the proposed WMGF would be in the foreground for travelers as they pass by on I-8, though partially blocked by the raised berm that follows I-8. Additional berms would be built to obstruct the view of the solar field and prevent it being a distraction to drivers on I-8.

The visual impact of the proposed WMGF would be primarily from introduction of two HRSGs, a field of solar collectors as part of the SEECOT™ system, associated equipment, and a cooling tower system. The HRSGs would be an outdoor, freestanding design, each with an integral exhaust stack, 19 feet in diameter and 160 feet high. The proposed WMGF would be painted using desert shades and earth tone colors to minimize contrast with the surrounding area, as described in section 2.2.1.3 and depicted in figure 2.2-4. ACC mitigation measure number 21 (table 2.2-6) requires use of nonreflective and/or neutral colors on surface materials. The proposed WMGF would be visible from portions of I-8 and Old Highway 80, including several residences in the area, as described in section 3.8. Views of the proposed WMGF would be partially obscured by the terrain in the area. Figure 4.8-2 shows the proposed WMGF as it would appear to eastbound travelers on I-8 as they approach to within approximately 1 mile of the proposed WMGF. Figure 4.8-3 shows the proposed WMGF as it would appear from near the edge of the Ligurta Foothills residential development to the northeast (in a view at a distance of approximately 0.5 mile from the proposed WMGF). Taller than the existing substation equipment and the existing transmission lines, the proposed WMGF would be an additional alteration of the middleground view from near the edge of the Ligurta Foothills residential area to the northeast.

The low profile of the solar collector panels that comprise the SEECOT™ system would be screened from view (and potential glare) from travelers on I-8 by fencing, landscape plantings, and berms which would be designed to contain the glare from the solar panels and the overall noise from the facility. This is a mitigation required by ACC requirement 23. Landscaping would also minimize the potential glare of collectors reflecting sunlight into the eyes of travelers in the immediate vicinity of the proposed WMGF site on I-8 and Old Highway 80. The Applicant has prepared a Landscape Plan for the proposed WMGF (Wellton-Mohawk 2001a) that is summarized in section 2.2.5.1 and is a mitigation measure included as part of the Proposed Action. Mitigation measure number 23 required by the ACC mandates compliance with the Landscape Concept Plan.

Photo simulations of the proposed WMGF were also prepared from two points of local interest: Antelope Hill, approximately 15 miles east of the proposed WMGF, and Telegraph Pass, approximately 4.5 miles west of the proposed WMGF. Figure 4.8-4 shows the view from Antelope Hill looking west toward a simulation of the proposed WMGF. In this photo simulation, it is difficult to discern the proposed WMGF given the distance, the haze, (section 3.3) and reduced visual range in the photo. The level of haze in the photo is representative of normal conditions in the area. The haze is generated by wind generated dust and farming operations which quite often create dust and smoke. Figure 4.8-5 shows the view from Telegraph Pass looking east towards a simulation of the proposed WMGF. In this photo simulation, the proposed WMGF is discernible and creates a slight contrast with the varied color and texture of the landscape.

The photo simulations show that the proposed WMGF would be prominent in foreground and middleground views (figures 4.8-1, 4.8-2, and 4.8-3) given its height, although terrain features would provide some shielding of the proposed WMGF in the foreground. The background views (figures 4.8-4 and 4.8-5) show that elevated terrain in the area would provide wide-open views of the proposed WMGF, when not obscured by haze. Although the proposed WMGF would contrast with the existing landscape, the visual impact of the proposed WMGF would be reduced given the existing alterations to the landscape (e.g., agriculture, utilities, irrigation, highways) within Dome Valley. The proposed WMGF would not substantially modify the overall visual character of the area, and thus would not result in significant visual impacts.

Figure 4.8-1. Simulation of the Proposed Wellton-Mohawk Generating Facility in the Foreground from Interstate 8.

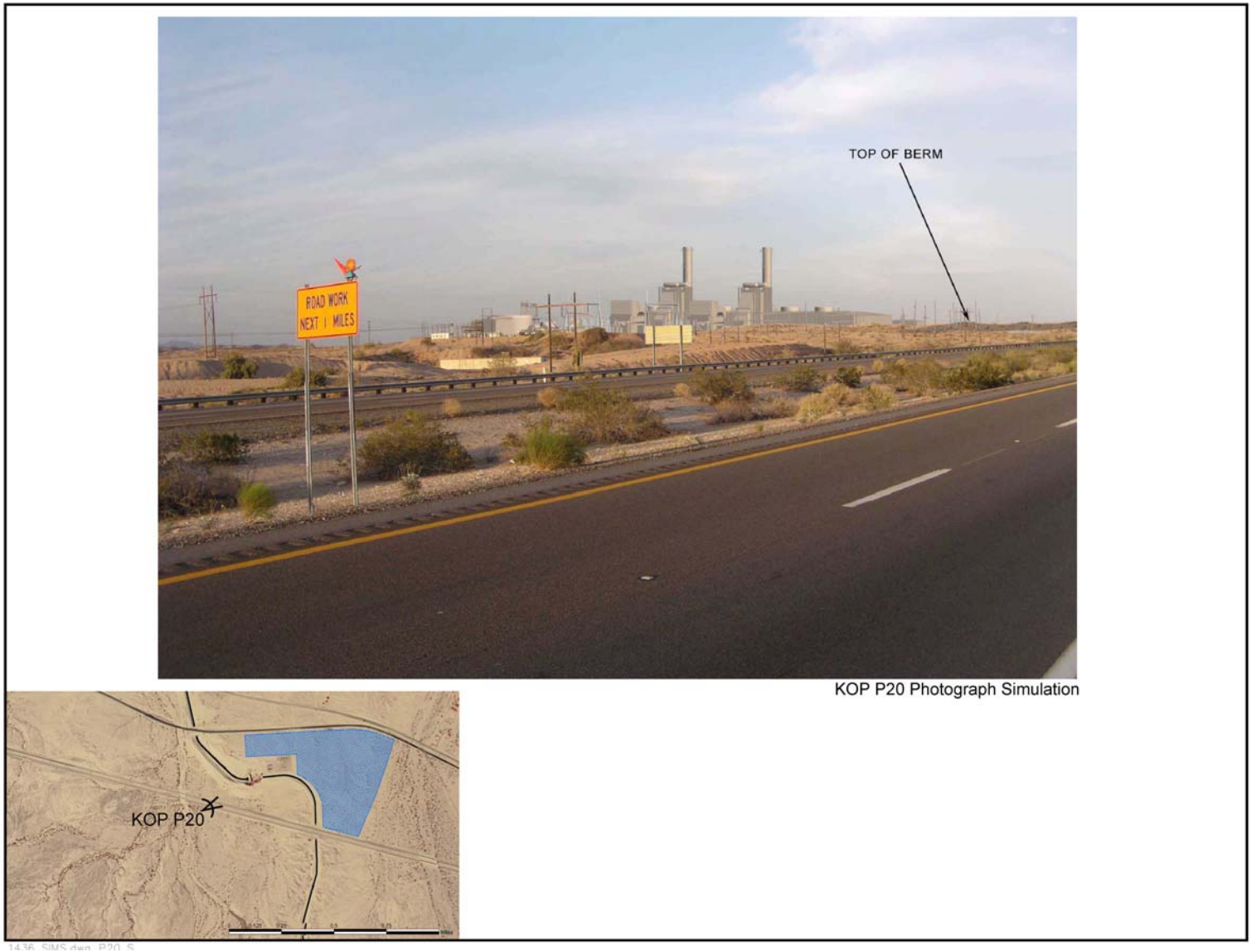


Figure 4.8-2. Simulation of the Proposed Wellton-Mohawk Generating Facility for Eastbound Interstate 8 Travelers.

Figure 4.8-3. Simulation of the Proposed Wellton-Mohawk Generating Facility from Near the Edge of the Ligurta Foothills Residential Development to the Northeast.

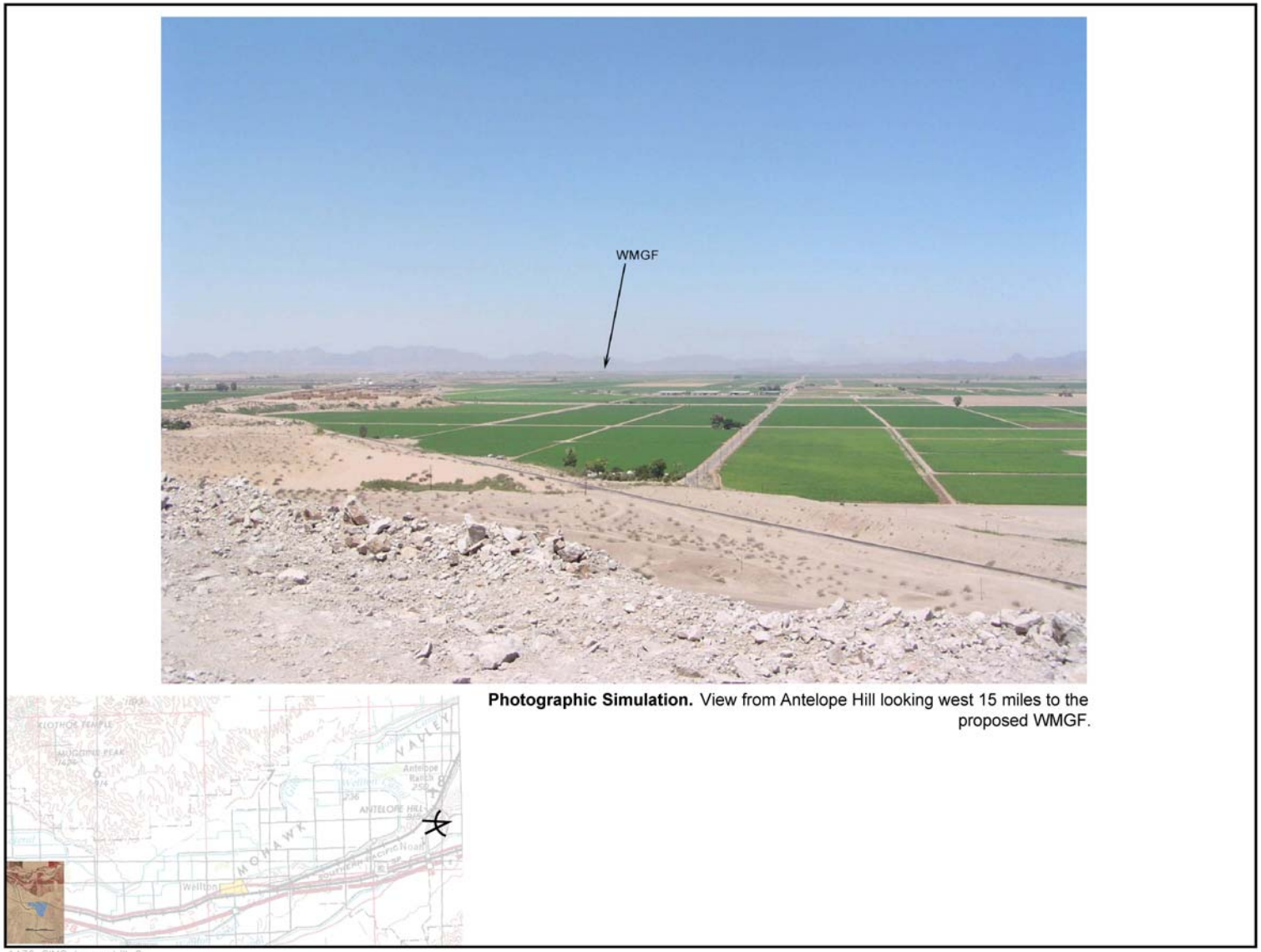
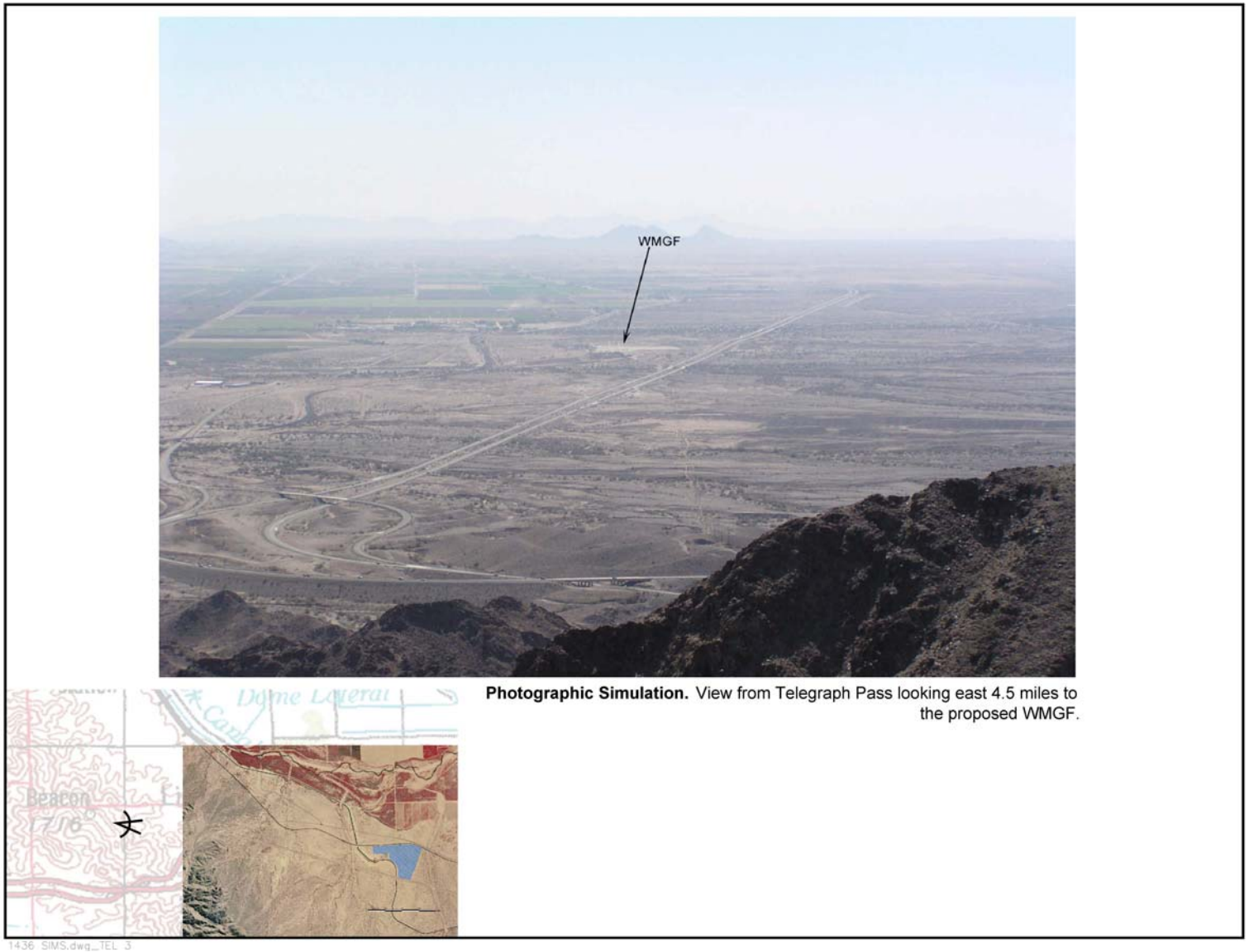


Figure 4.8-4. Simulation of the Proposed Wellton-Mohawk Generating Facility Looking West from Antelope Hill.



Photographic Simulation. View from Telegraph Pass looking east 4.5 miles to the proposed WMGF.

Figure 4.8-5. Simulation of the Proposed Wellton-Mohawk Generating Facility Looking East from Telegraph Pass.

Short-term visual impacts would be generated during construction from dust and equipment. As described in section 2.2.1.5, the entrance to the proposed WMGF would be paved to aid in dust control. Dust control measures would be implemented by the Applicant to minimize impacts in accordance with mitigation measure number 12 in table 2.2-7. Access used for construction that would not be used for ongoing operation and maintenance would be restored to near pre-construction conditions to reestablish the natural soil and vegetation conditions through grading and seeding activities, per mitigation measure number 6 in table 2.2-7.

The residual visual impact of construction of the proposed WMGF (including the SEECOT™ system), after application of the mitigation measures that are included as part of the Proposed Project, would not be significant because the existing visual resources are already altered from their natural state. The visual changes introduced would not substantially modify the overall visual character of the area.

Visual impacts of ongoing operation of the proposed WMGF would include all of the visual changes introduced during construction, as described above. In addition, steam clouds rising into the air from the cooling towers would be visible. Visibility of the steam clouds varies with meteorological conditions and the viewers vantage point. Due to the prevailing dry conditions, estimates are that suitable conditions for steam cloud formation would occur only a few times annually, primarily during winter months.

ACC mitigation measure number 21 in table 2.2-6 requires use of low intensity directive/shielded lighting fixtures to the extent feasible. This would limit any nighttime light pollution to a faint glow from the facility. As described in section 2.2.1.3, Lighting, there would be flashing aircraft warning lights on the HRSG stacks (readily visible) that would be white during the day and red at night, per requirements of the Federal Aviation Administration and Yuma County.

The residual visual impact of operation of the proposed WMGF (including the SEECOT™ system), as mitigated through measures described as part of the Proposed Project, would be insignificant because existing visual resources are already altered from their natural state. The visual changes introduced would not substantially modify the overall visual character of the area. Because the residual visual impacts of construction and operation of the proposed WMGF with the mitigation measures included as part of the Proposed Project are not significant, no additional visual mitigation measures are recommended.

4.8.3 Facility Natural Gas Pipeline

Options 1 and 2

Assessment of Impacts

The natural gas pipeline for the proposed WMGF would be buried for its full length of 12.7 miles for Option 1. Crossings of the Wellton-Mohawk Canal by the pipeline would be constructed by boring under the canal such that visual impacts would not be introduced. For Option 2, the facility natural gas pipeline would also be buried in its entirety. The visual impact of the buried facility natural gas pipeline would be from the clearing of any vegetation on the ground above the facility natural gas pipeline, existing access roads, vehicles, equipment in the

area that would be used during construction and operation, and any dust generated from vehicles and equipment.

Mitigation measure five in table 2.2-7 requires that construction sites be maintained in a sanitary condition and requires control of litter and trash. Mitigation measure 12 in table 2.2-7 requires dust control measures. Both of these measures would substantially reduce the visual impact of the facility natural gas pipeline during construction.

The residual visual impact of the facility natural gas pipeline (Options 1 or 2), as mitigated through the measures described as part of the Proposed Project, would be insignificant because the existing visual resources are already altered from their natural state. The visual changes introduced would not substantially modify the overall visual character of the area. Because the residual visual impacts of the facility natural gas pipeline (Options 1 or 2) with the mitigation measures included as part of the Proposed Project are not significant, no additional visual mitigation measures are recommended.

4.8.4 Transmission System Additions

The visual changes introduced by the new and upgraded transmission lines would vary depending on the existing transmission lines in the area. The visual impact of the clearing of vegetation for the ROW would be minimized by the sparse vegetation in the project area. It would primarily be limited to areas required for structures and approximately 2.5 miles of new access roads would be required (section 2.2.3). Conductors and ground wires used would not be dulled to reduce reflectance to minimize bird collisions with the wires. However, the structures, conductors, and ground wires would dull somewhat over time. Views of the proposed transmission line upgrades and additions would be partially obscured by the terrain in the area.

Modifications to Western's and APS's substations would be within the existing footprints and would not increase the current visible impact of the facilities.

Both the new and upgraded transmission lines would use steel structures, shown in figures 2.2-6 and 2.2-7. As compared to wood structures, steel structures are lighter in color and can be more reflective, but tend to blend better with a backdrop of sky. The proposed steel structures would be galvanized to prevent rusting, and over time they would oxidize and reduce the reflectance (shine). Galvanized steel structures would also have a longer life than wood structures and would require less maintenance activities. Thus, the use of galvanized steel structures reduces both the visual impact and the need for ongoing maintenance activities.

New Transmission Line

Assessment of Impacts

For the new 18.7-mile Ligurta-North Gila Transmission Line, Western proposes using galvanized light-duty steel single-circuit H-frame poles ranging in height from 70 to 110 feet. The line would parallel an existing 161-kVtransmission line for most of its way between Ligurta Substation and Dome Tap Substation. The existing previous disturbance to the natural landscape, such as a 500-kV switch yard, transmission lines, Union Pacific Railroad, I-8, and the Wellton-Mohawk Canal in the area, reduces the visual sensitivity of the landscape to change.

For approximately two-thirds of its length (the Ligurta-Dome Tap segment), the visual impacts of the new transmission line represents a negligible increase over current impacts of the existing Ligurta-Dome Tap Transmission Line. Transmission line structures would be visible from a brief section of I-8 and from some residences in the area. The Dome Tap-North Gila segment of the new transmission line would be in the immediate foreground to travelers on Highway 95 as the transmission line crosses overhead, and in the foreground for the individuals using the adjacent shooting range on Yuma County land. The rest of the new transmission line would be on land seldom accessed by the public and would be visible only in the background. State-of-the-art bird flight diverters would be used on the transmission line at the Gila River crossing, which would increase the visibility of the transmission line for any viewers in the area, but would reduce flight collision impacts to birds. Also, if required by the Federal Aviation Administration, aircraft warning balls would be located at the Gila River crossing, which may provide additional warnings to birds. At this time the requirement for aircraft warning balls is not known and the current Ligurta-Dome Tap Transmission Line and the adjacent distribution line at the crossing site do not have aircraft warning balls. The Gila River crossing of the transmission line is disturbed by semiannual 250-foot wide clearing of the low flow channel for flood control purposes and maintenance of a 60-foot wide fire break under the distribution line that would be adjacent to the proposed transmission line. Visual impacts from the new transmission lines are not significant because they are located in areas that already have visual intrusions and nearby transmission or distribution lines.

Upgraded Transmission Line

Assessment of Impacts

For the upgraded 12.7-mile transmission line from the Ligurta-Gila substation, Western proposes to replace the existing wood structures primarily with galvanized light-duty steel single-circuit H-frame poles, ranging in height from 70 to 110 feet. In the vicinity of Telegraph Pass, approximately eight galvanized steel lattice towers, approximately 95 feet high, would be used. This upgraded transmission line would be visible to travelers and to some local residents as it follows along I-8. Because the structures would change from dark wood to lighter colored steel, there would be some reduction in visual contrast. However, because the steel structures would be taller and would have ground wires, there would be an off-setting slight increase in visual impact. The impact would still be much less than adding an entirely new transmission line. The lattice structures to be installed in Telegraph Pass would be fewer in number, taller, and of a slightly heaver construction than the existing structures. Taken as a whole, the visual impact would be very similar to impacts from the existing line.

Western's Construction Standard 13, (measures 3, 4, 12, 19, and 21 in table 2.2-8) require construction be done with minimum impacts to vegetation, control of dust and surface restoration of disturbed sites including re-contouring and reseeding. In combination, these measures would substantially reduce the visual impact of construction of the transmission system additions. BLM mitigation measures would require the transmission line to be designed and constructed such that the location and color of poles and transmission lines achieve the minimum practicable visual impacts. Steel towers and conductor that oxidize and become non-reflective would be used to reduce contrast with prominent background colors.

The residual visual impact of the upgraded transmission line, as reduced through the mitigation measures included as part of the Proposed Project, would be insignificant because the existing visual resources are already altered from their natural state. Visual changes introduced would not substantially modify the overall visual character of the area because of the existing transmission line. The residual visual impacts of the transmission system additions, with the mitigation measures included as part of the Proposed Project are not significant. No additional visual mitigation measures are recommended.

4.8.5 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be constructed. There would be no additional impact to the existing visual resources in the area.

4.9 NOISE

4.9.1 Methodology and Significance Criteria

Assessment of noise impacts involved the identification of Proposed Project noise sources and the location of noise-sensitive receptors. Acoustical calculations were conducted for the proposed WMGF to estimate the noise levels from Proposed Project construction and operation at the closest noise sensitive receptors. Impacts were based on a comparison of the Proposed Project's modeled noise values compared with applicable noise criteria as reflected in the listed significance criteria discussed below.

Noise sampling, as described in section 3.9.3 indicates that the area is already impacted by noise sources. The existing impact is a routine episodic noise and is typically viewed differently than a constant noise source. Therefore, a conservative approach is to assume the background value based on typical information from EPA guidelines. Based on the values provided in figure 3.9-2, Typical Sound Levels, the expected sound levels in this rural area would be between 40 and 50 dB L_{dn}.

Significance criteria were based on Yuma County noise standards and EPA noise compatibility guidelines. The Yuma County Planning and Zoning Ordinance restricts the type of development in certain noise zones, such as zones where existing noise levels exceed 65 dBA. Generally, this is directed toward limiting development in the vicinity of an airport. The noise analysis has extrapolated this to mean that sound levels up to 65 dBA L_{dn} are considered compatible with residential land uses. Using this criteria, development in areas where the noise exceeds 65 dBA L_{dn} would be restricted. This would be considered a significant impact if it would impose restrictions on land currently planned for residential development.

EPA published acoustical guidelines are designed to protect public health and welfare with an adequate margin of safety. The guidelines classify the various areas according to primary activities that are most likely to occur in each area. Indoor noise environment of 45 dBA L_{dn} would permit speech communication in homes, while an outdoor L_{dn} not exceeding 55 dBA would permit normal speech communication. Impacts related to noise would be considered significant if EPA guidelines of 55 dBA $L_{eq(24)}$ at the nearest residence would be exceeded, or if the county standard of 65 dBA L_{dn} would be exceeded in areas planned for residential development.

4.9.2 Wellton-Mohawk Generating Facility

Assessment of Impacts

Although noise would be produced during construction activities for the proposed WMGF, this would be short term (i.e., limited to the months during active construction). Construction activities would occur only during the daytime. Due to the nature and anticipated noise levels (less than 65 dBA), the impact would not exceed the county criteria. Noise created during construction activities would likely exceed the EPA guidelines for short periods of time. However, the background noise measured at the residence north of I-8 was an average of 60 dBA, which already exceeds the EPA guidelines. This high average level is due to events such as frequent train and highway traffic noise. See the second paragraph of section 3.9.3 for a discussion of this data. In light of the high noise levels from events such as passing trains, this impact is not considered a significant impact due to the limited period of noise generation during each day combined with the limited period of the construction activity overall.

Appendix F of the Applicant's SUP Application provided an estimate of the projected noise resulting from operation of the proposed WMGF. The combustion turbines associated with the proposed WMGF are similar to a jet engine and produce a similar sound. Much of the sound is directed upward through the exhaust stacks. The cooling towers are also a noise source.

Property Line Impacts

The equipment supplier has proposed to meet a noise control limitation of 66 dBA at 400 feet from the noise envelope. The noise envelope is defined as the perimeter encompassing the turbines, HRSGs, generators, cooling towers, and all ancillary equipment. The noise envelope extends approximately 400 feet from the proposed WMGF center. For convenience, the distance from the proposed WMGF center is used to evaluate the noise impact. Table 4.9-1 shows the predicted sound levels at various distances from the center of the WMGF. A review of the table indicates that the 65 dBA noise level would extend out to about 550 feet from the center of the WMGF. The diagram of the plant site shows that the 65 dBA would be contained within the property boundary, with the exception of a small area to the south and west of the center of the WMGF. Immediately south, the area exceeding 65 dBA would be a strip of land tapering from 0 to about 50-feet wide laying between the plant site and the Wellton-Mohawk Canal. The strip of land then widens, to a maximum width of about 140 feet, almost all of which is within the existing Ligurta Substation site. The size and configuration of the area would effectively prohibit residential development regardless of noise generated on the proposed WMGF site.

Table 4.9-1. Predicted Sound Levels (dBA).

Distance From WMGF Center (feet)	Noise Resulting from WMGF Operation	Background Noise	Total Noise
500	64.1	60	65.5
600	62.5	60	64.4
700	61.1	60	63.9
800	60.0	60	63.0
900	59.0	60	62.5
1,000	58.0	60	62.1
1,500	54.5	60	61.1
2,000	52.0	60	60.6
2,500	50.1	60	60.4
3,000	48.5	60	60.3
4,000	46.0	60	60.2
5,000	44.1	60	60.1

There are a number of mitigating circumstances that reduce the overall impact of noise generated from the proposed WMGF. The area to the north of the proposed WMGF is already impacted by noise from the existing railroad, with trains passing the site more than once an hour on average. The area to the southwest is in the vicinity of the Wellton-Mohawk Canal and is already impacted by the noise resulting from I-8. Both of these areas already experience episodes of noise levels in excess of 65 dBA. The primary difference is that the proposed WMGF would create an almost continuous noise at this level, rather than short periods of noise associated with a train, or the intermittent but constant, during the day, highway traffic.

Based on this analysis, the noise levels exceed the Yuma County standard of 65 dBA at the property line. However, the noise levels would be below the guideline beyond approximately 550 feet from the center of the proposed WMGF. This would only have an effect on land immediately adjacent to the plant boundary and future residential development in this area is not possible due to current land uses. In addition, the affected property is currently managed by WMIDD and is not intended for residential development. Therefore the county standards would not affect the current land use plans in the vicinity of the Proposed Project, and the impacts are considered insignificant.

Impacts at Nearest Residences

The nearest residence is approximately 1,500 feet from the proposed WMGF center. Based on sound level predictions, the proposed WMGF would contribute approximately 54.5 dBA at 1,500 feet. There is also a residential development (Ligurta Foothills) of approximately 79 lots. The nearest residence in this subdivision is located approximately 2,640 feet northeast of the proposed WMGF. At this distance, unmitigated noise from the proposed WMGF would contribute approximately 49.7 dBA. However, these noise contributions would be partially mitigated by the existing terrain features. Inspection of the proposed site indicates that some terrain, primarily the berm for the railroad, interdict the “line-of-sight” between the residences and the proposed plant site, and will reduce perceived noise amplitude. Also additional berms are planned to reduce reflectance from the solar field and these should also serve to contain some of the noise. In accordance with the guidelines from ADOT, a reduction in noise levels between 5 and 10 dB can be expected as a result of earthen berms intervening in the line-of-sight (ADOT 2000). A reduction of 5.5 dBA at the closest residence and a reduction of 0.5 dBA at the Ligurta

Foothills subdivision can be expected as a result of the intervening terrain, and would result in the Proposed Project being well within the EPA guidelines.

In addition, the overall impact would be reduced by the fact that the railroad and a highway run between the proposed WMGF and the residences. The measured noise levels in the vicinity of the nearest residence are currently above an average of 60 dBA L_{eq}. The addition of the proposed WMGF plant is expected to increase the total noise level at the nearest residence by only 1.1 dBA without taking into account the topography. This increase is not expected to be discernable by the human ear. EPA guidelines state that changes in hearing level of less than 5 dB are generally not considered noticeable or significant. Old Highway 80 runs within 300 feet of the nearest residence. These existing sources contribute significant noise to the area. Although the proposed WMGF would create a relatively continuous noise level, it is not expected to create a nuisance inside a well-constructed residence. Based on the fact that the levels of noise contribution are within the EPA guidelines, and the 1.1 dB level increase in total noise would be undetectable to the human ear, impacts from noise are not significant. No additional mitigations are recommended for noise.

4.9.3 Facility Natural Gas Pipeline and Transmission System Additions

Assessment of Impacts

Although noise would be produced during construction activities for the facility natural gas pipeline, substation, and transmission system additions, this noise would be short term (i.e., limited to the months of active construction). Active construction for the facility natural gas pipeline and transmission system additions would typically not exceed 30 days in any one area and would extend throughout the construction period of the proposed WMGF, as described in chapter 2. Construction activities would occur only during the daytime. Due to the nature and anticipated noise levels (less than 65 dBA), the impact would not exceed county restrictions, and noise created during construction activities would be short term and the impact would not be considered significant.

Operation of the gas pipeline and transmission system facilities would result in noise limited to that associated with the vehicles of occasional maintenance workers. Aside from this short-term, temporary noise source, existing background noise levels would be expected to continue. The one exception would be corona-generated audible noise from transmission lines which is generally characterized as a crackling or hissing noise. This noise is most noticeable during wet weather conditions which are rare in this location. There are no noise codes applicable to transmission lines in Arizona. Audible noise from transmission lines is often lost in the background noise at locations beyond the edge of the ROW. No significant noise impact would result from operation of the facility natural gas pipeline and transmission lines because of the intermittent nature of maintenance vehicle traffic, low level of the corona noise, and the fact that few people would be in the area.

No significant noise impact would result from the operation of the substations; because noise from substation operations dissipates at or very near the facility boundary.

4.9.4 No Action Alternative

The No Action Alternative would result in no change to the existing noise levels in the area. Specifically, no additional noise impacts would be perceived at the existing residence located within 1,500 feet of the proposed WMGF site, or at the Ligurta Foothills subdivision.

4.10 SOCIOECONOMICS

4.10.1 Methodology and Significance Criteria

The analysis of socioeconomics impacts considered effects on economic activity as measured by changes in employment and earnings, and the community as measured by changes in population and the demand for housing and community services. The socioeconomic impacts estimated in this analysis were generated by expenditures and employment allocated to the proposed WMGF and its associated components, which include the WMGF, facility natural gas pipeline, and related transmission system additions. The analysis measured incremental effects and their overall effects on the ROI from changes in expenditures, income, and employment associated with the Proposed Project. The ROI is Yuma County, the area surrounding the Proposed Project location, where the majority of proposed WMGF construction and operation employees and their families would likely reside, spend their wages and salaries, and use their benefits.

The analysis addressed both direct and indirect socioeconomic impacts. Direct impacts are changes in proposed WMGF construction and operations employment and expenditures expected to take place under the Proposed Project. Spending by WMGF would directly affect the ROI in terms of dollars of expenditures gained or lost for individuals and businesses, dollars of income gained or lost to households, and the number of proposed WMGF jobs created or lost. Proposed WMGF employment and expenditures would directly affect the overall economic and social activities of the communities and people living in the ROI. Additionally, businesses and households in the ROI would re-spend WMGF-generated money, which would in turn create indirect and induced socioeconomic effects. Every subsequent re-spending of money by businesses and households in the ROI is another tier of indirect and induced socioeconomic effects originating from proposed WMGF construction and operations. The total economic impact to the ROI is the sum of direct and indirect impacts.

To analyze socioeconomic effects, total employment and earnings multipliers for the ROI obtained from the Regional Input-Output Modeling System II (RIMS II) by the U.S. Bureau of Economic Analysis were used. The RIMS II model's multipliers are derived from the U.S. Bureau of Economic Analysis's national input-output table adjusted using the U.S. Bureau of Economic Analysis's most recent region-specific information describing the relationship of the regional economy to the national economy.

Indirect impacts were determined by applying the region-specific multipliers to direct job and proposed WMGF expenditure estimates to determine the comparable change in the regional economy. Multipliers can vary by project phase. For example, the multiplier used to estimate indirect employment during the operational phase differs from the multiplier used for the construction phase.

The importance of the Proposed Project and its impacts was determined relative to the context of the affected environment. The regional baseline conditions as presented in section 3.10 provide

the framework for analyzing the importance of potential socioeconomic impacts that could result from the Proposed Project. Impacts would be considered significant if the change resulting from the Proposed Project would exceed historical or estimated fluctuations in the regional economy. The selected socioeconomic impact areas are demographics, economic base, and housing/community services. The impact of the proposed WMGF on nearby residential property values is also assessed.

4.10.2 Wellton-Mohawk Generating Facility

Assessment of Impacts

The proposed WMGF would not cause any noticeable change in existing demographic characteristics within the socioeconomic ROI. With respect to the region's economic base, the WMGF-related employment would occur in two stages. The first stage would include the temporary employment of a workforce for construction of the proposed WMGF. The second stage would require a smaller level of permanent employment for operation and management of the proposed WMGF. Construction of the WMGF is anticipated to span a period of 12 to 18 months requiring a range of 50 to 300 employees, depending on the construction phase. The workforce would include both skilled and nonskilled workers. Approximately 25 permanent workers, spread over two shifts, would be needed to operate and maintain the proposed WMGF. The proposed WMGF would be continually manned 24 hours a day in two 12-hour shifts of three employees. The other employees would work Monday to Friday, 8 hours a day (normal workday), with a total of 15 employees onsite during the normal workday. The majority of the required workforce would be available in the Yuma area; however, in order to determine the maximum potential impact, it was assumed that the entire workforce would migrate into the county and its communities.

Population

The proposed WMGF would not create a noticeable change in population within the ROI (section 3.10.1). In order to be conservative, it is assumed that the proposed WMGF would result in an in-migration of a maximum of 300 workers to Yuma County for an estimated 12 to 18 months, and approximately 25 permanent workers for the proposed WMGF operation. In actuality, expectations are that many of the people would already be area residents. Assuming the Census 2000 figure of 2.86 persons per household for the county, the population associated with the additional workforce migrating into the county is estimated to be 858 persons during the construction phase and 85 during the operation phase. The construction estimate, using a very conservative analysis, represents 0.5 percent of the Census 2000 Yuma County population and 1.1 percent of the combined Census 2000 populations of the Town of Wellton and City of Yuma. This increase is within historical population fluctuations. Therefore, impacts to area populations would not be significant.

Economic Base

The proposed WMGF would provide employment opportunities in the region. Assuming a temporary (12- to 18-month) 300-employee payroll and pay rates commensurate with local construction salaries during the construction phase, the payroll generated by the construction phase of the proposed WMGF would be $10.8 million. Assuming a permanent operating

workforce of approximately 25 employees, payroll and pay rates commensurate with local utility operations salaries, the payroll generated by the operations phase of the proposed WMGF would be a maximum of $1.2 million annually.

A portion of these payrolls would enter the local economy as new workers purchase additional goods and services. The combined direct and indirect effects of construction employment would result in an increase of approximately 494 jobs within the region. Likewise, the direct and indirect effects of construction payroll expenditures would result in a $16.6 million increase to the regional economy, which is less than 1 percent of the total personal income for Yuma County. Since this does not exceed historical fluctuations, it is not a significant impact.

For operations employment, the combined direct and indirect effects of operations employment would result in an increase of approximately 86 jobs within the region. Likewise, the combined direct and indirect effects of operations payroll expenditures would result in an annual $2 million increase to the regional economy, which is much less than 1 percent of the total personal income for Yuma County, and not significant since it is within historical fluctuations.

In addition, the proposed WMGF would likely result in an increase in nonpayroll expenditures. Additional goods and services would be required to support the additional activities, facilities, and workers generated by the proposed WMGF. Additional expenditures of new personnel would generate additional income and employment opportunities within the region as the expenditures filter throughout the economy. Additional income and employment opportunities generated by the proposed WMGF would represent an overall beneficial economic impact to the region.

The proposed WMGF would not pay property tax to Yuma County because it would be built on land leased from WMIDD. As a government entity, WMIDD is exempt from taxes. Instead of paying several million dollars per year, the amount a commercial plant of a similarly assessed value would be required to pay, the Applicant has volunteered to donate an estimated $1.2 million to be divided between the county and school districts in the area surrounding the proposed WMGF (Wehrle 2003).

Housing

The proposed WMGF would create a very small change in existing housing within the ROI (section 3.10.1.1). Assuming one housing unit per additional employee, a maximum of 300 temporary housing units would be required for the construction phase and a maximum of approximately 25 housing units would be required for the operations phase. In this very conservative analysis, 300 housing units represents 1.5 percent of the housing stock available in the ROI and 3.6 percent of the combined housing stock available in the Town of Wellton and the City of Yuma. Therefore, ROI housing capacity would exceed project-related demand. Actual impacts would likely be much less, as many of the workers are expected to already live in the area. Yuma County would experience a very small impact and the combined capacity of the Town of Wellton and the City of Yuma would experience an insignificant impact.

Community Services

The proposed WMGF would not create a noticeable change in community services within the ROI (sections 3.10.1.2 and 3.10.1.3). As stated in the population section, the largest increase in

population is attributed to the temporary 12 to 18-month construction period of the proposed WMGF and represents 0.5 percent of the 2000 county population and 1.1 percent of the combined 2000 populations of the Town of Wellton and City of Yuma. The construction workforce would be temporary and relatively small. Because community services have been constructed and operated to meet current demand, the temporary increase in population and subsequent use of community services would also be small. The operations workforce and resulting population increase would be negligible. Therefore, the operations-related use of community services would also not be significant; it is within historical fluctuations of the regional economy.

Property Values

A literature review of studies reporting the impacts of perceived locally undesirable land uses (LULUs) was made to determine the likely impact of the proposed WMGF on nearby residential property values. Where diminishment of property values was found, they began with the public announcements of the impending LULU. The studies further identified that the adverse impacts to nearby residential property values related to the LULUs having significant adverse visual, noise, transportation, air, odor, or water quality impacts. The proposed WMGF, associated facility natural gas pipeline, and transmission system additions would cause only negligible impacts to these environmental components. Therefore, an adverse impact to nearby residential property values is not anticipated.

4.10.3 Facility Natural Gas Pipeline and Transmission System Additions

The facility natural gas pipeline will be constructed over a period of 6 to 8 weeks utilizing an estimated workforce of 40 employees. The work would be contracted, with many of the skilled employees expected to come from out of the area. These employees are anticipated to live in motels or camp trailers, possibly going home on weekends. Some of the workers are anticipated to be local people.

The transmission system additions are anticipated to take approximately 6 months utilizing an estimated workforce of 50 employees, and the substation modification work is anticipated to take approximately 3 months utilizing 10 employees. The work will be contracted with some of the skilled employees coming from out of the area, and other workers being local people.

The analysis for the proposed WMGF was a very conservative estimate utilizing 300 employees during the construction period of 12 to 18 months, and assuming all of the employees would come from outside of the local area. This analysis found there would be no significant socioeconomic impact from the maximum 300 construction workers. In reality, many of the employees would come from the local area, and the WMGF construction workforce is anticipated to be as low as 50 employees during some periods. The timing of the construction work on the pipeline, the transmission system, and the substation is not known at this time. However, the shorter periods of construction for the pipeline, the transmission system additions, and the substation modifications, the transient nature of the pipeline work, and the insignificance of the impacts from the maximum 300 employees used in the analysis indicates that there would be no significant socioeconomic impacts from the construction and operation of the pipeline and the transmission system additions, and the substation modifications.

The pipeline and transmission system additions construction and the substation modifications could possibly occur simultaneously with the time the WMGF has its construction workforce at the 300 person maximum. This worst case condition would involve a workforce of 400 people which would last for six to eight weeks. The 2000 census showed that the City of Yuma and the Town of Wellton had over 8,000 vacant housing units. Thus, no significant adverse socioeconomic impacts are anticipated.

4.10.4 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be built and operated. As a result, increasing reliance would be placed on existing small, older, less efficient power generation in the area and system reliability may decrease. Ultimately, this could affect population growth trends, the economy, housing, and community services until such time as an alternative power source becomes available. Growth in population, the economy, and housing would likely continue. The temporary construction impacts described in sections 4.10.2 and 4.10.3 would not occur. The increase of 86 jobs, directly and indirectly associated with the operation of the Proposed Project, would not occur, nor would the estimated annual $2 million increase to the local economy.

4.11 ENVIRONMENTAL JUSTICE

4.11.1 Methodology and Significance Criteria

Western considered whether there were any means for minority or low-income populations to be disproportionately affected by the construction and operation of the Proposed Project. Western's basis for making this determination is a comparison of areas predicted to experience human health or environmental impacts with areas in the ROI known to contain high percentages of minority or low-income populations, as reported by the U.S. Census Bureau, and defined by the CEQ. Information on locations and numbers of minority and low-income populations was obtained and derived from 2000 Census data.

Impacts on minority or low-income populations that could result from the Proposed Project were analyzed for the geographic areas in which the Proposed Project would be located to determine if they would have disproportionately high and adverse impacts. Impacts related to the Proposed Project were analyzed within the census tracts containing the components of the Proposed Project (figure 3.11-1). These census tracts were selected because they encompass any potential impacts caused by the Proposed Project, as depicted in the chapter 4 resource area analyses, which include: geology and soils, water resources, air resources, biological resources, cultural resources, land use and recreation, transportation, visual resources, noise, socioeconomics, health and safety, and waste management, during both the construction and operation phases of the Proposed Project.

As stated in section 3.11.1, "minority" refers to people who classified themselves in the 2000 Census as Black or African American, Asian or Pacific Islander, American Indian or Alaskan Native, Hispanic of any race or origin, or other non-White races (CEQ 1997). As stated in section 3.11.2, environmental justice guidance defines low-income using U.S. Census Bureau statistical poverty thresholds. Information on low-income populations was developed from 1999

incomes reported in the 2000 Census. In 1999, the poverty-weighted average threshold for an individual was $8,501 (Census 2001).

Analysis of environmental justice impacts is also applied to issues that are unique to and involve Native Americans, in particular, to cultural resource issues. Potential impacts of the Proposed Project related to Native American cultural resources are addressed in detail in section 4.5. During the ethnographic study conducted for the Proposed Project, tribal representatives indicated that the proposed WMGF and related facilities would have significant impacts on individual cultural resources of importance to the tribes. These impacts would include both physical damage as well as impacts to the settings of resources through visual and auditory intrusions. Impacts would occur not only to individual resources, but also to the traditional, sacred and historic landscape of the area, within which the Proposed Project is located. These impacts to the landscape and individual resources would have a significant impact on the role of the landscape within tribal traditions and the use of the landscape by tribal members. Although no specific measures have been identified to completely avoid, reduce, or mitigate these potential impacts to the cultural landscape, consultations with the tribes and tribally-affiliated interests on possible creative mitigation measures are continuing. Impacts associated with environmental justice are significant if the impacts of construction and operation of the Proposed Project would have disproportionately high and adverse impacts on minority or low-income populations as defined by EPA criteria, or if affected minority or low-income populations were not informed of and offered an opportunity for meaningful involvement to assure that their interests and concerns about the Proposed Project would be considered.

4.11.2 Minority Populations

Assessment of Impacts

As discussed in this chapter, the Proposed Project has little potential to significantly affect human health and/or the environment. Disproportionately high and significant effects to minority populations are unlikely based on three factors: a lower percentage of minority populations in the Proposed Project area compared with Yuma County as a whole, a low population density within the project area (the average is 38.5 persons per square mile), and overall low expected impacts from the construction and operation of the Proposed Project.

The total minority population in the three census tracts covered by the Proposed Project is estimated at 6,875 people, 36.0 percent of the total population. This is less than the 55.7 percent minority population of Yuma County as a whole. There may be neighborhoods near the Proposed Project area with higher percentages of minorities, but any impacts of the Proposed Project to these residents, are expected to be less than significant and would be further mitigated by the low population density. No additional mitigations are proposed.

Public outreach to minority and low-income persons regarding scoping for the Proposed Project included advertisements in local newspapers, and mailings in English and Spanish to a distribution list that included local government officials, agencies, tribes and individuals, as described in section 1.4. Beginning with scoping, Western, Reclamation, BLM and the Applicant have been meaningfully involved with the tribes and tribally affiliated interests to address the concerns that they have expressed.

4.11.3 Migrant Workers

Assessment of Impacts

Farms in the area of the Proposed Project are likely to employ migrant workers during part of the year. No agricultural areas would be significantly impacted by the Proposed Project. As explained in section 3.11, migrant workers residing in the United States tend to live in or near the City of Yuma. No known migrant worker housing exists near the Proposed Project. Resource area analyses performed for this EIS do not indicate any direct or indirect effects to migrant workers through reduced air or water quality, noise, or impeded access to work areas. No additional mitigations are proposed.

4.11.4 Low-Income Populations

Assessment of Impacts

The portion of the low income population within the three census tracts covered by the Proposed Project is 15.7 percent, which is lower than the 19.2 percent of Yuma County as a whole. The percentage of the population within each census tract is also less than the county as a whole. Based on these criteria and the low potential of the Proposed Project to significantly affect human health and/or the environment, there would be no disproportionately high and adverse effects to low-income populations by the Proposed Project. No mitigations are proposed.

4.11.5 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be built and operated and would not impact any populations, including minority or low-income populations.

4.12 HEALTH AND SAFETY

4.12.1 Worker Health and Safety

4.12.1.1 *Methodology and Significance Criteria*

Health and safety issues have been evaluated in the context of general air quality, noise, hazardous materials, electric and magnetic (EMF) exposure, and accidents. Analysis of the impacts to worker health and safety consists of an evaluation of the effects caused by the construction and operation of the Proposed Project.

Public scoping comments received concerning worker health and safety focused on evaluation of environmental impacts of accidents, including the arrangements for emergency response, containment of spills, and ammonia spills. Each of these issues is analyzed in the context of the proposed mitigation measures that are part of the Proposed Project.

The Proposed Project would have a significant adverse effect on worker health and safety if the Proposed Project would create a worker health hazard beyond limits set by health and safety regulatory agencies or would present a worker health and safety hazard that endangers human life and/or property. EMF exposure would be significant if it would be beyond normal levels experienced by utility workers. This conservative position is taken even though EMF exposure has not been scientifically determined to be a human health factor.

While not impacted by the Proposed Project, geologic hazards could damage components of the Proposed Project if geological hazards are not addressed during the Proposed Project design. Geological hazards include vibratory ground motion induced by seismic activity, local subsidence or sinkholes, mass movement or ground shifting, and large scale geological conditions such as earthquakes. ACC mitigation measure 18 in table 2.2-6 requires compliance with all existing applicable ordinance, master plans, and regulations of the Federal, state, and local authorities, and Western has design standards to account for all kinds of geologic hazards. These mitigation measures would eliminate any reasonably foreseeable impacts to safety caused by geologic hazards. Therefore, health and safety impacts from geologic hazards will not be discussed further.

4.12.1.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Construction

The level of risk to construction workers increases in relation to the amount of new construction required. Construction accident risks increase based on the length of the construction period and the number of construction workers for each component of the Proposed Project (section 2.2 for details). All applicable Occupational Safety and Health Administration (OSHA) and Arizona Department of Occupational Safety and Health (ADOSH) codes for health and safety would be followed for all identified and anticipated hazards to worker health and safety, providing for basic standards of worker health and safety. Implementation and compliance with these codes and standards would be a contract and legal responsibility of the party performing construction, as described in section 2.2.

Potential health impacts to construction workers from the Proposed Project would include fugitive dust and noise typical of construction sites (sections 4.3 and 4.9). Mitigation measure 18 in table 2.2-6 requires dust control measures. Construction workers could be exposed to airborne emissions from routine activities, such as welding, soldering, grinding, painting, and cleaning operations. The potential noise impact to workers from heavy equipment operation and activities such as cutting metal or grinding operations would potentially pose higher noise levels to workers than noise during proposed WMGF operations. These exposures would be intermittent, but may be intense and would be evaluated at the time of construction. Workers would also be at risk for typical construction site injuries such as trips and falls. Health and safety programs would be designed and carried out by the contractor performing construction to ensure compliance with OSHA and ADOSH codes, including requirements for hearing protection, personal protection equipment, chemical exposure limits, and safe work practices, such that potential adverse impacts to worker health and safety during construction would be minimized. ACC mitigation measure 18 in table 2.2-6 requires compliance with all existing applicable ordinance, master plans, and regulations of Federal, state, and local authorities. Compliance with this mitigation measure would substantially reduce construction hazards to workers.

The residual health and safety impacts of construction to workers, as mitigated through the measures included as part of the Proposed Project, would be small and insignificant because there would be no worker hazards beyond limits set by health and safety regulatory agencies and no elevated threat to human life and/or property.

Operation

Worker health and safety issues during operation of the proposed WMGF would primarily be typical industrial work-related injuries such as bruises, cuts, falls, and repetitive stress injuries. Good housekeeping and work-related practices would mitigate hazards that could result in slips, trips, falls, and other injuries. All applicable OSHA and ADOSH codes for health and safety, including electrical design standards, would be carried out for all identified and anticipated hazards to worker health and safety, providing for basic standards of worker health and safety during proposed WMGF operations. ACC mitigation measure 22 in table 2.2-6 requires compliance with OSHA Worker Safety Noise Standards during proposed WMGF operation. The overall design, layout, and operational protocols of the proposed WMGF would minimize occupational hazards and injuries. Some employees would have long-term exposure to EMF levels, but there would be no health hazards that would endanger human life.

During proposed WMGF operations, possible worker health effects could occur as a result of accidents leading to a fire or a natural gas explosion. However, the likelihood of fire or explosion would be small because such hazards are well understood and would be recognized and addressed in both the operating procedures and in facility design.

The Applicant would train all employees who handle, use, transport, or have contact with potentially hazardous and toxic materials (e.g., ammonia, sulfuric acid, cleaning solvents, degreasers, herbicides) to reduce exposure and impact to worker health and safety. The Applicant has prepared a preliminary SPCCERP that includes prevention and response to spills and emergencies, including worker protection, as described in Section 2.2.1.4, Hazardous Materials and Emergency Management (Wellton-Mohawk 2003b).

ACC mitigation measure 18 in table 2.2-6 requires compliance with all existing applicable ordinance, master plans, and regulations of Federal, state, and local authorities. This mitigation measure would substantially reduce operation hazards to workers.

The residual health and safety impacts of operation of the proposed WMGF, as mitigated through the measures included as part of the Proposed Project, would be small and insignificant because there would be no worker hazards beyond limits set by health and safety regulatory agencies and no elevated threat to human life and/or property. No additional health and safety mitigation measures are recommended.

4.12.1.3 *Facility Natural Gas Pipeline*

Assessment of Impacts

Construction

For a discussion of construction activities associated with the facility natural gas pipeline, refer to the general construction discussion in section 4.12.1.2.

Operation

Workers required for operation of the facility natural gas pipeline would conduct routine maintenance and inspections no more than two to four times per year. As described in section 2.2.1.5, work areas for maintenance and inspections would be finish-graded and free of surplus construction material and debris in accordance with the requirements of the landowner or land manager, thus mitigating the potential for typical workplace injuries such as trips, cuts, and bruises. Possible worker health effects could occur in the remote event of fire or a natural gas explosion. As described in section 2.2.2.1, the facility natural gas pipeline would be designed and operated in accordance with ACC requirements and 49 CFR Part 192, which prescribes minimum safety requirements for pipeline facilities and the transportation of gas, thus reducing the risk to workers from pipeline accidents.

ACC mitigation measure 18 (table 2.2-6) requires compliance with all existing applicable ordinance, master plans, and regulations of Federal, state, and local authorities. This mitigation measure would substantially reduce operation hazards to workers.

The residual health and safety impacts of construction and operation of the facility natural gas pipeline, as mitigated through the measures described in this section that are included as part of the Proposed Project, would be small and insignificant because there would be no worker hazards beyond limits set by health and safety regulatory agencies and no elevated threat to human life and/or property. No additional health and safety mitigation measures are recommended.

4.12.1.4 *Transmission System Additions*

Assessment of Impacts

Construction

For a discussion of the risks of general construction activities refer to the general construction discussion in section 4.12.1.2. For transmission system construction activities that would be undertaken by Western as part of the Proposed Project, safety and health measures that would be carried out are listed in section 1.4 of Western Construction Standards, Standard 1, General Requirements (Western 2003c). These standards require the necessary precautions and a safety and health program to protect the safety and health of employees and members of the public and to prevent damage to public and private property. These standards forbid Western from allowing employees, whether directly employed or employed through subcontract or onsite supply contract, to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to their health or safety.

Operation

Workers required for operation of the new and upgraded transmission lines would generally conduct routine maintenance and inspections on transmission lines in the area. As described in section 2.2.3.5, work areas for maintenance and inspections would be finish-graded and free of surplus construction material and debris in accordance with the requirements of the landowner or land manager, thus mitigating the potential for typical workplace injuries such as trips, cuts, and

bruises. There would be a potential for electric shock or electrocution when working around transmission lines, although the likelihood of this would be very small because Western's and other (International Brotherhood of Electrical Workers, Western Electric Coordination Council, and OSHA) standard safety practices would be followed.

The transmission lines would be designed to minimize EMF and would have EMF levels similar to other existing transmission lines. For the Ligurta-Gila upgraded transmission line, the maximum electric field would occur within the ROW and would be approximately 3.5 kV/m. This compares to 1.8 kV/m for the existing 161-kV transmission line, described in section 3.12. The maximum electric field at the edge of the 125-ROW would be approvimately 1.0 kV/m. The maximum magnetic field would be 200 mG, with the maximum at the edge of the 125-foot ROW being approximately 50 mG, compared to 30 mG for the existing 161-kV transmission line. For the proposed Ligurta-North Gila Transmission Line, the maximum electric field would occur within the ROW and would be approximately 3.5 kV/m, and the electric field at the edge of the 125-foot ROW would be approvimately 1.0 kV/m. The maximum magnetic field in the ROW would be approximately 180 mG, and at the edge of the 125-foot ROW would be 33 mG. The calculated maximum electric and magnetic fields are for the proposed transmission lines being operated at 230-kV. These electric and magnetic field levels are typical for workers in the utility industry. However, the proposed transmission lines would be initially operated at 161-kV and would produce lower levels of EMF. Figures 4.12-1 and 4.12-2 graphically illustrate the EMF strengths (electric and magnetic fields) for the upgraded Ligurta-Gila Transmission Line. Figures 4.12-3 and 4.12-4 graphically illustrate the EMF strengths for the proposed Ligurta-North Gila Transmission Line. At some point in the future, as the regional 161-kV system is upgraded to 230-kV, these lines would be operated at 230-kV. The capacities of Gila and North Gila Substations are not the same, thus the transmission lines serving them will have different limitations, resulting in difference in the figures.

The residual health and safety impacts of construction and operation of the transmission system additions, as mitigated through compliance with OSHA 29 CRF 1910, General Industry Standards, OSHA 29 CFR 1926, Construction Standards, the Western Power System Safety Manual, and other mitigation measures described in this section that are included as part of the Proposed Project, would be small and insignificant because there would be no worker hazards beyond limits set by health and safety regulatory agencies, no threat to human life and/or property, and EMF levels would be similar to those typically experienced by utility workers. No additional mitigation measures are recommended.

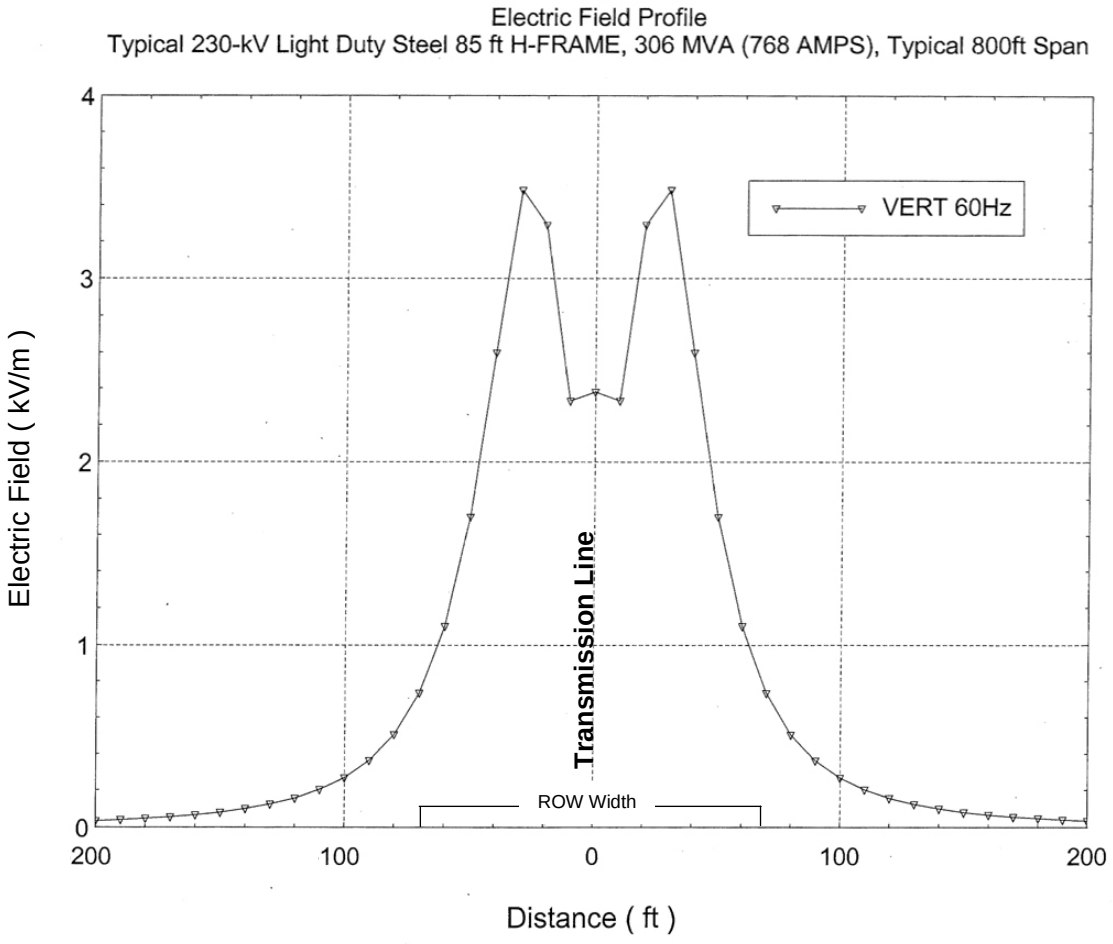


Figure 4.12-1. Electric Field Strength for Upgraded Ligurta-Gila Transmission Line.

230-kV

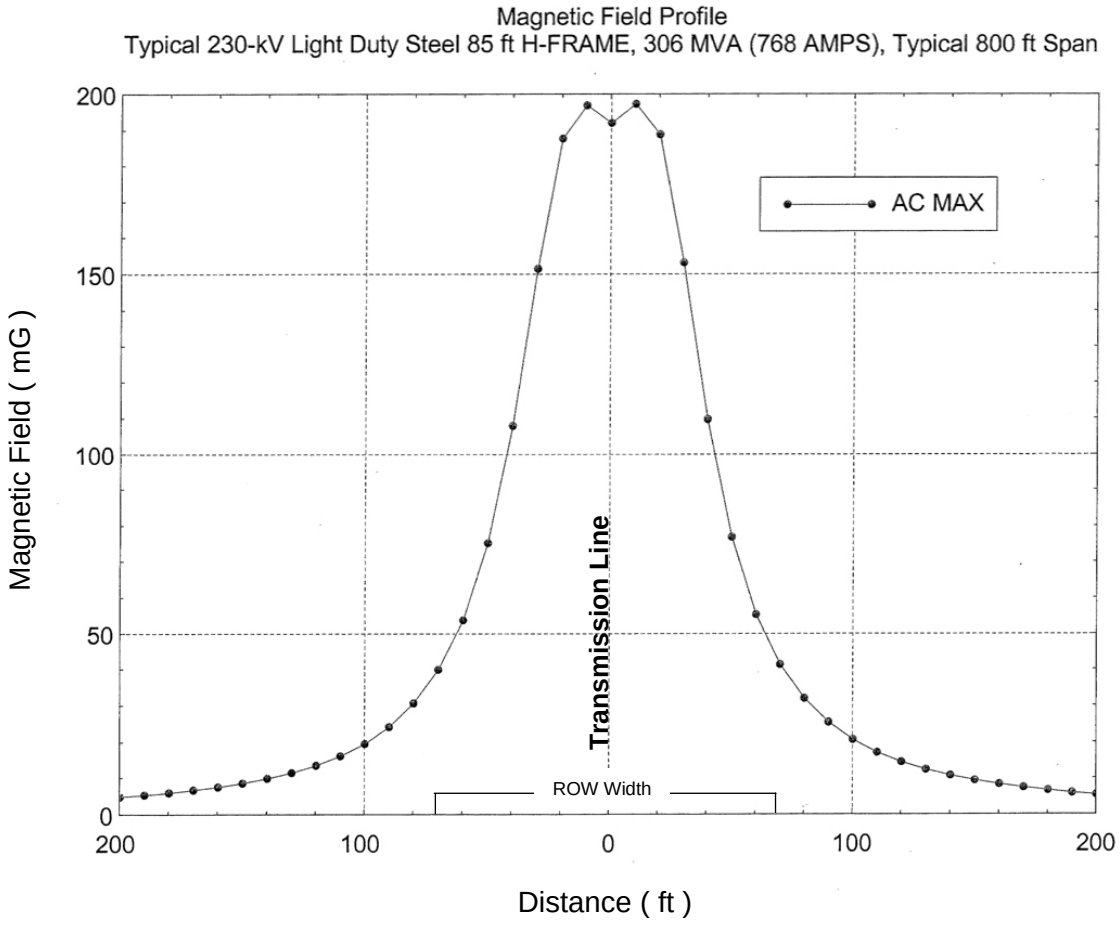


Figure 4.12-2. Magnetic Field Strength for Upgraded Ligurta-Gila Transmission Line.

230-kV

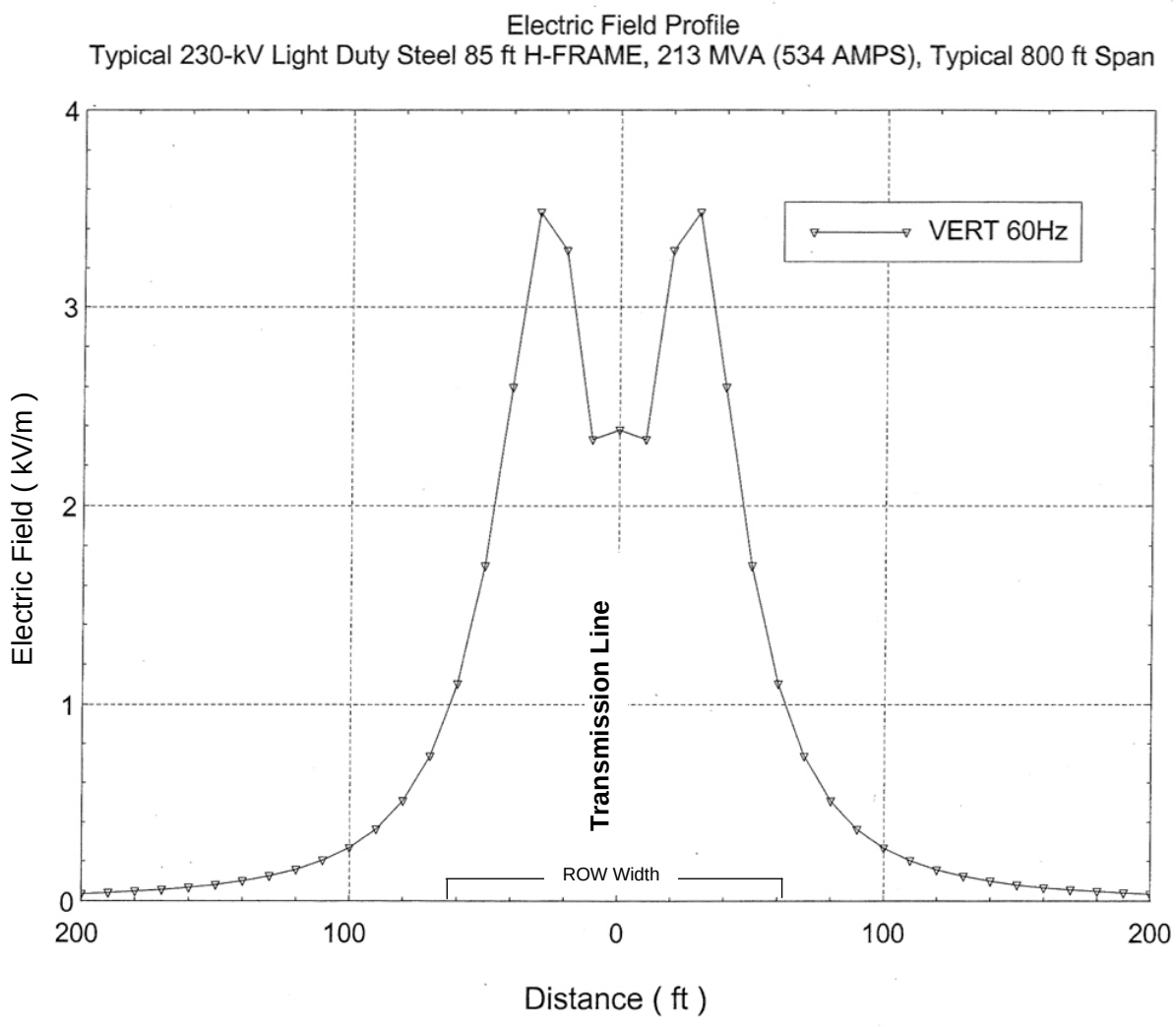


Figure 4.12-3. Electric Field Strength for Proposed Ligurta-North Gila Transmission Line.

230-kV

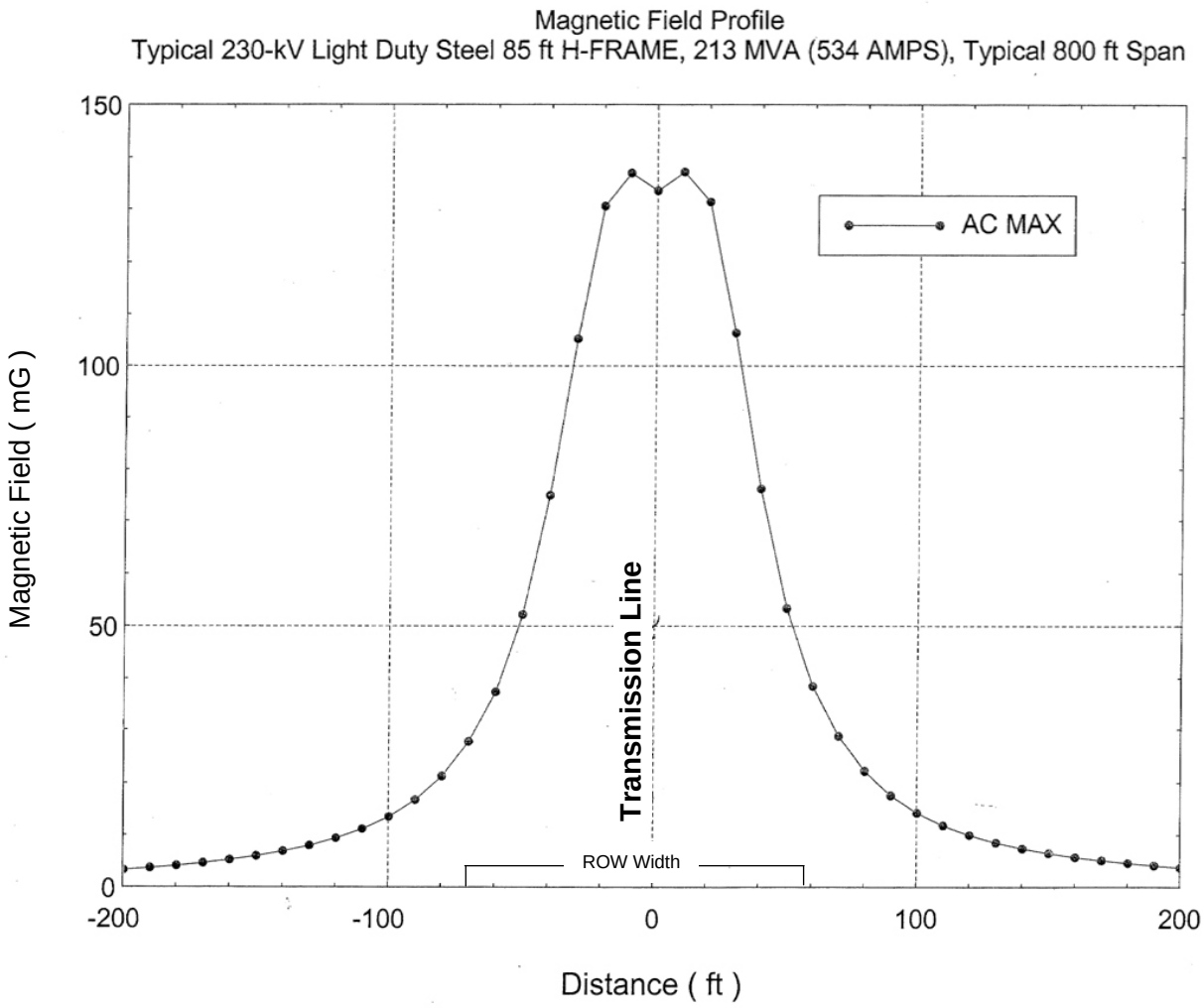


Figure 4.12-4. Magnetic Field Strength for Proposed Ligurta-North Gila Transmission Line.

230-kV

4.12.2 Public Health and Safety

4.12.2.1 *Methodology and Significance Criteria*

Health and safety issues have been evaluated in the context of general air quality, noise, hazardous materials, EMF exposure, and accidents. Analysis of the impacts to public health and safety consists of an evaluation of the effects caused by the construction and operation of the Proposed Project.

Public scoping comments received concerning public health and safety focused on evaluation of overall health effects to nearby residents including the impacts to nearby sick and elderly; the potential for the pond to become a breeding ground for mosquitoes and other disease vectors; and evaluation of environmental impacts of accidents, including the arrangements for emergency response, containment of spills, and ammonia spills. Each of these issues is analyzed in the context of the proposed mitigation measures that are part of the Proposed Project to assess the impact to public health and safety.

The Proposed Project would have a significant adverse effect on public health and safety if the Proposed Project would create a public health hazard beyond limits set by health and safety regulatory agencies or would present a public health and safety hazard that endangers human life and/or property. EMF exposure would be significant for the public if it would be beyond levels experienced from common household appliances. This conservative position is taken even though EMF exposure has not been determined to be a human health factor.

4.12.2.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Construction

Potential health impacts to the public from construction of the Proposed Project include fugitive dust typical of construction sites and noise (sections 4.3 and 4.9). Mitigation measure number 18 in table 2.2-6 requires dust control measures. Public health impacts from construction activities would be short term and minimal due to low population density surrounding the components of the Proposed Project.

As described in section 2.2.1.5, the proposed WMGF site would be patrolled and the access would be continually monitored through a guard service. As early as possible in the construction process, a perimeter fence would be installed. A guard shack manned 24 hours per day, 7 days per week would control access to the site. Therefore, the potential for injury due to trespassing at the site would be minimal.

For construction of the facility natural gas pipeline and transmission system additions, the boundaries of the work area would be surveyed and staked with fences, flags, or signs, as required by the Applicant's proposed mitigation two in table 2.2-7. Temporary fences would be erected wherever feasible to control public access to construction areas. In addition, construction equipment would be secured at night. Therefore, the potential for injury due to trespassing in construction areas would be minimal.

The residual health and safety impacts of construction to the public, as mitigated through the mitigation measures described in this section that are included as part of the Proposed Project, would be small and insignificant because there would be no public hazards beyond limits set by health and safety regulatory agencies and no threat to human life and/or property.

Operation

An accidental release of hazardous or toxic substances to the air or water is the primary health and safety risk to the public from operation of the proposed WMGF. Hazardous and toxic substances to be used at the proposed WMGF would be stored in tanks with secondary containment to contain leaks and spills. While the potential would exist for an accidental release of hazardous or toxic substances, the Applicant has a preliminary SPCCERP that would be updated and in place to minimize adverse impacts from spills and prevent exposure to the public. The Applicant also has a Facility Emergency Response Plan that includes methods for notifying the public and response agencies that a release has occurred (Wellton-Mohawk 2003b). All of the predicted air quality impacts are below both the NAAQS (established by EPA to protect public health and safety, including the health and safety of the sick and elderly) and Arizona's Air Quality Guidelines and Standards. Thus, with proper mitigations in place to prevent and control releases of hazardous and toxic substances and modeled air emissions below national and state standards, no significant impact is expected as a result of proposed WMGF operations.

During proposed WMGF operations, the lined evaporation pond could potentially become a breeding ground for mosquitoes that could be a nuisance to the public and could also, in very rare instances, transmit potentially life-threatening diseases. As described in Section 2.2.1.4, Waste Management, the 600 by 1,200-foot evaporation pond would be located directly east of the HRSGs and cooling towers and would be lined with a geomembrane. Water in the evaporation pond is expected to be too salty for mosquito production once the facility is operating, so no significant mosquito production is anticipated.

In addition, public health effects could potentially occur as a result of fire or a natural gas explosion. Fire and explosion hazard issues would be addressed through basic facility design considerations, such as fire suppression systems described in section 2.2.1.4. Therefore, the likelihood of fire or explosion would be very remote. In the event of a fire or explosion, facility damage would occur, but support from the Rural Metro Fire Department (section 2.2.1.4) would limit impacts to primarily be within the boundaries of the proposed WMGF site. There is an agreement with the Fire Department which would include disclosure of all information concerning the potentially toxic and hazardous materials that would be at the WMGF. This list and proper planning would reduce the risk to emergency responders in the unlikely event of a fire, explosion, or chemical spill. A detailed fire-fighting plan would be incorporated into the Facility's Emergency Response Plan prior to operation of the WMGF (Dome Valley 2005).

ACC mitigation measure 18 in table 2.2-6 requires compliance with all existing applicable ordinance, master plans, and regulations of the Federal, state, and local authorities. This mitigation measure would substantially reduce operation hazards to the public.

The residual health and safety impacts of construction and operation of the proposed WMGF, as mitigated through the mitigation measures described in this section that are included as part of the Proposed Project, would be small and insignificant because there would be no public hazards

beyond limits set by health and safety regulatory agencies and no threat to human life and/or property.

Additional Mitigations

To reduce the potential for mosquito breeding in the evaporation pond, Western proposes that the Applicant consult with a biologist knowledgeable on this topic to develop possible mitigation measures on the design (e.g., pond shape and depth) and operation (e.g., vegetation control around the edges) of the evaporation pond to reduce this potential public health risk to the extent feasible. Because the residual health and safety impacts of operation of the proposed WMGF with the mitigation measures included as part of the Proposed Project are not significant, no health and safety mitigation measures in addition to the mosquito control measure are recommended.

4.12.2.3 *Facility Natural Gas Pipeline*

Assessment of Impacts

Construction

For a discussion of construction activities associated with the facility natural gas pipeline, refer to the general construction discussion in section 4.12.2.2. Work area boundaries would be surveyed and staked with fences, flags, or signs, as required by the Applicant's proposed mitigation two in table 2.2-7. Temporary fences would be erected wherever feasible to control public access to construction areas. In addition, construction equipment would be secured when not in use. Therefore, the potential for injury due to trespassing in construction areas would be minimal.

Operation

Potential health impacts to the public from operation of the facility natural gas pipeline would be limited because the facility natural gas pipeline would be buried. As described in section 2.2.2.1, pipeline markers would be placed along the ROW to inform the public of the presence of the facility natural gas pipeline.

Possible public health effects could occur in the remote event of fire or a natural gas explosion. The facility natural gas pipeline would be designed and operated in accordance with CEC, state requirements, and 49 CFR Part 192, which prescribes minimum safety requirements for pipeline facilities and the transportation of gas, thus reducing the risk to the public from pipeline accidents.

ACC mitigation measure 18 in table 2.2-6 requires compliance with all existing applicable ordinance, master plans, and regulations of Federal, state, and local authorities. This mitigation measure would substantially reduce operation hazards to the public.

The residual health and safety impacts of construction and operation of the facility natural gas pipeline, as mitigated through the mitigation measures described in this section that are included as part of the Proposed Project, would be small and insignificant because there would be no public hazards beyond limits set by health and safety regulatory agencies no threat to human life and/or property. No additional health and safety mitigation measures are recommended.

4.12.2.4 *Transmission System Additions*

Assessment of Impacts

Construction

For a discussion of general construction activities associated with the transmission systems additions, refer to the general construction discussion in section 4.12.2.2. Temporary fences would be erected wherever feasible to control public access to construction areas. In addition, construction equipment would be secured at night except within the fenced areas of the substations or construction yards. Any equipment in the substations would be secure. Transmission line construction would have an area to secure equipment that would be fenced or patrolled. Therefore, the potential for injury due to trespassing in construction areas would be minimal.

Operation

The potential hazard to the public from climbing poles would not be a major concern because steel H-frame structures, which are not generally climbable, would make up a majority of the proposed transmission line structures. The lattice structures proposed for the upgraded Ligurta-Gila Transmission Line would be designed so that the clearance above the ground level would make unauthorized climbing of the structures by members of the public extremely difficult.

Lightning strikes to transmission line structures cause a very small number of wildfires. However, the transmission lines would be designed with overhead ground wires (unlike the existing wood structures along the Ligurta-Gila Transmission Line) and grounded structures to protect the system from lightning. The potential for vegetation and equipment fires would be reduced by the use of steel (versus wood) structures, proper grounding, ongoing routine maintenance of equipment, and keeping structure sites clear of tall vegetation.

The public would be exposed to electrical field effects (section 3.12.3) if they were in the immediate vicinity of the transmission lines. EMF exposure to the public would be temporary since any member of the public would only be near or under the transmission lines for a short period of time, and EMF would be strongest directly beneath the transmission lines and would diminish rapidly with increased distance from the transmission lines. The nearest residential dwellings are at least 0.25 mile away; so there would be no impact at that location. Also, the EMF fields around the transmission lines would be less than fields commonly found in the home or workplace.

In addition, there would be a potential for low-flying crop duster airplanes to collide with structures, conductors or guard wires on the new Ligurta-North Gila Transmission Line. The Ligurta-Dome Tap segment of the line either parallels or replaces existing transmission lines; so this would not be a new hazard for the crop dusters in that area. The Dome Tap-North Gila segment of the line would be a new hazard to crop duster aircraft. There would not be low-flying commercial aircraft in the project area as there are no airports in the vicinity. Bird diverter devices, as described in section 2.2.3.2, on the Gila River crossing would make the transmission line more visible to aircraft that may be flying the river corridor for recreation or sightseeing. Given that much of the route location is somewhat removed from agricultural lands, the new

transmission line parallels an existing line for much of its length, and the upgraded line replaces an existing one, the potential impacts to aircraft operations are expected to be insignificant.

The residual health and safety impacts of construction and operation of the transmission system additions, as mitigated through the mitigation measures described in this section that are included as part of the Proposed Project, would be small and insignificant because there would be no public hazards beyond limits set by health and safety regulatory agencies, no threat to human life and/or property, and EMF levels would be similar to or below typical household levels from common household wiring and appliances. No additional health and safety mitigation measures are recommended.

4.12.3 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be built or operated. The potential for accidents and human exposures to additional amounts of fugitive dust and noise associated with the Proposed Project would not occur. Existing EMF levels and health and safety considerations from transmission lines in the area would continue.

4.13 WASTE MANAGEMENT

4.13.1 Regulated Waste and Hazardous Waste

4.13.1.1 *Methodology and Significance Criteria*

This section discusses the potential regulated waste and hazardous waste management impacts of the Proposed Project and the No Action Alternative. The analysis is based on information provided in the preliminary SPCCERP prepared on behalf of Dome Valley (Wellton-Mohawk 2003b). Due to lack of specific information on the type and quantity of waste that would be generated from the Proposed Project, typical waste from a similar facility and its quantity was used to analyze impacts on waste management. The regulated and hazardous waste management impact analysis is an evaluation of the potential waste management effects from construction and operation activities. Other potential waste management effects such as human health effects were evaluated in Section 4.12, Health and Safety.

Regulated waste management impacts would be significant if the quantity of wastes generated exceed state or local treatment, storage, and disposal facilities processing rates or capacities in managing the additional waste. Hazardous waste management impacts would be significant if releases occurred, and there was damage to the environment, the workforce, or the public.

4.13.1.2 *Wellton-Mohawk Generating Facility*

Assessment of Impacts

Construction

During construction of the proposed WMGF, storage and use of fuel, lubricants, and other fluids could create a potential contamination hazard. Spills or leaks of regulated fluids could contaminate groundwater and affect aquifer use if not cleaned up promptly. According to the SPCCERP, various regulated and hazardous substances would be used at the proposed WMGF. These substances include transformer oil, insulating oil, lubricating oil, mineral oil, solvents,

scrap wood and metals, concrete, empty containers, insulation, and oil filters. The impact of leaks and spills would be minimized or avoided by training employees and carrying out proper handling procedures for the materials, and restricting the location of refueling activities. Mitigation measure seven in table 2.2-8 requires spills to be cleaned up and properly disposed of as soon as they occur per applicable state and Federal regulations. All regulated material spills must be reported promptly to the appropriate surface management agencies and hazardous materials management authorities. Cleanup material from oil spills would be properly contained, stored, and sent to recycling if possible. For a discussion of potential impacts of leaks or spills on groundwater, refer to section 4.2.2. No significant impacts from spills or leaks of regulated materials would occur if preventive and mitigating procedures outlined in the SPCCERP are carried out. No residual impacts from spills or leaks are anticipated.

Cleaning agents, solvents, oils, and other regulated wastes would be recycled or properly disposed of by the Applicant's construction contractor. There are 17 licensed treatment, storage, and disposal facilities in the Phoenix, Arizona, area that could potentially receive the limited quantities of hazardous waste that would be generated from construction of the proposed WMGF (ADEQ 2004a). Only facilities that are in good standing with ADEQ and EPA would be used. The quantities of hazardous waste that would be generated are well below the capacity of the available disposal facilities, and whenever possible, wastes would be recycled. Therefore, there would not be significant waste management impacts. The impact of waste disposal in landfills would be insignificant because the nearest landfill has a projected life in excess of 100 years. Table 4.13-1 provides a list of anticipated construction wastes.

Table 4.13-1. Summary of Anticipated Construction Wastes.

Waste Stream	Disposal Method	Estimated Quantity
Scrap wood, steel, glass, plastic, paper, insulation materials	Recycle	2,400 lb/month
Scrap metals	Recycle	1,000 lb/month
Empty hazardous material containers	Landfill or recycle	100 containers, intermittent
Spent welding materials	Recycle	20 lb/month
Waste oil filters	Recycle	100 lb/month
Oily rags, oil absorbent	Recycle or landfill	Two 55-gallon drums/month
Solvents, paints, adhesives	Recycle or incinerate	180 lb/month
Spent lead acid batteries	Recycle	10 batteries/month
Waste oil	Recycle	50 gallons/month
Sanitary waste	Landfill	200 gallons/week
Stormwater from construction area	Treat	55,000 gallons/average discharge per rain event
Pipe cleaning and flushing	Treat/recycle	2,400 gallons for construction

Operation

Operational wastes would be minimal, consisting of limited amounts of regulated and hazardous waste. Table 4.13-2 provides a list of wastes anticipated during operation of the Proposed Project. Table 3.13-1 lists the chemicals that would be stored and used onsite. Wastes generated

from operation and maintenance of the proposed WMGF would include limited quantities of cleaning agents and solvents, batteries, hydraulic fluid, used oil, filters, pads, small quantities of waste oil/rags, and water wash liquid that would have to be trucked off monthly. The oil/water separator waste would be trucked off semi-annually or annually. Used oil generated by the proposed WMGF would be transported to existing oil petroleum recycling facilities in Arizona. There are 17 licensed treatment, storage, and disposal facilities in the Phoenix, Arizona, area that could potentially receive the limited quantities of hazardous waste that would be generated from operation of the proposed WMGF (ADEQ 2004a). Only facilities that are in good standing with ADEQ and EPA would be used. Thus, there would not be significant hazardous waste management impacts because all hazardous materials would be properly stored and utilized, spills would be cleaned up promptly, and no damage to the environment is anticipated. The impact of waste disposal in landfills would be insignificant because the nearest landfill has a life expectancy of over 100 years.

Table 4.13-2. Summary of Anticipated Operating Wastes.

Waste Stream	Disposal Method	Estimated Quantity
Used equipment parts	Recycle	Less than 200 lb/month
Spent hydraulic fluid and oils	Recycle	Less than 720 lb/month
Spent lead acid batteries	Recycle	Less than 10 batteries/year
Spent alkaline batteries	Recycle	50 batteries/month
Waste oil from oil-water separator	Treat & recycle	1,500 gallons/year
Oily rags, oil absorbent	Recycle – landfill	55 gallon container/month
CTG used air filters	Recycle – landfill	100 lb/month
CTG water wash	Treat & recycle	120 gallons/6 months
Used Catalyst – Vanadium Oxide	Recycle	Quantity unknown – located in exhaust stacks to improve air quality – replaced about every 5 years generally recycled by the manufacturer
Paint	Recycle or treat	Quantity unknown
Spent solvents	Recycle	90 gallons/3 months
Sanitary wastewater	Treat - recycle	2,000 gallons/day
Industrial wastewater	Treat - recycle	323,000 gallons/day
Stormwater	Oil water separator treated and recycled	79,000 gallons average discharge per rain event

Hazardous Wastes and Emergency Management

The proposed WMGF would be a small-quantity hazardous waste generator since no more than 2,200 pounds per month of hazardous waste would be generated and stored at any given time of the year. Hazardous waste would be accumulated onsite up to 90 days prior to being transported and disposed of offsite. All containers would meet the requirements of 40 CFR 265, Subparts I and J, which regulates the use and management of containers for all owners and operators of hazardous waste facilities that store hazardous waste. All tanks and containers would be kept closed and would be clearly marked with hazardous waste labels indicating the generator name, address, EPA identification number, and the date accumulation began. The storage area for

hazardous material would be inspected daily and records would be made of the inspection until the waste is transported offsite for disposal.

If a release should occur, product and impacted material would be segregated accordingly and placed in suitable containers or tanks that will be stored onsite and ready for use. The containers would be labeled and stored in designated areas onsite, ready for use. Material Safety Data Sheets (MSDS) would be posted wherever hazardous materials are stored and at the hazardous waste storage area. Additionally, these locations would have signs that would indicate where and how to use the facility phone to implement the contingency plan during a release or other emergency. Spill response materials and personal protective equipment would be provided at the hazardous waste storage area. Spill prevention equipment would be inspected and maintained monthly.

Paint containers would be tightly sealed to prevent leaks or spills. Excess paint would be disposed of or recycled consistent with the manufacturer's recommendations and according to applicable regulations.

The Rural Metro Fire Department would provide fire and hazardous materials support for the proposed WMGF, as described in the SPCCERP. At the Applicant's request, the Rural Metro Fire Department has provided Dome Valley with a written commitment to serve the Proposed Project as a contracted service. The proposed WMGF would include a diesel-powered water pump to be used in case of a fire, and a 300-gallon diesel tank (Wellton-Mohawk 2003c).

In addition to fire emergency response, a spill/release response plan would be in place that provides mandatory rules that must be followed in the event of spill/release of regulated materials. An emergency response contractor would ship all cleanup material to a licensed treatment, storage, and disposal facility. If the recovered fuel has commercial value for energy recovery in boilers and industrial furnaces that are not regulated as hazardous waste incinerators, then the waste fuel would be recyclable material regulated under 40 CFR §360.14 and would not be a hazardous waste to the ultimate user. The residual impacts from a spill/release would be potential impacts to groundwater if the spill reaches the groundwater before it could be cleaned up. Refer to Section 4.2.2, Groundwater, for more discussion on potential impacts to groundwater from spill/release of hazardous material.

Wastewater Systems

The proposed WMGF wastewater system would be designed with a zero liquid discharge system and would reuse wastewater to the maximum extent practicable. Wastewater not suitable for direct reuse would be treated and recycled back into the process or discharged into an onsite evaporation pond. The mineral salts would be disposed of at the Copper Mountain Landfill. Therefore, there would be no significant impact from mineral salts removed from the evaporation pond.

The chemical waste collection and treatment system would be designed to collect and neutralize chemical wastewater originating in the proposed WMGF in an 11,000-gallon tank. Chemical waste sources include regeneration water demineralizer, chemical containment area drains, water treatment area floor drains, and laboratory drains. Soda ash would be used for neutralization.

Once the tank contents are neutralized, the waste would be transferred to the wastewater collection and treatment system. The waste would then be discharged to the onsite evaporation pond. The pond would be adjacent to the cooling tower, cooling tower water treatment facility, and septic tank/leach line location. Thus, there would be no significant impact from the chemical waste collection and treatment system.

Stormwater runoff from the developed part of proposed WMGF site, including the solar collection field, would be routed to an oil/water separator to remove any oil. Collected oil would be recycled or disposed of offsite at a hazardous waste facility in accordance with regulatory requirements. Water from the oil/water separator would be routed to the cooling tower basin for reuse. There would be no impacts to the quality of surface water and groundwater from this design because no contaminate/polluted wastewater would be discharged or allowed to collect in the unlined stormwater retention ponds and percolate into the ground water. No additional waste mitigation measures are recommended.

4.13.1.3 *Facility Natural Gas Pipeline*

Options 1 and 2

Assessment of Impacts

Construction

During construction of the facility natural gas pipeline, accidental spills of oils, chemicals, and other fluids used for maintaining construction equipment and vehicles could potentially contaminate groundwater and surface water. These impacts would be minimized or avoided by measures including restricting the location of refueling activities and requiring immediate cleanup of spills and leaks of hazardous materials. As a part of standard construction practices, regulated material would not be drained onto the ground or into drainages. Used oil would be recycled and hazardous waste would be disposed of per Federal and state waste regulations. Cleanup supplies, including drums, would be available onsite for immediate use in case of a spill. No residual impacts from accidental spills are anticipated if preventive and mitigation measures described are taken. Proper waste storage and disposal practices would be used for both regulated and hazardous wastes.

There would be no significant impacts to waste management from construction of the proposed facility natural gas pipeline because there would be no impacts to the environment and the life of the treatment, storage, and disposal facilities would not be significantly reduced.

Operation

No waste would be generated during normal facility natural gas pipeline operations, and there would be no waste management impacts.

4.13.1.4 *Transmission System Additions*

New and Upgraded Transmission Lines and Substations

Assessment of Impacts

Construction

During transmission line construction and installation of new equipment in the substations under the Proposed Project, accidental spills of oils, chemicals, and other fluids used in construction equipment maintenance could potentially contaminate groundwater and surface water. These impacts would be minimized or avoided by preventative measures including restricting the location of refueling activities and requiring immediate cleanup of spills and leaks. Standard construction practices require that regulated materials would not be drained onto the ground or into drainage areas. Used oil would be recycled and wastes would be disposed of or recycled in accordance with regulatory requirements. Appropriate cleanup supplies, including drums and absorbent materials, would be available onsite for immediate use in case of a spill. There would be no significant waste management impacts from construction of the transmission system additions because impacts to the environment would be avoided, and the amount of waste generated from construction would be too small to affect the life of the hazardous waste facilities.

Operation

Before the new substation additions would become operational, Western would review its SPCCERP plans for the Ligurta and North Gila substations to ensure the new equipment is addressed. Minimal amounts of waste from routine maintenance activities and herbicide use would be generated during normal operations of the transmission lines. Proper waste disposal practices would be used for all waste. There would be no significant impacts because there would be no impacts to the environment, and the amount of waste generated from operations would be too small to affect the life of hazardous waste facilities.

4.13.2 Septic and Sanitary Wastes

4.13.2.1 *Methodology and Significance Criteria*

This section discusses the potential impact from septic and sanitary wastes (trash), generated by the Proposed Project. The analysis is based on information provided in the preliminary SPCCERP prepared on behalf of Dome Valley (Wellton-Mohawk 2003b). The types and amounts of septic and sanitary wastes would be typical for construction worksites with a workforce ranging from 50 to 300 workers during construction at the proposed WMGF. During operation septic and sanitary waste generation would be typical for an industrial site with a normal workday staff of 15 persons, and night and weekend staffing of three persons. Septic and sanitary waste generation from construction of the facility natural gas pipeline would involve up to 40 workers and the transmission system additions would involve up to 50 workers. The septic and sanitary waste management impact analysis consists of an evaluation of the potential effects of septic and sanitary waste from construction and operation activities.

Waste management impacts would be significant if the septic wastes cause impacts to groundwater quality, or the sanitary wastes generated by the Proposed Project significantly reduces the life of state or local landfills.

4.13.2.2 *Wellton-Mohawk Generating Facility – Facility Natural Gas Pipeline and Transmission System Additions*

Assessment of Impacts

Construction

During construction of all components of the Proposed Project, septic waste would be removed from temporary portable toilets, hauled from the area, and disposed of in an approved sewage or septic system. The permanent septic system would be constructed early in the construction of the proposed WMGF, and that component would have an onsite septic system to be used by the construction trailers, before construction is completed. The onsite septic system and the location where the portable toilets are emptied will be approved by local permitting processes which will ensure that groundwater is not adversely impacted by septic waste associated with any of the components of the Proposed Project. Thus, impacts will not be significant.

During construction of the proposed WMGF, the facility natural gas pipeline, and the transmission system additions, sanitary wastes (trash) would be contained and hauled to an authorized landfill at least weekly. Since the nearest landfill has an anticipated life of over 100 years, the addition of the small quantity of waste generated by the Proposed Project would not have a significant impact.

Operation

Once in operation, the facility natural gas pipeline and transmission system additions will be unmanned. Therefore, it is not anticipated that there will be waste associated with these facilities. Only the substations may generate sanitary waste which should be removed at least monthly and sent to an authorized landfill.

Operation of the proposed WMGF will generate sanitary waste which will be removed to an authorized landfill at least weekly. Impacts from sanitary waste would not be significant because the small quantity of sanitary waste will go to a landfill with an estimated life of over 100 years.

4.13.3 No Action Alternative

Under the No Action Alternative, the Proposed Project would not be built or operated. There would be no generation of additional waste, and the potential for spills or wastes from the Proposed Project to effect soils or groundwater would not exist. Waste management facilities in the area would continue current operations.

4.14 UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

This section summarizes potential unavoidable adverse environmental effects associated with activities analyzed in the WMGF EIS. Unavoidable impacts are those that would occur after implementation of all committed and recommended additional mitigation measures. This

discussion does not include temporary impacts which would be mitigated. It also does not include impacts from speculative events, such as hazardous waste spills which are not cleaned up promptly in accordance with accepted mitigating measures. Recognizing the arid nature of the climate it is arbitrarily assumed that the permanent impacts would be those that are still evident 5 years after construction is complete and full scale operation begins. For the WMGF EIS, such impacts were identified for water, air quality, biological resources, cultural resources, visual resources, noise, and waste management.

Water

The proposed WMGF site would be graded and designed as a zero discharge system. Therefore, normal runoff from the 119 acre area would be contained and evaporated or sink into the groundwater from unlined ponds, rather than draining off to augment river flows. Any runoff that could be contaminated or polluted would be captured and sent to the oil separator and used in the plant or sent to the lined evaporation pond. These reduced surface flows and groundwater recharge would not be considered significant due to the relatively small size of the area, and some of the water would be utilized in the proposed WMGF, thus reducing the amount of water diverted from the Wellton-Mohawk Canal.

Air Quality

Generation of energy using gas turbines would cause unavoidable emissions of air pollutants that would be considered an adverse impact. Residual emissions are expected to be well below applicable ambient air quality standards. Air modeling predicted that there would be an impact to visibility at the federally designated Class II areas in the vicinity of the Proposed Project. Air quality modeling has shown BLM's Muggins Mountains Wilderness Area, the closest Class II area to the proposed WMGF would experience reduced visibility 4.63 percent of the time. This visibility impact and other impacts to air quality would not be significant because it would be within AAAQS and authorized by a permit from ADEQ.

Biological Resources

Construction of the proposed WMGF would permanently remove approximately 119 acres of desertscrub plant communities and replace them with structures and ancillary facilities. Approximately 20-30 acres of wind-blown sand deposits, suitable habitat for several special-status plant species, would be lost due to the proposed facility. However, inventory of the WMGF site found that none of the special status plants are present.

Construction of the proposed WMGF would destroy, unless salvaged, a population (86 individuals) of the parasitic *Pilostyles thurberi* and its host plant, dyeweed (*Psorothamnus emoryii*), which are present on the site. Because these plants are more widespread then previously believed, a sample of 24 healthy dyeweed plants, with *Pilostyles thruberi,* would be transplanted to better determine survival rates. Estimates are that there would be a 50-percent survival rate. *Pilostyles thurberi,* being a parasitic plant, will eventually kill all of the transplanted parasitized dye weed.

Construction of the proposed WMGF would displace some resident wildlife, and cause an inconsequential loss of habitat.

Construction of the facility natural gas pipeline would remove some desertscrub community. This impact is minimized by routing the pipeline as close as possible to the existing canal and its associated roads. The area would be revegetated with BLM approved native plant species as soon as construction was completed. However, due to the extreme aridity of the area, it would take an estimated 10 to 20 years before the shrub component of the vegetation is restored to its current level.

Construction of new transmission line structures and access roads would permanently remove vegetation. This impact has been minimized to the extent possible by making maximum use of existing ROW and access roads. Operation of the new transmission line would have minor effects on vegetation from vehicle access on roads under or near the transmission line. Operation of the transmission line would pose a mortality risk to birds from collisions with the conductors and towers, especially at the Gila River crossing. The impact to biological resources would not be considered significant because of the relatively small amount of vegetation and wildlife habitat that would be lost in a very expansive area of desertscrub. State-of-the-art bird flight diverter devices would be installed to minimize the risk to birds flying the Gila River corridor, and overall there would be no unmitigated impacts to special-status plants and animals which could impact the viability of the populations.

Cultural Resources

Cultural resources present in the affected areas could be adversely impacted by construction of the Proposed Project. Potential direct effects would be mitigated by inventory, avoidance, and collection of artifacts and data to preserve scientific values. Several existing access roads will be rerouted to avoid continuing impacts to four cultural resources sites, a positive benefit of the Proposed Project. The impact to cultural resources would not be significant because the mitigation of direct effects would comply with the requirements of the National Historic Preservation Act (NHPA). There would be impacts from the encroachment of the components of the Proposed Project on the solitude and aesthetics of the cultural sites, both visual and auditory, within the width of the transmission line ROW. The reduction in aesthetics and solitude at some cultural sites would be unavoidable, but would not be a violation of the NHPA. It could, however, be a significant impact to TCP locations important to Native American peoples. In some cases those TCPs are already significantly impacted by existing developments, while in others, a Proposed Project component may be the first major intrusion. Consultation with the PA signatories will continue in an effort to minimize these impacts, with final decisions made in the agency RODs.

Visual Resources

The area of the Proposed Project already has several visual intrusions from powerlines and the Ligurta Substation. The proposed WMGF is located adjacent to I-8 and it would be in the foreground as an industrial site with two 160-foot stacks with aircraft warning lights. Additionally, there would be several other buildings including a cooling tower 40-feet high, and 60-feet wide by 200-feet long. These features and the solar collector field would be painted with natural colors and partially hidden from view with berms. Multiple residences are in the viewshed of the proposed WMGF and transmission lines, with the residence 0.25 mile north of the proposed WMGF and a residential development, approximately 0.5 mile northeast of the

proposed WMGF being the closest. The overall impact of these project facilities would not be viewed as significant intrusions because the existing visual resources are already altered from their natural state (section 4.8.2). Nonetheless, they would be additional unavoidable visual intrusions.

Noise

Ambient noise in the area of the proposed WMGF would be increased by the operation of power generating turbines. However, the expected increase, at the nearest residence, would be so slight as to be imperceptible to the human ear. Impacts from noise of the proposed WMGF would not be considered significant because the project would be located in an already noisy environment, with traffic on I-8 and heavy railroad train traffic (more than one train per hour the day the noise analysis data was gathered).

Waste Management

Operation of the proposed WMGF would result in the generation of small quantities of wastes that would slightly decrease the life of existing landfills and increase shipments to Resource Conservation and Recovery Act-permitted treatment and disposal facilities. The impact to waste management would not be significant due to the high availability and large capacity of the available waste storage and treatment facilities.

Energy Utilization

The WMGF will use 1.756 million cubic feet of natural gas during its estimated 20-year operating life. Given the large supply of natural gas available through the regional, and national, interconnected natural gas pipeline system, the impact is considered to be small. The ACC has rules that the WMGF must utilize a new source of natural gas; so that current natural gas customers would not experience a shortage of natural gaus or a major increase in price due to the increased demand caused by WMGF.

Summary of Impact Significance

As noted above, each of the resources analyzed had insignificant impacts after application of mitigations, except for impacts to TCPs. Therefore, if all committed and additional recommended mitigation measures identified in this chapter are implemented, the Proposed Project is anticipated to have no significant adverse impacts except to TCPs. Western will continue to work with the affected tribes to identify ways and means of further reducing impacts to TCPs.

4.15 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

This section describes the irreversible and irretrievable commitments of resources associated with implementation of the Proposed Project. A commitment of resources is irreversible when primary or secondary impacts limit the future options for a resource. An irretrievable commitment refers to use or consumption of a resource that is neither renewable nor recoverable for use by future generations. Irretrievable commitment of resources applies to loss of nonrenewable resources such as minerals or cultural resources.

The life of the proposed WMGF is expected to be 20 to 30 years unless the facility is reconditioned, in which case it could operate considerably longer. When the proposed WMGF facility is eventually decommissioned, the generation facility would be removed and the site reclaimed. The facility natural gas pipeline would be drained and left in the ground, with all of the above ground features removed and the sites reclaimed. The transmission system additions and modifications can be removed; however, they are expected to be upgraded and continue to be used for the transfer of electricity across the region.

Construction of the proposed WMGF, transmission system additions, and facility natural gas pipeline would have irreplaceable impacts on energy and non-recyclable construction supplies.

Energy resources such as natural gas are nonrenewable, and therefore irretrievable. The Proposed Project would utilize 87.8 million cubic feet of natural gas per year (both phases) with an estimated project life of 20 years. Thus, over the life of the project, 1,756 million cubic feet of natural gas would be burned in the proposed WMGF. The allocation of this nonrenewable resource to electric power generation will prevent it from being available for alternative uses such as residential, commercial, and industrial heating, fertilizer manufacturing, and other chemical industry uses. Also, some undetermined amount of energy would have been spent on fabrication of the components of the Proposed Project. An example would be the energy required to make the pipe for the facility natural gas pipeline and the metals in the generation machinery. Once abandoned, the steel pipeline could not be economically recovered and recycled.

Cultural resources are nonrenewable, and disturbance of a site is an irretrievable impact to that resource. Preservation of archaeological sites would be pursued through cultural resource site avoidance and data recovery.

Construction of the proposed WMGF, transmission system additions, and facility natural gas pipeline would require an irretrievable commitment of some non-recyclable building materials and fuel for construction equipment. Many components of the proposed WMGF would be recycled, particularly the metal components. Theoretically, construction of facilities is a reversible commitment of land and water.

4.16 SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

This section discusses the Proposed Project's short-term use of the local environment and the maintenance and enhancement of long-term productivity of the environment. Construction and operation of the proposed WMGF would have an impact on the environment for the period of operation of the proposed WMGF, an estimated 20 to 30 years (but may be longer if the facility is reconditioned), which is considered to be the short-term for the sake of this discussion. The Proposed Project would require short-term commitments of resources such as soil, water, air resources, vegetation, wildlife populations and habitats, noise, visual resources, cultural resources, and land use. The impacts and utilization of resources associated with the Proposed Project were discussed earlier in this chapter.

The short-term use of the Proposed Project area would result in electricity being generated and distributed for use in the Yuma area and other areas. The electricity would provide heating and

cooling, lighting, and a multitude of other commercial and industrial uses which would provide for jobs and the comfort and well-being of people, as well as economic benefits.

When the proposed WMGF is decommissioned the facilities would be removed and be reclaimed. This action would restore the long-term productivity to the area with the following exceptions. The underground pipeline of the facility natural gas pipeline would be left buried in place, but that should not impact the long-term productivity of the area. The transmission lines are expected to be left to continue moving electricity throughout the region, and may be replaced or upgraded in the future. Thus the long-term productivity of the environment is expected to be impacted by the small surface area associated with the transmission line structures. Visual resources would be impacted by the presence of the transmission lines that would be in the I-8 viewshed and elsewhere within sight of people. Also, traditional uses of specific areas may be impacted with decreases in value over the long term because of the Proposed Project.

4.17 CUMULATIVE IMPACTS

4.17.1 Introduction

CEQ regulations implementing the procedural provisions of NEPA define cumulative effects 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 other actions" (40 CFR Part 1508.7). The regulations further explain that "cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." The cumulative effects analysis presented in this WMGF EIS is based on the potential effects (direct and indirect) of construction and operation of the proposed WMGF, facility natural gas pipeline, and transmission system additions combined with other past, present, and reasonably foreseeable future actions that could have effects in the ROI of the Proposed Project.

The following resources and environmental components have been evaluated for cumulative effects: water resources, air quality, biological resources, cultural resources, land use and recreation, transportation, visual resources, noise, socioeconomics, environmental justice, health and safety, and waste management.

4.17.2 Methodology

The cumulative effects were assessed by combining the anticipated Proposed Project activities with past development activities, present ongoing activities, and other reasonably foreseeable future projects and activities.

Anticipated Proposed Project activities are discussed in detail in chapters 1 through 4. Like the previous analysis, the ROI depends on the resource being analyzed. Thus, the past, present, and foreseeable future activities are identified in a broad perspective.

The primary past activities that have impacted the ROI and relate to the impacts of the proposed WMGF include the railroad, I-8 and other nearby roads such as Old Highway 80, the Wellton-Mohawk Canal with its associated pumping station, the Ligurta Substation and its supporting transmission and distribution lines, the development of communication towers in the vicinity of

Telegraph Pass, and the conversion of desert to agricultural land. The primary ongoing influences on the ROI include increasing tourism, rapid population growth resulting in land conversion from desert and agricultural into rural residential and traditional residential, increased demand for electrical and natural gas energy, increasing traffic congestion, declining air quality, increasing demands for water, and increasing "snowbird" use of the public lands for long-term winter camping.

One reasonably foreseeable action is Western's planned upgrade of its entire transmission system, and associated substations, in the area to 230-kV (section 2.3). The Proposed Project includes the upgrading of Ligurta-Gila, Ligurta-North Gila Transmission Lines and the upgrading of the Ligurta, Gila, and North Gila substations. Actions by others in the region include potential transfer of title to approximately 57,418 acres administered by Reclamation to WMIDD (section 2.1.2), potential construction of a new reservoir along the Wellton-Mohawk Canal (section 2.4.1) (Slocum 2003), potential construction and operation of a regional natural gas supply pipeline into the Yuma area (section 2.1.2), and potential construction and operation of a gasoline refinery at an undetermined location in Yuma County, likely to be along the I-8 corridor (Arizona Republic 2003). The potential location discussed for the gasoline refinery for this EIS is Tacna, approximately 20 miles east of the proposed WMGF site. There is also a potential new APS transmission line to better serve its load in Yuma. Construction of that line could involve double-circuiting the Ligurta-Gila portion of the Proposed Project; however, it would not be connected to either substation. An additional regional natural gas pipeline is being considered, and the rapid growth in population is expected to continue with its associated demands for land, water, and energy.

There is little definite knowledge about any of these actions other then the Proposed Project. The Western system upgrade to 230-kV is expected to start in 2007 and involve both the transmission lines and the associated substations. However, if current components of the system fail, they are replaced with 230-kV capable equipment. If the Proposed Project is built, the Ligurta-Gila and Ligurta-North Gila lines would not require modification, but substation equipment would be replaced with 230-kV equipment. ACC indicates there is a strong need for an increased natural gas supply for the Yuma region even without considering the WEMG need for natural gas. However, at this time there are no specific commitments to routes or size of the line(s). Water is at a premium in the Yuma region, and a potential reservoir site has been identified. However, at this time it is in the talking phase, and there is no firm funding commitment. The land transfer is in process, but has not been completed.

CEQ regulations implementing the procedural provisions of NEPA define cumulative effects 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 other actions" (40 CFR Part 1508.7). For example, if the impact to air quality from existing activities and the proposed WMGF added to the anticipated impact to air quality of the proposed gasoline refinery would cause air quality standards to be exceeded, a significant cumulative air impact would occur.

4.17.3 Cumulative Impacts by Resource

4.17.3.1 *Water Resources*

Water is at a premium in the Yuma region. Water usage by the Proposed Project would have no significant impact on any other water consumers in the area. The proposed WMGF would use water from the WMIDD to which WMIDD has current water rights. Water development and use has been critical to the conversion of lands from desert to agricultural uses, and to responding to the increased demand for domestic and industrial water due to growth in the area. These uses and demands would not be impacted by the Proposed Project because the Proposed Project would use WMIDD water which it already controls through the action of the state's water rights laws. The proposed allocation of water to the proposed WMGF would preclude alternative use of the water for agricultural, municipal, or industrial purposes.

The new reservoir proposed by WMIDD would alter the surface waters on the site. The reservoir would have a beneficial effect on local water supplies in the ROI by allowing WMIDD to better utilize its water for agricultural purposes by controlling the timing of irrigation and not being dependent upon Reclamation's flow schedules. The gasoline refinery would use some amount of cooling water depending on the cooling technology utilized. Upgrade of Western's transmission system, construction of the regional natural gas supply line, and the land transfer, would not affect the availability of water resources. The water supply is sufficient for the Proposed Project and foreseeable actions. When considered cumulatively with the Proposed Project's impacts, the cumulative impact on surface waters would not be significant.

Analysis of the Proposed Project indicates that it would not have a significant impact on groundwater because it would not use groundwater, and it would not pollute the groundwater because of mitigations preventing and/or controlling spills of hazardous and toxic substances. Thus there is no groundwater impact from the Proposed Project to add to the past, current, and proposed uses of groundwater, and there would be no significant cumulative impact to groundwater from the Proposed Project.

4.17.3.2 *Air Quality*

No significant impacts are expected to air quality in the Proposed Project area as a result of the Proposed Project. Construction along the ROW during Western's upgrade of its transmission system would result in fugitive dust emissions that may have a temporary adverse impact on local air quality. Construction of the new reservoir, regional gas pipeline, and gasoline refinery would also result in fugitive dust emissions that may have a temporary adverse impact on local air quality. These impacts would be insignificant to those associated with natural conditions and current agricultural activity in the area. The title transfer would have no direct impact on air quality.

There are other existing power generating units in the vicinity including the Yucca Generating Station and the Yuma Generating Station. The Yucca Generating Station is operated by APS. The sources at this facility include one gas-fired steam unit, five gas- and oil-fired CTG units, and an auxiliary boiler. The Yuma Generating Station is primarily solar and includes one unit plus a small standby boiler and emergency generator.

The air quality analysis of the proposed WMGF, combined with the existing significant sources in the vicinity and background concentrations, showed that all of the predicted impacts are below ambient air quality standards. The addition of a gasoline refinery in the area along I-8 would contribute additional emissions to the region. EPA's PSD increments would apply to the gasoline refinery and would prevent significant deterioration of air quality. Cumulatively, impacts of the foreseeable actions and the Proposed Project would not significantly impact air quality.

4.17.3.3 *Biological Resources*

The analysis of the Proposed Project found that there would be no significant impacts to plants, animals, or special-status species. The analysis showed that site development; pipeline construction and maintenance; and transmission line upgrading, construction, and maintenance had insignificant impacts on vegetation, wildlife, and special-status species if appropriate mitigating measures are used (such as intensive inventories, avoidance of habitats by routing adjustments, salvaging and transplanting of plants, and providing state-of-the art warning devices for preventing bird collisions with the wires crossing the Gila River).

In the past, biological resources have been impacted by construction of the railroad, I-8 and other roads, the Wellton-Mohawk Canal and its pumping station, the Ligurta Substation and its associated transmission and distribution lines, conversion of desert to agricultural land, and the conversion of agricultural and desert lands to residential uses. Native vegetation has been lost and animals have been displaced as a result of loss of habitat from these activities. Currently there is on-going loss of biological resources due to the rapid population growth in the area which causes land conversions for housing and supporting infrastructure. These conversions result in a loss of habitat for native plants, wildlife and special status species.

Concerning the foreseeable projects, at this time, the land transfer has no specifics on changes in land use which would involve disturbance to vegetation, wildlife, and special-status plant species. It is not anticipated that there would be significant adverse cumulative impacts. Additionally, Reclamation has a "may affect, but not likely to adversely affect" opinion from the USFWS for the total land transfer relative to the Yuma clapper rail and the southwestern willow flycatcher. The areas to be transferred include habitat for the Yuma clapper rail and the southwestern willow flycatcher. Impacts related to habitat being transferred out of Federal protection are being addressed by the title transfer process, which is evaluating impacts and mitigations.

Western's planned regional transmission system upgrades, including substation modifications, would be accomplished in accordance with mitigating measures and others established by BLM. These would be similar to the mitigations for the transmission system additions described for the Proposed Project. Thus, no significant impacts are anticipated from Western's regional transmission system upgrade, which would be cumulative to the impacts of the Proposed Project. The Proposed Project is only a part of this planned regional transmission work. Likewise the regional gas pipeline would be authorized with special stipulations for reclamation and avoidance of special status-species resulting from an EIS prepared by FERC, and again no significant impacts are anticipated from the regional gas pipeline which would be cumulative to the impacts of the Proposed Project.

The proposed reservoir and gasoline refinery would disturb biological resources. However, they would involve relatively small areas, and they would be well removed from the Proposed Project. Also, both state and Federal laws would provide protection for the special-status species. The APS transmission line proposal would disturb biological resources; however, some of it would be constructed with a ROW grant from BLM which would have the same mitigations as the Proposed Project, and there would be state and Federal laws to protect special-status species. Ongoing growth is probably the least controllable of the impacts to biological resources; however, county zoning and the enforcement of state and Federal laws to protect special-status species would mitigate some of those impacts.

In summary, impacts to biological resources are well mitigated with the possible exception of ongoing growth which is causing land use conversions. Considering that the quality of the habitat involved in the Proposed Project is low quality and there is a vast quantity of the same kind of habitat, no significant cumulative impact to biological resources is anticipated from construction and operation of the Proposed Project.

4.17.3.4 *Cultural Resources*

The analysis of the Proposed Project found no significant impacts to cultural resources based on compliance with the NHPA and the implementation of mitigating measures involving inventory, avoidance, or data recovery along with collection of all significant artifacts with detailed recording of their context. However, there is concern about impacts, even after mitigation to the full extent of what is required by law, and negotiations are ongoing with tribal interests to see if acceptable mitigations can be developed and carried out. There are cultural resource concerns about the land transfer because that action involves many cultural sites that would lose the protections provided to cultural resources on public lands. Again, there are on-going negotiations to see if acceptable mitigations can be developed for the protection of cultural resources on the land that is to be transferred, and/or retaining specific sites or TCPs in Federal ownership. The reservoir and the gasoline refinery footprints have not been identified; the existence and value of the cultural resources on those sites is unknown. However, cultural sites would likely be found once those areas have been inventoried. There are cultural resources along some of the transmission line and pipeline ROW in the Proposed Action. Therefore, it must be anticipated that there are cultural sites that would be on or near the ROW for the regional gas pipeline and Western's transmission line upgrades.

Impacts to cultural resources come in two forms. First, there are possible direct impacts of physical disturbance, destruction, and loss of artifacts. The scientific values of the artifacts are lost by simply disturbing the artifact by separating it from its context to other artifacts and its environment. This degradation increases as the artifacts or features are impacted by driving over them causing breakage, vandalism, or total removal. The second impact to cultural resources is indirect. This kind of impact is manifested in such things as visual intrusion of manmade objects on a cultural resource site/TCP, which may impact people who may visit the area and have an ethnographic connection to cultural sites, artifacts, and features. Both kinds of impacts are associated with increases in accessibility of remote areas. Access increases impacts to cultural resources and those impacts continue after the projects are completed due to the continued presence of people in an area.

Given the number of cultural sites involved in the Proposed Project, the other foreseeable activities, and the interest of the Native American community, there would be cumulative impacts to cultural resources of the aesthetic type. The tribes believe significant impacts due to development and other human activity have already occurred and will only increase in severity. Physical impacts to artifacts, features and sites are expected to continue long after the projects are built, since total protection of cultural resources is not possible.

Cultural resources also include historical sites. Segments of the Juan Bautista de Anza National Historic Trail, Butterfield Overland Mail Route, and Gila Trail are located along the same general routes as the facility natural gas pipeline and portions of the transmission line components of the Proposed Project. The trails run east through the pass between the Gila Mountains and the Laguna Mountains and follow the Gila River to the south and east. The general locations of these trail segments are known from documentary evidence. The exact locations of these trails are unknown as no physical evidence of the trails has been found in the Proposed Project area (Foster et al. 2004). There is no way to determine exactly where the Proposed Project or other foreseeable actions actually cross or overlie these trails.

The trails' interpretive value is in their relationship to the natural features in the landscape. The Proposed Project area already contains many visible manmade intrusions onto these natural features, particularly in the river valley, in the form of irrigation and drainage systems, power transmission systems, agricultural fields, railroad, and roadways. The impact of these additions to the already affected region would be additive, but the trail corridors and the natural features would retain their interpretive value; thus, the impact would not be significant. In time, these human intrusions may become historic in their own right.

The future upgrade of Western's regional transmission system, while involving only replacement of existing lines and substation equipment, could still impact cultural resources. Some of the ROW for Western's existing transmission lines have not been surveyed according to current standards and practices. Consultation with the tribes would also have to be initiated for the upgrade, and the work would require NEPA and NHPA compliance. Reclamation has prepared an EIS evaluating the proposed transfer of Federal land under their jurisdiction, within the ROI, to WMIDD. Reclamation is evaluating the impact of the cultural resources associated with that land losing Federal protection, and it is withdrawing some areas from the proposed transfer as a result. The area for the new reservoir was previously used for agriculture, making it much less likely that any significant cultural resources remain.

In the ROI, previous developments are infrastructure oriented, and have included multiple transportation systems (interstates, highways, paved roads, and railroads), irrigation and drainage systems (the Wellton-Mohawk Canal, the Gila Main Gravity Canal, and their associated infrastructure of pumps, levees, siphons, access roads, and gates), and power transmission systems (transmission lines and structures, substations, and access roads). Evidence of physical impacts to cultural resources from these developments can be found throughout the ROI. The developments have also visually impacted the landscape. Construction of the regional natural gas pipeline is likely to impact cultural resources along its route. The gasoline refinery is likely to be located in a more disturbed setting; however, depending on the location, there is a possibility of cultural resources being present.

Finally, the rapid population growth in the area is expected to continue with its associated impacts of changing land uses. The changing of open lands to developed lands for agricultural, residential, commercial, and industrial purposes, would impact cultural resources both physically and ethnographically because much of the change would occur on private lands were cultural resource are not afforded Federal protection under the NHPA.

The cumulative impacts of the Proposed Project, with mitigations, and the reasonably foreseeable actions would likely result in some physical impacts to archaeological or historical sites. Because of the regulations requiring the assessment of cultural resources and implementation of the consultation process to consider mitigations, the cumulative physical impacts from the Proposed Project, and foreseeable actions would not be significant. The new development will impact the cultural landscape, and the TCPs important to tribes would be visually and functionally impacted. These impacts would be similar to, and in addition to, those that have already occurred. The Proposed Project, when added to the other past, present, and reasonably foreseeable activities would result in a significant cumulative impact to cultural resources and the associated TCPs. A determination of the significance of these impacts will be made in consultation with the PA signatories. A specific plan would be developed in consultation with tribal representatives under the terms of the PA. This process is now in progress by Reclamation for the proposed title transfer of land to WMIDD. The result is that certain lands having significant cultural resources, primarily including rock art and intaglios are being dropped from the title transfer proposal.

4.17.3.5 *Land Use and Recreation*

In the past, land use associated with the Proposed Project area has been one of industrial uses at the plant site where there was a concrete batch plant. Adjacent to the proposed WMGF site is the Wellton-Mohawk Canal and associated pumping station, and the Ligurta Substation and associated transmission and distribution lines. The ROW associated with the Proposed Project would pass through areas having other ROW for ditches, canals, roads, transmission and distribution lines, etc. Yuma County has formally zoned the proposed WMGF site for industrial uses.

The land use for the ROW for Western's transmission system upgrade would remain the same. The land transfer would not directly affect land use in the area. The land use for the regional natural gas pipeline is not likely to change significantly as the pipeline would most likely be located within existing utility corridors.

The land use for the reservoir would change over 100 acres from open land, to use as a water project, which may or may not impact other land uses in the vicinity.

The gas refinery would represent a change in land use much like the development of the proposed WMGF. Land would change from an open undeveloped area to a complex industrial site with associated impacts on visual resources, air quality, noise, etc. which would cause an impact to potential land uses in the vicinity.

The growth pattern in the local area would not likely change as a result of construction and operation of the proposed WMGF and the foreseeable actions. Therefore, it is not expected that there would be a significant cumulative impact from the Proposed Project when its impacts are added to impacts of the past, present, and foreseeable actions.

4.17.3.6 *Transportation*

Employee-generated traffic related to the Western's system upgrade would be similar to that projected for the construction phase of the Proposed Project and is expected to have minimal impact on transportation in the area. Short-term traffic delays may occur at highway crossings and locations where local roads intersect with access roads due to large vehicles delivering equipment. Similar short-term increases in traffic would be expected from construction of the new reservoir, regional natural gas pipeline, and gasoline refinery. Long-term employment at the gasoline refinery would result in a minor increase in local traffic. The title transfer would have no direct impact on transportation in the area. The impacts of the Proposed Project and the foreseeable actions would occur at different times and at different locations; therefore, they would not have a significant cumulative impact on transportation in the area.

4.17.3.7 *Visual Resources*

Visual resources in the area have been impacted by intrusions like the railroad, Ligurta Substation, transmission lines, and the Mohawk-Wellton Canal and associated pumping station. The ROW supporting the Proposed Project would be following existing ROW for transmission lines and other purposes, and the Telegraph Pass portion of the route has numerous communication towers. The site of the transmission line crossing of the Gila River is impacted by repeated clearing of the 250-foot wide river channel for flood control, maintenance of a 60-foot wide fire break and a distribution line. Thus, there is not a high quality visual resource associated with the Proposed Project and no significant impacts were identified after application of the identified mitigations.

The visual impact of Western's transmission system upgrade would be negligible as the upgrade would replace existing transmission lines. The new reservoir would only impact the visual foreground of the few people near the project. The reservoir would not involve any tall facilities. The title transfer would not directly impact the visual resources of the area because there are no known land use changes associated with the title transfer, other than the Proposed Project. The regional natural gas pipeline is not expected to have any long term visual impact as the pipeline is likely to be sited within existing utility corridors. The cumulative impact to visual resources of the Proposed Project and the foreseeable actions within the viewshed of the Proposed Project would not be significant.

The gasoline refinery could require tall equipment including stacks and flares. The location near I-8 would involve a large number of potential viewers. Depending on the existing view, the impacts may be substantial. However, the gasoline refinery would not be within the viewshed of the Proposed Project, according to preliminary information. Thus no significant cumulative impacts to visual resources are expected from the Proposed Project, because the addition of the identified impacts from the reasonably foreseeable activities would not substantially modify the overall visual character of the area.

4.17.3.8 *Noise*

There were no significant noise impacts identified in the analysis of the Proposed Project. This was in part due to the high levels of noise in the vicinity from the traffic along I-8 and the current Union Pacific Railroad operations which averages a little more than one train per hour. The only

other foreseeable action that would generate significant noise is the gasoline refinery. Since noise is a localized effect, and the gasoline refinery would be located over 20 miles outside of the Proposed Project area, there would be no cumulative noise impact.

4.17.3.9 *Socioeconomics*

The analysis of the Proposed Project found that there were no significant impacts to socioeconomics in either the construction or operation phase. Impacts to population, housing, public services, community services, and the economic base were well within the expected fluctuations in the regional economy. Since all indications are that the foreseeable activities would not be constructed at the same time as the Proposed Project, it is anticipated that there would be no extra impacts resulting from having two or more of the foreseeable activities impacting the socioeconomic structure of the Yuma region at the same time. Therefore, there would be no significant cumulative socioeconomic impacts from the Proposed Project and the foreseeable activities.

4.17.3.10 *Environmental Justice*

Minority and low-income populations do not exist in sufficient densities to warrant their designation as minority or low-income populations under CEQ criteria, so there are no environmental justice impacts under those criteria. In addition, future projects would not have environmental justice impacts under those criteria unless the population characteristics change. Cultural resource and TCP issues are addressed in detail in section 4.5. Cumulative impacts to cultural resources and TCPs are described in section 4.17.3.4.

4.17.3.11 *Health and Safety*

Worker and public health impacts from the construction of the Proposed Project would be due to typical work-related injuries, fugitive dust emissions, increased noise, the remote potential for fires and natural gas explosions, and the handling, use and disposal of hazardous materials. All construction and operation and maintenance activities would have little to no impact because risks to worker and public health and safety would be minimized through facility design, safe work practices, and continuous maintenance in compliance with OSHA and state of Arizona regulations. Health and safety events that may occur within the nearby residential development, or along I-8, or the railroad, are unlikely to interact with those that might occur at Proposed Project facilities. Reasonably foreseeable activities, such as the proposed gasoline refinery, reservoir, regional natural gas pipeline, and transmission lines are similar but they will occur at different times and will, for the most part, be distant from the Proposed Project. Local zoning will control the encroachment of new developments on the Proposed Project, therefore, the impacts would not be additive toward causing unsafe work conditions and unsafe situations for the public. The proposed land transfer does not directly involve any construction, operation or maintenance of facilities, and therefore does not impact worker and public health or safety. The proposed gasoline refinery, reservoir, natural gas pipeline and transmission lines will be subject to permitting requirements that will address public and worker health and safety concerns, rendering cumulative impacts unlikely.

4.17.3.12 *Waste Management*

The analysis of the Proposed Project found that there were no significant impacts from waste management. The increment of waste generated by the Proposed Project is small. The reservoir, the regional natural gas pipeline, and Western's transmission line upgrades are unmanned facilities that would generate relatively small amounts of waste during the period of construction or periodic major maintenance activities. Thus there would be no continuous waste stream from these activities. The land transfer is not associated with any firm commitments that would generate waste other than the Proposed Project. The new refinery may be built on some of the transferred land. However, the waste that is generated by the refinery would be specific to the design of that facility, and refinery waste would not likely add to the waste from the Proposed Project such that it would result in a significant cumulative impact because the closest landfill has a projected life in excess of 100 years, and there are 17 permitted facilities in the Phoenix area that store and process hazardous wastes.

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5.0 CONSULTATION AND COORDINATION

This chapter summarizes the consultation efforts undertaken for the Proposed Project. It also contains a list of the permits that will likely be required by the various governmental agencies with jurisdiction, and a list of the government agencies, organizations, and individuals who will be sent a copy of this Draft environmental impact statement (EIS). This chapter also contains a list of the persons who prepared this EIS, and copies of the disclosure statements executed by the contractors involved.

5.1 AGENCIES AND PERSONS CONSULTED

CEQ regulations (40 CFR 1501.6) require that in preparing an EIS, the lead agency shall enlist the assistance of other governmental agencies that have jurisdiction by law (permitting responsibilities) as cooperating agencies. For the Wellton-Mohawk Generation Facility EIS, as stated in chapter 1, the Bureau of Reclamation (Reclamation) and the Bureau of Land Management (BLM) have permitting responsibilities and are participating as cooperating agencies. Consultations that were initiated during scoping are described in chapter 1, section 1.4. In addition, certain statutes and regulations require Western Area Power Administration (Western) to consult with Federal, state, and local agencies, as well as, federally recognized Native American tribes regarding the potential for the Proposed Project to adversely impact sensitive resources. Consultations must occur in a timely manner and are generally required before any land disturbance can begin. Most of these consultations are related to biological, cultural, and Native American resources. Biological resource consultations generally pertain to the potential for activities to disturb sensitive species or habitats. Cultural resource consultations pertain to the potential for damage to important cultural or archaeological sites. Native American consultations are concerned with the potential for disturbance of Native American ancestral sites, traditional cultural properties (TCP), and traditional practices.

Western is in ongoing consultation with Federal and state agencies as well as federally recognized Native American tribes regarding the potential for the Proposed Project to disturb sensitive resources. Table 5-1 lists permits and approvals potentially required for the Proposed Project. All agencies and Native American groups listed will be provided with a copy of the EIS. Information from the agencies' and Native American tribes' responses has been incorporated into chapters 3 and 4 as appropriate. Consultations will continue until agency decisions are finalized by a Record of Decision (ROD).

Western completed informal consultation with U.S. Fish and Wildlife Service (USFWS) regarding the Proposed Project's effects to proposed, candidate, and listed threatened and/or endangered species. A Biological Assessment (Western 2003d) was prepared addressing whether the Proposed Project would adversely affect proposed, candidate, or listed species; USFWS concurred with Western's determinations (appendix B, item #5), and section 7 requirements have been met.

Class I and Class III cultural resource surveys of the Proposed Project have been completed. Copies of the survey reports have been provided to the interested tribes for their review and comment. Consultations with affected tribes will continue throughout the NEPA process.

5.2 ADDITIONAL REVIEWS AND APPROVALS

There is no single Federal, state, or local entity or agency that has overall approval authority over the Proposed Project, or over any of its components such as the proposed Wellton-Mohawk Generating Facility (WMGF). Distinct from the Federal requirements, the approval processes associated with any proposed power plant in Arizona are multifaceted and involve several different regulatory reviews, requirements, and decisions. The Yuma County Planning and Zoning Division, Board of Adjustment approved a variance for construction of the WMGF exhaust stacks. The Arizona Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission (ACC), and the ACC itself, have unanimously approved the proposed WMGF following an analysis of technical reports that describe the feasible and prudent alternatives considered, the potential adverse environmental impacts of the alternatives, and the environmental compatibility of the proposed WMGF (ACC 2003). A Prevention of Significant Deterioration permit under the Clean Air Act was recently issued by the Arizona Department of Environmental Quality (ADEQ) in coordination with the U.S. Environmental Protection Agency (EPA). Table 5-1 lists the potentially required permits and approvals for the Proposed Project.

Table 5-1. List of Potentially Required Permits/Approvals.

Agency	Permit/Approval
ACC	Certificate of Environmental Compatibility
ADEQ Air Quality Control District	Air Quality Permits
USEPA	Prevention of Significant Deterioration (PSD) Permit
	Operating Permit
	Acid Rain Permit
	Toxic Air Emissions
ADEQ	Aquifer Protection Permit
ADEQ	Hazardous Waste Permit
ADEQ/EPA	Storm Water Permits
Arizona Department of State Lands	Friendly Condemnation by Western
Arizona Department of Agriculture	Native Plant Permit
Arizona Department of Transportation (ADOT)	Encroachment Permit
	Crossing Permit
	Boring Permit
	Class C Permit
Arizona State Historic Preservation Office	Concurrence or Agreement Document
Arizona State Museum	Cultural Resources Inventory Permit
	Burial Agreement
BLM	Right-of-Way (ROW) Grant
	Temporary Use Permit
Reclamation	Title transfer
	ROW concurrence
U.S. Army Corps of Engineers	Nationwide 404 Permits for the facility gas pipeline, new and upgraded transmission lines
USFWS	Concurrence or Biological Opinion
Western Area Power Administration	Interconnection Agreement

Table 5-1. List of Potentially Required Permits/Approvals. (*continued*)

Yuma County	Zoning Approval Industrial Use Permit Excavation/Grading Permit Septic Permit Permit for Temporary Construction Facilities Permit for Temporary Power Building Permits Permit to Build in Roadway Special Use Permit

5.3 LIST OF GOVERNMENT AGENCIES, ORGANIZATIONS AND INDIVIDUALS TO RECEIVE THE EIS

Federal Agencies

Advisory Council on Historic Preservation
Environmental Protection Agency
- Office of Federal Activities
- Region 9

Department of Agriculture
- Natural Resources Conservation Service
  - Phoenix
  - National Environmental Coordinator
- Rural Utilities Service

Department of Commerce
- Economic Development Administration

Department of Defense
- Army Corps of Engineers
  - Los Angeles
  - Phoenix
- Army Yuma Proving Ground Yuma
- Marine Corps Air Station Yuma
- Barry M. Goldwater Air Force Range

Department of Energy
- Western Area Power Administration
  - Desert Southwest Region
  - Western Area Power Administration
    - Corporate Services Office

Department of Homeland Security
- U.S. Customs and Border Protection - Yuma

Department of the Interior
- Office of Environmental Policy & Compliance
- Bureau of Indian Affairs – Fort Yuma Agency
- Bureau of Land Management
  - Yuma Field Office
  - Arizona State Office
- Bureau of Reclamation – Yuma Area Office
  - Salt River Project
- Fish and Wildlife Service
  - Imperial National Wildlife Refuge
  - Ecological Services Field Office - Phoenix
- Geological Survey - Yuma

Federal Energy Regulatory Commission
International Water and Boundary Commission
- El Paso
- Yuma

Indian Tribes and Communities

AhaMaKav Cultural Society
Ak-Chin Indian Community
Chemehuevi Tribal Council
Cocopah Indian Tribe
Colorado River Indian Tribal Museum
Colorado River Indian Tribes
Fort McDowell Mohave/Apache Indian Community
Fort Mohave Tribal Council
Fort Yuma Quechan Tribe
Gila River Cultural Advisory Committee
Gila River Indian Community
Gila River Indian Community Council

Indian Tribes and Communities (*continued*)

Hia-Ced O'odham Alliance
Hopi Office of Cultural Preservation
Hopi Tribe of Arizona
Hualapai Tribal Council
Kaibab Paiute Tribal Council
Pascua Yaqui Tribe
Pueblo of Zuni
Salt River Pima-Maricopa Indian Community
San Carlos Apache Tribe
San Carlos Tribal Council
The Navajo Nation
Tohono O'odham Nation
Tonto Apache Tribal Council
Viejas Band of Kumeyaay Indians
Yavapai Prescott Board of Directors
Yavapai Prescott Indian Tribe
Zuni Historic Preservation Office

State and Local Agencies

Arizona Corporation Commission
Arizona Corporation Commission
- Arizona Power Plant and Transmission Line Siting Committee
Arizona Department of Mines & Mineral Resources
Arizona Department of Environmental Quality
Arizona Department of Game and Fish
Arizona Department of Public Safety
Arizona Department of Transportation
Arizona Department of Water Resources
Arizona Office of Attorney General
Arizona State Historic Preservation Officer
Arizona State Land Department
Arizona State Parks
City of Yuma
Dept of Community Development
Town of Wellton
Western Arizona Council of Governments
Yuma County Board of Supervisors
Yuma County Planning & Zoning Div.

Public Officials

Janet Napolitano, Governor of Arizona
U.S. Senator Jon Kyl
U.S. Senator John McCain
U.S. Representative Raul Grijalva
State Representative Amanda Aguirre
State Representative Russell L. Jones
State Senator Robert Cannell

Water User, Power User, and Flood Control Agencies & Organizations

North Gila Valley Irrigation District
Yuma County Water Users Association
Yuma Irrigation District
Yuma Mesa Irrigation and Drainage District
Wellton-Mohawk Irrigation and Drainage District

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The WMGF EIS was prepared under the supervision of Western. The individuals who contributed to the preparation of this document are listed below, accompanied by their organization, education, years of experience, and project role.

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TETRA TECH		
Name/Title	**Education/Experience**	**Responsibility**
Blauer, H. Mark - Chemist	BS, Chemistry MS, Earth and Space Sciences PhD, Nuclear Chemistry 29 years experience	Technical input, Health and Safety, Quality assurance
Botz, Jacqueline	BA, French Language and Literature MBA, Business 11 years experience	Public outreach
Daily, Pam - Technical Editor	BA English for Writing 6 years experience	Technical editing
Dimmick, Ross - Geologist	BS, Geological Sciences MS, Geological Sciences 17 years of experience	Lead author, Socioeconomics and Environmental Justice
Elliot, Joe - Private Consultant	BS, Biology and Chemistry PhD, Botany 30 years experience	Technical input, Biological Resources, Threatened & Endangered Species
Fontenelle, Samantha	BA, Environmental Science MA, Environmental Studies Master of Public Health 10 years experience	Quality assurance
Gaige, C. David - Environmental Engineer	BS, Mechanical Engineer MS, Environmental Engineer 29 years experience	Technical input, Air Quality and Noise
Hill, Nikki	BA, Psychology and Social Science MBA, Business Administration 4 years experience	Technical input, Socioeconomics and Environmental Justice
Itani, Mahr	BS, Civil Engineering MEA, Engineering Administration 18 years experience	Quality assurance
Jarman, Clifford - Project Manager	BS, Geology MS, Geophysics 14 years experience	Project management, technical input, Geology and Soils
Lyncoln, Karen	BA, Urban Studies 30 years experience	Technical input, Environmental Justice
Pergler, Charles	BS, Range and Wildlands Science MS, Range Management 20 years experience	Technical input, Land Use

TETRA TECH (*continued*)		
Name/Title	**Education/Experience**	**Responsibility**
Plato, Paul - Geologist	BS, Geophysics 15 years experience	Technical input, Geology
Roberts, Larry - Hydrologist	BS, Geosciences MS, Fluvial Geomorphology & Hydrology 16 years experience	Technical input, Water Resources
Rodes, Leigh - Project Scientist	BA, Environmental Science 3 years experience	
Roxlau, Katherine - Anthropologist	BA, Anthropology MA, Anthropology 12 years experience	Technical input, Cultural Resources
Song, Jamie - Biologist	BS, Biology 3 years experience	Reference Coordinator, Technical input, Transportation and Waste Management
Smith, Mark E. - Civil Engineer	BS, Civil Engineering 13 years experience	Quality assurance
Zell, Erica - Deputy Project Manager	BS, MS, Environmental Engineering 6 years experience	Project Management, Technical input, Visual Resources and Health & Safety
Zeller, Michael - Hydrologist	BS, Physics 30 years experience	Technical input, Water Resources, surface water

Glenn Wallace Consulting		
Name/Title	**Education/Experience**	**Responsibility**
Schmidt, (Robert) Bob - Natural Resource Specialist	BS, Forestry 38 years experience	Technical input, Affected Environment and Environmental Impacts
Wallace, Glenn - Planning & Environmental Project Manager	BA, Social Science 32 years experience	NEPA compliance, and EIS preparation

CONSULTANT
APPLICANT'S ENVIRONMENTAL STUDIES

Greystone Environmental		
Name/Title	**Education/Experience**	**Responsibility**
Carpenter, Jennifer - Ecologist	BA, Ecology and Evolutionary Biology MS, Applied Ecology and Environmental Resources 8 years experience	Technical input, Biological Resources

Greystone Environmental (*continued*)		
Name/Title	**Education/Experience**	**Responsibility**
Cowan, Eric - Geographic Information Systems/ Computer Aided Drawing & Design (GIS/CADD) & Visual Resource Specialist	GIS Certificate 12 years experience	GIS/CADD, visual simulation support,
Florian, Chuck - Staff Ecologist	BS, Natural Resources Management 8 years experience	Technical input, Biological Resources
Frisbie, Gordon - Senior Air Quality Specialist	BS, Wildlife and Fisheries Biology MS, Environmental Engineering 16 years experience	Technical input, Air Quality
Goldstein, Beau - Anthropologist	BA, Anthropology MA, Anthropolgy 9 years experience	Technical input, Cultural Resources
Gregory, Jason - GIS & Visual Resource Specialist	BS, Natural Resource Assessment 15 years experience	GIS and visual simulation support
Killman, Larry - Project Manager	28 years experience	Project Management, Technical input, Hydrology, Biological Resources, Land Use, project features
McDermott, Mike - CADD & Visual Resource Specialist	AAS, Denver Technical College 5 years experience	CADD and visual simulation support
Pollio, Kenda - Project Manager	BS, Environmental/Urban & Regional Planning MA, Political Science – International Environmental Policy 13 years experience	Project Management, Technical input, Land Use, Socioeconomics, Environmental Justice, Transportation
Spath, Carl - Anthropologist	BA, Anthropology MA, Anthropology PhD, Anthropology 27 years experience	Technical input, Cultural Resources
Van Nice, Chris - GIS Analyst	Associate of General Studies BA, Anthropology BS, Geography/GIS 3 years experience	GIS support
Wilton, Jessica - Biologist	BA, Biology 3 years experience	Technical Review

5.5 DISCLOSURE STATEMENTS

TETRA TECH, INC.

Attachment:

National Environmental Policy Act Disclosure Statement for the Environmental Impact Statement for the Wellton-Mohawk Generating Facility, Yuma County Arizona

TETRA TECH, INC.

The Council on Environmental Quality (CEQ) regulations at 40 CFR 1506.5(c), which have been adopted by the Department of Energy (10 CFR 1021), require contractors who will prepare an Environmental Impact Statement (EIS) to execute a disclosure specifying that they have no financial or other interest in the outcome of the project. The term "financial or other interest in the outcome of the project" is defined for the purposes of this disclosure in Question 17 of the CEQ guidance "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," (46 FR 18026 - 18038).

> "Financial or other interest in the outcome of the project" includes "Any financial benefit such as promise of future construction or design work in the project, as well as indirect benefits the contractor is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)."

In accordance with these requirements, the Tetra Tech Team (i.e., Tetra Tech, Inc., and subcontractors) hereby certifies that the members of the Tetra Tech Team have no financial or other interest in the outcome of the Environmental Impact Statement for the Wellton-Mohawk Generating Facility, Yuma County, Arizona.

Certified by:

Signature

Clifford J. Jarman
Name

Project Manager
Title

STATEMENT OF NO FINANCIAL OR OTHER INTEREST

WELLTON-MOHAWK GENERATING FACILITY EIS

As required by 40 CFR 1506.5(c), I certify that neither I, nor any of my subcontractors have any financial or other interest in the outcome of the proposed Wellton-Mohawk Generating Facility Project that is the subject of this EIS.

Glenn Wallace

10/18/04
Date

6.0 GLOSSARY, REFERENCES, AND SCIENTIFIC ABBREVIATIONS

This chapter contains a glossary of words used in this environmental impact statement (EIS), and a list of references. In addition, it also has scientific abbreviations that the reader may encounter, an English-to-Metric conversion chart, and a list of metric prefixes that the reader may find helpful.

6.1 GLOSSARY

Acre-foot: The volume of water that will cover an area of 1 acre to a depth of 1 foot (326,000 gallons, 0.5 second foot days, 1,233.5 cubic meters).

Advisory Council on Historic Preservation: A 19-member body appointed to advise the President and Congress in the coordination of actions by Federal agencies on matters relating to historic preservation.

Aesthetics: Referring to the perception of beauty.

Affected environment: Existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, as the result of a proposed human action.

Air dispersion modeling: a mathematical simulation, usually computer-generated, of how gases, vapors, or particles disperse into the air.

Air pollutant: Generally, an airborne substance that could, in high enough concentrations, harm living things or cause damage to materials. From a regulatory perspective, an air pollutant is a substance for which emissions or atmospheric concentrations are regulated or for which maximum guideline levels have been established due to potential harmful effects on human health and welfare.

Air Quality Control Region (AQCR): Geographic subdivisions of the United States established to regulate pollution on a region or local level. Some regions span more than one state.

Air Quality Standards: The level of pollutants prescribed by regulation that may not be exceeded during a specified time in a defined area.

Alluvial deposits: Deposits of earth, sand, gravel, and other materials carried by moving surface water deposited at points of weak water flow.

Ambient air: Any unconfined portion of the atmosphere; open air, surrounding air. That portion of the atmosphere, external to buildings, to which the general public has access.

Amperes: Measure of the flow of electric current; source of a magnetic field.

Antiquities Act of 1906: Protects all historic and prehistoric sites on Federal lands and prohibits excavation or destruction of such antiquities unless a permit is obtained.

Applicant: Dome Valley Energy Partners, LLC; Wellton-Mohawk Irrigation and Drainage District; and the Yuma County Water Users' Association.

Aquifer: A body of rock or sediment in a formation, group of formations, or part of a formation that is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs.

Archaeological sites (resources): Any location where humans have altered the terrain or discarded artifacts during either prehistoric or historic times.

Archaeology: A scientific approach to the study of human ecology, cultural history, and cultural process.

Area of potential effects: The area of potential direct effect to cultural resources within which a systematic cultural resource inventory is required.

Artifact: An object produced or shaped by human workmanship of archaeological or historical interest.

Atmospheric dispersion: The process of air pollutants being dispersed into the atmosphere. This occurs by the wind that carries the pollutants away from their source and by turbulent air motion that results from solar heating of the Earth's surface and air movement over rough terrain and surfaces.

Attainment area: An area which the U.S. Environmental Protection Agency (EPA) has designated as being in compliance with one or more of the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter. Any area may be in attainment for some pollutants but not for others.

Auxiliary transformer: A backup transformer.

Background noise: The total acoustical and electrical noise from all sources in a measurement system that may interfere with the production, transmission, time averaging, measurement, or recording of an acoustical signal.

Blackout: Lack of illumination (and other uses of electricity) due to an electrical power failure.

Bounding: A credible upper limit to consequences or impacts.

Breaker: A switching device that is capable of closing or interrupting an electrical circuit under over-load or short-circuit conditions as well as under normal load conditions.

Brownout: A reduction or cutback in electrical power especially as a result of a shortage.

Bus: A set of two or more electrical conductors that serve as common connections between load circuits and each of the phases (in alternating current systems) of the source of electric power.

CALPUFF: An advanced non-steady-state meteorological and air quality modeling system adopted by the EPA as the preferred model for assessing long-range transport of pollutants and

their impacts on Federal Class I areas and on a case-by-case basis for near-field applications involving complex meteorological conditions.

Candidate species: A species of plant or animal for which there is sufficient information to indicate biological vulnerability and threat, and for which proposing to list as "threatened" or "endangered" is or may be appropriate.

Capability: The maximum load that a generator, turbine, transmission circuit, apparatus, station, or system can supply under specified conditions for a given time interval, without exceeding approved limits of temperature and stress.

Capacity: The load for which a generator, turbine, transformer, transmission circuit, apparatus, station, or system is rated. Capacity is also used synonymously with capability.

Carbon monoxide (CO): A colorless, odorless gas that is toxic if breathed in high concentrations over a period of time. It is formed as the product of the incomplete combustion of hydrocarbons (fuel).

Class I, II, and III Areas: Area classifications, defined by the Clean Air Act, for which there are established limits to the annual amount of air pollution increase. Class I areas include international parks and certain national parks and wilderness areas; allowable increases in air pollution are very limited. Air pollution increases in Class II areas are less limited, and are least limited in Class III areas. Areas not designated as Class I start out as Class II and may be reclassified up or down by the state, subject to Federal requirements.

Clean Air Act (CAA): (42 U.S.C. 7401 et seq.) Establishes (1) national air quality criteria and control techniques (section 7408); (2) NAAQS (section 7409); (3) state implementation plan requirements (section 4710); (4) Federal performance standards for stationary sources (section 4711); (5) National Emission Standards for Hazardous Air Pollutants (NESHAP) (section 7412); (6) applicability of CAA to Federal facilities (section 7418), i.e., Federal agency must comply with Federal, state, and local requirements respecting control and abatement of air pollution, including permit and other procedural requirements, to the same extent as any person; (7) Federal new motor vehicle emission standards (section 7521); (8) regulations for fuel (section 7545); (9) aircraft emission standards (section 7571).

Clean Water Act (CWA): (33 U.S.C. 1251 et seq.) Restores and maintains the chemical, physical, and biological integrity of the nation's waters.

***Code of Federal Regulations* (CFR):** All Federal regulations in force are published in codified form in the *Code of Federal Regulations*.

Combined-Cycle Generation Facility: The combination of a gas turbine and a steam turbine in an electric generation plant. The waste heat from the gas turbine provides the heat energy for the steam turbine.

Combustion turbine: Turbine operating on fuels that are capable of converting heat energy into electrical energy.

Combustion Turbine Generator (CTG): Turbine generator where inlet air would be compressed as it flows through the stages of the compressors, where it would then enter the combustion chambers.

Community (biotic): All plants and animals occupying a specific area under relatively similar conditions.

Compressor: A machine, especially a pump, for compressing air, gas, etc.

Conservation: A reduction in electric power consumption as a result of increases in the efficiency of energy use, production, or distribution.

Corona effect: Electrical breakdown of air into charged particles. It is caused by the electric field at the surface of conductors.

Council on Environmental Quality (CEQ): Established by the National Environmental Policy Act (NEPA), the CEQ consists of three members appointed by the President. A CEQ regulation (Title 40 CFR 1500-1508, as of July 1, 1986) describes the process for implementing NEPA, including preparation of environmental assessments and environmental impacts statements, and the timing and extent of public participation.

Criteria pollutants: An air pollutant that is regulated by the NAAQS. The EPA must describe the characteristics and potential health and welfare effects that form the basis for setting or revising the standard for each regulated pollutant. Criteria pollutants include sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter.

Critical habitat: Defined in the Endangered Species Act of 1973 as "specific areas within the geographical area occupied by [an endangered or threatened] species..., essential to the conservation of the species and which may require special management considerations or protection; and specific areas outside the geographical area occupied by the species... that are essential for the conservation of the species."

Cultural resources: Districts, sites, structures, and objects and evidence of some importance to a culture, a subculture, or a community for scientific, traditional, religious, and other reasons. These resources and relevant environmental data are important for describing and reconstructing past lifeways, for interpreting human behavior, and for predicting future courses of cultural development.

Cumulative impact: The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Customer: Any entity or entities purchasing power from the power generator or distributor provider.

Decibel (dB): A unit for expressing the relative intensity of sounds on a logarithmic scale from 0 for the average least perceptible sound to about 130 for the average level at which sound causes pain to humans. For traffic and industrial noise measurements, the A-weighted decibel (dBA), a frequency-weighted noise unit, is widely used. The A-weighted decibel scale corresponds approximately to the frequency response of the human ear and thus correlates well with loudness.

Demand: The rate at which energy is used at a given instant or averaged over a designated period of time.

Demineralizer: A device that removes minerals from raw water so that water can be utilized in industrial processes.

Deposition: In geology, the laying down of potential rock-forming materials; sedimentation. In atmospheric transport, the settling out on ground and building surfaces of atmospheric aerosols and particles ("dry deposition") or their removal from the air to the ground by precipitation ("wet deposition" or "rainout").

Dome Valley: Dome Valley Energy Partners LLC

Drawdown: The height difference between the natural water level in a formation and the reduced water level in the formation caused by the withdrawal of groundwater.

Drinking water standards: The prescribed level of constituents or characteristics in a drinking water supply that cannot be exceeded legally.

Ecology: A branch of science dealing with the interrelationships of living organisms with one another and with their nonliving environment.

Ecosystem: Living organisms and their nonliving (abiotic) environment functioning together as a community.

Effects (impacts): As used in NEPA documentation, the terms effects and impacts are synonymous. Effects can be ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

Elevation: Height in feet above sea level.

Eligibility: The criteria of significance in American history, architecture, archeology, engineering, and culture. The criteria require integrity and association with lives or events, distinctiveness for any of a variety of reasons, or importance because of information the property does or could hold.

Eligible cultural resource: A cultural resource that has been evaluated and reviewed by an agency and the State Historic Preservation Officer and recommended as eligible for inclusion in the National Register of Historic Places, based on the criteria of significance.

Emissions: Pollution discharged into the atmosphere from smoke stacks, other vents, and surface areas of commercial or industrial facilities, residential chimneys, and vehicle exhausts.

Emission Standards: Requirements established by a state, local government, or the EPA Administrator that limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.

Endangered species: Plants or animals that are in danger of extinction through all or a significant portion of their ranges and that have been listed as endangered by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures outlined in the Endangered Species Act and its implementing regulations (50 CFR 424). *Note: Some states also list species as endangered. Thus, in certain cases a state definition would also be appropriate.*

Endangered Species Act of 1973: (16 U.S.C. 1531 et seq.) Provides for listing and protection of animal and plant species identified as in danger, or likely to be in danger, or extinction throughout all or a significant portion of their range. Section 7 places strict requirements on Federal agencies to protect listed species.

Environmental Impact Statement (EIS): The detailed written statement that is required by section 102(2)(C) of NEPA for a proposed major Federal action significantly affecting the quality of the human environment. A Department Of Energy (DOE) EIS is prepared in accordance with applicable requirements of the CEQ NEPA regulations in 40 CFR Parts 1500-1508, and the U.S. Department of Energy (DOE) NEPA regulations in 10 CFR Part 1021.

Environmental Justice: Identification of potential disproportionately high and adverse impacts on low-income and/or minority populations that may result from proposed Federal actions (required by Executive Order 12898).

Energy: That which does or is capable of doing work. It is measured in terms of the work it is capable of doing; electric energy is usually measured in kilowatt-hours.

Environmental Portfolio Standard: An ACC provision stating that any load serving entity shall derive a percentage of its total retail energy sold from new solar resources or environmentally friendly renewable electricity technologies, whether that energy is purchased or generated by the seller.

Ephemeral stream: A stream or river that flows only after a period of heavy precipitation.

Erosion: Wearing away of soil and rock by weathering and the actions of surface water, wind, and underground water.

Ethnographic: Information about cultural beliefs and practices.

Executive Order 12898: Issued by the President on February 11, 1994, this Executive Order requires Federal agencies to develop implementation strategies, identify low-income and minority populations that may be disproportionately impacted by proposed Federal actions, and solicit the participation of low-income and minority populations.

"F" type: Frame type combustion turbine generator.

Facility: The power generating components of the natural gas-fired, simple cycle peaking power plant.

Fault: A fracture or a zone of fractures within a rock formation along which vertical, horizontal, or transverse slippage has occurred. A normal fault occurs when the hanging wall has been depressed in relation to the footwall. A reverse fault occurs when the hanging wall has been raised in relation to the footwall.

Federal Energy Regulatory Commission (FERC): An agency within DOE that regulates interstate transfers of electrical energy, certificates for natural gas pipelines, resource development, and other energy actions.

Federal Land Policy and Management Act (FLPMA): This Act constitutes the organic act for the Bureau of Land Management and governs most uses of the Federal public lands, including grazing. The Act requires the Bureau of Land Management to execute its management powers under a land use planning process that is based on multiple use and sustained yield principles. The Act also provides for public land sales, withdrawals, acquisitions and exchanges.

Field effect: Induced currents and voltages as well as related effects that might occur as a result of electric and magnetic fields at ground level.

Floodplain: The lowlands adjoining inland and coastal waters and relatively flat areas, including at a minimum that area inundated by a 1-percent or greater chance flood in any given year. The base floodplain is defined as the 100-year (1.0 percent) floodplain. The critical action floodplain is defined as the 500-year (0.2 percent) floodplain.

Formation: In geology, the primary unit of formal stratigraphic mapping or description. Most formations possess certain distinctive features.

Generating unit: The combination of a generator and step-up transformer.

Generation: The act or process of producing electricity from other forms of energy.

Generator: A machine that converts mechanical energy into electrical energy.

Groundwater: Water within the earth that supplies wells and springs.

Hazardous Air Pollutants: Air pollutants that are not covered by ambient air quality standards, but that may present a threat of adverse human health effects or adverse environmental effects.

Hazardous waste: A category of waste regulated under the Resource Conservation and Recovery Act (RCRA). To be considered hazardous, a waste must be a solid waste under RCRA and must exhibit at least one of four characteristics described in 40 CFR 261.20 through 40 CFR 261.24 (i.e., ignitability, corrosivity, reactivity, or toxicity) or be specifically listed by the Environmental Protection Agency in 40 CFR 261.31 through 40 CFR 261.33.

Heat Recovery Steam Generators (HRSG): A device that is coupled to a combustion turbine to produce high temperature steam for electrical generation.

Historic properties: Properties of national, state, or local significance in American history, architecture, archaeology, engineering, or culture, and worthy of preservation.

Hydraulic conductivity: A coefficient describing the rate at which water can move through a permeable medium.

Hydric soils: Soils containing considerable moisture.

Hydrophytic vegetation: Vegetation adapted to an aquatic or very wet environment

Impacts (effects): An assessment of the meaning of changes in all attributes being studied for a given resource; an aggregation of all the positive and negative effects, usually measured using a qualitative and nominally subjective technique. In this EIS, as well as in the CEQ regulations, the word impact is used synonymously with the word effect.

Indirect impacts: Impacts resulting from an action that are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Infrastructure: The basic installations and facilities on which the continuance and growth of a community or state (e.g., roads, schools, power plants, transportation, communication systems) are based.

Intaglio: A design or figure incised beneath the surface of hard stone.

Interested parties: Those groups or individuals that are interested, for whatever reason, in the project and its progress. Interested parties include but are not limited to private individuals, public agencies, organizations, customers, and potential customers.

Invertebrate: Animals characterized by not having a backbone or spinal column, including a wide variety of organisms such as insects, spiders, worms, clams, crayfish, etc.

Irrigation District: An irrigation district typically provides irrigation water for agricultural use by diverting water from a river or stream, and drainage services by re-capturing used irrigation water. In the case of the Wellton-Mohawk Irrigation and Drainage District (WMIDD), it also provides electrical service within its district boundaries.

Kilovolt (kV): The electrical unit of power that equals 1,000 volts.

Lithic: A stone artifact that has been modified or altered by human hands.

Load: The amount of electric power required at a given point on a system.

Loam: A rich, permeable soil composed of a mixture of clay, silt, sand, and organic matter.

Low-income population: A population that is classified by the U.S. Bureau of the Census as having an aggregated mean income level for a family of four that correlates to $13,359, adjusted through the poverty index using a standard of living percentage change where applicable, and whose composition is at least 25 percent of the total population of a defined area or jurisdiction.

Major source: Any stationary source or group of stationary sources in which all of the pollutant-emitting activities at such source emit, or have the potential to emit, 100 or more tons per year of any regulated air pollutants.

Mammal: Animals in the class Mammalia that are distinguished by having self regulating body temperature, hair, and in females, milk-producing mammary glands to feed their young.

Mechanical Draft Cooling Towers: Used for the condensers to reject heat. Additional cooling water would be used to cool auxiliary equipment as required and dissipate the heat from the inlet chilling system.

Megawatt (MW): The electrical unit of power that equals 1 million watts or 1 thousand kilowatts.

Meteorology: The science dealing with the dynamics of the atmosphere and it phenomena, especially relating to weather.

Mineral: Naturally occurring inorganic element or compound.

Minority Population: A population that is classified by the U.S. Bureau of the Census as African American, Hispanic American, Asian and Pacific American, American Indian, Eskimo, Aleut, and other non-White persons, whose composition is at least 25 percent of the total population of a defined area or jurisdiction.

Mitigation: The alleviation of adverse impacts on environmental resources by avoidance through project redesign or project relocation, by protection, or by adequate scientific study.

National Ambient Air Quality Standards (NAAQS): Standards defining the highest allowable levels of certain pollutants in the ambient air. Because the EPA must establish the criteria for setting these standards, the regulated pollutants are called criteria pollutants.

National Emissions Standards for Hazardous Air Pollutants (NESHAP): Emissions standards set by the EPA for air pollutants which are not covered by NAAQS and which may, at sufficiently high levels, cause increased fatalities, irreversible health effects, or incapacitating illness.

National Environmental Policy Act: This Act (42 U.S.C. 4341, passed by Congress in 1975) established a national policy designed to encourage consideration of the influences of human activities (e.g., population growth, high-density urbanization, industrial development) on the natural environment. NEPA also established the CEQ. NEPA procedures require that environmental information be made available to the public before decisions are made. Information contained in NEPA documents must focus on the relevant issues in order to facilitate the decision-making process.

National Historic Preservation Act: (NHPA): (16 U.S.C. 470) Provides for an expanded National Register of Historic Places (NRHP) to register districts, sites, buildings, structures, and objects significant to American history, architecture, archaeology, and culture. Section 106 requires that the President's Advisory Council on Historic Preservation be afforded an opportunity to comment on any undertaking that adversely affects properties listed in the NRHP.

National Pollutant Discharge Elimination System (NPDES) Permit: Federal regulation (40 CFR Parts 122 and 125) that requires permits for the discharge of pollutants from any point source into the waters of the U.S. regulated through the Clean Water Act, as amended.

National Register of Historic Places (NRHP): A list maintained by the Secretary of the Interior of districts, sites, buildings, structures, and objects of prehistoric or historic local, state, or National significance. The list is expanded as authorized by section 2(b) of the Historic Sites Act of 1935 (16 U.S.C. 462) and section 101(a)(1)(A) of the National Historic Preservation Act of 1966, as amended.

Native American: A tribe, people, or culture that is indigenous to the United States.

Native vegetation: Plant life that occurs naturally in an area without agricultural or cultivation efforts. It does not include species that have been introduced from other geographical areas and have become naturalized.

Noise: Unwanted or undesirable sound, usually characterized as being so loud as to interfere with, or be inappropriate to, normal activities such as communication, sleep, study or recreation. (background noise.)

Nonattainment: An area shown by monitored data or modeling to exceed National Ambient Air Quality Standards for a particular air pollutant.

Nonattainment area: An area that the EPA has designated as not meeting (that is, not being in attainment of) one or more of the NAAQS for criteria pollutants. An area may be in attainment for some pollutants, but not others.

Obligate species: Plant species that almost always occur in wetlands (i.e., greater than 99 percent of the time).

Open Access Transmission Service Tariff (OATT): A document (typically filed with a regulatory body) that sets forth the rates, terms, and conditions under which an interested entity can receive transmission service from an electric utility. Western's OATT filed with FERC requires Western to offer its transmission lines for delivery of electricity when capacity is available.

Ozone: A molecule of three oxygen atoms bound together. In the stratosphere, ozone protects the earth from the sun's ultraviolet rays but in the lower levels of the atmosphere, ozone is considered an air pollutant.

Paleontology: The study of fossils.

Particulate matter: Any finely divided solid or liquid material, other than uncombined water.

Peak capacity: The maximum capacity of a system to meet loads.

Peak demand: The highest demand for power during a stated period of time.

Permeability: The ability of rock or soil to transmit a fluid.

pH: A measure of the relative acidity or alkalinity of a solution, expressed on scale from 0 to 14, with the neutral point at 7.0. Acid solutions have pH values lower than 7.0, and basic (i.e. alkaline) solutions have pH values higher than 7.0. Because pH is the negative logarithm of the hydrogen ion (H_+) concentration, each unit increase in pH value expresses a change of state of 10 times the preceding state. Thus, pH 5 is 10 times more acidic than pH 6, and pH 9 is 10 times more alkaline than pH 8.

Physiography: The science of the surface of the earth and the interrelations of air, water, and land.

Plume: Visible or measurable discharges of a contaminant from a given point or area of origin into the environment.

Prehistoric: Of, relating to, or existing in times before written history. Prehistoric cultural resources are those that precede written records of the human cultures that produced them.

Prevention of Significant Deterioration (PSD): Regulations established to prevent significant deterioration of air quality in areas that already meet NAAQS. Among other provisions, cumulative increases in sulfur dioxide, nitrogen dioxide, and PM_{10} levels after specified baseline dates must not exceed specified maximum allowable amounts.

Prime farmland: Soil types with a combination of characteristics that make the soils particularly productive for agriculture.

Raptor: Birds of prey including various types of hawks, falcons, eagles, vultures, and owls.

Record of Decision (ROD): A concise public document that records a Federal agency's decision(s) concerning a proposed action for which the agency has prepared, or cooperated in the preparation of an EIS. The ROD is prepared in accordance with the requirements of the CEQ NEPA regulations (40 CFR 1505.2).

Region of Influence (ROI): The geographical region that would be expected to be affected in some way by a proposed action and alternatives.

Reliability: The ability of the power system to provide customers uninterrupted electric service. Includes generation, transmission, and distribution reliability.

Reliably must run (RMR): Condition in which a local area transmission grid may not operate reliably solely because of insufficient generation in service within the local area. Generating units may be designated as RMR to run during certain conditions to maintain reliable service to customers.

Right-of-way (ROW): An easement for a certain purpose over the land of another, such as a strip of land used for a transmission line, roadway or pipeline.

Riparian: Of or pertaining to the bank of a river, stream, lake, or other water bodies.

Runoff: The portion of rainfall, melted snow, or irrigation water that flows across the ground surface and may eventually enter streams.

Saturated zone: The zone in which the voids in the rock or soil are filled with water at a pressure greater than atmospheric pressure. The water table is the top of the saturated zone in an unconfined aquifer.

Scoping: An early, open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

Section 106 Process: A National Historic Preservation Act (16 U.S.C. §470 et seq.) review process used to identify, evaluate, and protect cultural resources eligible for nomination to the NRHP that may be affected by Federal actions or undertakings.

Sediment: Material deposited by wind or water.

Sedimentation: The process of deposition of sediment, especially by mechanical means from a state of suspension in water.

SEECOT™ Solar Thermal System: Solar-energy-based technology that allows solar energy to be converted into thermal energy, which is used in a chilling system that reduces the temperature of the inlet combustion air to the Combustion Turbine Generators.

Seismic: Pertaining to any earth vibration, especially an earthquake.

Sensitive species: Those plants and animals for which population viability is a concern, as shown by a significant current or predicted downward trend in populations or density and significant or predicted downward trend in habitat capability.

Sheeps-Footing: A mechanical means of soil compaction using a roller with stobs that leave depressions in the soil.

Socioeconomics: The social and economic condition in the study area.

Solid waste: In general, solid wastes are non-liquid, non-soluble discarded materials ranging from municipal garbage to industrial wastes that contain complex and sometimes hazardous substances. Solid wastes include sewage sludge, agricultural refuse, demolition wastes, and mining residues.

Special-status species: Those species that have been identified as endangered, threatened, proposed, state species of special concern, or state protected.

State Historic Preservation Officer (SHPO): The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as liaison for purposes of implementing the National Historic Preservation Act.

Steam Turbine Generator and Condenser (STG): A device that uses high pressure steam to drive a generator to produce electricity. In the WMGF it will be powered by the superheated steam from HRSGs, the steam passes through the STGs and the exhaust steam would be condensed in surface condensers. The condensate would be removed from the condensers and pumped to the HRSGs.

Step-up transformer: Transformer in which the energy transfer is from a low- to a high-voltage winding or windings. (Winding means one or more turns of wire forming a continuous coil for a transformer, relay, rotating machine, or other electric device.)

Substation: Facility with transformers where voltage on transmission lines change from one level to another.

Surface water: All bodies of water on the surface of the earth and open to the atmosphere, such as rivers, lakes, reservoirs, ponds, seas, and estuaries.

Switchyard: Facility with circuit breakers and automatic switches to turn power on and off on different transmission lines.

Tap: To tie a substation into an existing transmission line through a connection.

Threatened species: Plant and wildlife species likely to become endangered in the foreseeable future.

Traditional Cultural Property/Use Area: Areas of significance to the beliefs, customs, and practices of a community of people that have been passed down through generations.

Transformer: A device for transferring energy from one circuit to another in an alternating-current system. Its most frequent use in power systems is for changing voltage levels.

Transmission line: The structures, insulators, conductors and other equipment used to transfer electrical power from one point to another.

Transmissivity: The rate at which water is transmitted through an aquifer.

U.S. Environmental Protection Agency (EPA): The independent Federal agency, established in 1970, that regulates Federal environmental matters and oversees the implementation of Federal environmental laws.

Uncomformably: A geologic term describing where there was a time gap between the rock layers where deposition did not occur, or was laid down and then eroded prior to the formation of the younger layers of rock.

Vertebrate: Animals that are members of the subphylum Vertebrata, including the fishes, amphibians, reptiles, birds, and mammals, all of which are characterized by having a segmented bony or cartilaginous spinal column.

Volatile Organic Compounds (VOCs): A broad range of organic compounds, often halogenated, that vaporize at typically background or relatively low temperatures.

Volt: The unit of voltage or potential difference. It is the electromotive force which, if steadily applied to a circuit having a resistance of one ohm, will produce a current of one ampere.

Voltage: Potential for an electric charge to do work; source of an electric field.

Western Area Power Administration: A power marketing agency of the DOE that was established on December 21, 1977, pursuant to Section 302 of the DOE Organization Act, Public Law 95-961.

Western's Desert Southwestern Customer Service Regional Office: Manages transmission facilities in the States of Arizona, California, and Nevada.

Wetland: Land or areas exhibiting hydric soil concentrations, saturated or inundated soil during some portion of the year, and plant species tolerant of such conditions.

Wind rose: A circular diagram showing, for a specific location, the percentage of the time the wind is from each compass direction. It may also show the frequency of different wind speeds for each compass direction.

Withdrawn Lands: United States Government lands that were originally acquired by the Federal government (e.g. Louisiana purchase) and were subsequently set aside for a specific purpose (e.g. a ntaionl park, a national forest, a Bureau of Reclamation project.)

Yield: A measure of the availability of water to meet authorized purposes sometimes defined in terms of the ability to meet project needs within specific time periods.

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6.3 SCIENTIFIC ABBREVIATIONS, ENGLISH-METRIC CONVERSION CHART AND METRIC PREFIXES

ac-ft	acre foot or acre feet
bcf	billion cubic feet
cf/hr	cubic feet per hour
cfs	cubic feet per second
CO	carbon monoxide
CO_2	carbon dioxide
dB	decibel
dBA	weighted sound levels
F	Fahrenheit
ft	feet
ft/sec	feet per second
gm	gram
gpm	gallons per minute
H_2	hydrogen
Hz	Hertz
K	Kelvin
km	kilometer

kV	kilovolt
L_{10}, L_{50}, L_{90}	statistical noise descriptors
L_{dn}	day-night average noise level
L_{eq}	equivalent sound level
L_{max}	root mean square maximum
L_{min}	root mean square minimum
kV/m	kilovolt per meter
lbs	pounds
mG	milligauss
$\mu g/m^3$	microgram per cubic meter
mg/m^3	milligram per cubic meter
m	meter
mg/L	milligram per liter
MMBTU	million British Thermal Unit
MMscf	million standard cubic feet
mmcf	million cubic feet
MW	megawatt
MWh	megawatt hour
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
ppb	parts per billion
ppm	parts per million
psig	pounds per square inch gauge
SO_2	sulfur dioxide
SO_4	sulfate
SF_6	sulfur hexaflouride
tpy	tons per year

CONVERSION CHART

To Convert Into Metric			To Convert Into English		
If You Know	**Multiply By**	**To Get**	**If You Know**	**Multiply By**	**To Get**
Length					
inch	2.54	centimeter	centimeter	0.3937	inch
feet	30.48	centimeter	centimeter	0.0328	feet
feet	0.3048	meter	meter	3.281	feet
yard	0.9144	meter	meter	1.0936	yard
mile	1.60934	kilometer	kilometer	0.62414	mile (Statute)
Area					
square inch	6.4516	square centimeter	square centimeter	0.155	square inch
square feet	0.092903	square meter	square meter	10.7639	square feet
square yard	0.8361	square meter	square meter	1.196	square yard
acre	0.40469	hectare	hectare	2.471	acre
square mile	2.58999	square kilometer	square kilometer	0.3861	square mile
acre-foot	1233.48	cubic meter	cubic meter	0.00081	acre-foot
Volume					
fluid ounce	29.574	milliliter	milliliter	0.0338	fluid ounce
gallon	3.7854	liter	liter	0.26417	gallon
gallon	0.0039	cubic meter	cubic meter	256.14	gallon
cubic feet	0.028317	cubic meter	cubic meter	35.315	cubic feet
cubic yard	0.76455	cubic meter	cubic meter	1.308	cubic yard
Weight					
ounce	28.3495	gram	gram	0.03527	ounce
pound	0.45360	kilogram	kilogram	2.2046	pound
short ton	0.90718	metric ton	metric ton	1.1023	short ton
Force					
dyne	0.00001	Newton	Newton	100,000	dyne
Temperature					
Fahrenheit	Subtract 32 then multiply by 5/9ths	Celsius	Celsius	Multiply by 9/5ths, then add 32	Fahrenheit

METRIC PREFIXES

Prefix	Symbol	Multiplication Factor		
exa-	E	1 000 000 000 000 000 000	=	10^{18}
peta-	P	1 000 000 000 000 000	=	10^{15}
tera-	T	1 000 000 000 000	=	10^{12}
giga-	G	1 000 000 000	=	10^{9}
mega-	M	1 000 000	=	10^{6}
kilo-	k	1 000	=	10^{3}
hecto-	h	l00	=	10^{2}
deka-	da	l0	=	10^{1}
deci-	d	0.1	=	10^{-1}
centi-	c	0.01	=	10^{-2}
milli-	m	0.001	=	10^{-3}
micro-	µ	0.000 001	=	10^{-6}
nano-	n	0.000 000 001	=	10^{-9}
pico-	p	0.000 000 000 001	=	10^{-12}
femto-	f	0.000 000 000 000 001	=	10^{-15}
atto-	a	0.000 000 000 000 000 001	=	10^{-18}

APPENDIX A

BACKGROUND ON LAND TRANSFER AND REGIONAL NATURAL GAS PIPELINE

Introduction

There are several decisions that are related to, but not directly connected with the Proposed Project, that are not evaluated in this EIS. The following provides background information on a separate land transfer in the area that includes the proposed WMGF site, and on a regional natural gas pipeline to which the proposed facility natural gas pipeline evaluated in this EIS would connect.

Land Transfer

As part of the second phase of the National Performance Review (REGO II), Reclamation is undertaking a program to transfer title to land and facilities that could be efficiently and effectively managed by nonfederal entities and that are not identified as having national importance. Under REGO II, Reclamation intends to transfer title and responsibility for certain facilities to entities that are currently operating and maintaining the facilities and managing the lands.

The Secretary of the Interior (Secretary) is authorized by the Wellton-Mohawk Transfer Act of June 2000 (P.L. 106-221) to transfer title to the facilities of the Wellton-Mohawk Division (Division) of the Gila Project and lands in or adjacent to the Gila Project (initially 57,418 acres of land, including federally-owned portions of the proposed WMGF site) to WMIDD. WMIDD is a political subdivision of the State of Arizona constituted to own lands and facilities and to contract with Reclamation for diversion of Colorado River water for delivery to its landowners. Created in 1951 by action of the state legislature, the Division begins approximately 12 miles east of the city of Yuma and extends upstream along the Gila River corridor for approximately 45 miles.

Federal decisions associated with the general transfer of title of the facilities of the Wellton-Mohawk Division of the Gila Project and lands in or adjacent to the Gila Project from Reclamation to WMIDD are being addressed in a separate EIS, *Environmental Impact Statement for the Transfer of Title to Facilities, Works, and Lands of the Gila Project, Wellton-Mohawk Division to Wellton-Mohawk Irrigation and Drainage District, Yuma County, Arizona* (Council on Environmental Quality No. 030402), which was released by Reclamation as a Draft EIS for public review and comment in August 2003. A Final EIS and Record of Decision (ROD) concerning the transfer of title is expected in the summer of 2005.

The Division, located in Yuma County, Arizona is currently owned by the United States, administered by Reclamation, and operated by WMIDD. This transfer of title would consolidate management responsibility with WMIDD, thereby allowing WMIDD to have greater authority in the management of growth in the Wellton-Mohawk Valley, protect against encroachment on agriculture, and consolidate ownership of lands, facilities, and the Gila River Flood Channel. This consolidation of management obligations with WMIDD is fully consistent with the intent of REGO II, and best achieves the purposes of the Federal action by transferring title to the entity most suited to accepting such responsibilities.

Since decisions on the Reclamation's larger title transfer may not be made until after the WMGF EIS is completed, and because the proposed WMGF project is completely independent of the larger transfer of Reclamation facilities and lands, this WMGF EIS addresses the transfer of the 96 acres of the proposed WMGF site to WMIDD. In other words, the WMGF EIS, and decisions resulting from it, can go forward with or without the larger Reclamation land transfer occuring.

Regional Natural Gas Pipeline

Natural gas service in the project region is currently provided by Southwest Gas Corporation (Southwest Gas) through its distribution network. Currently, natural gas is supplied to Southwest Gas through the El Paso Natural Gas Company natural gas pipeline. The Yuma area is experiencing rapid growth and additional natural gas is needed for the area.

The ACC has made approval of the Proposed Project contingent upon the Applicant finding a new source of natural gas; so that consumption of natural gas at the proposed WMGF would not cause a supply shortage and resulting price increase for existing natural gas customer. Currently there are two proposals to provide additional gas to the region.

First, is to provide added natural gas by increasing capacity in the El Paso pipeline that runs along highway U.S. 95. If this happens, the Applicants would obtain natural gas for the proposed WMGF by constructing a 12.7 mile pipeline, alongside the Wellton Mohawk canal, to the proposed WMGF site. This pipeline connection is described as Option 1 in the draft EIS.

Second, there is a proposal by National Energy Gas Transmission Company (NEGT) to build a new natural gas pipeline from the North Baja Pipeline, located west of Yuma, east to serve a number of customers. If constructed, it is anticipated that the pipeline would be routed along I-8. Connection to this pipeline is discussed in the draft EIS as Option 2, and it would be about one quarter of a mile in length.

However, because the new proposed NEGT line and/or the expansion of the El Paso pipeline would occur regardless of the Proposed Project, these actions involve needs not driven by the proposed WMGF, and are not evaluated as directly connected actions in this EIS. Any upgrade or new pipeline facilities constructed by El Paso or NEGT to the Yuma area would be subject to the jurisdiction and regulation of the Federal Energy Regulatory Commission (FERC), and would have to go through a review and approval process that would likely include the preparation of an EIS and a ROD by FERC.

El Paso Pipeline Expansion. Currently, one natural gas pipeline supplies natural gas to Southwest Gas that provides service to the Yuma area. The existing north/south 10-inch Yuma lateral is owned by El Paso and generally follows Highway 95 from Interstate 10, where it taps into the El Paso mainline south to where it crosses the Wellton-Mohawk Canal ROW. Southwest Gas informed the Applicant that the existing pipeline does not have the capacity to supply the fuel needs for proposed WMGF. The existing pipeline could be upgraded to larger capacity; however, in the interim, the State of Arizona and El Paso have agreed to limit new users. This could change in the future; therefore, an upgraded El Paso pipeline could be the source of fuel for the proposed WMGF at some point during the lifetime of the facility.

NEGT North Baja Pipeline. The existing North Baja natural gas pipeline runs north/south along the California side of the Colorado River into Mexico. In the United States, the North Baja pipeline is owned by NEGT. NEGT conducted an open season for a proposed pipeline lateral project into the Yuma area. If this lateral is constructed, firm pipeline transportation service could be available to Southwest Gas and its customers. During the open season, NEGT invited all potential customers for the natural gas to identify their needs and proposed locations for service. Dome Valley identified the proposed WMGF as a potential customer for the proposed lateral. Following the open season, NEGT will conduct a feasibility study and evaluate potential pipeline routes.

While the decisions regarding potential routes and length of the NEGT lateral have not been made, discussions with NEGT have led to two concepts where the proposed NEGT gas pipeline would come near the proposed WMGF site. In one concept, the proposed NEGT pipeline would be near the intersection of Highway 95 and the Wellton-Mohawk Canal. In the second concept, the NEGT pipeline would continue east past Yuma along I-8.

Cumulative Impacts. The proposed WMGF would be one of many of Southwest Gas's customers for the natural gas supplied from these regional pipelines. To the extent that the proposed WMGF would be a large customer, the demand from the WMGF could influence the size and routing of these regional pipelines. Details concerning the timing, routing, and construction of these regional pipelines are not yet available. The decisions regarding the design, construction, and routing of the proposed regional natural gas pipelines will be made by FERC and the gas companies, presumably with consideration of Dome Valley input. Since the influence of the proposed WMGF project on these regional gas pipelines cannot be determined at this time, the cumulative impacts section, chapter 4 of this WMGF EIS, considers the impacts of the regional natural gas pipelines in general as cumulative actions to the extent that information is available or can be reasonably projected.

APPENDIX B

SUPPORTING MATERIALS

CONTENTS

Item #	Page	Description
1	B-3	Arizona Corporation Commission Required Mitigation Measures, August 13, 2003.
2	B-6	Arizona Game and Fish Department letter from Linden Piest to Jennifer Carpenter at Greystone Environmental Consultants, July 27, 2003.
3	B-14	U.S. Army Corps of Engineers letter from Cindy Lester to Dome Valley Energy Partners, LLC, C/O Charles Florian at Greystone Environmental Consultants, May 17, 2004.
4	B-17	Greystone Environmental Consultants letter from Don Douglas and Kenda Pollio-Hein to Mr. Peter Lahm, at Arizona Department of Environmental Quality, March 27, 2003.
5	B-23	U.S. Fish and Wildlife Service letter from Steven L. Spangle to Mr. John Holt at Western Area Power Administration, November 26, 2003.

Mitigation Measures Required by the Arizona Corporation Commission.

1.	Within thirty (30) days of the ACC decision authorizing construction of the WMGF, the Applicant shall erect and maintain at the WMGF site a sign of not less than 4 feet by 8 feet in dimension, advising the general public that: (1) the site has been approved by the ACC for the construction of a 520 MW (nominal), approximately 620 MW (peak), generating facility; (2) the expected date of completion of the first 260 MW (nominal), approximately 310 MW (peak), phase of the WMGF; and (3) phone number for public information regarding the WMGF.
2.	This authorization to site and construct the first 260 MW (nominal), approximately 310 MW (peak), and phase of the WMGF shall expire five (5) years from the date the Certificate is approved by the ACC unless the first phase has been constructed to the point that it is capable of being operated at its rated capacity by such date. This authorization to site and construct the second 260 MW (nominal), approximately 310 MW (peak), phase of the WMGF shall expire ten (10) years from the date the Certificate is approved by the ACC unless the second phase of the WMGF has been constructed to the point that the second phase facility is capable of being operated at its rated capacity by such date. However, before any such expiration, Applicant may request that the ACC extend these time limitations.
3.	Applicant shall incorporate solar technology as part of each phase of the WMGF, as a supplement to the natural gas-fired combined cycle power plant. Applicant shall first offer renewable energy and/or associated credits to creditworthy Arizona load-serving entities and to creditworthy marketers providing service to those Arizona load-serving entities under Arizona's Environmental Portfolio Standard. Applicant shall participate in the ACC's Environmental Portfolio Standard Working Group and other future ACC renewable energy workshops.
4.	Applicant agrees to work jointly with the Wellton Elementary School and the Antelope Union High School District to develop and implement an educational program to teach the children about the science of solar electric technology, particularly the SEECOT™ system. The program will include site visits to see the solar field at work. Applicant will fund the program.
5.	Pursuant to applicable FERC regulations, Applicant shall not knowingly withhold its capacity from the market for reasons other than forced outage, pre-announced planned outage, or to avoid sales at an economic loss outside of established contractual obligations.
6.	Applicant's plant interconnection must satisfy the Western Electricity Coordinating Council's (WECC) single contingency outage criteria (N-1) and all local utility planning criteria, applicable at the time of interconnection, without reliance on remedial action such as reducing generator output, generator unit tripping, or load shedding.
7.	Prior to construction of any facilities for a WMGF phase, Applicant must provide the ACC with technical study evidence that sufficient transmission capacity exists to accommodate the full output of such WMGF phase and that the full output of the WMGF phase shall not compromise the reliable operation of the interconnected transmission system. The technical studies shall include a power flow and stability analysis report showing the effect of the plant on the existing Arizona electric transmission system. The technical study report(s) shall document both physical flow capability as well as contractual schedule capability to deliver full plant output to some market. The technical study reports required by this condition have been satisfactorily completed for the WMGF's first phase as discussed in Exhibit 4 (of the application). In addition, Applicant must provide the ACC with updates to the information required in this condition not more than 1 year and not less than 3 months prior to commercial operation of each WMGF phase. Prior to commencing operation of a given power block, transmission facilities improvements necessary to deliver the full output of that power block to some market, as identified in the aforesaid technical studies, shall have been completed.
8.	Applicant shall become and remain a member of WECC, or its successors, and file an executed copy of its WECC Reliability Management System (RMS) Generator Agreement with the ACC. Membership by an affiliate of the Applicant satisfies this condition only if Applicant is bound by the affiliate's WECC membership.

Mitigation Measures Required by the Arizona Corporation Commission (*continued*).

9.	Applicant shall apply to become and, if accepted, thereafter remain a member of the Southwest Reserve Sharing Group or its successor, thereby making its units available for reserve sharing purposes, subject to competitive pricing.
10.	Applicant shall participate in good faith in State of Arizona and regional transmission study forums, such as the Southwest Transmission Expansion Planning (STEP) study and ACC RMR studies, to identify and encourage expedient implementation of transmission enhancements, including transmission cost participation as appropriate, to reliably deliver power from the WMGF throughout the WECC grid.
11.	Applicant shall offer for Ancillary Services, in order to comply with WECC RMS requirements, a total of up to 10 percent of its total plant capacity to (a) the local control area with which it is interconnected and (b) Arizona's regional ancillary service market, (i) once a Regional Transmission Organization (RTO) is declared operational by FERC order, and (ii) until such time that an RTO is so declared, to a regional reserve sharing pool.
12.	Applicant shall participate in good faith in appropriate Arizona related transmission studies, to identify and encourage expedient implementation of transmission enhancements necessary to accommodate expansion of WMGF beyond the first phase 260 MW (nominal) approximately 310 MW (peak).
13.	Applicant shall not commence expansion of WMGF beyond 260 MW (nominal), approximately 310 MW (peak), until technical studies required in Condition 7 above have been provided to the ACC and operation of such additional units shall not commence until the prerequisite transmission enhancements are in place.
14.	Applicant shall participate in good faith in Arizona regional workshops and other assessments of the interstate pipeline infrastructure in the region.
15.	Applicant shall pursue all necessary steps to ensure a reliable supply and delivery of natural gas for the WMGF.
16.	Within five (5) days of ACC approval of this Certificate, Applicant shall request in writing that El Paso Natural Gas (El Paso) provide Applicant with a written report describing the operational integrity of El Paso's Southern System facilities from the Gila Compressor Station to the California border. Such request shall include: a. A request for information regarding inspection, replacement and/or repairs performed in this segment of El Paso's pipeline facilities since 1996 and those planned through 2006; and b. An assessment of subsidence impacts on the integrity of this segment of pipeline over its full length, together with any mitigation steps taken to date or planned in the future.
17.	Applicant shall file its request and El Paso's response under this docket with the ACC's Docket Control. Should El Paso not respond within 30 days, Applicant shall docket a copy of Applicant's request with an advisory of El Paso's failure to respond. In either event, Applicant's responsibility hereunder shall terminate once it has filed El Paso's response or Applicant's advisory of El Paso's failure to respond.
18.	Applicant shall comply with all existing applicable air and water pollution control standards and regulations, and with all existing applicable ordinance, master plans, and regulations of the local, State of Arizona, and Federal authorities.
19.	Applicant shall comply with all permits required and issued by local, State of Arizona, and Federal authorities. Applicant shall comply with the applicable provisions of the law of the Colorado River regarding beneficial consumptive use of Colorado River water.
20.	Applicant shall comply with all applicable regulations and permits governing transportation, storage, and handling of petroleum products and chemicals.
21.	Applicant shall use nonreflective and/or neutral colors on surface materials and low intensity directive/shielded lighting fixtures to the extent feasible for the WMGF.

Mitigation Measures Required by the Arizona Corporation Commission (*continued*).

22.	Applicant shall operate the WMGF so that during normal operations, the WMGF will not exceed (i) U.S. Department of Housing and Urban Development or (ii) Federal Transportation Administration (FTA) residential noise guidelines or (iii) Occupational Safety and Health Administration (OSHA) Worker Safety Noise Standards.
23.	Applicant shall comply with the Landscape Concept Plan (Exhibit 7 of the application), L-1 and L-2, dated 4/28/03. The berms will be of sufficient height to screen the solar farm as indicated on the Concept Plan and installation to be under the supervision of the town of Wellton.
24.	Applicant shall install night lighting on the WMGF site for security. Applicant shall fence the perimeter of the WMGF site with a 6-foot high chain-link fence with a 1-foot high barbed-wire outrigger placed at the top of the fence. Applicant shall provide a separate gated and fenced entrance from that of the existing Ligurta Substation.
25.	In consultation with the Arizona Game & Fish Department, Applicant shall develop a monitoring and reporting plan for the evaporative ponds. Applicant shall fence the evaporative ponds to minimize effects of plant operations on terrestrial wildlife and shall keep the berms surrounding the evaporative ponds clear of vegetation to limit evaporative pond attractiveness to birds.
26.	Applicant shall continue to work through the federal permitting process, which includes consultation with the Arizona State Historic Preservation Officer (SHPO) and the tribes to implement the mitigation plan for cultural sites, which cannot be avoided.
27.	Should any cultural features and/or deposits be discovered during ground disturbing activities associated with construction of the facility, Applicant shall comply with A.R.S. § 41-844, which requires that work cease in the immediate area of the discovery and that the WMGF promptly notify the Director of the Arizona State Museum.
28.	The Applicant, its successor(s) or assign(s) shall submit a self-certification letter annually listing which conditions contained in the Certificate have been met. Each letter shall be submitted to the ACC's Utilities Division Director on August 1, beginning in 2003, describing conditions, which have been met as of June 30. Applicant shall attach to the certification letters documentation explaining, in detail, how compliance with each condition was achieved. Applicant shall also submit copies of each certification letter, along with corresponding documentation, to the Arizona Attorney General and the respective Directors of the Arizona Department of Water Resources and Arizona Department of Commerce, Energy Office. To the extent that a condition contained herein need only be fulfilled once, once Applicant has fulfilled said condition, Applicant need not report with respect to said condition in future self-certification letters.
29.	The ACC is approving this Certificate as a package of inter-related requirements and conditions that must all remain in force in order to merit ACC approval. If the Applicant, its successor(s) or assignee(s) pursue a legal challenge of any condition herein, the authority to construct facilities granted by this ACC Decision shall be revoked and the Certificate rendered null and void in its entirety without further order of the ACC.
30.	Applicant shall prepare a plan for shutdown, decommissioning and clean up of plant site, which shall be filed with docket control within 1 year of beginning construction. In that regard, the Committee recommends that Applicant work with Yuma County and/or any other local governing body with jurisdiction over the plant site to ensure that such plan is reasonable and is followed or amended as necessary.

Source: Greystone 2003d.

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
2221 WEST GREENWAY ROAD, PHOENIX, AZ 85023-4399
(602) 942-3000 • WWW.AZGFD.COM
Yuma Office, 9140 E 28th Street, Yuma, AZ 85365-3596 (928) 342-0091

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JOE MELTON, YUMA
DIRECTOR
DUANE L. SHROUFE
DEPUTY DIRECTOR
STEVE K. FERRELL

COPY

July 27, 2003

Jennifer Carpenter
Greystone Environmental
401 West Baseline Road, Suite 204
Tempe, AZ 85283

Dear Jennifer,

Enclosed are copies of the data forms for the surveys I conducted for Yuma clapper rails and Southwestern willow flycatchers at the 15E powerline crossing of the Gila River in Dome Valley.

To briefly summarize, a pair of clapper rails responded to the survey recording during both of the surveys. The calls they gave included the "clatter" call, indicating that they were a mated pair. They resided in the strip of tall cattails that lined the south side of the river channel and, when detected both times, were about 30 m downstream from the present powerline crossing. The strip of habitat likely used by this pair includes the area immediately under the powerline.

I detected no willow flycatchers during the 3 surveys for that species. The site has dense growths of saltcedar, particularly on the north side, with some scattered, small willows. I would not consider this to be potential habitat, however, because of the low stature of the vegetation, the absence of moist soil within the tree patches, and the absence of other resident willow flycatchers in this area of the state.

Please let me know if you need additional information.

Sincerely,

Linden Piest

Linden Piest

Willow Flycatcher Survey and Detection Form (rev. 4/98)

Site Name 15E Powerline Crossing Was site surveyed in previous year? Yes (No)
If yes, what site name was used? _____

County Yuma State AZ USGS Quad Name Dome

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ☒ *Yes* ☐ *No*

Site Coordinates: Start: N 3627813 E 0745924 UTM
Stop: N 3627700 E 0745800 UTM Zone 11

Elevation 170 (feet) / meters (circle one)

*** Fill in additional site information on back of this page ***

Survey # / Observer(s)	Date (m/d/y) / Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Presence of Livestock, Recent sign Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents or number of fledges seen; potential threats)
1 L.Rest	Date 5-15-03 start 0530 stop 0545 total hrs 0.25	0				N	N	
2 L.Rest	Date 6-17-03 Start 0500 Stop 0515 total hrs 0.25	0				N	N	
3 L.Rest	Date 7-2-03 Start 0505 Stop 0520 total hrs 0.25	0				N	N	
	Date start stop total hrs							
	Date start stop total hrs							

Overall Site Summary (Total only resident WIFLs)	Adults	Pairs	Territories	Nests	Were any WIFLs color-banded? Yes No
Total survey hrs 0.75	0	0	0	0	If yes, report color combination(s) in the comments section on back of form

Name of Reporting Individual Linden Rest Date Report Completed 7-29-03

Submit the original of this form. Retain a copy for your records.

Fill in the following information completely. Submit original form. Retain copy for your records.

Name of Reporting Individual Linden Priest Phone # 928-342-0091

Affiliation AZ Game + Fish Email lpriest@gf.state.az.us

Site Name 15E Powerline Crossing

Did you verify that this site name is consistent with that used in previous years? Yes No (circle one) NA

Management Authority for Survey Area (circle one): Federal Municipal/County State Tribal (Private)

Name of Management Entity or Owner (e.g., Tonto National Forest) Wellton-Mohawk Irrigation + Drainage District?

Length of area surveyed: 100 m (specify units, e.g., miles = mi, kilometers = km, meters = m)

Did you survey the same general area during each visit to this site this year? (Yes) No If no, summarize in comments below.

If site was surveyed last year, did you survey the same general area this year? Yes / No If no, summarize in comments below.

NA

Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

- ☐ Native broadleaf plants (entirely or almost entirely, includes high-elevation willow)
- ☐ Mixed native and exotic plants (mostly native)
- ☒ Mixed native and exotic plants (mostly exotic)
- ☐ Exotic/introduced plants (entirely or almost entirely)

Identify the 2-3 predominant tree/shrub species: tamarisk, Salix goodingii, arrowweed

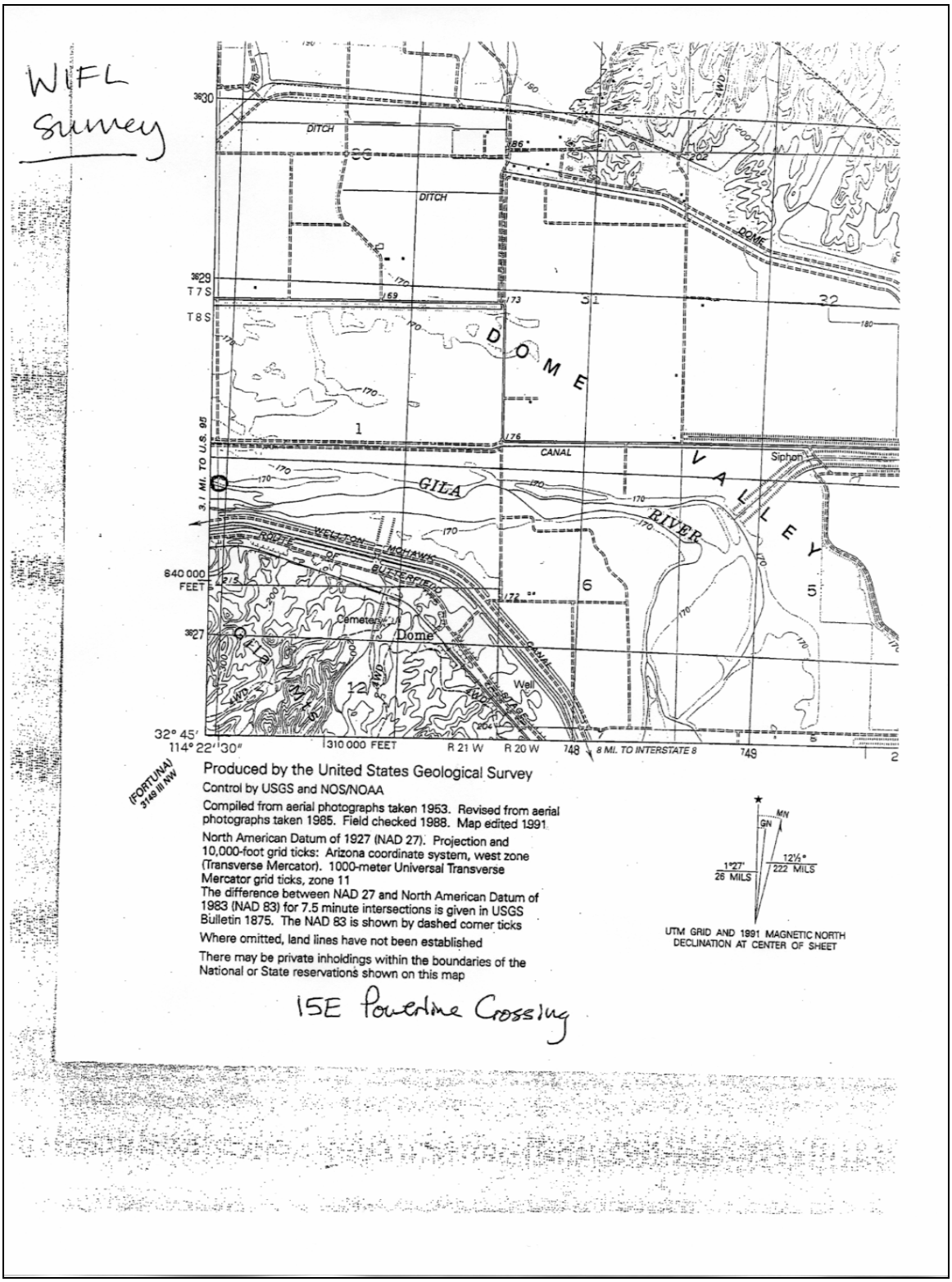
Average height of canopy: 5 m (specify units)

Was surface water or saturated soil present at or adjacent to site? (Yes) No (circle one)
Distance from the site to surface water or saturated soil: 50 m (specify units)

Did hydrological conditions change significantly among visits (did the site flood or dry out)? Yes (No) (circle one)
If yes, describe in comments section below.

Remember to attach a xerox copy of a USGS quad/topographical map (REQUIRED) of the survey area, noting the survey site and location of WIFL detections. You may also include a sketch or aerial photograph showing details of site location, patch shape, survey route in relation to patch, and location of any willow flycatchers or willow flycatcher nests detected. Such sketches or photographs are welcomed, but DO NOT substitute for the required USGS quad map.

Comments (attach additional sheets if necessary): Site is predominantly low-stature tamarisk with some scattered small willows. Water and moist soil is restricted to the Gila River channel; substrate in the tree patches is dry. Does not appear to be suitable habitat.


WIFL
Survey
DITCH
DITCH
DOME
DOME
VALLEY
CANAL
Siphon
GILA
RIVER
WELTON-MOHAWK
ROUTE OF
BUTTERFIELD
Cemetery
Dome
Well
CANAL
GILA MTS
3.1 MI. TO U.S. 95
8 MI. TO INTERSTATE 8
T7S
T8S
3630
3629
3627
640 000 FEET
32° 45'
114° 22' 30"
310 000 FEET
R 21 W
R 20 W
(FORTUNA) 3149 III NW
Produced by the United States Geological Survey
Control by USGS and NOS/NOAA
Compiled from aerial photographs taken 1953. Revised from aerial photographs taken 1985. Field checked 1988. Map edited 1991
North American Datum of 1927 (NAD 27). Projection and 10,000-foot grid ticks: Arizona coordinate system, west zone (Transverse Mercator). 1000-meter Universal Transverse Mercator grid ticks, zone 11
The difference between NAD 27 and North American Datum of 1983 (NAD 83) for 7.5 minute intersections is given in USGS Bulletin 1875. The NAD 83 is shown by dashed corner ticks
Where omitted, land lines have not been established
There may be private inholdings within the boundaries of the National or State reservations shown on this map
MN
GN
1°27'
26 MILS
12½°
222 MILS
UTM GRID AND 1991 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
15E Powerline Crossing

Yuma Clapper Rail Survey Data Sheet — January 2000

Location Gila River Route 15E Xing Date 5-30-03

Weather-start 0%, 4mph, 90° end 0%, 4mph, 90° Observer L. Priest

0745924 3627813

Stop #	Time Start	Time Stop	Clatter Call	Kek Call	Other Call	Was Rail Seen?	Was Rail Heard?	Was Rail Paired?	Other Species?	Habitat Type Where Rail Was Detected
1	0819		✓		✓ KH					Typha
			✓		✓ KH					"

Page total:

Total rails recorded on survey 2

Incidental observations of rails in survey area 0

YUMA CLAPPER RAIL SURVEY
COVER SHEET
(JANUARY 2000)

Date: 5-30-03

Location Information:
Location Name Gila River Route 15E Xing

Map Name Dome Township/Range/Section T8S/R21W/S1

Observer(s) L. Priest

Weather:
Start %Cloud Cover 0 Temp 90 Wind Speed 4
End % Cloud Cover 0 Temp 90 Wind Speed 4

Data Summary:

1) Total individual rails seen or heard while surveying 2
2) Number of other rails seen or heard (incidentals) 0

Total rails per route or location equals #1+#2 2
For rails/hour, each stop is 7 minutes

Observations:

Events during survey that may have affected results:

Other Observations/Comments:

Yuma Clapper Rail Survey Data Sheet — January 2000

Location Gila R. Route 15E Powerline Xing Date 5-15-03

Weather-start 0%, 0mph, 53° end 0%, 0mph, 53° Observer L. Piest

Stop #	Time Start	Time Stop	Clatter Call	Kek Call	Other Call	Was Rail Seen?	Was Rail Heard?	Was Rail Paired?	Other Species?	Habitat Type Where Rail Was Detected
1	0520				✓KH			✓		Typha
			✓					✓		"

Page total:

Total rails recorded on survey 2

Incidental observations of rails in survey area 0

YUMA CLAPPER RAIL SURVEY
COVER SHEET
(JANUARY 2000)

Date: 5-15-03

Location Information:
Location Name Gila River Route 15E Powerline Xing

Map Name Dome Township/Range/Section T8S/R21W/S1

Observer(s) L. Piest

Weather:
Start %Cloud Cover 0 Temp 53 Wind Speed 0
End % Cloud Cover 0 Temp 53 Wind Speed 0

Data Summary:

1) Total individual rails seen or heard while surveying 2
2) Number of other rails seen or heard (incidentals) 0

Total rails per route or location equals #1+#2 2
For rails/hour, each stop is 7 minutes

Observations:

Events during survey that may have affected results:

Other Observations/Comments:

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
ARIZONA-NEVADA AREA OFFICE
3636 NORTH CENTRAL AVENUE, SUITE 900
PHOENIX, ARIZONA 85012-1939

REPLY TO
Office of the Chief
Regulatory Branch

May 17, 2004

Dome Valley Energy Partners, LLC
C/O Charles D. Florian
Greystone
5231 South Quebec Street
Englewood, Colorado 80111

File Number: 2004-01196-RWF

Dear Mr. Florian:

This is in reply to your April 12, 2004 letter concerning your proposal to construct the Wellton-Mohawk Generating Facility and install approximately 12.87 miles of 16-inch buried natural gas pipeline. According to the information provided with your letter, no waters of the United States are within the parcel that will contain the proposed Wellton-Mohawk Generating Facility, but the associated pipeline construction will require the discharge of dredged and/or fill material into six unnamed washes at (Sections 28, 34, 35 and 36, T8S, R20W, Section 1, T9S, R20W, and Sections 1 and 2, T8S, R21W), Yuma County, Arizona.

The Corps of Engineers has determined, under Section 404 of the Clean Water Act (33 U.S.C. 1344), that your proposed activity complies with the terms of Nationwide Permit No. 12, "Utility Line Activities." You must comply with all terms and applicable conditions (regional, general, and 401 conditions) described in Enclosure 1 and complete the compliance statement (Enclosure 2).

Furthermore, you must comply with the following **Special Condition(s)**:

a. Discharges of dredged and/or fill material in the Clean Water Act jurisdictional area of the six unnamed washes that are necessary for the proposed pipeline construction shall be limited to a 25-foot wide corridor at each wash crossing.

b. The pipeline shall be installed below the expected scour elevation at each wash crossing.

c. The permittee shall not use areas below the ordinary high water mark as a fill source.

d. No debris, soil, silt, sand, rubbish, cement or concrete washings thereof, oil or petroleum products or washings thereof, shall be allowed to enter into or placed where it may be washed by rainfall or runoff into the waterway. When project operations are completed, any and all excess construction materials, debris, and or other associated excess project materials shall be removed to an appropriate off-site location outside of any jurisdictional areas. At no time shall this material be sidecast into the waters of the United States.

e. Staging, storage, fueling, and maintenance of equipment and materials shall be located outside of the Corps' jurisdiction.

f. The permittee shall perform work during low water conditions when the area is naturally dewatered and shall suspend all operations when there is water within the project area.

g. To the maximum extent possible, the pipeline construction shall be aligned in a manner that will avoid impacts to mature native arborescent species.

h. The permittee shall ensure that the natural course of each impacted jurisdictional water is restored to pre-project contours or gradients and conditions to the maximum extent possible upon project completion. Immediately following completion of the construction activities, all disturbed bank sections shall be re-seeded with a locally native seed mix.

i. Should previously unknown historic or archaeological remains be discovered while accomplishing activities authorized by this permit, the permittee shall immediately cease work in the area of discovery and provide immediate notification to the Corps of Engineers.

j. A copy of the permit shall be on the job site at all times during construction. The permittee shall provide a copy of this permit to all contractor(s), subcontractor(s), foreperson(s), and construction representatives. The permittee shall require that all contractor(s), subcontractor(s), foreperson(s), and construction representatives read this authorization in its entirety and acknowledge they understand its contents and their responsibility to ensure compliance with all general and special conditions contained herein. The permittee shall hold a pre-construction meeting with the contractor(s) to discuss the special conditions of this authorization, as well as other relevant approvals.

This letter of verification is valid for a period not to exceed two years unless the nationwide permits are modified, reissued, or revoked before that time. It is incumbent upon you to remain informed of changes to the nationwide permits.

A nationwide permit does not grant any property rights or exclusive privileges. Also, it does not authorize any injury to the property or rights of others or authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, state, or local authorizations required by law.

-3-

Thank you for participating in our regulatory program. If you have questions, please contact Ron Fowler at (602) 640-5385 x 226.

Sincerely,

Cindy Lester

Cindy Lester P.E.
Chief, Arizona Section
Regulatory Branch

Enclosures

Copies Furnished:
(Without Enclosures)

Dome Valley Energy Partners, LLC
5500 Mamaroneck Avenue, Suite 303
Harrison, New York 10528

COPY

GREYSTONE®

March 27, 2003

Mr. Peter Lahm, Air Resources Program Manager
Arizona Department of Environmental Quality
1110 W. Washington St.
Phoenix, Arizona 85007-2952

RE: Wellton-Mohawk Generating Facility (WMGF)
Response to Your 3/12/03 E-Mail Regarding Air Quality Issues

Dear Mr. Lahm:

This letter is a response to the e-mail that you submitted to Mr. Richard Tobin on March 12, 2003. On the following day, your e-mail was entered into the record at the State of Arizona Power Plant and Transmission Line Siting Committee hearing for the Wellton-Mohawk Generation Facility (WMGF) proceedings by Mr. Tobin. WMGF was then asked to address the concerns you identified in the e-mail during the hearing. This letter provides a written response to your e-mail by the WMGF Project and incorporates the testimony we provided at the hearing.

The proponents for the WMGF recognize your charter as a representative for Federal Land Managers concerning air quality issues on federal lands in Arizona. However, our conclusions on the significance of potential effects to the Muggins Mountains Wilderness Area from emissions from the proposed WMGF differ from those you identified in the e-mail you sent to Mr. Tobin. Our conclusions are based on the following:

- The Muggins Mountains Wilderness, managed by the Bureau of Land Management (BLM), is not a federal designated Class I airshed, but is a Class II airshed. Therefore, our analysis appropriately treated the Muggins Mountains Wilderness as the Class II airshed that it is. There are no published significance criteria within PSD rules for Class II airsheds. Furthermore, no significance criteria were identified for the Muggins Mountains Class II Wilderness when we submitted the modeling protocol for the Project. As a result, a determination of "significant effect" cannot be a conclusion in the absence of any criteria.

- Because there are no specific analysis criteria for Class II airsheds, we took the very conservative approach of using the VISCREEN model to estimate impacts to the Muggins Wilderness Area. The VISCREEN model normally is used to determine potential effects to Class I airsheds and in this case provides a very conservative analysis and results in an absolute worst-case outcome.

- The WMGF has decided not to continue to pursue an initial simple cycle phase of operations for consideration for the Project's PSD permit. This also would result

245 West Roosevelt Street • Phoenix, Arizona 85003
Phone (602) 229-1002
Website: www.greystone.us • E-mail: greystone@greystone.us

in a reduced potential impact to the Class II area because the simple cycle operation would have produced some of the highest emissions used in the worst-case assumptions used in the screening model.

In order to provide further response to your concerns, we have conducted a further refinement of the VISCREEN analysis. We are presenting this refined Level 2 VISCREEN analysis to demonstrate how much the potential visibility impacts to the Muggins Class II Wilderness would be reduced from what was previously reported for combined cycle operations in the January 2003 submittal to the Arizona Department of Environmental Quality (ADEQ). We also describe the conservatism of using VISCREEN as the analysis tool for a Class II analysis for a PSD permit application.

REFINED LEVEL 2 VISCREEN METHODOLOGY

In this refined Level 2 VISCREEN analysis, we demonstrate that, for the combined cycle operation of the Project, the Class I screening criteria may be exceeded only 4.6 percent of the time at the Muggins Mountains Class II Wilderness rather than the 19.8 percent that had been previously reported for emissions combined cycle operations.

In our original Level 2 VISCREEN analysis, we had assumed that the most conservative 24-hour emissions of oxides of nitrogen (NO_x) would occur. These 24-hour emissions had assumed an operational scenario of one cold start, five hot starts, five shutdowns, and no downtime between shutdowns and startups. These assumptions without a doubt represent a worst-case condition and would be highly unlikely to occur. To confirm this, the Project operator for WMGF, who is also the operator for a similar facility in Arizona that went in commercial operation in January 2002, reported that since commercial operation, this facility has not experienced an operating scenario that is as conservative as that modeled for the WMGF. The NO_x emissions resulting from this operating scenario would be 2005.9 pounds per day per turbine (lbs/day/turbine) and 10.54 grams per second per turbine (gm/sec/turbine). Comparatively, at a steady-state operation with the turbine at 100 percent load and employing duct firing for energy augmentation, the NO_x emissions would only be 22 percent of the startup scenario, or 443.8 lbs/day/turbine and 2.33 gm/sec/turbine. In spite of the startup scenario yielding an extremely conservative estimate of emissions, we continued to use the startup emissions in our refined VISCREEN analysis to demonstrate that even the extreme worst-case potential effects to visibility at the Muggins Wilderness would be minimal. Operational scenario conditions will be included in the ADEQ Air Permit.

Also, in our original analysis, we used very conservative methodology for determining the meteorological conditions that could affect the Muggins Mountains Wilderness. The original Level 2 analysis evaluated potential impacts relative to actual wind dispersion patterns. Sixteen polar sectors were defined, with the WMGF at the center with the centerline of each sector using the 16 cardinal directions. The arc length of each sector was 22.5 degrees.

Mr. Peter Lahm
March 27, 2003
Page 3

Meteorological data approved for the PSD modeling efforts by ADEQ, were then further analyzed using the WRPLOT View version 3.5 software to calculate the percentage of occurrence of wind directions and atmospheric stability. In these data, a percentage of occurrences were assigned for each stability class and each sector as described above. **Table 1** shows the frequency distribution of wind direction for each of the 16 sectors and each of the six stability categories.

Table 1
Percentage of Wind Direction Occurrence

Cardinal Wind Direction	Limits of Wind Direction Defining Sector [1]	Stability Category						Total
		A	B	C	D	E	F	
N	348.75°-11.25°	0.18	0.62	0.42	0.38	0.19	0.48	2.28
NNE	11.25°-33.75°	0.14	0.56	0.31	0.26	0.17	0.52	1.97
NE	33.75°-56.25°	0.23	0.85	0.73	0.73	0.63	1.36	4.53
ENE	56.25°-78.75°	0.18	1.06	1.48	2.11	1.63	2.14	8.59
E	78.75 - 101.25°	0.18	0.99	1.74	2.55	1.79	1.78	9.03
ESE	101.25°-123.75°	0.19	0.85	1.27	1.32	0.92	1.08	5.64
SE	123.75° -146.25°	0.16	0.76	0.86	0.88	0.72	0.89	4.27
SSE	146.25°-168.75°	0.08	0.44	0.43	0.45	0.31	0.61	2.31
S	168.75°-191.25°	0.12	0.38	0.32	0.39	0.30	0.63	2.15
SSW	191.25°-213.75°	0.08	0.31	0.27	0.32	0.26	0.67	1.90
SW	213.75°-236.25°	0.10	0.50	0.42	0.45	0.42	0.92	2.80
WSW	236.25°-258.75°	0.13	0.89	1.16	1.56	1.42	2.43	7.59
W	258.75°-281.25°	0.16	1.66	2.41	2.95	3.35	4.81	15.35
WNW	281.25°-303.75°	0.23	1.61	1.79	1.87	1.80	3.82	11.12
NW	303.75°-326.25°	0.25	1.39	1.05	1.05	0.69	1.60	6.01
NNW	326.25°-348.75°	0.14	0.78	0.55	0.51	0.26	0.55	2.80
Total		2.56	13.64	15.22	17.78	14.86	24.29	88.35 [2]

[1] Limits of sector that wind is blowing toward
[2] Total excludes 11.65 percent calm

A wind blowing only toward the Muggins Mountains would affect the visibility at the Class II area. To be very conservative in the original analysis, we had included additional wind sectors adjacent to the sectors that included wind directions that would most likely blow toward the Muggins Mountains. The direction from WMGF to the western edge of Muggins Mountains is approximately 340° with respect to true north (360°). The direction from WMGF to the eastern edge is approximately 30°. For a conservative analysis, one adjacent sector was included (the NW sector) on the western side of the Muggins Mountains. Because the eastern boundary of the Muggins Mountains encompasses a larger angle from true north, two additional sectors (NE and NNE) were included in the analysis. The following sectors were used in the original analysis using this conservative approach:

NW, NNW, N, NNE, NE, and ENE

As shown on the attached **Figure 1** and as stated above, the angles that realistically encompass a wind direction toward Muggins Mountains Wilderness are in the arc from 340° to 30°. Therefore, the sectors that are directly pertinent to the analysis included all wind directions in the arc from 326.25° through 33.75° (only Sectors NNW, N, and NNE).

The refined VISCREEN analysis evaluates atmospheric stability in addition to the wind direction. Essentially, stability determines how much the plume can be spread out (dispersed) both horizontally and vertically and affect the resultant concentration of the plume. For example, the atmosphere is very stable on a cold morning when a temperature inversion exists and the wind speed is very light. This condition is generally described as stability class F. Under this stability, the plume does not spread very much horizontally and the top of the temperature inversion acts as a cap to keep pollutants near the surface. Therefore, near the ground surface, the concentration of pollutants is the greatest and would lead to a higher effect on visibility. At the other end of the stability spectrum, the stability would be referred to as class A on a very hot day as is experienced in Arizona for about six months in the year. On these days, the highly heated air rises and carries the plume to great heights. Additionally, gusty winds accompany this stability class. As a result, the pollutant concentrations, and corresponding effect on visibility, is the least. The other stability classes E through B are incremental states of the atmosphere from highest pollutant concentration (class F) to lowest pollutant concentration (class A).

RESULTS OF REFINED LEVEL 2 VISCREEN ANALYSIS

VISCREEN was then run using the same extremely conservative emission scenario that was used for the original analysis, only the three wind sectors identified above, and for each of the six stability categories and the following wind speeds shown in **Table 2** below.

Table 2
VISCREEN Analysis Stability Classes and Wind Speeds

Stability Class	Wind Speed (m/s)
A	1.5
B	2.5
C	4.0
D	5.0
E	2.5
F	1.0

Mr. Peter Lahm
March 27, 2003
Page 5

The VISCREEN analysis showed that screening criteria used for a Class I area analysis could be exceeded when the state of the atmosphere was Stability Category C, D, E, or F. As shown in **Table 3**, the wind would blow from the proposed WMGF toward the Muggins Mountains Class II area approximately 7.05 percent of the time. However, the VISCREEN criteria for a Class I area would only be exceeded 4.63 percent of the time. The VISCREEN computer files are included for your review.

Table 3
Percentage of Wind Direction Occurrence
Toward Muggins Class II Wilderness

Cardinal Wind Direction	Limits of Wind Direction Defining Sector [1]	Stability Category						Total
		A	B	C	D	E	F	
N	348.75°-11.25°	0.18	0.62	0.42	0.38	0.19	0.48	2.28
NNE	11.25°-33.75°	0.14	0.56	0.31	0.26	0.17	0.52	1.97
NNW	326.25°-348.75°	0.14	0.78	0.55	0.51	0.26	0.55	2.80
Total (All Stabilities)		0.46	1.96	1.28	1.15	0.62	1.55	7.05
Total (Stabilities C, D, E and F)								4.63

[1] Limits of sector that wind is blowing toward

CONCLUSION

The Muggins Mountains Wilderness Area is not designated a federal Class I airshed, but is a Class II airshed. Therefore, there are no published criteria to determine whether a significant effect to visibility could occur. In spite of this lack of significance criteria, we conducted our further refined analysis using the non-applicable Class I standards in order to be overly conservative. We also used the very conservative startup emissions in our analysis. Even using these overly conservative data, the refined analysis demonstrates that any potential reductions of visibility within the Muggins Mountains Wilderness would occur only 4.63 percent of the time. These potential reductions in visibility would occur only if pollutants would be transported toward the wilderness (a small percentage of the time in a year), if the atmospheric stability conditions would be optimum to produce visibility restrictions (likewise a small percentage of time), and would be applicable only if the Muggins Mountains Wilderness Area were a Class I airshed (which it is not).

Because you had reported a "significant effect" for the WMGF on the Muggins Mountains Wilderness in your e-mail, we hope this further modeling refinement will provide clarification for your evaluation of the potential effects for this Class II area under your responsibilities in the ADEQ's PSD permitting process.

Mr. Peter Lahm
March 27, 2003
Page 6

We are available to meet with you at your convenience if you have any further comments or questions concerning this submittal.

Sincerely,

Don Douglas, KPH

Don Douglas
Senior Air Quality Specialist

Kenda Pollio-Hein, AICP
Project Manager WMGF

DEC-05-2003 FRI 10:54 AM WESTERN AREA POWER ADMIN FAX NO. 7209627263 P. 01

DEC-05-2003 09:48 FROM: TO:7209627263 P.2/3

1436-02

United States Department of the Interior
U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

In Reply Refer to:
AESO/SE
02-21-01-I-0287

November 26, 2003

Fax fr:
Jennifer Carpenter
480 775 6253
2 pages
From D. Swanson

Mr. John R. Holt
Environmental Manager
Western Area Power Administration
P.O. Box 6457
Phoenix, Arizona 85005-6457

Dear Mr. Holt:

Thank you for your letter of November 14, 2003 transmitting your biological assessment on the Wellton-Mohawk Generating Facility, proposed near the town of Wellton in Yuma County, Arizona. The species of concern are the razorback sucker (*Xyrauchen texanus*), cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), southwestern willow flycatcher (*Empidonax traillii extimus*), bald eagle (*Haliaeetus leucocephalus*), California brown pelican (*Pelecanus occidentalis californicus*), Yuma clapper rail (*Rallus longirostris yumanensis*) and the Sonoran pronghorn (*Antilocapra americana sonoriensis*). Your biological assessment also evaluated effects to the yellow-billed cuckoo (*Coccyzus americanus*), a candidate for Federal listing, and the mountain plover (*Charadrius montanus*), a species for which a listing proposal was withdrawn. Since these species are neither listed nor proposed for listing under the ESA, we do not address them further in this letter. In addition, findings of "no effect" were made in your biological assessment for the razorback sucker, California brown pelican, and Sonoran pronghorn. Since our concurrence with "no effect" determinations is not required under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544) (ESA), we do not address those species. For the southwestern willow flycatcher, cactus ferruginous pygmy-owl, bald eagle, and Yuma clapper rail, you request our concurrence that the proposed action is not likely to adversely affect those species.

The project consists of the powerplant site and facilities on the site, transmission lines, and a natural gas pipeline. The original contact for this proposed action, then titled the "Yuma Energy Project", resulted in a species list letter sent by the Fish and Wildlife Service on May 15, 2001.

Your findings of "may affect, not likely to adversely affect" for bald eagle, cactus ferruginous pygmy-owl, and southwestern willow flycatcher are supported by a lack of suitable habitat that could be disturbed or eliminated at the project sites, negative survey data for species occurrence in the vicinity of the project area, and avoidance of nesting periods during construction activities. There is some limited potential for these species to be present in the vicinity of the proposed action, but this risk is insignificant and discountable. For the Yuma clapper rail, the finding is

supported by the lack of suitable habitat that could be disturbed or eliminated at the project site, and avoidance of nesting periods during the construction activities. Yuma clapper rails have been documented approximately 30 yards west of the project site at the Gila River in the cattail habitat immediately downstream from the project. Suitable habitat is limited in the immediate upstream area. The lack of habitat elimination, avoidance of the sensitive breeding season, and the presence of contiguous suitable habitat as a retreat for the rails should construction noise disturb their activities reduces the effects to an insignificant and discountable level.

The new transmission line at the Gila River crossing will not significantly increase the risk of bird strike mortality at the project site. There is an existing line of similar type and size present and the new line would be close to the existing line. Line-marking devices will be placed on the new transmission line to make the line more visible to birds and reduce the risk of bird strike. This measure may also decrease the risk from the existing line, which does not have line markers. This risk is insignificant.

We concur with your finding of "may affect, not likely to adversely affect" for the cactus ferruginous pygmy-owl, bald eagle, southwestern willow flycatcher, and Yuma clapper rail.

Thank you for your efforts to document and reduce the potential effects of projects to listed, proposed and candidate species. If there are any questions regarding this concurrence, or with other aspects of this project, please contact Lesley Fitzpatrick (x236) or Tom Gatz (x240).

Sincerely,

Steven L. Spangle
Field Supervisor

cc: Federal Projects, Arizona Ecological Services Office, Fish and Wildlife Service, Phoenix, AZ

W:\Lesley Fitzpatrick\01-2K7 WM Gen Fac.wpd:cgg

APPENDIX C

WATERS OF THE UNITED STATES DELINEATION FOR THE PROPOSED FACILITY NATURAL GAS PIPELINE AND PROPOSED TRANSMISSION LINE ADDITIONS

Introduction

This appendix summarizes the Waters of the United States (WUS) Jurisdictional Delineation for the proposed transmission line additions followed by the complete report for the proposed facility natural gas pipelines. For more than half its length, the Ligerta-North Gila Transmission Line runs parallel to and within one-half mile or less from the facility natural gas pipeline. Therefore much of the map information would overlap and be duplicative. The Wellton-Mohawk Generating Facility Wetlands and Waters of the United States Delineation Report, (which addresses the proposed facility natural gas pipeline routes) was prepared by Dome Valley Energy Partners, LLC. The Jurisdictional Delineation Proposed Transmission Lines for the Proposed Wellton-Mohawk Generating Facility Yuma County, Arizona, report was prepared by Tetra Tech Inc.. A summary of this report follows.

Summary

Areas that potentially can be considered to be WUS by the U.S. Army Corps of Engineers (USACE) were delineated on aerial photographs. The potential ordinary high water marks are designated, with potential WUS lying between the ordinary high water marks. The potential area of jurisdictional waters for each of the three transmission line segments (Ligurta-Dome Tap, Dome Tap-North Gila, and Ligurta-Gila) was estimated for those areas within the proposed right-of-way (ROW). In addition, potential areas of disturbance have also been evaluated. Existing disturbed areas were not considered. The results for each transmission line segment are discussed below.

Ligurta-Dome Tap segment – Access to the proposed transmission lines between the Ligurta and Dome Tap substations would be on the existing road that currently provides access to an existing 161-kV transmission line. The new transmission structures would be located on high points, outside of the boundaries of any jurisdictional watercourses. Additional access would be provided along the existing roads paralleling the Wellton-Mohawk Canal. The one new segment aligned north-south just north of the Gila River, may require new access roads. There are no jurisdictional watercourses in this agricultural area. For the Ligurta-Dome Tap segment, there are no areas of disturbance to jurisdictional watercourses as the result of this project.

Dome Tap-North Gila segment – Access between the Dome Tap and North Gila substations would be through existing roads leading to another transmission line in the area. There would also be access through new access roads approximately 2 miles in total length that Western would construct to each structure location. The area of disturbance as the result of these new roads is 0.12 acres, assuming a 30 foot roadway width.

Ligurta-Gila segment – Access to the upgraded Ligurta-Gila Transmission Line would be primarily on the existing road that currently provides access to the existing transmission line. The new transmission structures would be located on high points, outside of the boundaries of any jurisdictional watercourses. For the Ligurta-Gila Transmission Line, there are no areas of disturbance to jurisdictional watercourses as the result of this project.

REPORT

WELLTON-MOHAWK GENERATING FACILITY

WETLANDS AND WATERS OF THE UNITED STATES DELINEATION REPORT

Submitted to:

U.S. Army Corps of Engineers
3636 North Central Avenue, Suite 900
Phoenix, Arizona 85012-1939

Submitted by:

Dome Valley Energy Partners, LLC
550 Mamaroneck Ave., Suite 303
Harrison, NY 10528

April 14, 2004

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APPENDICES

Appendix A Waters of the United States Photographs
Appendix B Qualifications of Delineators

1.0 INTRODUCTION

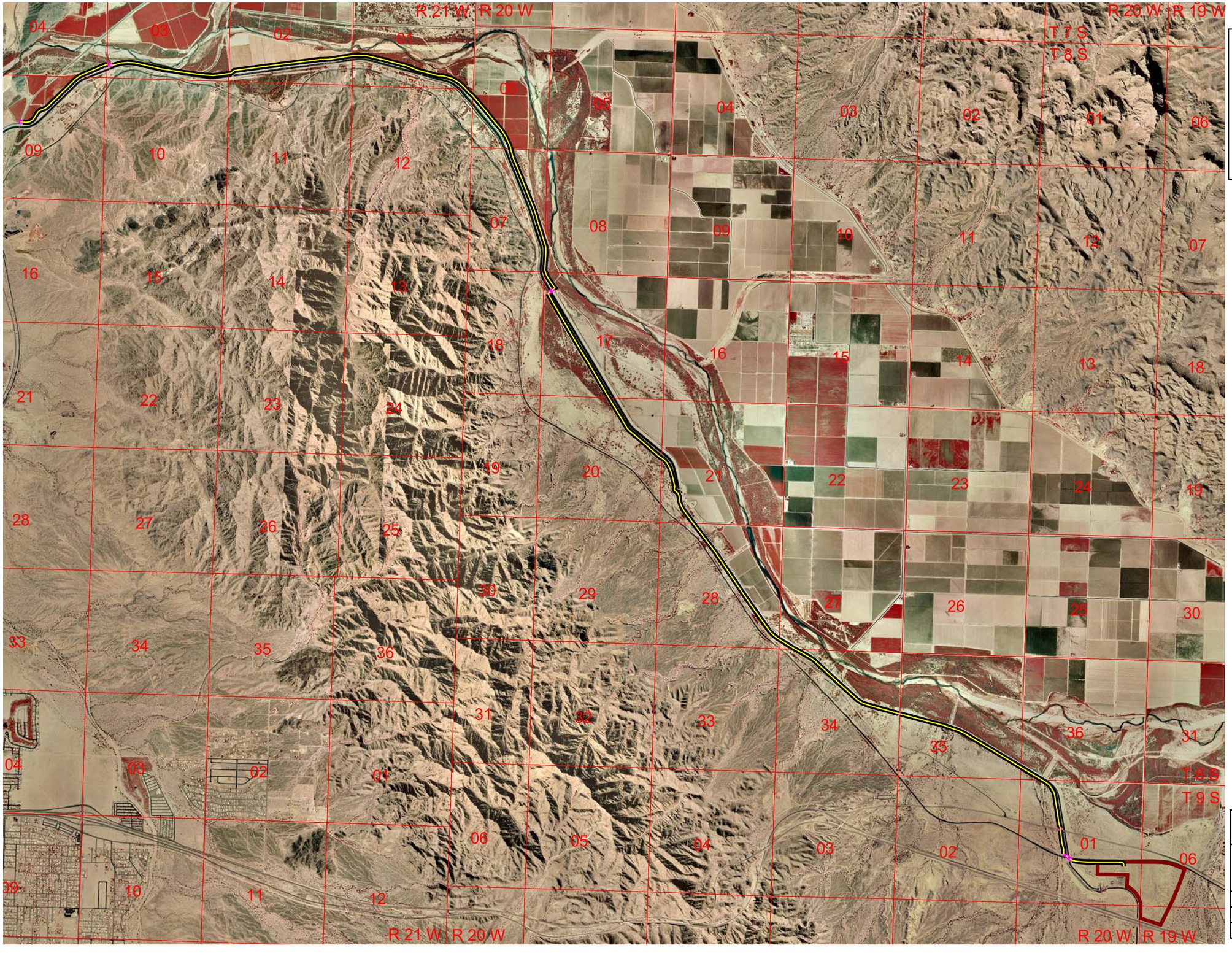
Wellton-Mohawk Irrigation and Drainage District (WMIDD), Yuma County Water Users' Association (YCWUA) and Dome Valley Energy Partners, LLC (Dome Valley Energy), collectively referred to as the Applicant, are proposing to develop, finance, build, own and operate the Wellton-Mohawk Generating Facility and 12.87 miles of 16-inch natural gas pipeline (Project). The generating facility would be located on approximately 119 acres in the SE ¼ of Section 1, T9S, R20W, the SW ¼ of Section 6, T9S, R19W, and the NW ¼ of Section 7, T9S, R19W, approximately 25 miles east of Yuma, Arizona and 9 miles west of Wellton, Arizona (**Figure 1**). The proposed natural gas pipeline originates in Section 9, T8S, R21W, just north of the intersection of the Wellton-Mohawk Canal and U. S. Highway 95. The corridor then runs east and south, paralleling the canal through Sections 1, 2, 3, 4, and 12, T8S, R21W, Sections 6, 7, 8, 17, 20, 21, 27, 28, 34, 35, and 36, T8S, R20W, and Section 1, T9S, R20W (**Figure 1**).

The Project will consist of a two-on-two or a two-on-one design, utilizing two advanced technology combustion turbine generators (CTGs), one or two steam turbine generators (STGs), two heat recovery steam generators (HRSGs), duct burners, inlet cooling, state-of-the-art emission controls, a SEECOT™ Solar Thermal System (SEECOT™ system) and all necessary ancillary equipment (collectively termed the "Plant"). The Plant is designed for baseload operations nominally rated at 520 MW, with peaking capacity of approximately 620 MW via duct burners. Part load operations will be maintained above the minimum operation of the CTGs such that the Plant will maintain compliance with all air permit requirements. The CTGs will be "F" Type, or equivalent, advanced technology CTGs. The Plant will incorporate Selective Catalytic Reduction (SCR) and a Carbon Monoxide (CO) catalyst and use state-of-the-art combustion control technologies to minimize emissions.

The Project is scheduled to be in service by the summer of 2007 and may be constructed in several phases in order to meet the demand for electrical energy on this schedule. If the Project is constructed in phases, the first phase would be simple cycle operation of the CTGs. The second phase would incorporate the balance of the combined cycle equipment to achieve a total nominal rating of 520 MW.

The proposed generating facility site will occupy 119 acres of land, the majority of which is currently owned by the Bureau of Reclamation (BOR). This parcel of BOR property is included in a land transfer agreement that will transfer ownership of thousands of acres land from BOR to WMIDD. WMIDD has secured an option to purchase the remaining property from Nickerson Farms Limited Partnership (NFLP). The proposed generating facility site is in an area that already contains long-established highway, water, and electric transmission line facilities and routes.

The proposed natural gas pipeline for the Project follows the Wellton Mohawk Canal from the canal intersection with U.S. Highway 95 to the plant site, where it will deliver natural gas from the proposed North Baja Pipeline Lateral, to be constructed by North Baja Pipeline, LLC. The pipeline corridor runs parallel to the Wellton Mohawk Canal, with the exception of the southeastern end where the pipeline redirects east along the southern edge the Southern Pacific Railroad and into the power plant site (**Figure 1**). The majority of the proposed route traverses previously disturbed land, including a significant portion that follows the base of the overburden pile removed from the canal during canal construction. Those portions of the pipeline corridor which traverse previously undisturbed land will be reclaimed, resulting in no permanent disturbance to areas not previously disturbed.



LEGEND

Pipeline Corridor
- boring
- trenched

Generating Facility Site

Section Lines

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

0.5 0 0.5 1
Miles

SCALE 1 : 48,000

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 1
PROJECT AREA MAP

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/14/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 4,000'	DRAWN BY: CDF

During reconnaissance of the plant site, one special status plant species tracked by the Arizona Game and Fish Department's Heritage Data Management System (HDMS), Thurber's pilostyles (*Pilostyles thurberi*), was found in abundance. This endoparasitic plant was observed to occur on 86 host plants (*Psorothamnus emoryi*) within the Plant site footprint, and on five out of six sites off of the plant site that were randomly searched after the host plant was observed growing. A special status species report will be submitted to the Bureau of Land Management (BLM) and included as an appendix to the Draft Environmental Impact Statement (DEIS). Preliminary consultation with BLM regarding the Thurber's pilostyles survey indicates that host plant salvage operations will not be required on the Plant Site due to the abundance of occurrences observed in the area. No critical habitat for any threatened or endangered species will be affected on the Plant site (Spangle 2003). Based on investigation and analysis, no significant impacts to any threatened or endangered species have been identified or are anticipated.

The analyses show that the Project is not expected to cause any direct, indirect or cumulative significant effects on land use, cultural resources, wilderness areas, ground or surface water quality, earth and soil resources, air quality, or noise. Similarly described effects on biological resources, including special interest wildlife and plant species, are not anticipated with the exception of the special-status plant species (*Pilostyles thurberi*) discussed above. Consultation with tribes regarding Native American concerns or traditional cultural properties has been initiated, and no conflicts pertaining to significant cultural resources are anticipated. No low income or minority groups will be disproportionately affected by the Project.

There will be socioeconomic benefits derived from the Project. In the short-term, the construction work force will increase revenues in the retail and service sectors of the Yuma County regional economy. In the long-term, the available power will provide greater reliability of service in area communities, will contribute to the stability of the regional power grid, and will provide approximately 20 high-paying jobs.

2.0 WETLANDS

2.1 METHODS

Evaluation of the Plant site for the presence of wetlands was conducted through review of National Wetland Inventory (NWI) maps combined with ground reconnaissance of the entire project area on March 18, 2004. No wetlands are reported on the Ligurta NWI on, or within the immediate vicinity of, the Plant site.

Review of NWI maps identified a contiguous wetland area associated with the Gila River that is traversed by the proposed pipeline corridor. The two adjacent wetland areas have NWI code designations of PSS2/1A (palustrine scrub-shrub, needle leaved / broad leaved deciduous, temporarily flooded) and PSS1/2J (palustrine scrub-shrub broad leaved / needle leaved deciduous, intermittently flooded). The NWI depicts the pipeline corridor crossing into the wetland in the SW1/4 of Section 1, T8S, R21W, continuing through Section 2 and into the SE1/4 of Section 3.

2.2 RESULTS

Site reconnaissance confirmed that no wetlands occur within the Plant site.

Wetland classification criteria were evaluated during reconnaissance of the proposed pipeline corridor (Cowardin 1979). The portion of the corridor bisecting the NWI-designated wetland area traverses previously disturbed upland directly adjacent to the Wellton-Mohawk Canal. Application of wetland delineation criteria disqualified this area from consideration as a wetland (COE 1987). None of the three required criteria for qualification as a jurisdictional wetland were met. The corridor traverses soil that has been previously disturbed. No hydric soils were identified and no supporting hydrology or hydrophytic vegetation was observed.

2.3 CONCLUSION

No impacts to wetland areas are anticipated as a result of construction or operation of the Wellton-Mohawk Generating Facility.

The proposed pipeline corridor traverses previously disturbed upland directly adjacent to the Wellton-Mohawk Canal, and construction and operation of the pipeline is not expected to impact any jurisdictional wetland area.

3.0 WATERS OF THE UNITED STATES

3.1 METHODS

Individual stream channel crossings along the proposed pipeline route were identified, measured, and recorded on aerial photography prints on March 18, 2004. One survey crew consisting of one biologist and two assistants drove the length of the proposed pipeline corridor, which parallels the Wellton-Mohawk Canal. Due to the altered surface hydrology resulting from construction of the Wellton-Mohawk Canal, there are no naturally formed surface drainages that cross the proposed pipeline corridor.

The survey crew recorded qualifying Waters of the United States (WUS) by stopping at each flume crossing where water derived from multiple drainages is channeled across the canal. These flumed waterway crossings transport water only after significant precipitation events, and the expected variability of the volume of surface water crossing each flume has rendered these qualifying WUS with an indiscernible ordinary high water mark (OHWM). Since each waterway has unrecognizable bank development, delineation of the OHWM for each WUS was estimated by evaluating vegetative and soil conditions, including lateral drift of vegetative debris and sporadic shelving in association with the perceived age of rooted vegetation along the channel periphery. Each flumed waterway to be crossed by trenching operations was declared a qualifying WUS because they are known to carry water on occasion from upland areas to the south toward the Gila River. Two flumed waterways that will be crossed utilizing conventional boring were excluded from this analysis because construction activities will not impact the surface channel.

At each qualifying WUS, width and depth of the estimated OHWM was measured, and general characteristics of the drainage, such as presence of riparian or terrestrial vegetation in the channel and dominant channel substrate, were described. The proposed Plant site was also surveyed for the presence of qualifying WUS.

3.2 RESULTS

Each flumed waterway along the proposed pipeline corridor identified as a qualifying WUS received a site identification number. **Figures 2-1** through **2-4** show the general location of each of the six delineated WUS crossings. **Table 1** presents the width, depth, and temporary impact area of each numbered WUS along the pipeline corridor. The total temporary impact area along the proposed pipeline corridor is estimated to be 1.069 acres. **Figures 3-1** through **3-20** show the specific location of each WUS location plotted on aerial photographs.

Data gathered during the WUS survey were used to determine the total temporary disturbance for each pipeline crossing. The calculation to determine disturbance acreage for each crossing assumes an 85-foot construction corridor. No permanent disturbance is proposed for any of the pipeline crossings.

Thorough reconnaissance of the Plant site resulted in no qualifying WUS identified within the boundaries of the proposed construction footprint. Construction of retention ponds on the site will contain all water originating on, or up-gradient of, the proposed power-plant boundary. The entire length of two separate, low-lying areas within the proposed Plant site have no discernable bank development, shelving, changes in soil characteristics, or accumulation of debris. In addition, aged terrestrial vegetation was abundant throughout these temporary drainage areas.

Construction and operation the Project will not permanently disturb any qualifying WUS, and no direct or indirect impacts to any qualifying WUS are anticipated.

TABLE 1 WATER OF THE UNITED STATE PIPELINE CORRIDOR

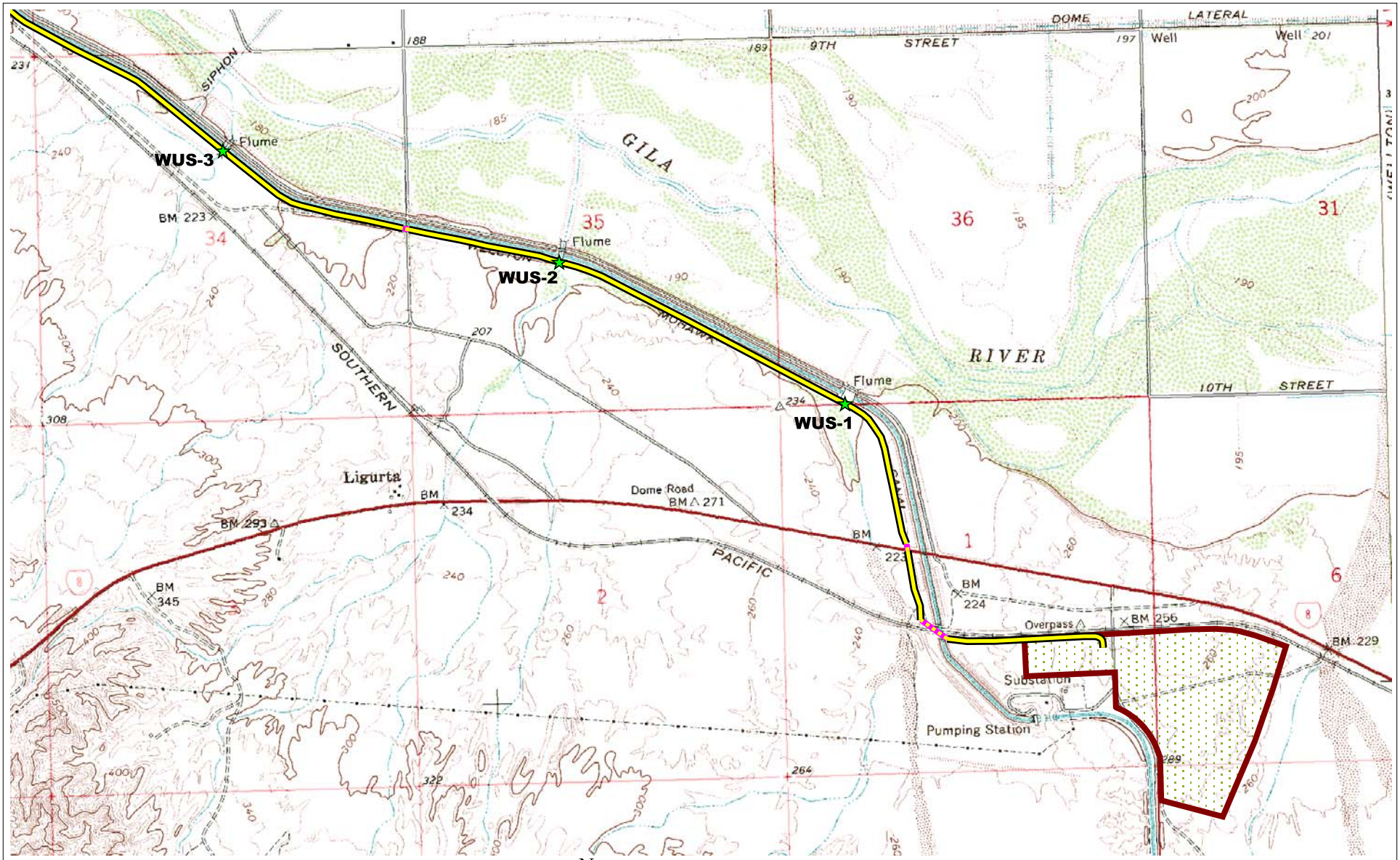
ID Number	Figure	Width (feet)	Depth (inches)	Temporary Impact Area* (acres)
WUS-1	3-3	185.3	26	0.362
WUS-2	3-4	65.4	18	0.128
WUS-3	3-5, 3-6	98.3	6	0.192
WUS-4	3-8	127.3	3	0.248
WUS-5	3-15	33.8	10	0.066
WUS-6	3-17	37.5	5	0.073
TOTAL				1.069

A complete list of each crossing surveyed is presented in **Table 1**. The ID Numbers presented in **Table 1** correspond to the locations presented on **Figures 2-1** through **2-4** and **3-1** through **3-20.**

3.3 CONCLUSION

Construction of the pipeline portion of the project is expected to temporarily disturb a maximum of 1.069 acres of WUS. All disturbed areas along the construction corridor will be reclaimed, and no permanent disturbance to any WUS is anticipated.

Construction of the Plant facilities is not expected to disturb any qualifying WUS.



LEGEND

- ★ Qualifying Water of the United States
- Generating Facility Site

Pipeline Corridor

- boring
- trenched

N

2000 0 2000 4000 Feet

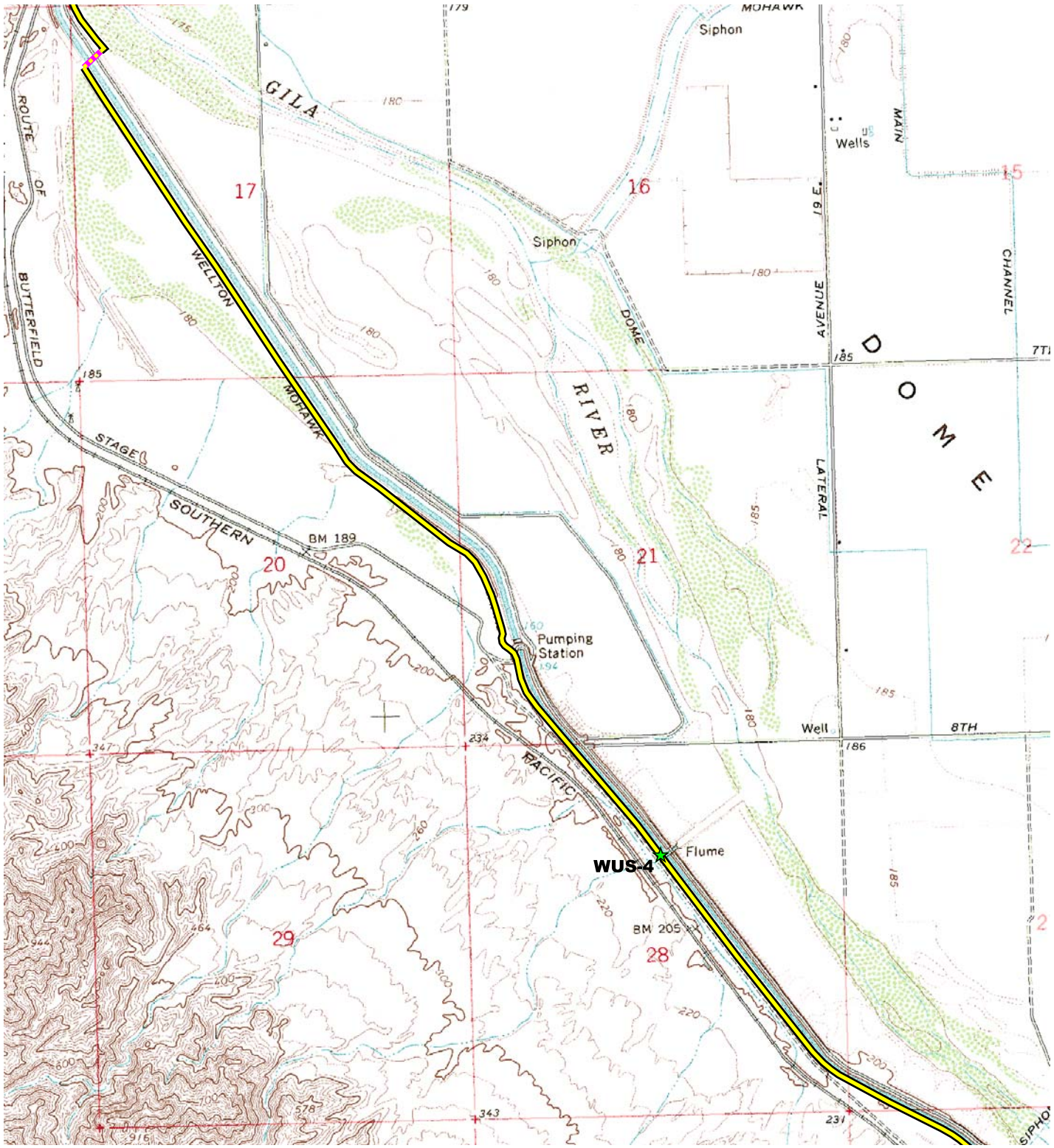
SCALE 1:24,000

Transverse Mercator Projection
1927 North American Datum
Zone 11

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 2-1
WATERS OF THE UNITED STATES
PROJECT OVERVIEW MAP 1 OF 4

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 2,000'	DRAWN BY: CDF



LEGEND

- ★ Qualifying Water of the United States

Pipeline Corridor
- boring
- trenched

N

Transverse Mercator Projection
1927 North American Datum
Zone 11

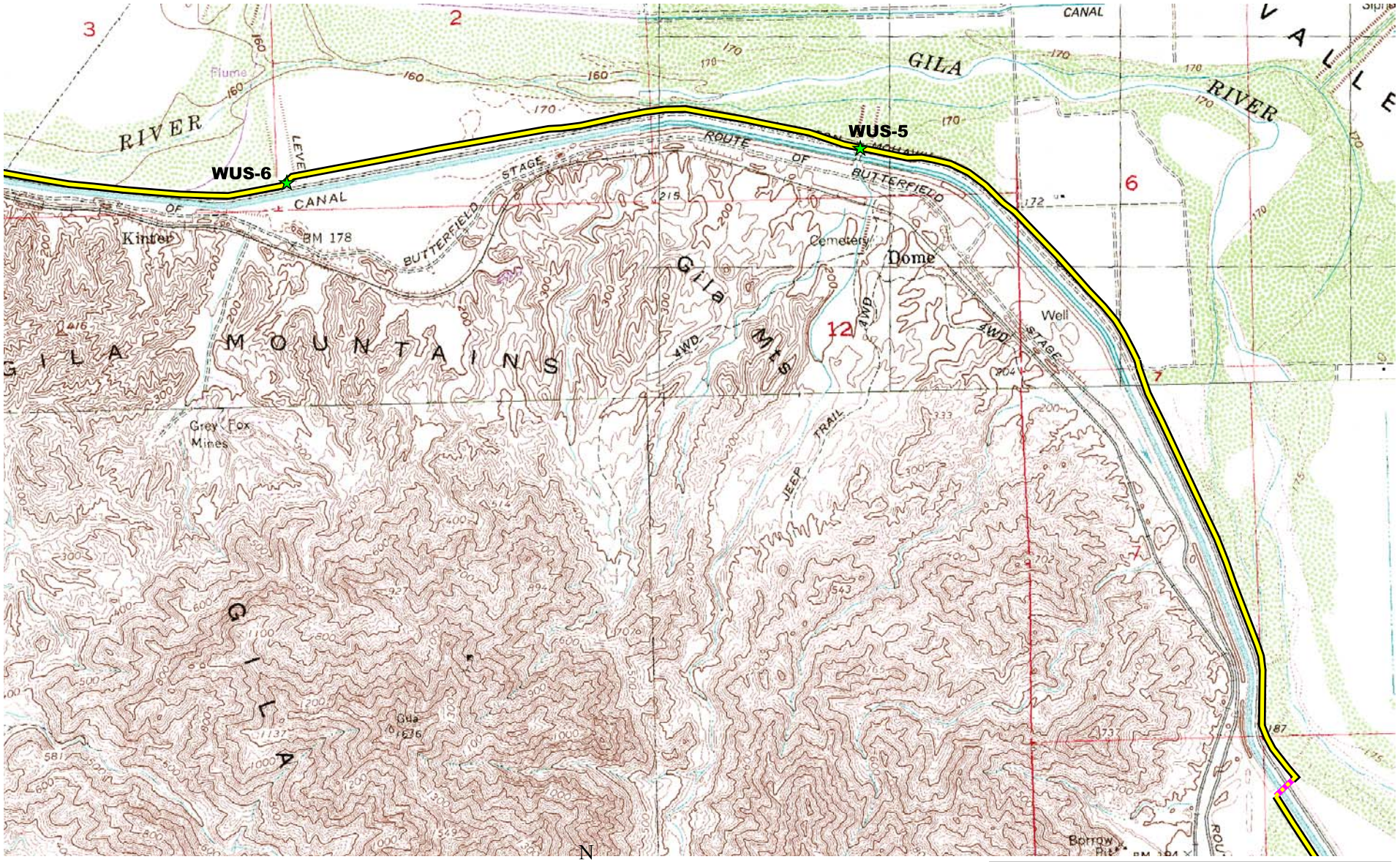
2000 0 2000 4000 Feet

SCALE 1:24,000

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 2-2
WATERS OF THE UNITED STATES
PROJECT OVERVIEW MAP 2 OF 4

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 2,000'	DRAWN BY: CDF



LEGEND

- ★ Qualifying Water of the United States

Pipeline Corridor

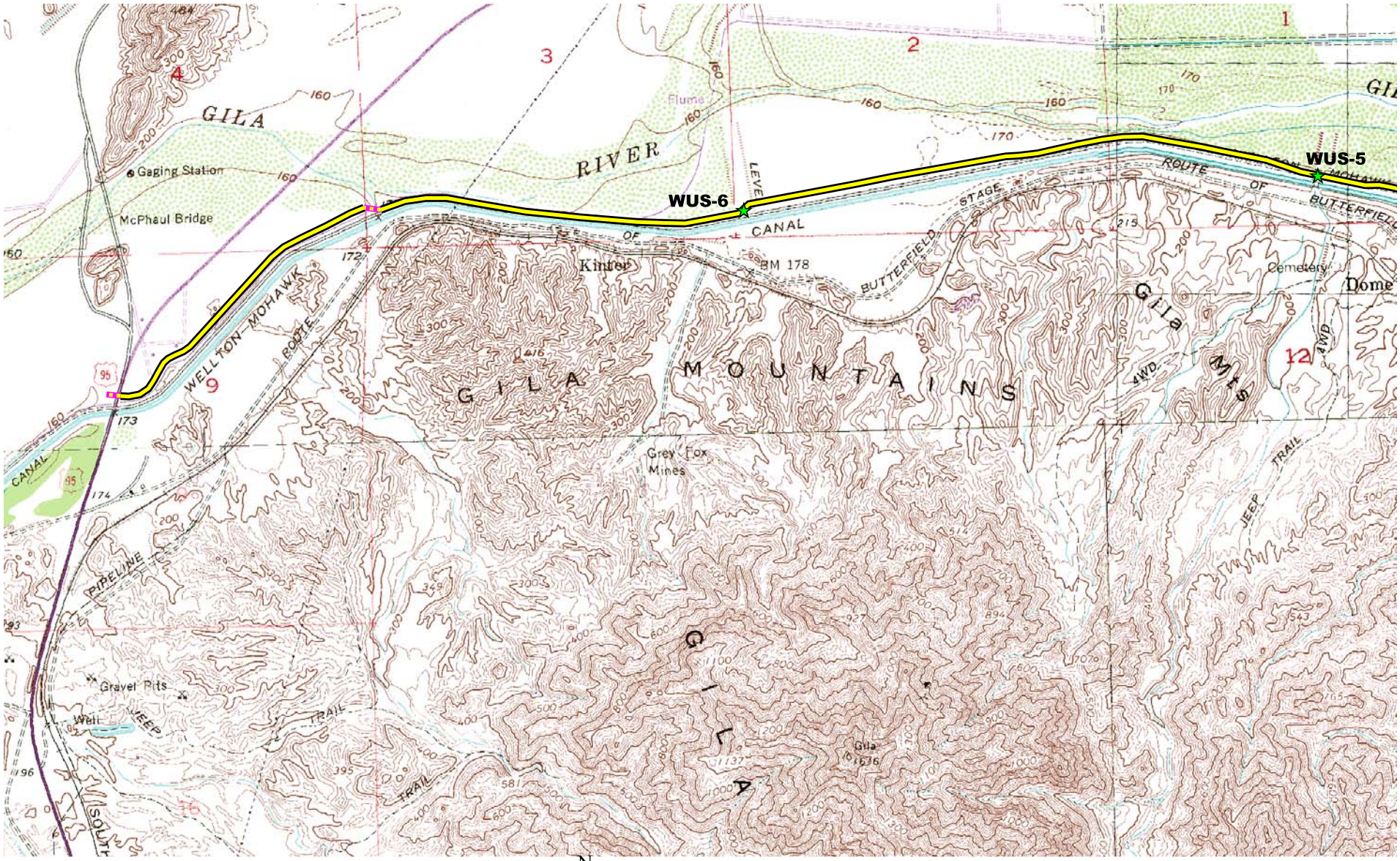
- boring
- trenched

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 2-3
WATERS OF THE UNITED STATES
PROJECT OVERVIEW MAP 3 OF 4

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 2,000'	DRAWN BY: CDF



LEGEND

- ★ Qualifying Water of the United States

Pipeline Corridor

- boring
- trenched

N

Transverse Mercator Projection
1927 North American Datum
Zone 11

2000 0 2000 4000 Feet

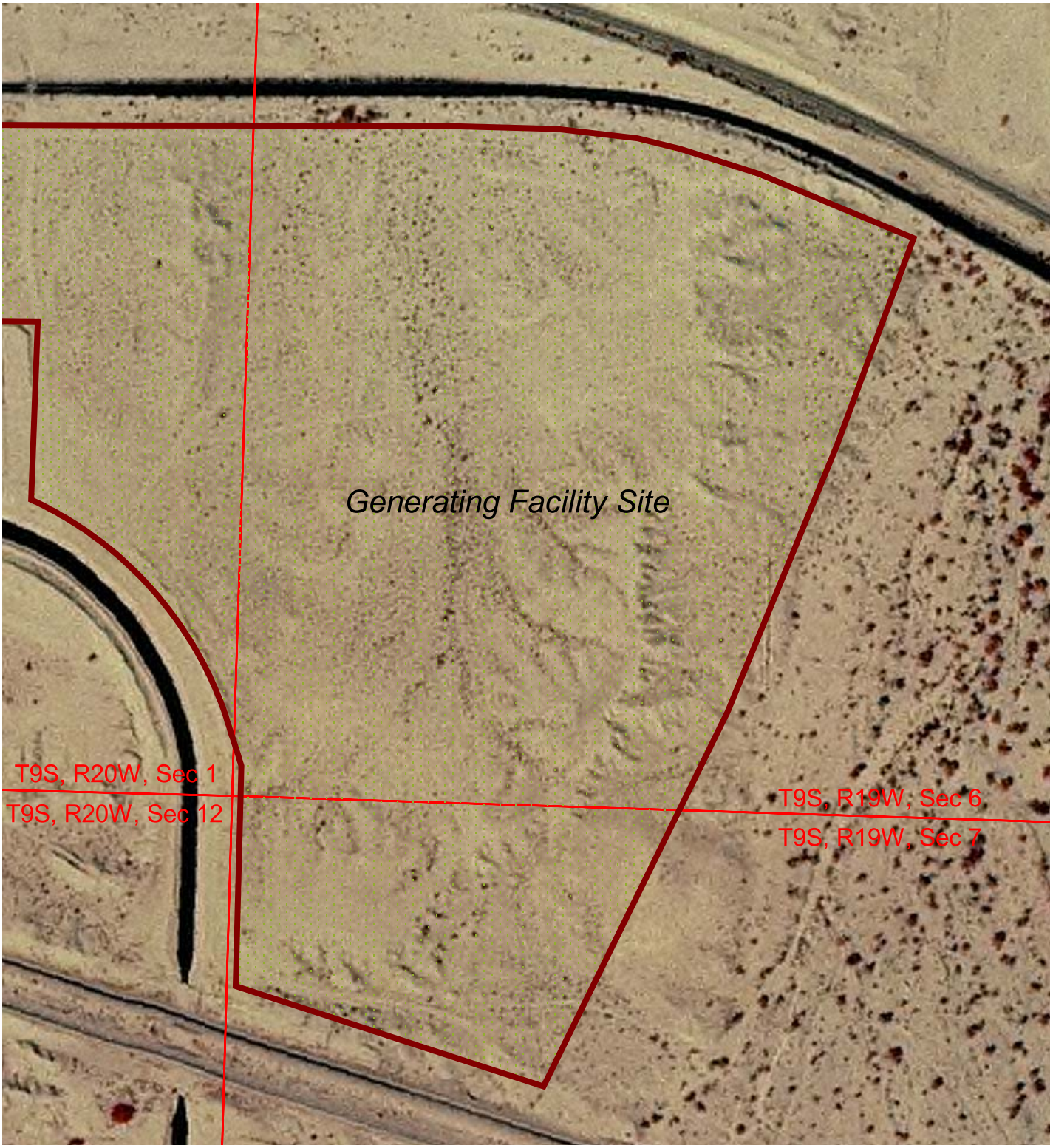
SCALE 1:24,000

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 2-4
WATERS OF THE UNITED STATES
PROJECT OVERVIEW MAP 4 OF 4

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 2,000'	DRAWN BY: CDF



LEGEND

- Qualifying Water of the United States
- Generating Facility Site

Pipeline Corridor

- boring
- trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

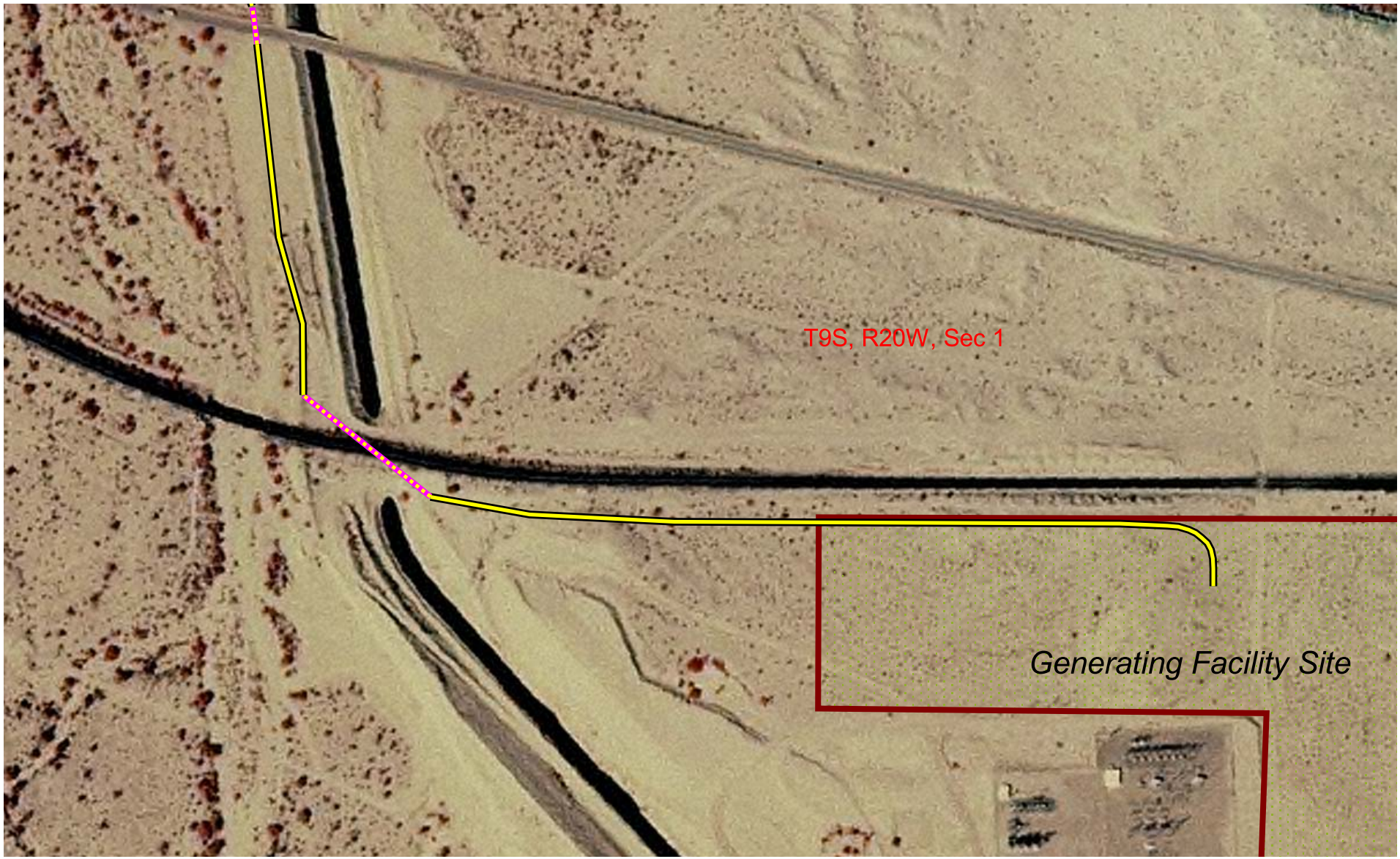
SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-1
WATERS OF THE UNITED STATES
MAP 1 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

- Qualifying Water of the United States
- Generating Facility Site

Pipeline Corridor
- boring
- trenched

N

2000 0 2000 4000 Feet

SCALE 1:4,800

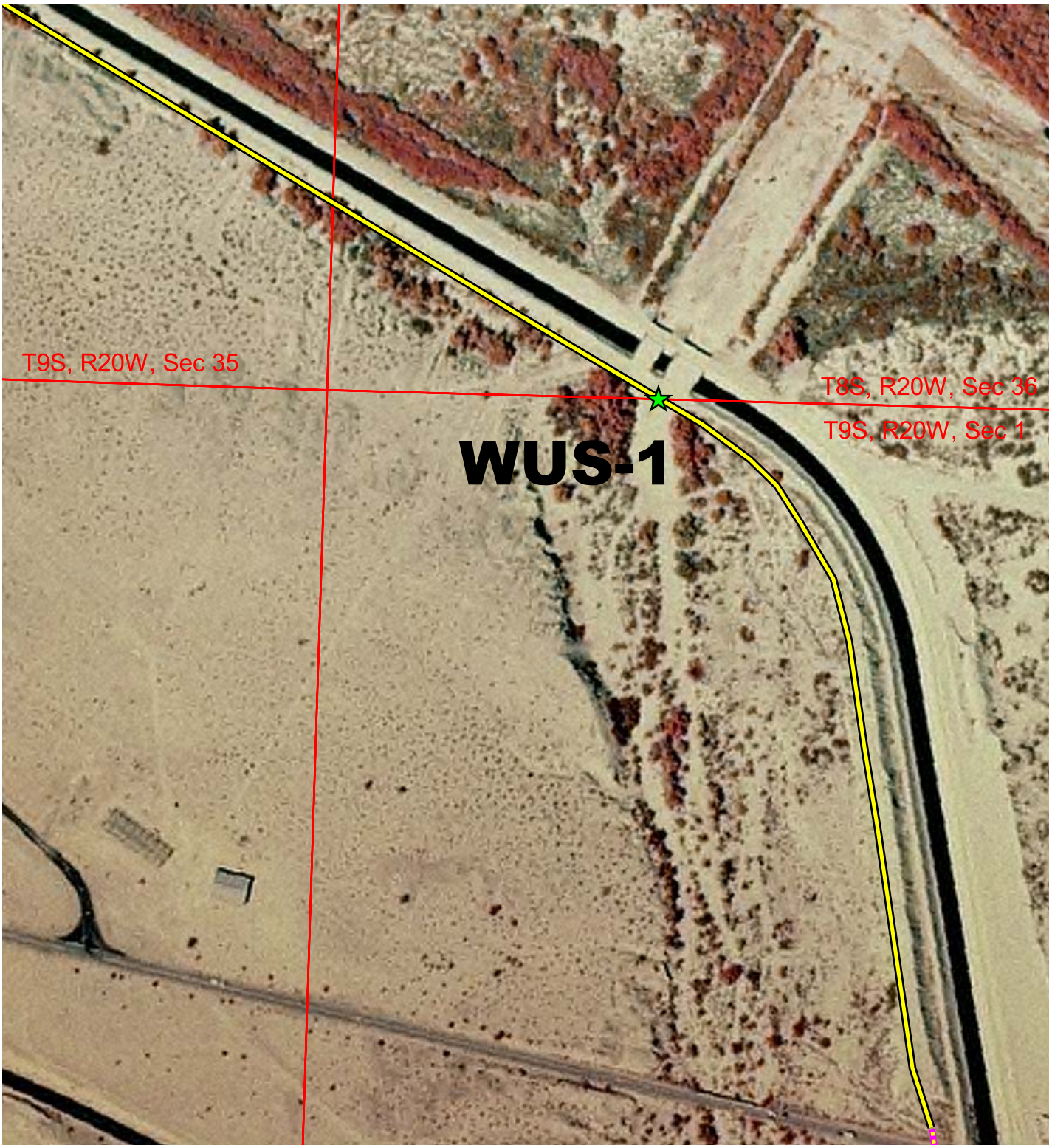
Transverse Mercator Projection
1983 North American Datum
Zone 12

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-2
WATERS OF THE UNITED STATES
MAP 2 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

- Qualifying Water of the United States

Pipeline Corridor

- boring
- trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-3
WATERS OF THE UNITED STATES
MAP 3 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

LEGEND

- Qualifying Water of the United States

Pipeline Corridor

- boring
- trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

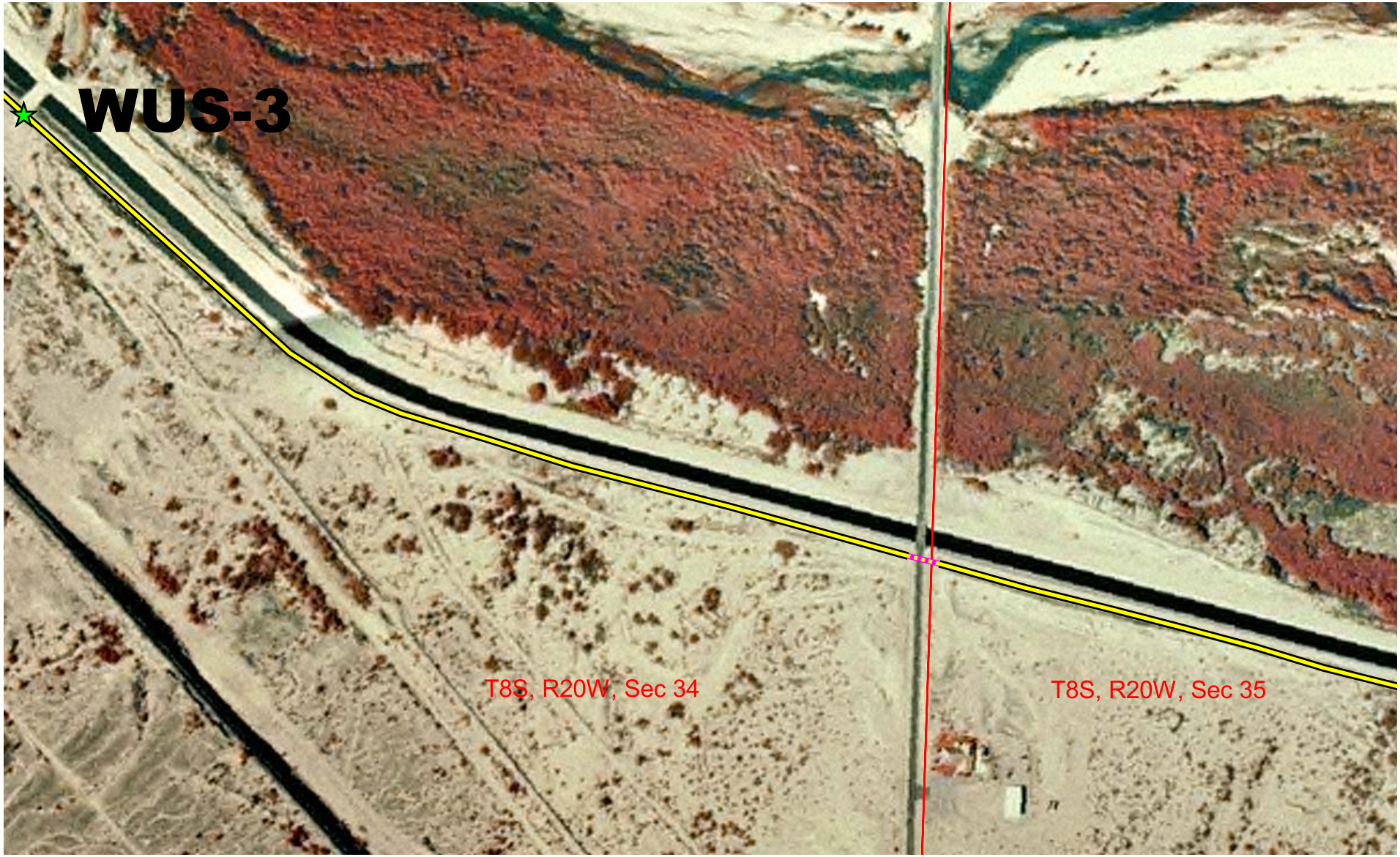
SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-4
WATERS OF THE UNITED STATES
MAP 4 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

- Qualifying Water of the United States

Pipeline Corridor

- boring
- trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

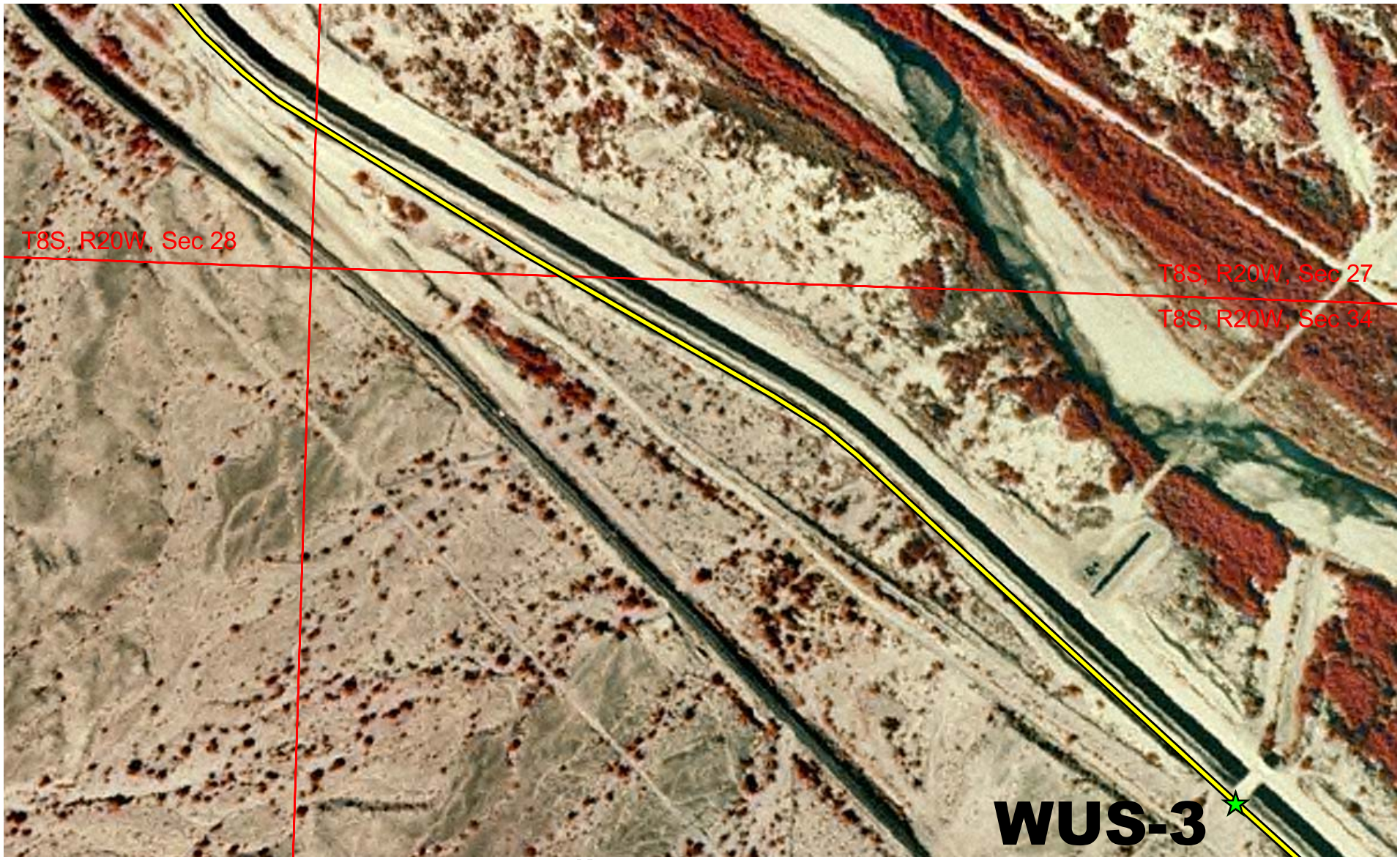
SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-5
WATERS OF THE UNITED STATES
MAP 5 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

- Qualifying Water of the United States

Pipeline Corridor

- boring
- trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-6
WATERS OF THE UNITED STATES
MAP 6 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

LEGEND

Qualifying Water of the United States

Pipeline Corridor

boring

trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-7
WATERS OF THE UNITED STATES
MAP 7 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

LEGEND

Qualifying Water of the United States

Pipeline Corridor

boring

trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

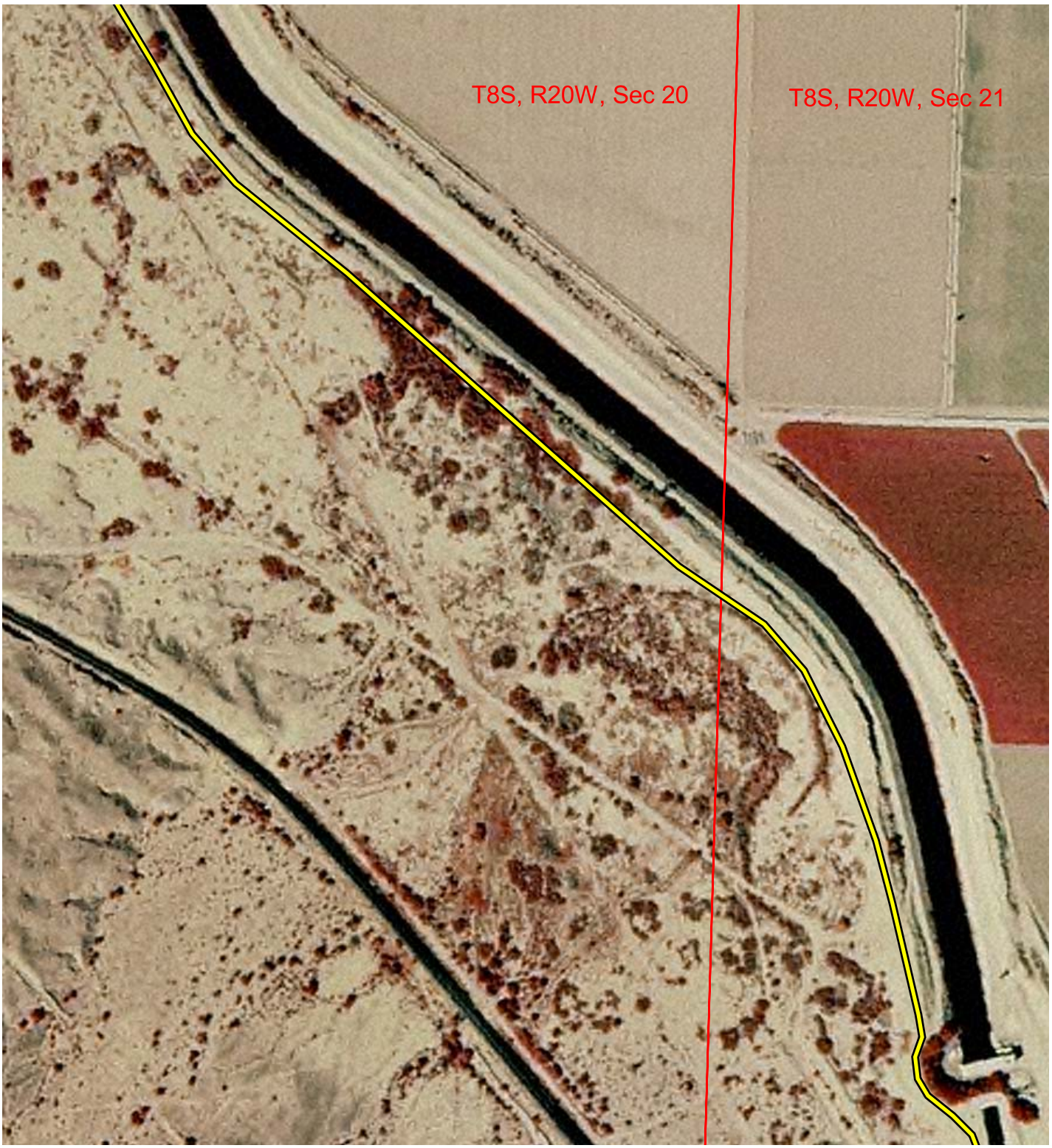
2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-8
WATERS OF THE UNITED STATES
MAP 8 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

Qualifying Water of the United States

Pipeline Corridor

boring

trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

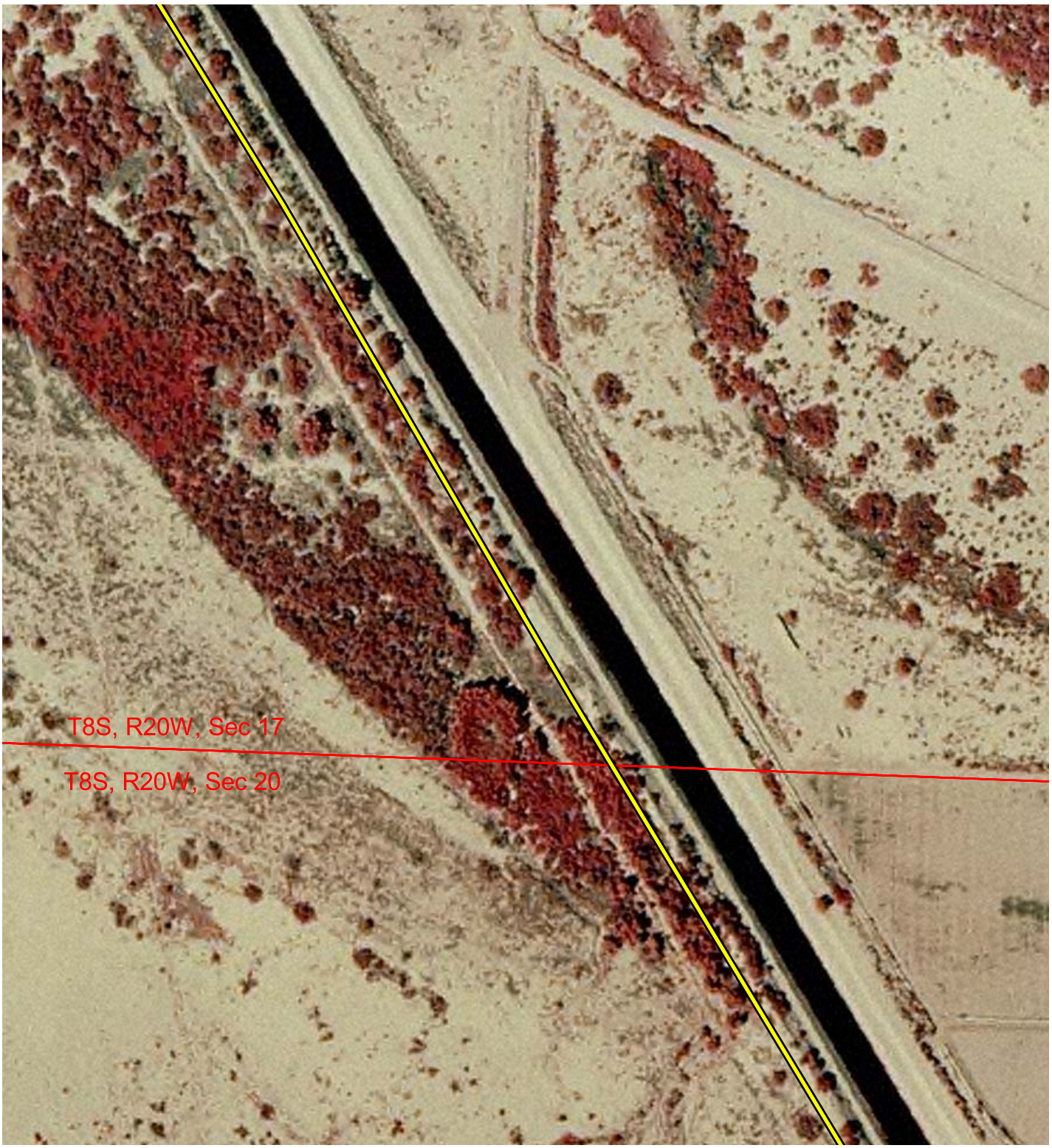
2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-9
WATERS OF THE UNITED STATES
MAP 9 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

Qualifying Water of the United States

Pipeline Corridor

boring

trenched

N

Transverse Mercator Projection
1983 North American Datum
Zone 12

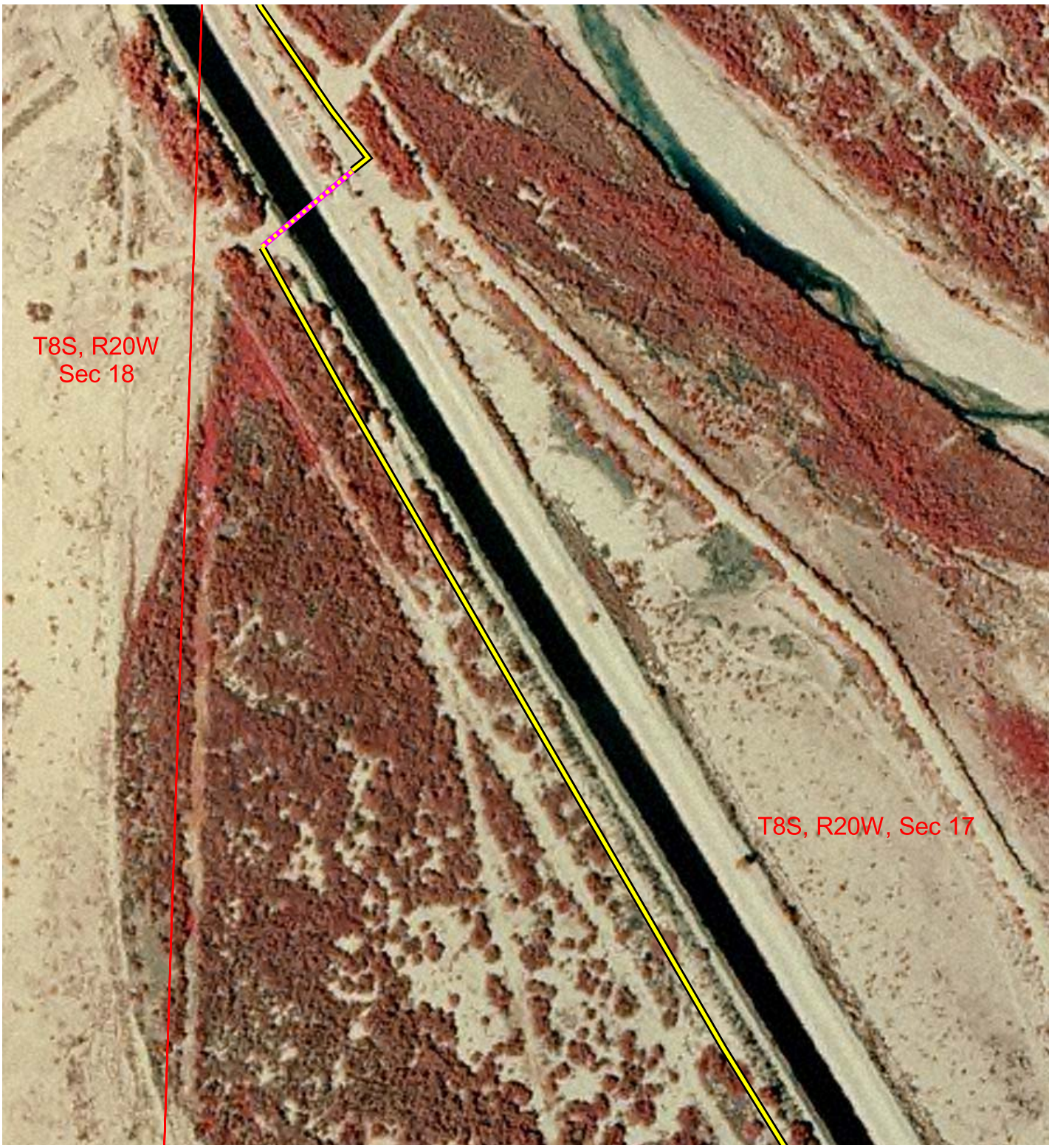
2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-10
WATERS OF THE UNITED STATES
MAP 10 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

Qualifying Water of the United States

Pipeline Corridor

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Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-11
WATERS OF THE UNITED STATES
MAP 11 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

LEGEND

- Qualifying Water of the United States

Pipeline Corridor

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Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-12
WATERS OF THE UNITED STATES
MAP 12 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

LEGEND

Qualifying Water of the United States

Pipeline Corridor

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Transverse Mercator Projection
1983 North American Datum
Zone 12

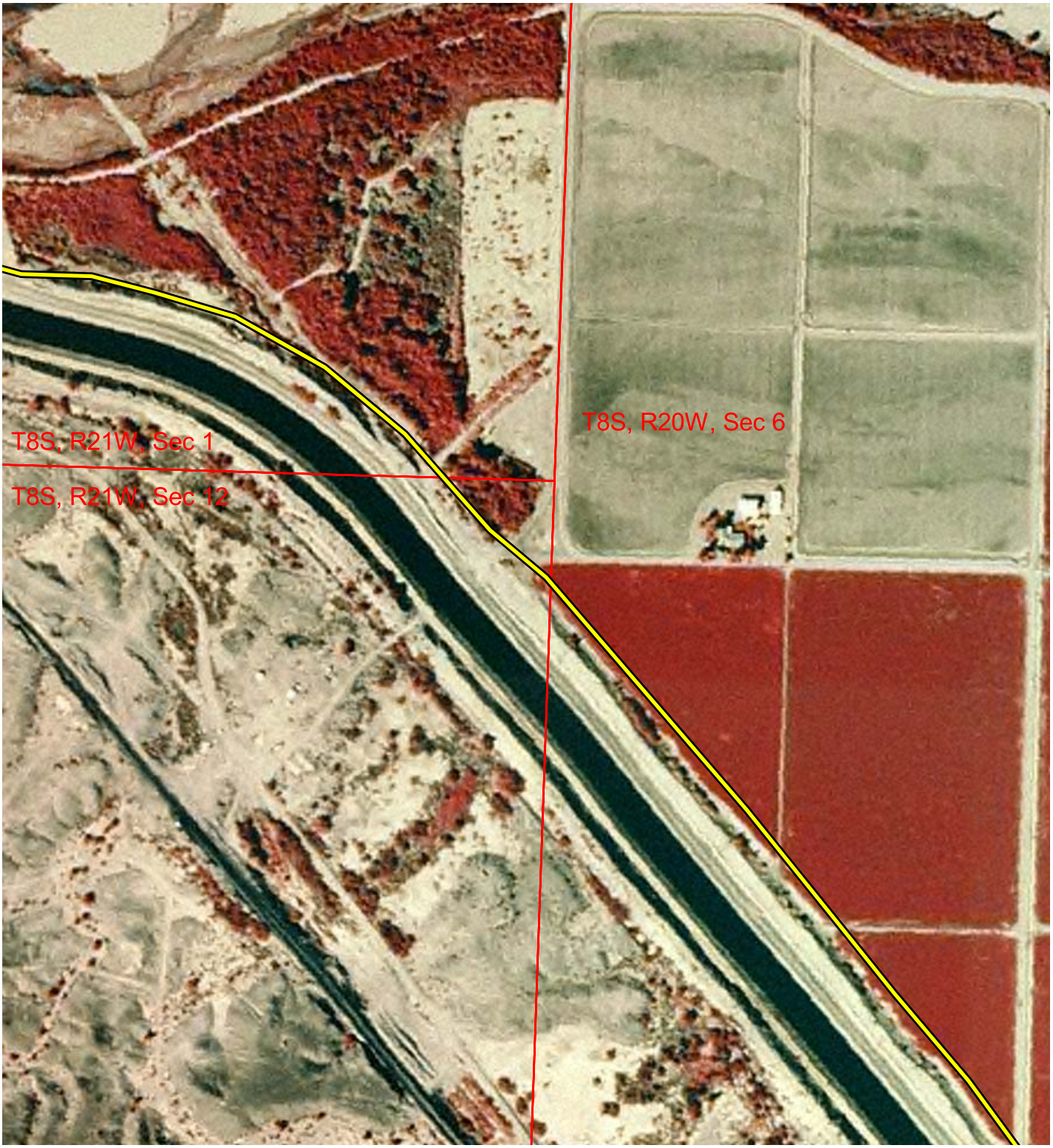
2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-13
WATERS OF THE UNITED STATES
MAP 13 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

Qualifying Water of the United States

Pipeline Corridor

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Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-14
WATERS OF THE UNITED STATES
MAP 14 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

LEGEND

- Qualifying Water of the United States

Pipeline Corridor

- boring
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Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-15
WATERS OF THE UNITED STATES
MAP 15 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

LEGEND

- Qualifying Water of the United States

Pipeline Corridor

- boring
- trenched

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Transverse Mercator Projection
1983 North American Datum
Zone 12

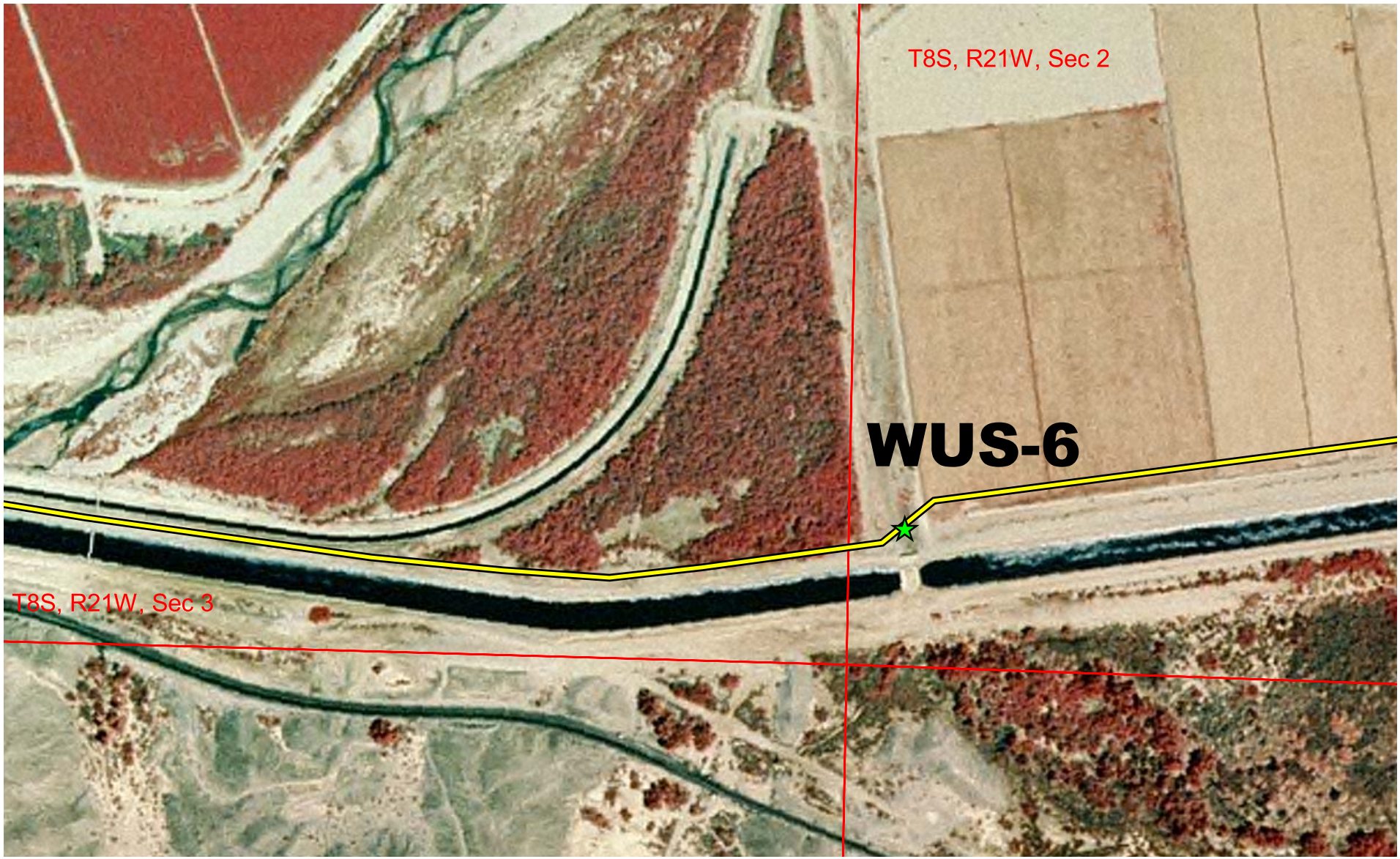
2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-16
WATERS OF THE UNITED STATES
MAP 16 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

- Qualifying Water of the United States

Pipeline Corridor

- boring
- trenched

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Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

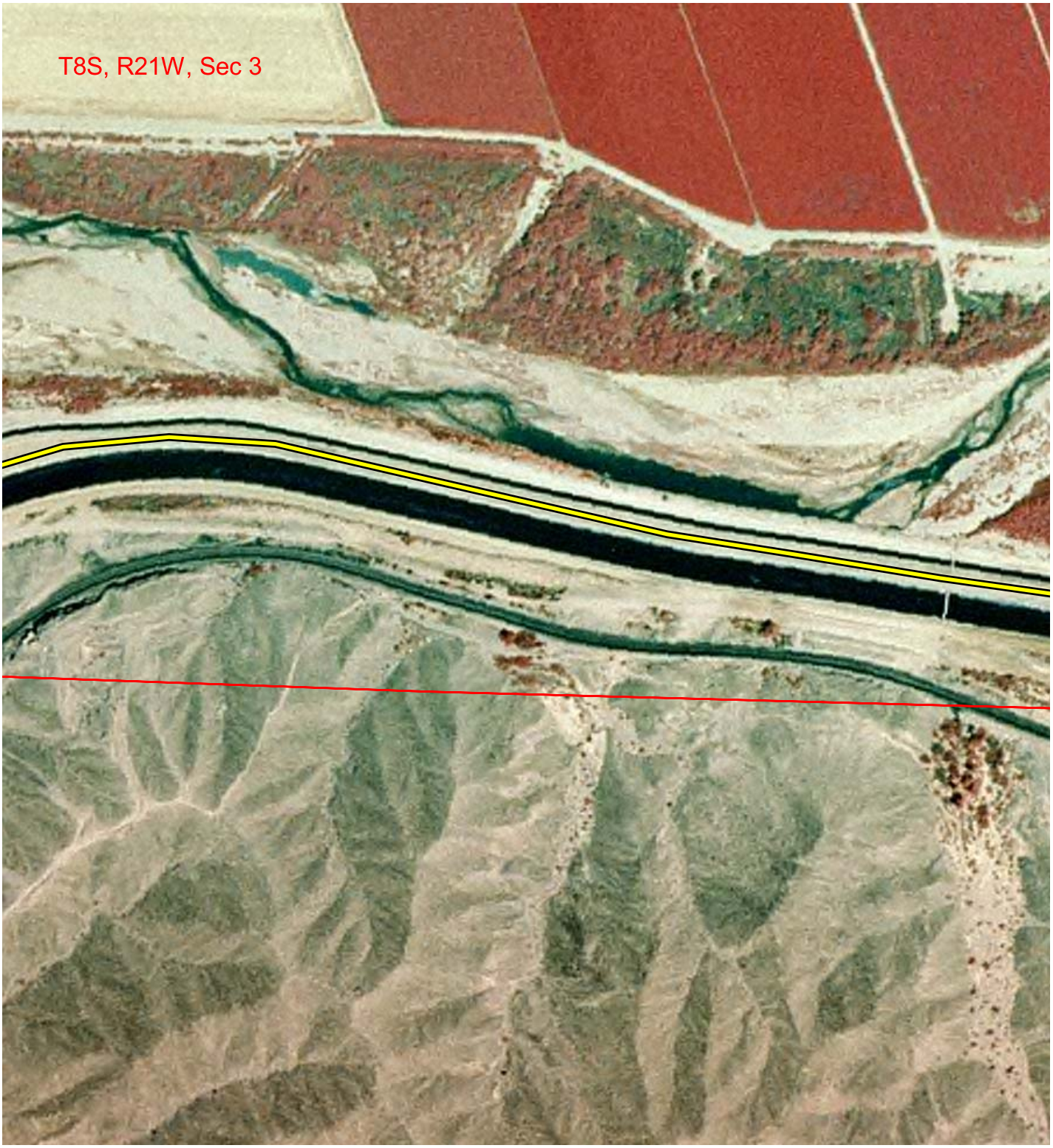
SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-17
WATERS OF THE UNITED STATES
MAP 17 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA

DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

Qualifying Water of the United States

Pipeline Corridor

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Transverse Mercator Projection
1983 North American Datum
Zone 12

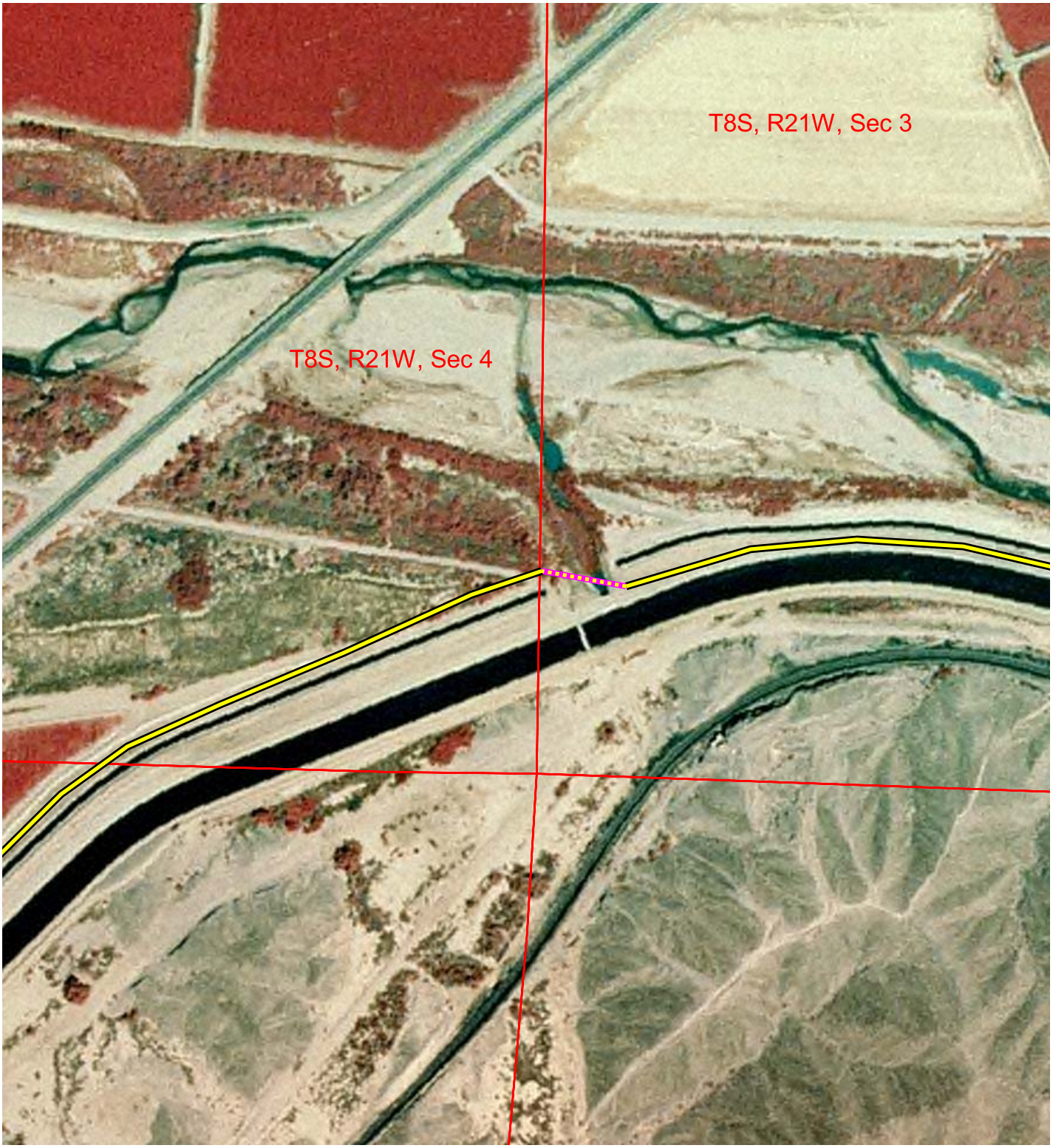
2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-18
WATERS OF THE UNITED STATES
MAP 18 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF



LEGEND

Qualifying Water of the United States

Pipeline Corridor

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Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-19
WATERS OF THE UNITED STATES
MAP 19 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

LEGEND

Qualifying Water of the United States

Pipeline Corridor

boring

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Transverse Mercator Projection
1983 North American Datum
Zone 12

2000 0 2000 4000 Feet

SCALE 1:4,800

WELLTON-MOHAWK GENERATING FACILITY

FIGURE 3-20
WATERS OF THE UNITED STATES
MAP 20 OF 20

ANALYSIS AREA: YUMA COUNTY, ARIZONA	
DATE: 04/13/04	ArcView File: C:\Wellmow\waters survey.apr
PLOT SCALE: 1" = 400'	DRAWN BY: CDF

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Spangle, S. 2003. Personal communication [November 26, 2003, letter to J. Holt, Western Area Power Administration, Phoenix, Arizona. RE: Threatened, endangered, and candidate species consultation]. Field Supervisor, United States Fish and Wildlife Service, Phoenix, Arizona. 2 pages.

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APPENDIX A – WATERS OF THE UNITED STATES PHOTOGRAPHS

Photo 1: View of WUS-1 crossing looking south.

Photo 2: View of WUS-1 crossing looking southeast.

Photo 3: View of WUS-2 crossing looking north.

Photo 4: View of WUS-3 crossing looking northeast.

Photo 5: View of WUS-4 crossing looking east.

Photo 6: View of WUS-5 crossing looking north.

Photo 7: View of WUS-6 crossing looking east.

APPENDIX B - QUALIFICATIONS OF DELINEATORS

Charles D. Florian

EDUCATION

Bachelor of Science (Natural Resource Management/ Forestry Minor)
Colorado State University – Fort Collins, Colorado

SPECIALTIES

Vegetation Sampling/Identification; Forest Ecology; Wetland Ecology; Disturbed Land Reclamation; Geographic Information Systems/Global Positioning Systems

EXPERIENCE 8 Years

Greystone
Staff Ecologist
TechniGraphic Systems
GIS Quality Control
Colorado State University
Research Assistant/Laboratory Manager
USDA Forest Service
Forestry Technician

Mr. Florian has experience on a variety of development projects including coal mine reclamation; environmental inspection on pipeline construction, utility corridor surveys; threatened, endangered, and sensitive species (TES) surveys; wetland and Waters of the United States delineations; vegetation surveys; and wildlife surveys. He has performed field data collection and academic research for use in Forest Management Plans, Environmental Impact Statements (EISs), Environmental Assessments (EAs), Army Corps of Engineers Section 404 Permits, Professional Research Papers, and Reclaimed Mine Bond Release Applications.

Mr. Florian was the crew leader for a team that delineated Waters of the United States and wetlands along two, 26 mile utility corridors in the summer of 2000 on the Big Sandy Energy Project near Wikieup, Arizona. He has experience in wetlands delineation for use in Environmental Impact Statements and U. S. Army Corps of Engineers (USACOE) Section 404 Permits. He has knowledge of the procedures outlined by the UACOE for proper delineation including identification of indicator plants and hydric soils.

APPENDIX D

GENERAL REQUIREMENTS OF THE CLEAN WATER ACT SECTION 404 NATIONWIDE PERMITS FOR UTILITY LINE ACTIVITIES

U S Army Corps of Engineers
Sacramento District

Nationwide Permit Summary

33 CFR Part 330; Issuance of Nationwide Permits – January 15, 2002, including Correction – February 13, 2002

12. Utility Line Activities. Activities required for the construction, maintenance and repair of utility lines and associated facilities in waters of the US as follows:

(i) Utility lines: The construction, maintenance, or repair of utility lines, including outfall and intake structures and the associated excavation, backfill, or bedding for the utility lines, in all waters of the US, provided there is no change in preconstruction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication (see Note 1, below). Material resulting from trench excavation may be temporarily sidecast (up to three months) into waters of the US, provided that the material is not placed in such a manner that it is dispersed by currents or other forces. The District Engineer may extend the period of temporary side casting not to exceed a total of 180 days, where appropriate. In wetlands, the top 6" to 12" of the trench should normally be backfilled with topsoil from the trench. Furthermore, the trench cannot be constructed in such a manner as to drain waters of the US (e.g., backfilling with extensive gravel layers, creating a french drain effect). For example, utility line trenches can be backfilled with clay blocks to ensure that the trench does not drain the waters of the US through which the utility line is installed. Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

(ii) Utility line substations: The construction, maintenance, or expansion of a substation facility associated with a power line or utility line in non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters, provided the activity does not result in the loss of greater than ½-acre of non-tidal waters of the US.

(iii) Foundations for overhead utility line towers, poles, and anchors: The construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the US, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

(iv) Access roads: The construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the US, excluding non-tidal wetlands adjacent to tidal waters, provided the discharges do not cause the loss of greater than ½-acre of non-tidal waters of the US. Access roads shall be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes the adverse effects on waters of the US and as near as possible to preconstruction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above preconstruction contours and elevations in waters of the US must be properly bridged or culverted to maintain surface flows.

The term "utility line" does not include activities which drain a water of the US, such as drainage tile, or french drains; however, it does apply to pipes conveying drainage from another area. For the purposes of this NWP, the loss of waters of the US includes the filled area plus waters of the US that are adversely affected by flooding, excavation, or drainage as a result of the project. Activities authorized by paragraph (i) through (iv) may not exceed a total of ½-acre loss of waters of the US. Waters of the US temporarily affected by filling, flooding, excavation, or drainage, where the project area is restored to preconstruction contours and elevation, is not included in the calculation of permanent loss of waters of the US. This includes temporary construction mats (e.g., timber, steel, geotextile) used during construction and removed upon completion of the work. Where certain functions and values of waters of the US are permanently adversely affected, such as the conversion of a forested wetland to a herbaceous wetland in the permanently maintained utility line right-of-way, mitigation will be required to reduce the adverse effects of the project to the minimal level.

Mechanized land clearing necessary for the construction, maintenance, or repair of utility lines and the construction, maintenance and expansion of utility line substations, foundations for overhead utility lines, and access roads is authorized, provided the cleared area is kept to the minimum necessary and preconstruction contours are maintained as near as possible. The area of waters of the US that is filled, excavated, or flooded must be limited to the minimum necessary to construct the utility line, substations, foundations, and access roads. Excess material must be removed to upland areas immediately upon completion of construction. This NWP may authorize utility lines in or affecting navigable waters of the US even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322).

Notification: The permittee must notify the District Engineer in accordance with General Condition 13, if any of the following criteria are met:

(a) Mechanized land clearing in a forested wetland for the utility line right-of-way;

(b) A Section 10 permit is required;

(c) The utility line in waters of the US, excluding overhead lines, exceeds 500 feet;

(d) The utility line is placed within a jurisdictional area (i.e., water of the US), and it runs parallel to a stream bed that is within that jurisdictional area;

(e) Discharges associated with the construction of utility line substations that result in the loss of greater than 1/10-acre of waters of the US.

(f) Permanent access roads constructed above grade in waters of the US for a distance of more than 500 feet; or

(g) Permanent access roads constructed in waters of the US with impervious materials. (Sections 10 and 404)

Note 1: Overhead utility lines constructed over Section 10 waters and utility lines that are routed in or under Section 10 waters without a discharge of dredged or fill material require a Section 10 permit; except for pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the US, which are considered to be bridges, not utility lines, and may require a permit from the USCG pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material associated with such pipelines will require a Corps permit under Section 404.

Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work and the area restored to preconstruction contours, elevations, and wetland conditions. Temporary access roads for construction may be authorized by NWP 33.

Note 3: Where the proposed utility line is constructed or installed in navigable waters of the US (i.e., Section 10 waters), copies of the PCN and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

A. General Conditions. The following general conditions must be followed in order for any authorization by an NWP to be valid:

☐ **1. Navigation**. No activity may cause more than a minimal adverse effect on navigation.

☐ **2. Proper Maintenance**. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

☐ **3. Soil Erosion and Sediment Controls**. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

☐ **4. Aquatic Life Movements**. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

☐ **5. Equipment**. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

☐ **6. Regional and Case-By-Case Conditions**. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

☐ **7. Wild and Scenic Rivers**. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

☐ **8. Tribal Rights**. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

☐ **9. Water Quality.**

☐ (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).

☐ (b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system,

including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs).

This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

☐ **10. Coastal Zone Management**. In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).

☐ **11. Endangered Species**.

☐ (a) No activity is authorized under any NWP which is likely to 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 destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated 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 that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

☐ (b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfms.noaa.gov/prot_res/overview/es.html respectively.

☐ **12. Historic Properties**. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR Part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

☐ **13. Notification**.

☐ (a) Timing; where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

☐ (1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

☐ (2) If notified in writing by the District or Division Engineer that an Individual Permit is required; or

☐ (3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

☐ (b) Contents of Notification: The notification must be in writing and include the following information:

☐ (1) Name, address and telephone numbers of the prospective permittee;

☐ (2) Location of the proposed project;

☐ (3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP (Sketches usually clarify the project and when provided result in a quicker decision.);

☐ (4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));

☐ (5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed;

☐ (6) For NWP 14 (Linear Transportation Projects), The PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable;

☐ (7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing;

☐ (8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee;

☐ (9) For NWP 29 (Single-Family Housing), the PCN must also include:

☐ (i) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;

☐ (ii) A statement that the single-family housing activity is for a personal residence of the permittee;

☐ (iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring ¼-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than ¼-acre in size, formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

☐ (iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

☐ (10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

☐ (i) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;

☐ (ii) A delineation of any affected special aquatic sites, including wetlands; and,

☐ (iii) Location of the dredged material disposal site;

☐ (11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources;

☐ (12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;

☐ (13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

☐ (14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

☐ (15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

☐ (16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities);

☐ (17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work; and

☐ (18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

☐ (c) Form of Notification: The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(18) of General Condition 13. A letter containing the requisite information may also be used.

☐ (d) District Engineer's Decision: In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary. The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

☐ If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then the District Engineer will notify the applicant either:

☐ (1) that the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an Individual Permit;

☐ (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level; or

☐ (3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the US will occur until the District Engineer has approved a specific mitigation plan.

☐ (e) Agency Coordination: The District Engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

☐ For activities requiring notification to the District Engineer that result in the loss of greater than ½-acre of waters of the US, the District Engineer will provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to NMFS within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

☐ (f) Wetland Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps (For NWP 29 see paragraph (b)(9)(iii) for parcels less than ¼-acre in size). The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

☐ **14. Compliance Certification**. Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

☐ (a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;

☐ (b) A statement that any required mitigation was completed in accordance with the permit conditions; and (c) The signature of the permittee certifying the completion of the work and mitigation.

☐ **15. Use of Multiple Nationwide Permits.** The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g. if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre).

☐ **16. Water Supply Intakes**. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

☐ **17. Shellfish Beds**. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

☐ **18. Suitable Material**. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the CWA).

☐ **19. Mitigation**. The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

☐ (a) The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site).

☐ (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

☐ (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland impacts requiring a PCN, unless the District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands as compensatory mitigation, with preservation used only in exceptional circumstances.

☐ (d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, ¼-acre of wetlands cannot be created to change a ¾-acre loss of wetlands to a ½-acre loss associated with NWP 39 verification. However, ½-acre of created wetlands can be used to reduce the impacts of a ½-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

☐ (e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

☐ (f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

☐ (g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

☐ (h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

☐ **20. Spawning Areas**. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

☐ **21. Management of Water Flows**. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

☐ **22 Adverse Effects From Impoundments**. If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

☐ **23. Waterfowl Breeding Areas**. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

☐ **24. Removal of Temporary Fills**. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

☐ **25. Designated Critical Resource Waters**. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

☐ (a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

☐ (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

☐ **26 Fills Within 100-Year Floodplains.** For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

☐ (a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

☐ (b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

☐ (c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.

☐ **27. Construction Period**. For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project).

☐ For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps.

☐ For projects that have been verified by the Corps, an extension of a Corps approved completion date may requested. This request must be submitted at least one month before the previously approved completion date.

B. <u>Further Information</u>

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

C. <u>Regional Conditions for Nationwide Permits – Sacramento District</u>

I. Regional Conditions to be applied across the entire Sacramento District:

☐ **1.** Nationwide Permits 14, 29, 39, 40, 41, 42, and 44 are withdrawn from used in histosols, including fens. For the used of all other nationwide permits in fens, project proponents are required to notify the Corps using the notification or PCN procedures of the nationwide permit program (General Condition 13). This will be a "Corps only" notification.

☐ **2.** For all activities using any existing and proposed nationwide permits, mitigation that is required by special condition must be completed before or concurrent with project construction. Where project mitigation involves the use of a mitigation bank or in-lieu fee, payment must be made to the bank or fee-in-lieu program before commencing construction of the permitted activity.

☐ **3.** For all nationwide permits requiring notification, except 27, the applicant must provide a written statement to the district engineer explaining how avoidance and minimization of loses of waters of the United States were achieved on the project site.

II. Regional conditions to be applied in California and Nevada.

☐ All existing and proposed nationwide permits are suspended in the Lake Tahoe basin in favor of using General Permit 16.

III. Regional conditions to be applied in Utah

☐ For use of any nationwide permit with the following attributes, notification of the Corps of Engineers' Utah Regulatory Office, using the "Notification" procedures of the Nationwide Permit Program (General Condition 13), is required, except where certain nationwide permits are restricted and can not be used as indicated in each category. This will be a "Corps only" notification.

☐ 1. All activities that will affect waters of the U.S. below the elevation 4217 feet msl adjacent to the Great Salt Lake and below 4500 feet msl adjacent to Utah Lake.

☐ 2. Bank stabilization in a perennial stream that would affect more than 100 feet of stream length as measured from the upstream portion of the affected bank to the downstream section, narrow the cross-section of the stream, substantially reduce the riparian vegetation, or increase velocities.

☐ 3. All activities that will affect springs. A spring is an aquatic feature caused by ground water being discharged to the surface, creating wetland and/or stream characteristics. Nationwide Permits 14, 16, 18, 29, 33, 36, 40, 42, 43, and 44 can not be used in spring areas.

APPENDIX E

SPECIAL STATUS SPECIES SURVEY FOR THURBER'S PILOSTYLES

SPECIAL STATUS SPECIES SURVEY

FOR THURBER'S PILOSTYLES

Submitted To:

Gail Acheson
Field Supervisor
U.S. Bureau of Land Management
Yuma Field Office
2555 East Gila Ridge Road
Yuma, AZ 85365

April 2004

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Figure 1 Thurber's Pilostyles Survey Plant Location Map 1-2

1.0 INTRODUCTION

Wellton-Mohawk Irrigation and Drainage District (WMIDD), Yuma County Water Users' Association (YCWUA) and Dome Valley Energy Partners LLC (Dome Valley Energy), collectively referred to as the Applicant, are proposing to develop, finance, build, own and operate the Wellton-Mohawk Generating Facility (Project). The facility would be located on approximately 119 acres with boundaries in the SE ¼ of Section 1, T 9 S, R 20 W, the SW ¼ of Section 6, T 9 S, R 19 W, and the NW ¼ NW ¼ of Section 7, T 9 S, R 19 W, approximately 25 miles east of Yuma, Arizona and 9 miles west of Wellton, Arizona. The general project area is displayed on Figure 1.

Greystone Environmental Consultants, Inc. (Greystone) was contracted by the Applicant to survey the Project Area for Thurber's pilostyles (Pilostyles thurberi). Thurber's pilostyles is a special status plant species, tracked by the Arizona Game and Fish Department's Heritage Data Management System (HDMS), and is currently ranked by HDMS as G5 (demonstrably secure; more than 100 occurrences) and S2 (rare; 6 to 20 occurrences in the state or few individuals or acres within the state). Thurber's pilostyles is an endoparasitic plant, the primary host of which is dye weed (Psorothamnus emoryi). It has also been observed as parasitic on featherplume (Dalea formosa) and black prairie clover (Dalea frutescens), two species that do not occur in the project vicinity.

During initial consultation with the Bureau of Land Management (BLM) regarding threatened, endangered, and sensitive (TES) species that may occur in the project vicinity, BLM informed the Applicant that habitat for, and known occurrences of, Thurber's pilostyles is present in the project vicinity. BLM requested that a biological survey for Thurber's pilostyles be conducted and all host plants flagged for potential salvage prior to construction of the Project.

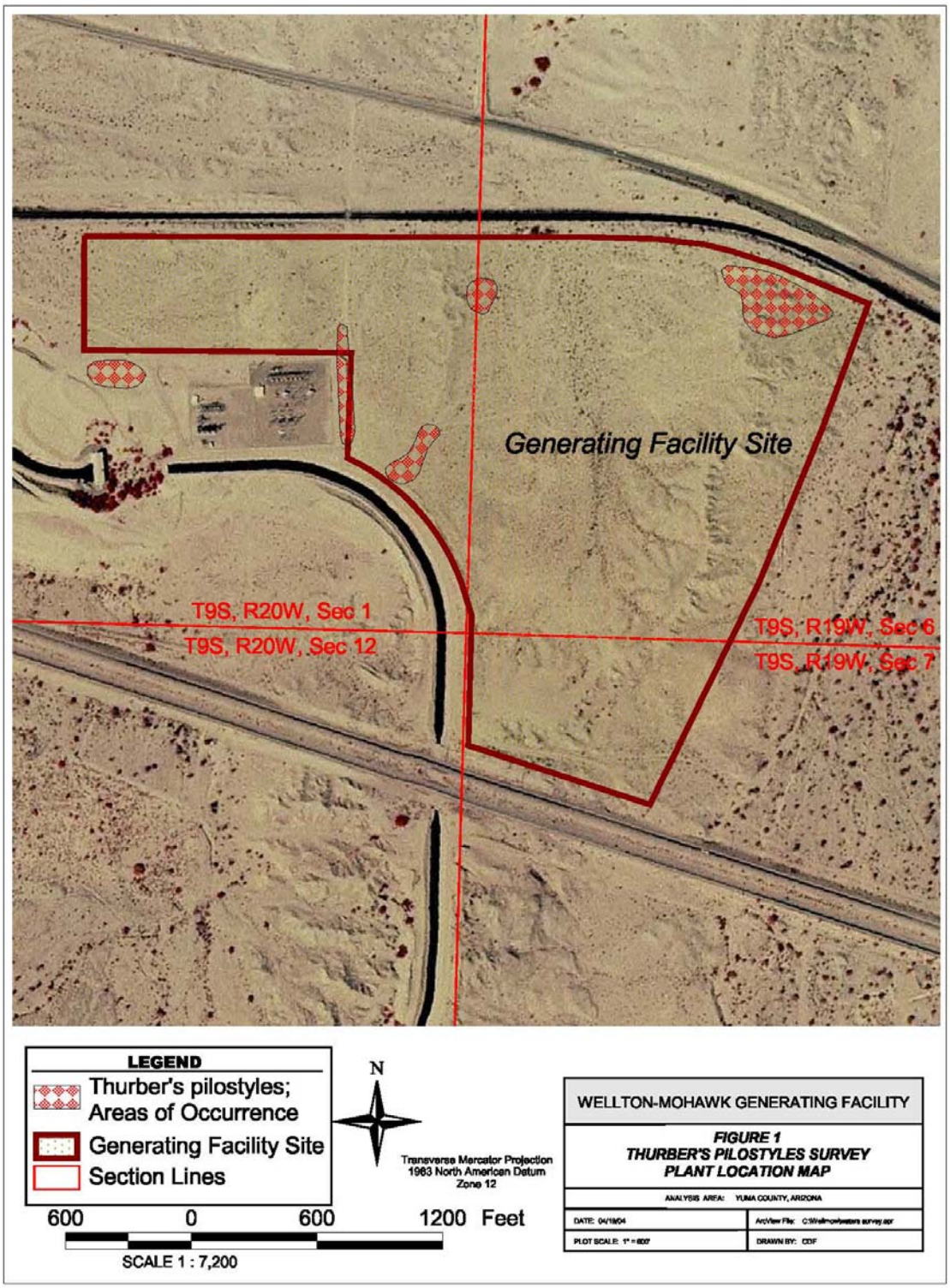

Figure 1 Thurber's Pilostyles Survey Plant Location Map

2.0 QUALIFICATIONS OF THE SURVEYOR

The Pilostyles thurberi survey was conducted by Greystone plant ecologist Chuck Florian. He received his B.S. in Natural Resources Management from Colorado State University and has experience conducting threatened, endangered, and sensitive plant surveys, cover estimates, production and clipping, shrub density, vegetation mapping, and plant identification. Mr. Florian was assisted by Sandra Fairchild and Larry Killman, both employees of Greystone Environmental Consultants, Inc.

3.0 SURVEY METHODS

This survey was conducted on March 18, 2004. The survey began with the all three surveyors identifying dye weed shrubs and familiarizing themselves with its growth form. Thurber's pilostyles was observed growing on dye weed shrubs within seconds of initial host plant identification. Once all three surveyors were comfortable with dye weed and Thurber's pilostyles identification, they began driving transects around the Project periphery and along false ridges that generally trend north and south through the Project Area. The surveyors exited the truck when dye weed shrubs were identified, and each individual host plant was searched for the presence of Thurber's pilostyles.

4.0 RESULTS

Thurber's pilostyles was observed to occur on 86 host plants (Psorothamnus emoryi) within the Project Area. Each host plant was tagged with flagging tape so each plant can be easily found again. Mr. Florian estimated that 25 percent of the host plants harboring Thurber's pilostyles were dead, presumably as a result of the parasitic activity. Additionally, the density of dye weed shrubs containing Thurber's pilostyles was greatest in areas that have been previously disturbed. Thurber's pilostyles was detected on host plants growing where construction activities associated with the electrical substation have occurred, and in low-lying areas where significant flooding events have historically flowed.

After completion of the survey across the entire Project Area, the surveyors drove around and stopped at six randomly selected locations where dye weed was observed to be growing. Thuyrber' pilostyles was detected in abundance on five out of the six sites searched off of the Project Area. All six of the searched sites were directly adjacent to roadways, and many of the host plants harboring Thurber's pilostyles were growing on ground disturbed by highway construction activities.

5.0 CONCLUSION

Construction of the Project will permanently disturb a known population of Thurber's pilostyles. If requested, the Applicant has agreed to salvage the host plants that harbor Thurber's pilostyles, but no indication of the potential success of salvage operations is known. It is the Applicant's opinion that Thurber's pilostyles occurs in greater abundance in project vicinity than the HDMS ranking indicates, and that construction of the Project will not endanger the current population of Thurber's pilostyles as a whole.

Comments received from the U. S. Fish and Wildlife Service (USFWS) in response to the Applicants request for TES information stated that the Applicants' finding of "may affect, not likely to adversely affect" regarding TES species is accurate (Spangle 2003). No critical habitat for any threatened or endangered species will be affected on the Plant Site. Based on investigation and analysis, no significant impacts to any threatened or endangered species have been identified or are anticipated.

6.0 REFERENCES

Spangle, S. 2003. Personal communication [November 26, 2003, letter to J. Holt, Western Area Power Administration, Phoenix, Arizona. RE: Threatened, endangered, and candidate species consultation]. Field Supervisor, United States Fish and Wildlife Service, Phoenix, Arizona. 2 pages.

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