Appendix L

PROGRAMMATIC AGREEMENT

Programmatic Agreement
Among
The Bureau of Land Management,
Las Cruces District, New Mexico
Arizona State Historic Preservation Officer
New Mexico State Historic Preservation Officer
Advisory Council on Historic Preservation
Tohono O'odham Nation
United States Coronado National Forest
Bureau of Indian Affairs
United States Army Corps of Engineers
New Mexico State Land Office
Arizona State Land Department
Arizona State Museum
University of Arizona
City of Tucson
Pima County
National Park Service
Western Area Power Administration
and
Southline Transmission, LLC
Regarding the
Southline Transmission Project

1. **Whereas,** Southline Transmission, LLC (Applicant), intends to construct, operate and maintain the Southline Transmission Project (Undertaking) in New Mexico and Arizona according to general parameters contained in the project Plan of Development (POD), summarized in the Undertaking Description (Attachment 1); and

2. **Whereas,** the Las Cruces District of the Bureau of Land Management (BLM) intends to issue a right-of-way (ROW) grant to Southline, LLC for the construction, operation and maintenance of the Undertaking, and the ROW grant will reference this Programmatic Agreement (PA); and

3. **Whereas,** this PA and the Historic Properties Treatment Plan (HPTP) that will be developed pursuant to this PA will be incorporated into the POD; and

4. **Whereas,** the Las Cruces District Office of the (BLM) has been designated to serve as the lead federal agency for the Undertaking, is a Signatory to this PA and in consultation with other parties has determined that the Undertaking will have an adverse effect upon historic properties as defined in 36 CFR 800.16.l(1), identified and not yet identified within the APE; and

5. **Whereas,** the BLM has consulted with the New Mexico State Historic Preservation Officer and the Arizona State Historic Preservation Officer (SHPO), and the Tohono O'odham Nation Tribal Historic Preservation Officer (THPO) pursuant to Section 800.6 of the regulations (36 CFR part 800)

implementing Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. 306108) as revised in 2004 and they are Signatories to this PA; and

6. **Whereas,** the BLM has notified the Advisory Council on Historic Preservation (ACHP) pursuant to 36 CFR § 800.6(a) (1)(i)(C) that the Undertaking will have adverse effects on historic properties and be resolved through a PA (3-4-13) and the ACHP has agreed to participate to resolve adverse effects and is a Signatory to this PA (3-19-13); and

7. **Whereas,** the Tohono O'odham Nation has assumed the role as Tribal Historic Preservation Office (THPO) for lands within their reservation boundaries and this Undertaking crosses lands under their jurisdiction (San Xavier District); and

8. **Whereas**, no provision of this PA will be construed by any of the Signatories as abridging or debilitating any sovereign powers of the Tohono O'odham Nation; affecting the trustee-beneficiary relationship between the Secretary of the Interior and Tohono O'odham Nation or individual Indian landowners; or interfering with the government-to-government relationship between the United States and the Tohono O'odham Nation; and

9. **Whereas,** the Bureau of Indian Affairs (BIA) is the agency responsible for issuing permits and approving rights-of-ways on tribal and allotted lands of the Tohono O'odham Nation, San Xavier District, and the BLM has consulted with the BIA about the effects of the Undertaking on historic properties and has invited them to be an Invited Signatory to this PA; and

10. **Whereas,** Western Area Power Administration (Western), an agency within the Department of Energy, owns and maintains transmission lines on rights-of-way in Arizona that may be upgraded as part of this Undertaking if Western transmission lines are utilized as part of the Undertaking; and

11. **Whereas,** the Applicant has applied for, and Western is considering providing Federal funding for the Undertaking, as authorized under the 2009 amendments to the Hoover Power Plant Act of 1984; and

12. **Whereas,** this PA is not applicable to Western's ongoing routine maintenance of its existing infrastructure which is instead governed by *Programmatic Agreement Among Western Area Power Administration, the Advisory Council on Historic Preservation, and the Arizona State Historic Preservation Officer, Regarding Maintenance and Minor Construction Activities at Existing Western Transmission Lines, Facilities and Properties in Arizona*; and

13. **Whereas**, should Western elect to acquire the land rights for the new build portion of the Undertaking in Arizona and New Mexico as part the Undertaking, Western will obtain temporary access rights as well as later permanent land rights in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, where land rights across each non-federal land ownership parcel are appraised pursuant to federal standards, and BLM has invited Western to participate as an Invited Signatory to this PA; and

14. **Whereas,** the Applicant has participated in consultations and BLM has invited them to be an Invited Signatory to this PA; and

15. **Whereas,** the Undertaking crosses lands under the jurisdiction of the U.S. Coronado National Forest (CNF) and the BLM has consulted with the CNF and has invited them to be an Invited Signatory to this PA; and

16. **Whereas,** the Undertaking crosses lands under the jurisdiction of the Arizona State Land Department (ASLD) and the New Mexico State Land Office (NMSLO); and the ASLD may use provisions of this PA to address the applicable requirements of the Arizona State Historic Preservation Act (ARS § 41-861 et seq.) and the Arizona Antiquities Act (AAA) (ARS § 41-841 et seq.) on state trust lands in Arizona; and the NMSLO may use the provisions of this PA to address the applicable requirements of the Cultural Properties Act (§§ 18-6-1 et seq. NMSA 1978) and the Cultural Properties Protection Act (§§ 18-6A-1 et seq. NMSA 1978); and the BLM has consulted with these agencies about the effects of the Undertaking on historic properties and has invited them to be Invited Signatories to this PA; and

17. **Whereas,** the BLM has consulted with the New Mexico Department of Transportation (NMDOT) and the Arizona Department of Transportation (ADOT), which may issue rights-of-ways to the Applicant for access to and construction of certain components of the Undertaking, has invited them to be Invited Signatories to this PA, and both NMDOT and ADOT have declined to sign; and

18. **Whereas,** the United States Army Corps of Engineers (USACE), will be responsible for issuing permits under Section 404 of the Clean Water Act for the Undertaking and the BLM has consulted with them about the effects of the Undertaking on historic properties and has invited them to be an Invited Signatory to this PA; and

19. **Whereas,** the Undertaking crosses lands under the jurisdiction of the City of Tucson and Pima County and the BLM has consulted with them about the effects of the Undertaking on historic properties and has invited them to be Invited Signatories to this PA; and

20. **Whereas,** the Department of the Interior (DOI), through the National Park Service (NPS), is responsible for National Historic Landmarks (NHLs) under Section 101 of the NHPA and consults with agencies on undertakings adversely affecting those NHLs; and

21. **Whereas,** the Undertaking crosses the Desert Laboratory National Historic Landmark (NHL) and the Tumamoc Hill Archaeological National Register (NR) District, which are nearly identical in location, and may affect this NHL and NR District; and the BLM will follow 36 CFR § 800.10 and the provisions contained in this PA, and the BLM has consulted with the NPS, which administers the NHL Program, and has invited the NPS (NHL Program) to be an Invited Signatory to this PA; and

22. **Whereas,** the Undertaking crosses the Desert Laboratory NHL and the Tumamoc Hill Archaeological NR District which are properties owned by Pima County and the Arizona Board of Regents (University of Arizona) and the BLM has consulted with these entities about the effects of the Undertaking on these historic properties and has invited them to be Invited Signatories to this PA; and

23. **Whereas,** the Arizona State Museum (ASM) has been invited to participate pursuant to 36 CFR § 800.6 (c)(2)(iii), as it has mandated authority and responsibilities under the Arizona Antiquities Act (AAA), ARS § 41-841 et seq., that apply to that portion of the Undertaking on state lands in Arizona (state, county and city); and mandated authority and responsibilities under ARS § 41-865 that apply to that portion of the Undertaking on private lands and BLM has invited them to be an Invited Signatory to this PA; and

24. **Whereas,** the BLM is responsible for government-to-government consultation with Indian tribes pursuant to section 101(d)(6)(B) of the NHPA, 36 CFR § 800.2(c)(2)(ii), the American Indian Religious Freedom Act (42 § USC 1996) (AIRFA), Executive Order 13175, and section 3(c) of the Native American Graves Protection and Repatriation Act (25 USC §§ 3001-13) (NAGPRA), and has formally invited the 21 Indian tribes listed below to participate in consultations regarding the

potential effects of the Undertaking on properties to which they ascribe traditional religious and cultural significance; and

25. **Whereas,** the Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, Hopi Tribe, Tonto Apache Tribe, Yavapai-Apache Nation, Pascua Yaqui Tribe, San Carlos Apache Tribe, Mescalero Apache Tribe, White Mountain Apache Tribe, Navajo Nation, Pueblo of Acoma, Pueblo of Laguna, Pueblo of Isleta, Pueblo of Tesuque, Pueblo of Zuni, Comanche Indian Tribe, Fort Sill Apache Tribe of Oklahoma, Kiowa Tribe of Oklahoma, and the Ysleta del Sur Pueblo, have been contacted, invited to engage in consultations and invited to be Concurring Parties to this PA; and

26. **Whereas,** the Tohono O'odham Nation, Gila River Indian Community, Salt River Pima-Maricopa Indian Community, Ak-Chin Indian Community, San Carlos Apache, Fort Sill Apache, Mescalero Apache, Pueblo of Isleta, Pueblo of Zuni, Hopi Tribe, and the Pueblo of Ysleta del Sur have participated in consultations for this Undertaking and the development of this PA; and

27. **Whereas,** the Butterfield Trail is an historic trail that is Under National Trail Feasibility Study, in accordance with the National Trails System Act (P.L. 90-543, as amended through P.L. 111-11), by the NPS, National Trails Intermountain Region (NTIR), and the BLM has coordinated and consulted with the NPS about this trail and has invited the NPS (NTIR) to be a Concurring Party to this PA; and

28. **Whereas,** the following have participated in consultations as Consulting Parties in accordance with 36 CFR § 800.2(c)(5) and 800.3(f)(1) and (3): the National Trust for Historic Preservation, Archaeology Southwest, and the Town of Marana and BLM has invited these entities to be Concurring Parties to this PA; and

29. **Whereas**, the Juan Bautista de Anza National Historic Trail (NHT) is administered by the NPS, Pacific West Regional Office, and the BLM has determined that this NHT is not a historic property where it occurs in the Undertaking's APE, nor are there any trail-related historic properties in the APE, and the BLM has consulted with the NPS regarding these conclusions; and

30. **Whereas,** the BLM has provided the public opportunities to comment on the Undertaking and participate in the National Environmental Policy Act (NEPA) process through a Notice of Intent to Prepare an Environmental Impact Statement (EIS) published in the Federal Register on 4-4 2012 for the development of the EIS; held six public scoping meetings in May 2012; published the Draft EIS on April 11, 2014 and held six public meetings in May 2014. Public meeting materials included information about the NHPA and the Section 106 process and BLM considered comments received through the NEPA and NHPA processes concerning cultural resources in the development of this PA; and

31. **Whereas**, Human Remains, Associated/Unassociated Funerary Objects, Sacred Objects, and Objects of Cultural Patrimony recovered within or on federal and tribal land will be treated in accordance with NAGPRA pursuant to 25 U.S.C. §3001–13, and with the American Indian Religious Freedom Act (AIRFA) pursuant to 42 U.S.C. §1996; and

32. **Whereas,** Human Remains and Funerary Objects discovered on state and private land in New Mexico will be treated in accordance with § 18-6-11.2 NMSA 1978**;** and in Arizona, in accordance with ARS §41-844 (state lands) and ARS §41-865 (private lands).

33. **Whereas**, the BLM is using the provisions of this PA to address applicable requirements of the Archaeological Resources Protection Act (ARPA) (16 U.S.C. §470aa), the American Indian Religious

Freedom Act (AIRFA) (42 U.S.C. §1996), and the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. §3001–13); and

Now, therefore, the parties to this PA agree that the Southline Transmission Line Project shall be completed in accordance with the stipulations established in this PA in order to take into account the effects of the Undertaking on historic properties.

UNDERTAKING DESCRIPTION

The Undertaking encompasses the construction phase of the proposed transmission line project that takes place after the BLM ROW grant is issued and includes associated project facilities as well as reclamation of areas used during construction but not necessary for operation and maintenance of the facilities. The Undertaking may include surveys, geotechnical testing, engineering, mitigation planning and design, or other activities initiated prior to construction of project facilities. The potential effects to historic properties will be the most extensive and substantial during the construction phase. The Undertaking also encompasses those activities necessary to operate and maintain the transmission line over the life of the project. Operation and maintenance activities are approved in the ROW grant and confined to the ROW. Changes to approved operations and maintenance activities, including new actions outside of the approved BLM ROW grant, require BLM approval and may necessitate a separate Section 106 review and additional ROWs. This PA stipulates the process necessary to comply with Section 106 obligations for construction and reclamation as well as operation and maintenance of the proposed transmission line and associated facilities. If decommissioning takes place in the future, it will be considered a separate undertaking when it occurs.

DETAILED DESCRIPTION OF UNDERTAKING: see Attachment 1
LOCATION OF UNDERTAKING: see Attachment 2 for a map of the Undertaking
DEFINITIONS USED IN THIS PA: see Attachment 3

STIPULATIONS

BLM shall ensure that the Undertaking is carried out in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties:

I. Identification, Evaluation, and Determination of Effects

A. **The Areas of Potential Effects (APE)** (see Attachments 2 and 3) are defined as:

1. **Direct effects:** The APE for direct effects during construction and reclamation for the new build portion of the Undertaking (from the Afton substation to the Apache substation) will include all areas likely to be affected by construction and reclamation activities. This APE will be the 200-foot-wide permitted ROW corridor for one 345 kV transmission line and access roads (within corridor) plus 100 feet on either side of the corridor (400’ total width). This width will allow for adjustments in transmission line or access road placement to avoid when possible any natural, cultural, or modern features such as outcrops, historic properties, petroglyph sites, and structures. For the upgrade portion of the Undertaking (from Apache substation to Saguaro substation) from an existing 115 kv to a 230 kv transmission line, the APE will be the 150 foot wide permanent ROW plus 100 feet on either side of the corridor (350’ total width).

    a. Proposed new access routes and existing roads requiring improvement outside the transmission line ROW will have a 150-foot wide APE (75 feet from centerline).

b. The APE for staging areas, borrow areas, substations and other transmission infrastructure will include the footprint of the facility and a buffer of 250 feet around the footprint of the proposed activity/facility.

c. The APE for pulling/tensioning sites that fall outside the ROW will be the footprint of the site plus a 250-foot radius around these points.

d. Direct effects from operation and maintenance activities will be confined to the ROW.

2. **Indirect effects**: The APE for indirect effects shall be areas visible and within 5 miles of any project component (including conductors and access roads) or to the visual horizon, whichever is closer, or where consultation identifies a need to expand this APE in certain locations.

a. BLM will use a Geographic Information System (GIS) view shed analysis to identify areas in the indirect effects APE from which the Undertaking may be visible.

b. The indirect effects APE may extend beyond the 5-mile convention to encompass properties that have traditional religious and cultural importance, including traditional cultural properties (TCPs), or other geographically extensive historic properties such as trails, when effects have been determined to extend beyond this distance.

3. **Cumulative effects**: The APE for cumulative effects shall be the same as that for direct and indirect effects combined.

B. The Applicant shall complete a cultural resources inventory to identify historic properties that could be affected by the Undertaking. This inventory will include:

1. A Class I, Existing Data Inventory of all previously recorded cultural resources within 0.25 mile of the APEs described in I.A.1, and the entire APE described in I.A.2 which shall include a review of historical maps, including 15-minute topographic maps, General Land Office maps and survey notes, and other archival sources for properties that are over 45 years old that may be affected by the Undertaking.

2. A Class III, Intensive Field Inventory of the direct effects APE as defined in Stipulation I.A.1. The Class III Inventory will be conducted with sensitivity for locations or other features identified as important through tribal consultation or ethnographic studies.

a. For the direct effects APE as defined in I.A.1, all historic linear cultural resources such as canals, roads, trails, and railroads will be identified and recorded where they intersect the APE and will be fully recorded within the APE. For the indirect effects APE as defined in I.A.2, all historic linear cultural resources such as canals, roads, trails, and railroads will be identified and evaluated where the Undertaking would be visible to such linear cultural resources.

b. All previously recorded cultural resources within the direct effects APE will be re-visited with the associated records updated and revised as appropriate, including NRHP eligibility recommendations and determinations. Previously

recorded cultural resources and newly recorded cultural resources whose boundaries lie partially within, or straddle the APE will be fully recorded outside the APE, to the extent practical, regardless of surface ownership.

c. Previously recorded and newly recorded cultural resources will be referenced by permanent site numbers with Universal Transverse Mercator (UTM) coordinates.

d. An assessment of visual impacts will be conducted for historic properties within the direct and indirect effects APEs that could be considered visually sensitive and potentially affected by the Undertaking which meet the following criteria:

   1) View shed analysis indicates that the Undertaking would be visible from the historic property;

   2) The historic property is eligible for the NRHP under criteria listed at 36 CFR 60 "(a), (b), or (c)". Under special circumstances, historic properties eligible only under criterion d may be included (e.g., an archaeological site with standing architecture). Inclusion of such properties will be at the discretion of the BLM in consultation with involved land managing agencies and the SHPO/THPO.

   3) Not less than 60 days prior to commencement of the visual analysis, the BLM will provide a proposed methodology for review and comment by Consulting Parties. The BLM, in consultation with land managing agencies and SHPO/THPO will consider all comments in refining the methodology prior to implementation.

C. The Applicant shall prepare a comprehensive Inventory Report incorporating findings from the existing Class I Data Inventory and the Class III, Intensive Field Inventory for each state. This report shall include NRHP eligibility recommendations and assessments of direct, indirect, and cumulative effects within the APE of the Undertaking as described in I.A.

D. The Applicant shall submit drafts of the Inventory Report for each state to the BLM. The BLM will provide the reports to the appropriate land managers, the ASM, and concerned tribes within each state for review, concurrent with BLM review. These parties will provide written comments to the BLM within 60 calendar days regarding:

   1. The adequacy of the identification effort;
   2. The NRHP eligibility of the cultural resources identified;
   3. The assessment of effects of the Undertaking on the historic properties identified,
   4. The presence of TCPs or any properties of traditional religious or cultural importance to tribes that were not identified in the inventory that may be affected by the Undertaking.

   The BLM shall ensure that comments received within 60 calendar days are considered in development of the revised Inventory Reports. The BLM will submit the revised Inventory Reports to the appropriate SHPO/THPO, tribes, and Consulting Parties for a 60-calendar-day review and will request SHPO/THPO concurrence on determinations of NRHP eligibility and BLM's assessments of effects to each historic property identified.

BLM will notify the Consulting Parties via electronic mail of the submittal and the date that comments are due. In New Mexico, one appendix to the Inventory Report shall include a data compendium with copies of the appropriate New Mexico Cultural Resource Information System (NMCRIS) and Laboratory of Anthropology (LA) archaeological site and Historic Cultural Properties Inventory (HCPI) forms and maps.

E. The Inventory Report will accomplish and provide the following:

1. Completion of the Identification of Historic Properties (except properties found during possible future Variances and Discoveries).
2. Determinations of Eligibility (except undetermined cultural resources and properties found during possible future Variances and Discoveries).
3. Determinations of effects to historic properties by the Undertaking (except undetermined cultural resources and properties found during possible future Variances and Discoveries).
4. Recommendations for treatment measures to be applied to historic properties affected by the Undertaking (except undetermined cultural resources and properties found during possible future Variances and Discoveries).

F. As part of its identification efforts, the BLM has consulted with Indian tribes whose aboriginal territories included portions of the Undertaking area or who have previously expressed interest in undertakings within the APE. The BLM shall continue to consult with Indian tribes regarding properties of traditional religious and cultural importance to them that might be affected by the Undertaking and shall provide opportunities for review and comment on draft and final versions of the Inventory Report. The consultation process will remain open for any tribe that expresses a desire to participate.

G. When making determinations of NRHP eligibility, the BLM will consider sites, districts, buildings, structures and objects that are significant and meet the integrity criteria. For properties that have traditional cultural values, the BLM shall take into consideration values expressed by the consulted tribes. The BLM shall make NRHP eligibility determinations, and provide this documentation to appropriate Consulting Parties to provide comment, taking into consideration all comments received from the Consulting Parties. If a SHPO/ THPO, land managing agency or any tribe disagrees with the BLM's determinations of eligibility, the BLM shall consult with the SHPO/ THPO, the land managing agency, and/or tribe to resolve the objection. If a resolution cannot be agreed upon, the BLM shall forward the required documentation to the Keeper of the National Register for final determinations. The BLM shall ensure that the Applicant prepares a revised Inventory Report incorporating BLM's eligibility determinations, or the Keeper's determination, if requested.

H. Any cultural resources for which eligibility cannot be determined during the inventory phase of the Undertaking shall be identified in the Historic Properties Treatment Plan (HPTP), and treated as eligible until a determination is made. Additional studies such as testing, archival research and oral histories will be completed for all such resources that will be affected by the Undertaking to enable the BLM in consultation with the land manager, and the SHPO/THPO to make an eligibility determination. The BLM's eligibility determinations for such resources will be submitted via electronic and regular

mail to the respective SHPO/THPO and land manager with a Summary report describing the results of the additional studies, and a request for concurrence on the determination of eligibility. The SHPO/THPO will review these eligibility determinations and respond to the BLM within 30 calendar days. If the SHPO/THPO does not respond to the BLM within 30 calendar days, the BLM will assume concurrence with the determination(s) of NRHP eligibility.

II. Avoiding and Minimizing Adverse Effects of the Undertaking on Historic Properties

A. The BLM shall, if possible, avoid adverse effects to historic properties, with input from Consulting Parties.

1. Avoidance measures for historic properties may include (but are not limited to) realignment of the transmission line, fencing of sites during construction, monitoring of construction near site areas, or placing towers, maintenance roads and ancillary facilities outside of site boundaries.

2. The BLM shall develop avoidance measures for any properties of traditional religious and cultural importance in consultation with the SHPO/THPO and affected tribes or Native American groups who ascribe traditional religious and cultural importance to the properties.

3. The BLM shall identify measures to avoid adverse effects from operation and maintenance activities to those historic properties remaining within the ROW, and shall incorporate these measures in the HPTP in accordance with Stipulation III.A.

B. Where avoidance is not possible, the BLM shall minimize or mitigate adverse effects to historic properties to the degree possible with input from Consulting Parties.

C. If any Indian tribe or other Native American groups have expressed concerns about effects on properties to which they ascribe traditional religious and cultural importance, BLM shall consult with them and the appropriate SHPO/THPO about possible measures to resolve the adverse effects and ensure that those measures are properly considered in the development of the HPTP.

D. For state and private land in New Mexico, if the adverse effect is to a property listed in the State Register of Cultural Properties or NRHP, the agency or political subdivision shall determine whether § 18-8-7 NMSA 1978 of the Prehistoric and Historic Sites Preservation Act applies. The agency or political subdivision should contact the New Mexico SHPO for assistance in making this determination and satisfying the requirements of 4.10.12 New Mexico Administrative Code (NMAC).

III. Resolution of Adverse Effects: Development of the HPTP

A. The BLM shall ensure that the Applicant prepares an HPTP for each state that will address the effects of the proposed Undertaking on historic properties, including properties of traditional religious and cultural importance, and traditional cultural properties (TCPs) as discussed in National Register Bulletin No. 38. The HPTP shall address potential direct, indirect and cumulative effects from construction and reclamation as well as from operation and maintenance of the proposed transmission line and associated facilities. The HPTP will be incorporated into the POD as an appendix and will:

1. Identify the nature of the effects to historic properties and describe the strategies proposed to avoid, minimize, or mitigate those effects.
2. Identify cultural resources that will be affected by the Undertaking for which NRHP eligibility determinations could not be made, and will specify the strategy for determining eligibility. It will further specify the strategy that will be used in the event that these cultural resources are determined eligible as a result of the testing/study phase. Stipulations I.G and I.H will be followed for determining eligibility.
3. Be consistent with the Secretary of the Interior's Standards and Guidelines (48 CFR 44716-44742); the ACHP's handbook, Section 106 Archaeology Guidance (http://www.achp.gov/archguide); the rules implementing the AAA and 36 CFR§ 800.13, Post-Review Discoveries, and in so doing will incorporate provisions for monitoring and inadvertent Discoveries.
4. At a minimum, the HPTP will specify and include:
    a. The historic properties to be affected by the Undertaking and the nature of those effects.
    b. The historic properties to be avoided and applicable avoidance measures, pursuant to Stipulation II.
    c. The historic properties where harm will be minimized and applicable measures to minimize harm.
    d. The properties at which adverse effects will be mitigated through scientific data recovery or other means.
    e. For archaeological resources, research questions and goals that are applicable to the Undertaking area and which can be addressed through data recovery and archival studies, along with an explanation of their relevance and importance. These research questions and goals will incorporate the concept of historic contexts as defined in National Register Bulletin 16.
    f. Fieldwork and analytical methods and strategies applicable to the Undertaking area, along with an explanation of their relevance to the research questions when dealing with archaeological resources. Treatment methods will be developed for each class of property identified in the Inventory report and may include, but are not limited to, excavation, scientific studies outside of the ROW, archival research, off-site interpretation, remote sensing, ethnographic studies, and oral history, as appropriate.
    g. The level of effort to be expended on the treatment of each property. For archaeological resources this will include methods of sampling, i.e., sample size, and rationale for specific sample unit selection.
    h. Data management and dissemination methodologies, including a proposed schedule of reports.
    i. A stand-alone Monitoring and Discovery Plan which will be an appendix to the HPTP. It will contain:

1) A monitoring plan to be used during construction and reclamation.

2) A discovery plan consistent with Stipulation VI to be used during the entire Undertaking.

3) If appropriate, a monitoring plan to be used during operations and maintenance will be developed in accordance with Stipulation III.E in consultation with the Consulting Parties and added after treatment activities are concluded. Any reports resulting from post-construction monitoring will be submitted to the Consulting Parties in accordance with the monitoring plan.

4) All monitoring shall follow clearly stated objectives and methodologies for achieving those objectives, such as to ensure impact avoidance or minimization during construction and reclamation; to measure the effectiveness of avoidance, minimization and mitigation measures; to assess the effects of operations and maintenance activities, or to help define treatments for historic properties with long-term concerns.

j. A Project Termination Plan with provisions for the following programs to be implemented in the event that the Undertaking is terminated for any reason:

1) A program outlining the steps to be taken in order to complete any data recovery or other treatment measures that are in progress at the time of project termination; and

2) A component outlining how analysis, interpretation, reporting, and curation for all historic properties will be completed.

k. Plans which include methods and procedures for the discovery and/or treatment of human remains, associated funerary objects, and sacred objects that reflect any concerns and/or conditions identified as a result of consultations between the BLM and the appropriate Tribes and :

1) A NAGPRA (of 1990 (25 § USC 3002) Plan of Action (POA) which will be consistent with 36 CFR § 800.13, NAGPRA (43 CFR Part 10).

2) In Arizona on state and private land, methods and procedures will be consistent with ARS § 41-844 and ARS § 41-865 and their implementing rules.

3) In Arizona, the Cultural Resources Contractor (CRC), working through the ASM, shall obtain “burial agreements” with Indian tribes pursuant to ARS § 41-844 and ARS § 41-865, that govern Discoveries of human remains and funerary objects on state and private lands.

4) On lands within the exterior boundaries of the Tohono O’odham Nation (TON), the BIA and the TON THPO will be contacted and consulted to ensure compliance with NAGPRA.

5) In New Mexico unmarked human burial grounds, including human remains and associated funerary objects discovered on state and private land, shall receive appropriate and respectful treatment and disposition in accordance

with § 18-6-11.2 NMSA 1978 and in accordance with the methods and procedures in 4.10.11 NMAC.

l. A strategy for cultural resource law and sensitivity training for all Undertaking personnel (including new, added, and replaced personnel) and contractors involved in transmission line construction, construction zone rehabilitation, and operation and maintenance of this transmission line. Instruction will be to a degree commensurate with their involvement in the Undertaking and will include information on the statutes protecting cultural resources, resource sensitivity, and requirements to avoid damage to historic properties and to report Discoveries of cultural resources in accordance with the Monitoring and Discovery Plan. Indian tribes will be provided opportunities to participate in the training program, which could be offered by a variety of means including training sessions, field visits, video programs, or printed materials.

m. A strategy for a public outreach program to disseminate information about the results of the cultural resource work to the general public. This program may include, but is not limited to, the following: a short report written specifically for the public, a brochure, exhibits for use at public outreach venues such as archaeology awareness fairs, slide or PowerPoint presentations, presentations to local historical and archaeological societies, lesson plans and educational materials for use in schools, podcasts, website and/or social media content or a traveling museum exhibit.

n. For the new build portion of the Undertaking, a variance review process to be used during operation and maintenance to address any changes in procedure that could have an adverse effect on historic properties in the ROW.

o. For the new build portion of the Undertaking, a list of operation and maintenance activities that will not require additional Section 106 review.

p. For the new build portion of the Undertaking, a list of operation and maintenance activities that will require additional Section 106 review.

B. Process for Developing the Historic Property Treatment Plan

1. The Applicant shall submit the draft HPTP to the BLM for initial review and comments. The BLM shall provide the SHPO/ THPO and other Consulting Parties within each state a copy for review, requesting comments on the adequacy of the proposed treatment measures**.** These parties will be notified of the review period via electronic mail and will have 45 calendar days to review and comment on the plan. If no comments are received by the BLM within the 45-calendar-day review period, concurrence with the draft HPTP will be assumed.

   a. During this review period, if necessary, the ASM will develop a burial agreement or agreements to provide for the treatment and disposition of human remains discovered on state or private lands in Arizona. The ASM will provide appropriate tribes, the BLM, and the Applicant with a draft of the burial agreement for a 30-calendar-day review.

   b. The BLM will convene at least one consultation meeting in each state with all interested Consulting Parties during the 45-day period.

2. The BLM shall consolidate the comments from Consulting Parties in each state and advise the Applicant of necessary revisions to the draft HPTP. The BLM shall ensure that all comments are taken into consideration in finalizing the HPTP and that the revised HPTP is distributed to all Consulting Parties for a 21-calendar-day review period. The BLM, in consultation with the SHPO/THPO, shall approve the final HPTP. The BLM will notify the Applicant and the Consulting Parties when the final HPTP has been approved.

C. The Applicant shall provide the BLM a Summary Report of treatment completed at each site. The Summary Report will include a brief characterization of site assemblage/contents, the types of analyses yet to be completed, a brief description of how the provisions of the HPTP were implemented, and any deviations from the HPTP that were implemented and the reasons for such deviations.

D. The BLM shall review the Summary Report of treatment that has occurred at each site and provide a copy via electronic and regular mail to the appropriate SHPO/ THPO and other Consulting Parties for review, requesting comments and concurrence with eligibility determinations for previously undetermined cultural resources and Discoveries, within 15 calendar days. The BLM shall consider comments submitted during the review period and shall consult with the appropriate reviewer(s) to resolve differences and/or disagreements. If no comments are received within the 15-calendar-day review period, concurrence with the adequacy of the treatment described in the preliminary summary will be assumed.

E. The BLM shall ensure that the Applicant prepares draft Treatment Reports for each state that incorporate the results of all the site-specific preliminary summaries into a comprehensive regional overview for each state. The Final Treatment Reports also will include:

1. Post-treatment eligibility recommendations for historic properties that have been subjected to treatment measures.

2. A listing of historic properties for which post-construction monitoring would be appropriate, and the reasons for this (i.e., proximity to Undertaking components with the potential for damage from operation and maintenance, percentage of property remaining in ROW, sensitivity of the property, a property identified as being of particular importance to a tribe(s), etc.).

3. The objectives that monitoring could achieve as part of the effort to avoid, minimize and/or mitigate adverse effects to those properties.

F. The BLM shall review the draft Treatment Reports and provide a copy to the appropriate SHPO/ THPO and other Consulting Parties for a 60-calendar-day review and comment period. The BLM will notify these parties of the submittal and review periods via electronic mail. The BLM shall consider comments received during the review period and shall consult with the appropriate reviewer(s) to resolve differences and/or disagreements. If no comments are received within 60 calendar days, concurrence with the adequacy of the Treatment Report will be inferred.

G. The BLM shall ensure that the Applicant prepares a revised Treatment Report that considers comments received on the draft Treatment Report. The BLM shall review the

revised Treatment Report and provide copies to the appropriate SHPO/ THPO and other Consulting Parties for a 30-calendar-day review period. The BLM will notify these parties of the submittal and review periods via electronic mail. The BLM shall consider comments submitted during the review period and shall consult with the appropriate reviewer(s) to resolve differences and/or disagreements. If no comments are received within 30 calendar days, concurrence with the adequacy of the revised Treatment Report will be assumed and the revised Treatment Report shall be considered the final Treatment Report. The BLM shall notify the Applicant when the final Treatment Report has been accepted and will distribute it to the Consulting Parties, if necessary.

H. During the Treatment phase, if deviations to the approved plan are warranted, the Applicant will submit proposed deviations from the HPTP to the BLM for review prior to implementation. The BLM shall provide copies of the proposed deviation via electronic mail to the appropriate SHPO/ THPO, the tribes, the ASM and land manager(s) within the respective state for a 15-calendar-day review. The BLM shall consider comments received within the review period and shall determine the adequacy of the proposed deviation. The BLM will notify the Applicant when the deviation has been approved.

IV. Construction Variance Review Process

A. All construction needs cannot be anticipated in advance and areas required for additional work space, access roads, ancillary facilities, reroutes, etc. may be identified at any time following the acceptance of the Inventory Report(s) by the appropriate SHPO/THPO and land managing agencies. If any newly identified construction needs would result in ground disturbing activities outside of the surveyed areas identified in the Inventory Report, the Applicant will request a variance review from the BLM.

1. The APEs of all variance areas will be consistent with those defined in Stipulation I.A.
2. A Class I Existing Data Inventory review and a Class III Intensive Field Inventory will be performed on all variance areas.
3. If the proposed variance will affect more than 10 acres of land or more than 1 mile of road, the BLM will provide the Consulting Parties with a description and map of the variance.

B. The following process for review and approval of construction Variances will be used.

1. If no cultural resources or properties of traditional cultural or religious importance to tribes are present within the variance APE, the results of the Class I and Class III inventories will be reported on SHPO Survey Report Summary Form (SRSF) (for Arizona) or the New Mexico Cultural Resource Information System (NMCRIS) Investigation Abstract Form (NIAF) (for New Mexico) prior to any access or use. The BLM will provide an expedited review of the variance request, not to exceed 2 working days following receipt, and will provide the Applicant's CRC with written approval/disapproval of the variance via electronic mail.
2. If cultural resources or properties of traditional cultural or religious importance to tribes are present within the variance APE, the Applicant's CRC will prepare an inventory report, as defined in Stipulation I.C, above, and submit it via electronic

mail to BLM and the appropriate SHPO/THPO, tribes, and land manager for review. Because variance requests may be necessary in the midst of construction activities, the agencies and tribes will provide an expedited review within 5 working days or less. If no objections to the variance are received, at the end of the 5-day period, BLM shall provide the Applicant's CRC with written approval of the variance via electronic mail. If objections are received, additional consultation regarding the variance will ensue in accordance with Stipulation XIII of this PA.

a. If historic properties exist in the variance APE and cannot be avoided, a Supplemental Treatment Plan for those properties will be developed and shall be consistent with the HPTP developed pursuant to Stipulation III of this PA.

b. Review procedures shall follow Stipulation III.B.

c. The supplemental Treatment Plan shall be appended to the HPTP and after the completion of these treatment measures, a preliminary Summary Report will be prepared and distributed in accordance with Stipulation III.D.

d. The BLM shall ensure that the results of such treatment efforts are reported in the final Treatment Report for the Undertaking.

e. Once the BLM determines that the approved treatment has been completed, the BLM shall provide the Applicant's CRC with written approval of the variance via electronic mail.

V. Authorization of Construction

Requests for authorizations of construction will be approved only if such authorizations will not restrict subsequent measures to avoid, minimize or mitigate the adverse effects to historic properties through rerouting of the corridor or placement of ancillary facilities.

A. Upon the BLM's acceptance of the final Inventory Report for each state, as described in Stipulation III, the BLM, at its discretion and pending compliance with all other applicable laws and regulations, may authorize the Applicant to begin construction on lands under any ownership or jurisdiction, subject to the appropriate jurisdiction's right-of-entry and ROW requirements, where **there are no historic properties present**.

B. Upon the BLM's acceptance of the final HPTP for each state, the BLM, at its discretion and pending compliance with all other applicable laws and regulations, may authorize the Applicant to begin construction on lands under any ownership or jurisdiction, subject to the appropriate jurisdiction's right-of-entry and ROW requirements, **where all effects to historic properties and unevaluated cultural resources will be avoided** (as described in the approved HPTP).

C. Following acceptance of the Summary Report of treatment that has occurred at each site described in Stipulation III.D, the BLM, at its discretion and pending compliance with all other applicable laws and regulations, may authorize the Applicant to begin construction on lands under any ownership or jurisdiction, subject to the appropriate jurisdiction's right-of-entry and ROW requirements **where provisions of the HPTP have been implemented**.

VI. Discoveries during the Undertaking

A. If potential historic properties are discovered, or unanticipated effects occur to known historic properties, the BLM will implement the Monitoring and Discovery Plan. This plan will be included as a standalone appendix to the HPTP (see Stipulation III.A.4.i) and will incorporate the following:

   1. The Applicant shall ensure that all surface-disturbing activities within 100 feet of the discovery immediately cease and that measures are taken to protect the cultural resources. The Applicant shall notify the BLM of the discovery within 24 hours. The BLM shall immediately notify the appropriate SHPO/THPO, tribe(s), ASM (in Arizona) and any other agency having jurisdiction over the land involved.
   2. If the discovered cultural resource is subsequently identified by an Indian tribe as a property of traditional religious and cultural importance, the BLM shall consult with the appropriate tribe(s).
   3. In Arizona on state and private land, the BLM shall ensure that the Discoveries are treated according to ARS § 41-841 et seq. and 41-865.
   4. In New Mexico on state and private land, the BLM shall ensure that Discoveries follow the process in 4.10.8.20 NMAC.

B. Treatment of the discovered cultural resources shall be consistent with the HPTP developed pursuant to Stipulation III of this PA and shall consider NRHP eligibility of the resource in accordance with 36 CFR § 800.13(c), which assumes eligibility.

   1. A preliminary Summary Report with eligibility recommendations(s) will be prepared and distributed in accordance with Stipulation III.D. The BLM shall ensure that the results of such treatment efforts are reported in the final Treatment Report for the Undertaking.
   2. Once the BLM determines that the approved treatment has been completed, the Applicant may resume construction upon receiving written authorization from the BLM.

C. If human remains, funerary objects, or objects of cultural patrimony are discovered, BLM will follow the provisions of applicable federal, state and local laws, any agreements and/or the NAGPRA POA for the Undertaking, which will be included as an appendix to the HPTP.

   1. In Arizona, the Applicant shall promptly report the discovery of human remains to the BLM, who shall notify the SHPO and the ASM Repatriation Coordinator pursuant to ARS § 41-844 (state lands), and pursuant to ARS § 41-865 (private lands).
   2. In New Mexico, the Applicant shall report the discovery of human remains to the BLM and local law enforcement and treat such Discoveries of human remains on state and private lands consistent with § 18-6-11.2 of the Cultural Properties Act NMSA, 1978 and 4.10.11 NMAC.
   3. On lands of the TON, the Applicant shall report the discovery of human remains to the BLM and the TON THPO.

4. Once the BLM has verified that the requirements of NAGPRA or of state laws governing nonfederal and nontribal lands have been met, the BLM may authorize the Applicant to proceed with construction.

VII. Standards for Conducting and Reporting Work

A. The BLM shall ensure that all work and reporting performed under this PA meets, at a minimum, the *Secretary of the Interior's Standards and Guidelines for Archaeological and Historic Preservation* (48 CFR 44716-44742, September 23, 1983) (the Secretary's Standards) and takes into consideration the ACHP's handbook, Section 106 Archaeology Guidance (http://www.achp.gov/archguide); *Procedures For Performing Cultural Resource Fieldwork On Public Lands in the Area of New Mexico State BLM Responsibilities* BLM Manual Supplement H-8100-1; *Guidelines for Identifying Cultural Resources* BLM Manual H-8110 and Guidelines for Evaluating and Documenting Traditional Cultural Properties, National Register *Bulletin 38*, 1989.

1. In Arizona, on state land, including municipalities, counties and other political subdivisions, all activities and documentation shall be consistent with AAA ARS § 41-841 et seq. and the Arizona State Historic Preservation Act ARS § 41-861 et seq. along with rules for implementing the AAA and AZ SHPO guidance on implementing the Arizona State Historic Preservation Act, and shall conform to specifications and guidelines contained in *Guidelines for State Historic Preservation Act ,* available online at: http://azstateparks.com/SHPO/review.html.

   Additionally, *AZ SHPO Standards for Documents Submitted for SHPO Review in Compliance with Historic Preservation Laws* (Revised December 2012) shall guide reports for all work done in Arizona, available online at: http://azstateparks.com/SHPO/downloads/SHPO_Guidelines_SHPA.pdf
2. In New Mexico, on state land all activities and documentation shall be consistent with the standards in Title 4, Chapter 10 of the New Mexico Administrative Code (NMAC). All activities and documentation on state land shall be consistent with the appropriate state standards found in rules 4.10.8 NMAC, Permits to Conduct Archaeological Investigations on State Land; 4.10.15 NMAC, Standards for Survey and Inventory; 4.10.16 NMAC, Standards for Excavation and Test Excavation; and 4.10.17 NMAC, Standards for Monitoring. The rules are available online at:

   http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0008.htm
   http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0015.htm
   http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0016.htm
   http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0017.htm

B. In Arizona, the Applicant shall ensure that its CRC obtains an AAA project-specific permit from the ASM prior to excavating sites on state, city and county lands pursuant to ARS § 41-841 et seq.

C. In New Mexico, the Applicant shall ensure that its CRC obtains a Project-specific excavation permit or other appropriate permit from the Cultural Properties Review Committee prior to excavating sites on state lands owned, operated or controlled by the State of New Mexico pursuant to § 18-6-5 NMSA 1978of the Cultural Properties Act. For NMSLO lands the Applicant shall obtain the appropriate rights-of-entry from the NMSLO concurrently with the permit application. The Applicant shall ensure that its

CRC obtains a permit prior to excavating unmarked human burials on state or private land pursuant § 18-6-11.2 NMSA 1978 of the Cultural Properties Act (4.10.11 NMAC) or conducting mechanical excavation of archaeological sites on private land in the State of New Mexico pursuant to § 18-6-11 NMSA 1978 of the Cultural Properties Act (4.10.14 NMAC). The rules are available online at:

http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0011.htm
http://www.nmcpr.state.nm.us/nmac/parts/title04/04.010.0014.htm

D. On lands of TON, the Applicant shall ensure that its CRC obtains a Project-specific excavation permit from the TON. This is a permit under the TON Archeological Resources Protection Ordinance. Once secured, the CRC shall approach the BIA for an ARPA permit.

VIII. Confidentiality of Records

A. BLM will maintain confidentiality of sensitive information regarding historic properties to which a tribe attaches religious or cultural significance to the maximum extent allowed by federal and state law. However, any documents or records the BLM has in its possession are subject to the Freedom of Information Act (FOIA) (5 USC § 552 et seq.) and its exemptions, as applicable. In the event that a FOIA request is received for records or documents that relate to a historic property to which an Indian tribe attaches religious or cultural significance and that contain information that BLM is authorized to withhold from disclosure by other statutes including Section 304 of the NHPA and the Archaeological Resources Protection Act, then, the BLM will consult with such tribe prior to making a determination in response to such a FOIA request not to withhold particular records and/or documents from disclosure.

B. All Parties to this PA agree that, to the extent consistent with Section 304 of the NHPA, and the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-mm)(ARPA) 27 Section 9(a), cultural resource description and locational data from this project will be treated as confidential by all Consulting Parties and is not to be released to any person, organization, or agency not a Consulting Party to this PA.

IX. Curation

A. On all lands other than that of TON, the Applicant shall arrange curation agreements with repositories approved by the BLM. The BLM shall ensure that all artifacts and records resulting from the inventory and treatment program are curated in accordance with 36 CFR Part 79, except as determined through consultations with Indian tribes carried out in accordance with federal and state laws pertaining to the ownership of artifacts and treatment and disposition of Native American human remains and funerary objects.

1. All artifacts recovered from state land in New Mexico, including associated records and documentation, shall be curated at the Museum of New Mexico, Museum of Indian Arts and Culture.

2. All artifacts recovered from lands owned, controlled or operated by the State of Arizona, including associated records and documentation, shall be curated at the Arizona State Museum and in accordance with the standards and guidelines required by ASM.

3. All artifacts recovered from lands of the TON, including associated records and documentation, shall be curated at the TON Cultural Center.

4. Artifacts that are not associated with human remains recovered from private lands are the property of the private landowner. It is understood that private landowners are not required to follow this Stipulation and may retain ownership and control of artifacts recovered from their private land.

X. Undertaking Monitoring, Annual Reporting and Evaluation

A. The BLM will be responsible for monitoring activities associated with this Undertaking on all jurisdictions during construction and reclamation.

1. In consultation with interested tribes, the BLM will select a 10 percent sample of cultural resources found during the inventory and conduct field inspections while accompanied by the CRC and interested tribal members to provide input regarding NRHP eligibility and possible future treatment options.

2. In consultation with interested tribes, the BLM will select a 25 percent sample of historic properties identified for mitigation of adverse effects, and conduct field inspections at those historic properties to ensure adequate implementation of the HPTP for those historic properties. Interested tribal members will be invited to attend these field inspections.

3. The lead BLM office shall prepare an annual letter report of cultural resources activities pertaining to this Undertaking for all Consulting Parties by December 31 for the duration of this PA. The annual letter report will include an update on project schedule, status, and any ongoing relevant cultural resources monitoring or mitigation activities, discovery situations, or outstanding tasks to be completed under this PA or the HPTP. The implementation and operation of this PA shall be evaluated on an annual basis by the Consulting Parties who will review and comment on the annual letter report within 30 days of receipt. This evaluation, to be conducted after the receipt of the BLM letter report, may include in-person meetings or conference calls among these parties, and suggestions for possible modifications or amendments to this PA.

4. The BLM shall monitor activities pursuant to this PA. Should the Applicant or its CRC fail to comply with any provision of this PA, the BLM may, at its discretion, counsel the Applicant and/or its CRC regarding performance requirements or suspend the permit under which this PA is executed. Such suspension would result in the issuance of a “stop work” order for the entire Project.

5. The BLM will remain responsible to inspect for compliance with the terms and conditions of the BLM ROW grant pertaining to historic properties for the life of the grant, and will ensure that the appropriate BLM cultural resources specialist participates in these compliance reviews.

XI. Operation and Maintenance of the Transmission Line and Facilities

A. After construction of the transmission line, the Applicant (ROW grant holder) will be required to follow all of the terms, conditions and stipulations concerning the operation and maintenance of the lines which are included in the Plan of Development (POD) and

the ROW grants. These terms, conditions and stipulations will include any provisions identified in the HPTP that resolve potential adverse effects to historic properties identified within the ROW.

1. The BLM will be responsible for ensuring that the stipulations in the BLM ROW grant are enforced.
2. The ASLD will be responsible for ensuring that the stipulations in their ROW grant are enforced on ASLD administered lands.
3. The NMSLO will be responsible for ensuring that the stipulations in their ROW grant are enforced on NMSLO administered lands.
4. The BIA and TON will be responsible for ensuring that the stipulations in their ROW grant are enforced on TON.
5. In accordance with *Programmatic Agreement Among Western Area Power Administration, the Advisory Council on Historic Preservation, and the Arizona State Historic Preservation Officer, Regarding Maintenance and Minor Construction Activities at Existing Western Transmission Lines, Facilities and Properties in Arizona*, Western is the lead agency for compliance with Section 106 for Western's maintenance program activities on existing lines in Arizona .

B. Post-construction evaluation and management of historic properties are described in Stipulation III.E.1–III.E.3.

C. Should any variance be necessary during operation and maintenance, the Applicant will follow the variance procedure in the HPTP and a BLM cultural resource specialist will review the action and make recommendations regarding potential effects and appropriate actions to avoid, minimize, or mitigate any adverse impacts (e.g., using hand tools if mechanical vegetation treatments are proposed in sensitive areas).

XII. Decommissioning

Should decommissioning of the transmission line and associated facilities be deemed necessary at any point, the ROW grant shall stipulate and the BLM shall ensure that it will be considered a new action for Section 106 review, and that historic properties potentially affected by decommissioning will be considered in the BLM-approved Termination and Reclamation Plan in accordance with the pertinent laws, regulations, and policies extant at the time.

XIII. Dispute Resolution

A. Should any Consulting Party to this PA object at any time to any actions proposed or the manner in which the terms of this PA are implemented, that party shall notify BLM in writing expressing its concern, including proposed modifications. The BLM shall consult with such party to resolve the objection. If the BLM determines that such objection cannot be resolved, BLM will notify Consulting Parties of the dispute and will:

1. Forward all documentation relevant to the dispute, including the BLM's proposed resolution, to the ACHP, asking that office to provide BLM with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, BLM shall prepare a written response that

takes into account any timely advice or comments regarding the dispute from the ACHP and Consulting Parties, and provide them with a copy of this written response. BLM will then proceed according to its final decision.

2. If the ACHP does not provide its advice regarding the dispute within the 30-day period, the BLM may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the BLM shall prepare a written response that takes into account any timely comments regarding the dispute from the Consulting Parties, and provide them and the ACHP with a copy of such written response.
3. The BLM will be responsible for carrying out all other actions subject to the terms of this PA that are not the subject of the dispute.

XIV. Amendments and Termination

A. Any Signatory or Invited Signatory to this PA may request that it be amended by informing BLM in writing of the reason for the request and the proposed amendment language, whereupon BLM shall inform the other parties and request their views concerning the proposed amendment. The amended PA shall take effect upon final signature by the ACHP.

B. Pursuant to 36 CFR § 800.6(c) (8), if any Signatory or Invited Signatory to this PA determines that the terms of the PA cannot be or are not being carried out, then such party must provide written notice to the BLM and the other Signatories and Invited Signatories stating the reasons for the determination and requesting consultation to resolve the stated concerns through amendment of the PA or other means. The Signatories and Invited Signatories shall consult regarding potential amendments to the PA to resolve the stated concerns within 30 calendar days of the written request. If the Signatories and Invited Signatories are unable to amend the PA or agree on other actions to resolve the concerns, and it has been determined that the terms of the PA cannot be or are not being carried out, provided that they consult during the 30-calendar-day period, the objecting party may terminate the PA by providing written notice to the Signatories and Invited Signatories.

C. In the event that this PA is terminated, the BLM shall comply with 36 CFR § 800.6 (c) (8) and will take reasonable steps to avoid adverse effects to historic properties until another PA has been executed or will request, take into account, and respond to Council comments, in accordance with 36 CFR § 800.7. BLM will notify all parties to this PA as to the course of action it will pursue.

D. At any point after the execution of this PA, and after providing written notice to the other Signatories and Invited Signatories, Western may decide to continue complying with its Section 106 responsibilities for the undertaking independently through a separate Programmatic Agreement per 36 CFR § 800.14 (b) or, failing that, through its request, consideration, and response to the formal comments of the ACHP per 36 CFR § 800.7(c). Such a decision by Western will not affect this PA with regard to its other parties.

XV. Term of the PA

This PA will expire if the Undertaking has not been initiated within 5 years of the signing of this PA, or the BLM ROW grant expires or is withdrawn. Otherwise, this PA shall take

effect from the date of execution and will remain in effect for 15 years or until acceptance of the final Treatment Reports by the Signatories.

XVI. Non-Endorsement Clause

Nothing in this PA should be interpreted to imply that any party endorses the Southline Transmission Project. The parties will not take any action or make any statement that suggests or implies such an endorsement based on signing this PA.

The Execution and Implementation of this PA evidences that the BLM, as lead federal agency, has satisfied its Section 106 responsibilities with regard to the construction, operation, and maintenance of the Southline Transmission Project.

ATTACHMENT 3: DEFINITIONS FOR TERMS USED IN THIS PA

Adverse Effect – Alteration of the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Places.

Area of Potential Effects (APE) – The geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR §800.16(d)).

Authorized Officer – The Authorized Officer for this Undertaking is the BLM Las Cruces District Manager and/or his or her delegated representative.

Consultation – The process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matter that arise in the section 106 process. The Secretary's "Standards and Guidelines for Federal Agency Preservation Programs pursuant to the National Historic Preservation Act" provide further guidance on consultation.

Consulting Party – Any party that has participated in the development of this PA and has indicated intent to participate in consultations during its implementation either by signing in concurrence or by written notification to the Agency Official. The refusal of any party invited to sign the PA, other than the Signatories, does not invalidate the PA. Consulting Parties include:

Signatory – Parties who have legal or financial responsibilities for completions of stipulations of the PA. The signatories have sole authority to execute the PA, and together with the invited signatories, to amend or terminate the PA.

Invited Signatory – The authorized official may invite additional parties to sign the PA and upon signing, they have the same rights with regard to amendments and termination as the signatories. These parties have legal responsibility in terms of the Undertaking, such as the issuance of a permit, license or ROW, and they have a compliance responsibility under the NHPA or a state cultural resource statute.

Concurring Party – A party who signs this PA but is not legally or financially responsible for completion of stipulations set forth in the PA.

Construction and Reclamation– The construction phase begins when BLM has issued a ROW grant to the proponent for the Undertaking. It includes all activities related to construction of the Undertaking, including activities required to be completed in advance of construction, as well as all activities completed in order to reclaim lands disturbed during construction for two years after construction is completed or until cost recovery agreements related to construction expire.

Cultural Resource – Any location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, landscapes, buildings, structures, objects, and places that possess historic and/or cultural significance as well as places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources may be but are not necessarily eligible for the NRHP; these properties have not been evaluated for NRHP eligibility.

Cultural Resource Consultant/Contractor (CRC) – A qualified and permitted professional consultant in cultural resources (archaeologist, historian, ethnographer, historic architect, architectural historian, or anthropologist) who is responsible for implementing cultural resource inventories and who prepares cultural resource documents, reports, analysis, records, and professional literature. CRCs must meet the Secretary of the Interior's Professional Qualification Standards and hold appropriate permits from land managing agencies.

Cultural Resource Inventory (from H-8100-1) –

Class I – Existing data inventory: Large-scale review of known cultural resource data

Class II – Sampling field inventory: Sample oriented field inventory

Class III – Intensive field survey: A complete surface inventory of a specific area involving a systematic field examination of an area to gather information regarding the number, location, condition, distribution, and significance of cultural resources present, typically requiring a systematic pedestrian review of an area with transect intervals that shall not exceed 50 feet (15 meters).

Decommissioning – The action in which the transmission line(s) and/or related facilities such as substations are taken out of commission (cease to operate) and are physically dismantled

Discovery – A previously unknown cultural resource identified in the APE during construction, subsequent to the Class III Inventory.

Effects are alterations to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP –

Direct effects are caused by the Undertaking and occur at the same time and place.

Indirect effects are also caused by the Undertaking and are effects that may be visual, atmospheric, or audible that could diminish the integrity of the properties.

Cumulative effects are the impacts on cultural resources which results from the incremental impact of the Undertaking 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 [per 40.CFR § 1508.7]. Cumulative effects may be direct or indirect and result from incremental effects related to the Undertaking over time (e.g. increased access because of new roads, future transmission lines along the

same corridor, new projects feeding into the Undertaking, etc.). Additional roads and visitors to the area (construction personnel, recreationists, etc.) also increase opportunities for effects from pot hunting, vandalism of historic properties, and disruption of spiritually important sites.

Eligible (for Inclusion in the National Register) – Includes both properties formally determined as such in accordance with regulations of the Secretary of the Interior and all other properties that meet the National Register criteria as determined by the Federal Agency in consultation with the SHPO/THPO and other parties.

Historic Property – Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. 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.

Historic Property(ies) Treatment Plan (HPTP) – A document that details the procedures and techniques for resolving adverse effects to historic properties within the APE through avoidance, minimization, and/or mitigation

Indian Tribe – Any Indian tribe, band, nation, or other organized group or community, including a native village, regional corporation, or village corporation, as those terms are defined in section 3 of the Alaska Native Claims Settlement Act (43 USC 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

Integrity – Refers to location, design, setting, materials, workmanship, feeling and association as defined in 36 CFR Part 60.

Interested tribal members – Tribal members who have identified themselves either as individuals or a group, through consultations with the BLM or through the THPO or the tribal member designated to participate in consultations concerning this Undertaking, as being interested in attending field inspection visits with the BLM and/or the CRC.

Inventory Report – The inventory report documents the results of the cultural resources inventory detailing the areas surveyed, the methodologies used, the cultural framework of the project area and the cultural resources discovered and documented. It includes assessments of direct, indirect, and cumulative effects within the APE of the Undertaking. It also provides recommendations on National Register eligibility of all of the cultural resources within the inventoried area.

Monitoring and Discovery Plan – The Monitoring and Discovery Plan is a component of the HPTP and (1) provides a detailed plan to monitor compliance with stipulations of the HPTP to avoid, minimize, or mitigate adverse effects of the Undertaking, (2) may include specific plans where monitoring is necessary to help resolve adverse effects to historic properties, (3) establishes procedures to follow in the event that previously undiscovered cultural resources are encountered during the Undertaking, and (4) includes a POA developed specifically to address the handling of human remains pursuant to the Native American Graves Protection and Repatriation Act (NAGPRA) and applicable state laws. All monitoring plans shall explicitly state the objectives of the monitoring and provide a methodology for attaining these objectives.

Monitoring Report – A document that summarizes the results of monitoring activities performed as outlined within the HPTP.

NAGPRA Plan of Action (POA) – A written document that establishes procedures for ensuring the proper treatment of Native American remains and related grave goods encountered on Federal lands pursuant to 43 CFR Part 10.

National Register of Historic Places – The official list of the Nation's prehistoric and historic places worthy of preservation including districts, cultural resources, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture and is maintained by the Secretary of the Interior.

National Register Criteria – The criteria of significance established by the Secretary of the Interior for use in evaluating the eligibility of properties for inclusion in the National Register (36 CFR Part 60).

Operation and Maintenance – Activities associated with operation and maintenance of the approved ROW grant over the life of the ROW grant. This includes all activities related to the functioning of the Undertaking after construction and reclamation are completed and prior to any activities related to decommissioning of the Undertaking, per Stipulation XI. Activities during this this time are generally infrequent, predictable, and routine. Any actions not specifically approved in the ROW grant, such as changes in equipment used or actions outside the ROW require approval of the BLM.

Plan of Development (POD) – The Final POD is a BLM approved document that will be an enforceable term and condition as part of the BLM approved ROW authorization. Contributors in the development of the Final POD prior to construction will include the Arizona State Land Department and New Mexico State Land Office. The Arizona and New Mexico surface managing agencies will be responsible for developing and enforcing their respective stipulations as they deem necessary to mitigate natural and cultural resource impacts, on state administered lands. Should the Arizona and New Mexico agencies choose to adopt the terms, conditions, and special stipulations as outlined in the Final POD on their respective state authorized rights-of-ways, responsibility to enforce these Final POD terms, conditions, and stipulations is strictly their sole responsibility. Enforcement will be between the state agency and the applicant.

Programmatic Agreement (PA)– A document that records the terms and conditions agreed upon to resolve the potential adverse effects of a Federal agency program, complex Project or other situations in accordance with 36 CFR § 800.14(b).

Reclamation – The activities necessary to restore lands disturbed by construction to as close to a pre-construction condition as possible. This may include ripping and re-seeding temporary access roads and staging areas, removal of wooden poles no longer in use and re-seeding of the abandoned transmission corridor(s).

Right-of-Way (ROW) – The public lands BLM authorizes to use or occupy under a grant. The PA and the HPTP are appended to the POD which is an essential component of the ROW grant.

Section 106 – Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the ACHP. Revised regulations, "Protection of Historic Properties" (36 CFR Part 800), became effective August 5, 2004.

State Historic Preservation Officer (SHPO) – The official appointed or designated pursuant to section 101(b) (1) of the act to administer the State Historic Preservation Program or a representative designated to act for the State Historic Preservation Officer.

State Lands of New Mexico - Lands owned, operated or controlled by departments, agencies, institutions or political subdivisions of the state of New Mexico.

Summary Report – A document that summarizes results of treatment activities undertaken on an individual historic property for the purposes of informing the agency and Consulting Parties for the purposes of gaining approval for the Project to go forward prior to the acceptance of the final Treatment Report.

Termination and Reclamation Plan – A document that addresses the removal of project facilities from permitted areas and addresses reclamation procedures identified by land management agencies in conjunction with project owners, prior to decommissioning.

Transmission line new build - The portion of the Southline Project that will be constructed in a completely new ROW: from the Afton substation to the Apache substation.

Transmission line upgrade – The portion of the Southline Project that will be constructed in an existing ROW corridor to replace and upgrade an existing line that will be subsequently decommissioned: from the Apache substation to the Saguaro substation.

Treatment Report – A document that presents the complete results of the treatment activities performed on all historic properties (and any undetermined cultural resources for which additional studies were performed to determine eligibility), addresses the research questions developed in the Treatment Plan and synthesizes the results into a regional overview of the Project Area.

Tribal Historic Preservation Officer (THPO) – the tribal official appointed by the tribe's chief governing authority or designated by a tribal ordinance or preservation program who has assumed the responsibilities of the SHPO for purposes of section 106 compliance on tribal lands in accordance with section 101(d) (2) of the NHPA.

Undertaking – A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval. The Undertaking may include surveys, geotechnical testing, engineering, mitigation planning and design, or other activities initiated prior to construction of project facilities.

Appendix M

BIOLOGICAL AND CONFERENCE OPINION AND CONFERENCE REPORT AND AMENDMENT FOR THE SOUTHLINE TRANSMISSION LINE PROJECT

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Las Cruces District Office
1800 Marquess Street
Las Cruces, New Mexico 88005
www.blm.gov/nm

TAKE PRIDE IN AMERICA

In Reply Refer To:

6841 (L0000)

JUL 27 2015

Memorandum

To: Field Supervisor, Arizona Ecological Services Office, USFWS, Phoenix, AZ

From: District Manager, Las Cruces, BLM, Las Cruces, NM

Subject: Request to Amend the Biological and Conference Opinion and Conference Report on the Proposed Southline Transmission Project with an Update to the Agency Preferred Alternative for the Final Environmental Impact Statement (EIS)

The Bureau of Land Management (BLM) and the Western Area Power Administration (Western) initiated formal consultation and conference on March 4, 2014, for the proposed Southline Transmission Project located in Doña Ana, Luna, Grant, and Hidalgo Counties, New Mexico; and Greenlee, Graham, Cochise, Pima, and Pinal Counties, Arizona. We received a draft biological opinion and conference report (BO) dated November 10, 2014. This draft BO included an analysis of impacts to the following species: the endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), the endangered Mexican long-nosed bat (*Leptonycteris nivalis*), the endangered Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), the endangered southwestern willow flycatcher (*Empidonax traillii extimus*), the endangered Gila chub (*Gila intermedia*) and its critical habitat, the endangered Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*), the threatened northern Mexican gartersnake (*Thamnophis eques megalops*) and its proposed critical habitat, the threatened yellow-billed cuckoo (*Coccyzus americanus*) western distinct population and its proposed critical habitat, and the non-essential population of northern aplomado falcon (*Falco femoralis septentrionalis*).

The draft BO analyzed impacts on listed species from segment P7 near the Willcox Playa in Arizona. Segment P7 would be a new approximately 20-mile, 345-kV transmission line segment that would parallel an existing 230-kV line. This segment was analyzed in the February 2014 biological assessment and the Draft EIS. During review of the Draft EIS, the Arizona Game and Fish Department (AZGFD) and the U.S. Fish and Wildlife Service raised concerns about potential impacts to sandhill cranes (*Grus canadensis*) because of the route's proximity to the Willcox Playa Wildlife Area, an area managed by the AZGFD, and Crane Lake. In a letter dated July 10, 2014, the AZGFD recommended that the BLM and Western consider an alternative route to reduce impacts to this species. They suggested a reroute on the eastern side of the

Sulphur Springs Valley, which became P7a (an approximately 30-mile long route variation) and was part of the new Agency Preferred Alternative in the Administrative Final EIS. This was the route segment analyzed in the final BO, dated December 30, 2014.

During the Administrative Final EIS review process, the BLM sent letters to over 1,000 landowners along Route Variation P7a and received numerous response letters of concern, particularly from owners and operators of vineyards and wineries in the area. Because of these concerns, the BLM and Western have decided to return to the original segment P7 as the Agency Preferred Alternative in the Final EIS.

Subsequent discussions with the AZGFD were held to address impacts to the sandhill crane with segment P7 as the Agency Preferred Alternative in the Final EIS. In a letter dated June 21, 2015, the AZGFD provided suggested measures that they feel would satisfactorily minimize or mitigate impacts to the Willcox Playa Wildlife Area. One of the measures would be to relocate Crane Lake, which would minimize potential bird strikes and therefore minimize impacts to cranes.

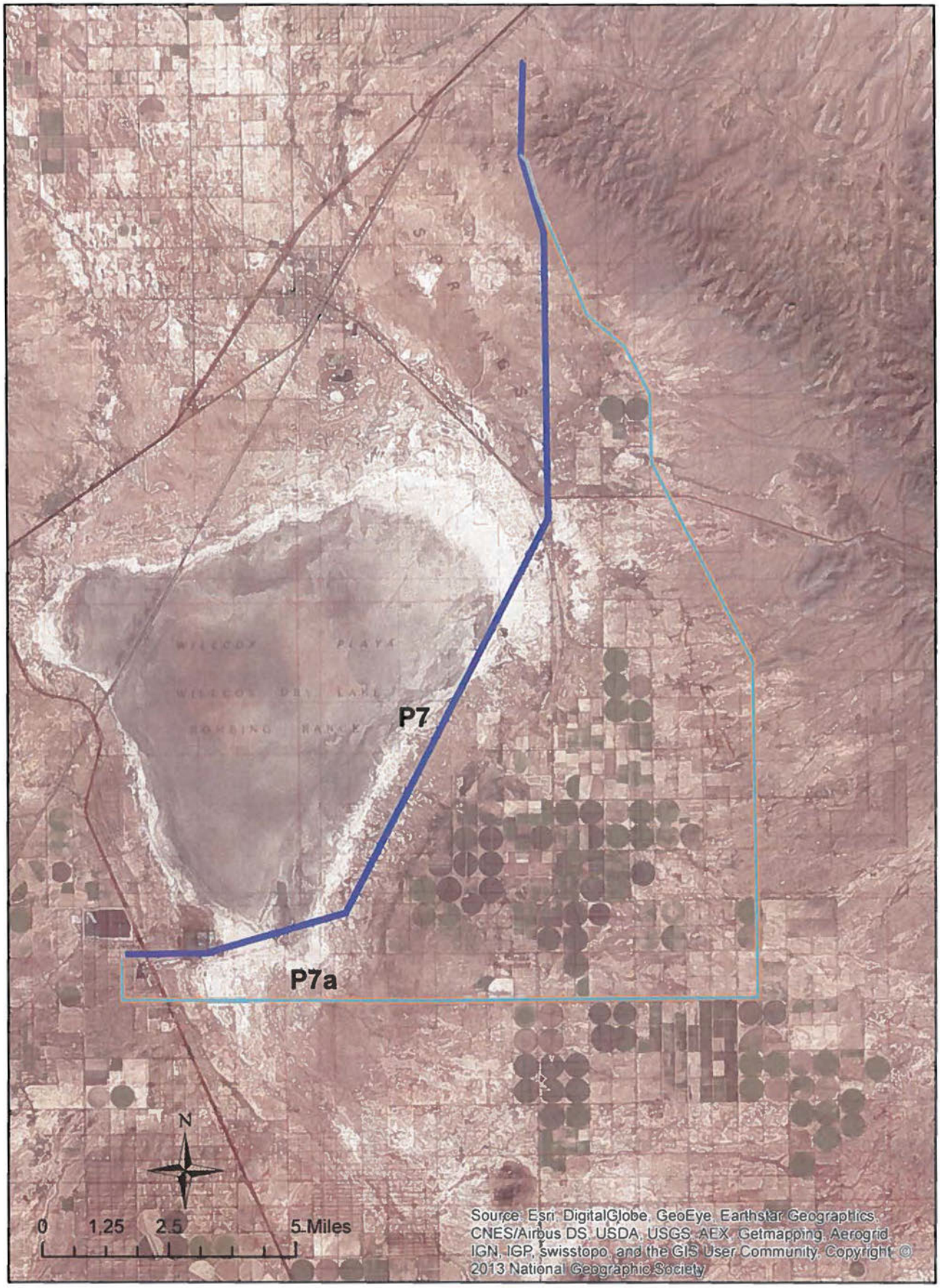
The BLM and Western have determined that the effect on listed species (i.e., the lesser-long nosed bat) from segment P7 and route variation P7a are essentially the same. Vegetation communities along both routes are similar, with the main vegetation communities being Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe (65 percent), and Apacherian-Chihuahuan Mesquite Upland Scrub (25 percent). The only listed species with potential to occur along either route is the lesser-long nosed bat. There are no known roosts along either route. Impact to the species would be from potential loss of foraging habitat. However, as mentioned in the BO, forage plants would not be affected to the extent that would preclude this species from foraging within the area because of the relatively small area of forage that would be affected.

The BLM and Western are requesting an amendment to the biological opinion and conference opinion to include segment P7 as the Agency Preferred Alternative for the Final EIS. Questions concerning this consultation may be directed to Mark Massar, BLM Wildlife Biologist, at (760) 833-7121 or mmassar@blm.gov.

Bill Childress

1 Attachment:
1 – Attachment A. Routes P7 and P7a

Attachment A. Routes P7 and P7a



United States Department of the Interior
Fish and Wildlife Service
Arizona Ecological Services Office
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AESO/SE
02EAAZ00-2014-F-0140

December 30, 2014

Memorandum

RC 1/6/15

To: District Manager, Bureau of Land Management, Las Cruces, New Mexico

From: Field Supervisor, Arizona Ecological Services Office

Subject: Biological and Conference Opinion and Conference Report on the Proposed Southline Transmission Project

Thank you for your request for formal consultation and conference with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated March 4, 2014, and received by us on March 4, 2014. At issue are the impacts that may result from the proposed Southline Transmission Project located in Doña Ana, Luna, Grant, and Hidalgo counties, New Mexico, and Greenlee, Graham, Cochise, Pima, and Pinal counties, Arizona. You determined that the proposed action may affect, and is likely to adversely affect, the endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), the endangered Mexican long-nosed bat (*Leptonycteris nivalis*), the endangered Pima pineapple cactus (*Coryphantha scheeri var. robustispina*), and the endangered southwestern willow flycatcher (*Empidonax traillii extimus*).

In your memorandum, you requested our concurrence that the proposed action may affect, but is not likely to adversely affect, the endangered Gila chub (*Gila intermedia*) and its critical habitat and the endangered Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*). We concur with your determinations and provide our rationale in Appendix A.

In addition, you requested conference for effects of the proposed action on proposed threatened northern Mexican gartersnake (*Thamnophis eques megalops*) and its proposed critical habitat, and on the proposed threatened yellow-billed cuckoo (*Coccyzus americanus*) western distinct population. On September 23, 2014, you changed your request for a formal conference to a request for a formal consultation regarding the effects of the proposed action on the northern Mexican gartersnake because it was listed as threatened since your March 4, 2014, request. On October 10, 2014, you changed your request for a formal conference to a request for a formal consultation regarding the effects of the proposed action on the yellow-billed cuckoo because it was listed as threatened since your March 4, 2014 request, and you also requested a formal

conference on yellow-billed cuckoo proposed critical habitat, which was proposed since your request of March 4, 2014. Therefore, we are also providing formal consultation for the northern Mexican gartersnake and the yellow-billed cuckoo, and formal conference for the proposed critical habitat for these species, all of which are presented in the main body of this biological and conference opinion.

You also requested conference for effects of the project on the non-essential population of northern aplomado falcon (*Falco femoralis septentrionalis*), which is provided through a conference report as Appendix B. You also requested technical assistance for effects of the project on candidate species Sonoran desert tortoise (*Gopherus morafkai*) and Sprague's pipit (*Anthus spragueii*) which is provided in Appendix C. You also requested technical assistance for the effects of the project on the Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*). On September 23, 2014, we found that listing the Tucson shovel-nosed snake as an endangered or threatened species is not warranted and we removed this subspecies from our candidate list. Therefore, we are not providing technical assistance for this former candidate species.

This biological and conference opinion and conference report is based on information provided in the February 2014 "Biological Assessment for the Southline Transmission Project," the March 2014 "Proposed Southline Transmission Line Project Draft Environmental Impact Statement and Draft Resource Management Plan Amendment," telephone conversations, field investigations, and other sources of information. Literature cited in this biological and conference opinion is not a complete bibliography of all literature available on the species of concern, transmission line construction and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

Consultation History

- March 4, 2014. We received your request for formal consultation and conference.
- July 9, 2014. We sent you a request for an additional 60 days to complete formal consultation.
- August 4, 2014. We received your concurrence for an additional 60 days to complete formal consultation.
- September 23, 2014. We received your request to change from a conference opinion to biological opinion for the recently listed northern Mexican gartersnake
- October 10, 2014. We received your request to change from a conference opinion to a biological opinion for the recently listed yellow-billed cuckoo, and for a conference opinion regarding yellow-billed cuckoo proposed critical habitat.
- November 10, 2014. We sent you the draft biological and conference opinion for review and comment.
- December 17, 2014. We received your comments on the draft biological and conference opinion along with the amendment to the Biological Assessment.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is: for the BLM to issue a right-of-way grant to Southline Transmission, LLC (Southline) for the construction and operation of a 345 kV transmission line from the Afton Substation in New Mexico to the Apache Substation in Arizona (BO Figure1); for Western Area Power Administration (Western) to authorize and participate with Southline in the upgrade an existing Western transmission line and associated facilities from 115 kV to 230 kV from Apache Substation to Saguaro Substation in Arizona (BO Figure 1); for the U.S. Forest Service to authorize the upgrade of the Western line across Forest Service managed land in Cochise County, Arizona; and for the U.S. Bureau of Reclamation (Reclamation) to authorize the upgrade of the Western line across Reclamation managed lands in Pima and Pinal counties, Arizona. Because multiple Federal agencies have actions that are required by the project, this BCO evaluates all of these proposed actions and provides section 7 compliance for all of these agencies' actions. The BLM is acting as the lead action agency with regard to this consultation.

The Southline Transmission Line Project (project) is a proposed electrical transmission line project that would consist of two sections. The first section would entail construction of approximately 240 miles of new double-circuit 345-kilovolt (kV) transmission line in a 200-foot right-of-way (ROW) between the Afton Substation, south of Las Cruces in Doña Ana County, New Mexico, and Western's Apache Substation, south of Willcox in Cochise County, Arizona (New Build Section). The second section would entail the upgrade of approximately 120 miles of Western's existing Saguaro–Tucson and Tucson–Apache 115-kV transmission lines to a double-circuit 230-kV transmission line in a 100-foot existing ROW (Upgrade Section). The Upgrade Section would originate at the Apache Substation and terminate at the Saguaro Substation northwest of Tucson in Pinal County, Arizona (BO Figure 1). Both new permanent ROW and temporary construction ROW would be required in the New Build Section and in some portions of the Upgrade Section for the transmission line, substations, access roads, and other permanent and temporary project components; the anticipated ROW width for the Upgrade Section 230-kV transmission line would be 150 feet. The proposed project would also include installation of new communications equipment, and connect to 14 substations distributed throughout southern New Mexico and Arizona, including expanding/upgrading existing substations and potentially constructing a new substation in Luna County, New Mexico. The proposed project would also include installation of new communications equipment to facilitate operations. The proposed action includes proponent committed environmental measures, best management practices (BMPs), and additional proposed species-specific conservation measures (BA Table 3-7 included as Appendix D of this BO).

On December 17, 2014, you provided an amendment to your Biological Assessment with an updated project description (route changes) and an updated effects analysis for Leptonycteris bats. The route changes would occur in route group 2 and 4. You concluded that the route changes would not change the effects analysis or determinations for any listed species.

The proposed action includes maintenance activities, which includes inspecting portions of the line by air and ground, repair of structures and electrical equipment, access road maintenance,

clearing vegetation as necessary to minimize fire hazard or physical impedance of the transmission line, and noxious plant control. Maintenance of vegetation would be done using mechanical and manual equipment, such as weed trimmers, rakes, shovels, mowers, brush hooks, and, occasionally as need, chainsaws. Although unlikely to be necessary, species-dependent herbicide could be applied subsequent to vegetation clearing to prevent regrowth of that vegetation and/or noxious and invasive weeds. Emergency maintenance may be needed to repair downed wires during storms and correct unexpected outages, and repair or replace damaged equipment.

Action Area

The action area for this BO is defined as a 1-mile buffer on either side of the centerline of the Agency Preferred Alternative in the New Build Section and a 500-foot corridor (200 feet off of the existing 100-foot-wide ROW) (see BO Figure 1) in the Upgrade Section, as well as any identified substations, staging areas, or access roads outside those corridors.

Term of ROW (New Build Section)

The term of the BLM right-of-way grant to allow use of Federal land within the New Build Section of the proposed project would be limited to 50 years.

Conservation Measures

Lesser Long-nosed Bat and Mexican Long-nosed Bat

LNB-1: All paniculate agaves (*Agave palmeri*, *A. parryi*, and *A. chrysantha*) and saguaros would be inventoried within the proposed ROW, and the potential to avoid or salvage each plant would be assessed. The priority would be avoidance when feasible.

LNB-2: All suitable (e.g., healthy, undamaged, not flowering) paniculate agaves that could not be avoided would be salvaged using methods approved by the BLM/Western and FWS, but mature agaves would be given preference for avoidance when feasible. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside disturbed areas if necessary.

LNB-3: Saguaros less than 15 feet in height would be salvaged, unless prevented by site-specific conditions or poor plant health. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside of disturbed areas if necessary. Larger saguaros would be avoided whenever feasible, but would be topped or removed if necessary.

LNB-4: Agave and saguaro salvage would be augmented, as necessary, within three years after completion of initial restoration activities. Augmentation would occur within the ROW in areas of higher value to bats (e.g., in the vicinity of active roosts, within areas of high concentration of agaves) to achieve a goal of no net loss of forage plants. Plant stocks from local sources or approved nursery-grown plants would be used.

LNB-5: Salvaged plants would be monitored following reclamation for a period of 3 years, as described in the POD. Supplementary water would be provided, if monitoring indicates that

rainfall is insufficient to achieve the goal of no net loss of forage plants. Plant survival through the monitoring period would be reported annually to the BLM/Western and FWS.

Pima Pineapple Cactus

PPC-1: Any Pima pineapple cactus that are not within the area of permanent disturbance, but are present within the project vicinity, shall be flagged by a qualified biologist prior to the commencement of work to avoid accidental damage during construction. Flagging will be removed following construction.

PPC-2: Any Pima pineapple cactus that cannot be avoided would be conserved by relocating plants within the existing ROW, but outside of the area of any ongoing disturbance.

PPC-3: For Pima pineapple cactus that cannot be avoided. Southline will purchase credits in an FWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of permanent disturbance to occupied Pima pineapple cactus habitat. Alternatively, Southline my purchase suitable mitigation lands within Pima County's Pima pineapple cactus priority conservation areas.

PPC-4: In compliance with Executive Order 13112 regarding invasive species, all disturbed soils that will not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.

PPC-5: Also in compliance with Executive Order 13112 regarding invasive species, all earth-moving and hauling equipment shall be washed at the contractor's storage facility prior to arriving on site to prevent the introduction of invasive species.

PPC-4: To prevent invasive species propagules from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris prior to leaving the construction site.

Southwestern Willow Flycatcher

WF-1: All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of breeding or nesting southwestern willow flycatchers.

WF-2: Line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River to minimize the potential for avian collisions with transmission lines.

Northern Mexican Gartersnake

No specific conservation measures are proposed for the northern Mexican gartersnake because the proposed action minimizes ground and vegetation disturbance within the riparian habitat and proposed critical habitat at Cienega Creek and the San Pedro River (see Effects of the Action). However, some conservation benefit to the gartersnake is derived by shortened construction time frames proposed as conservation measures for the yellow-billed cuckoo and southwestern willow flycatcher.

Yellow-billed Cuckoo

YBC-1: All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of breeding or nesting yellow-billed cuckoos.

YBC-2: Line marking devices would be placed at the proposed crossings of the San Pedro River and Cienega Creek to minimize the potential for avian collisions with transmission lines.

STATUS OF THE SPECIES AND CRITICAL HABITAT

Lesser Long-Nosed Bat

The lesser long-nosed bat was listed (originally, as *Leptonycteris sanborni*; Sanborn's long-nosed bat) as endangered in 1988 (53 FR 38456). No critical habitat has been designated for this species. A recovery plan was completed in 1997 (U.S. Fish and Wildlife Service 1997). Loss of roost and foraging habitat, as well as direct taking of individual bats during animal control programs, particularly in Mexico, have contributed to the current endangered status of the species. Recovery actions include roost monitoring, protection of roosts and foraging resources, and reducing existing and new threats. The recovery plan states that the species will be considered for delisting when three major maternity roosts and two post-maternity roosts in the U.S., and three maternity roosts in Mexico have remained stable or increased in size for at least five years, following the approval of the recovery plan. A five-year review has been completed and recommends downlisting to threatened (U.S. Fish and Wildlife Service 2007b).

Species Description

The lesser long-nosed bat is a medium-sized, leaf-nosed bat. It has a long muzzle and a long tongue, and is capable of hover flight. These features are adaptations for feeding on nectar from the flowers of columnar cacti (e.g., saguaro [*Carnegiea gigantea*]; cardon [*Pachycereus pringlei*]; and organ pipe cactus [*Stenocereus thurberi*]; and from paniculate agaves (e.g., Palmer's agave [*Agave palmeri*]) (Hoffmeister 1986).

Distribution and Life History

The lesser long-nosed bat is migratory and found throughout its historical range, from southern Arizona and extreme southwestern New Mexico, through western Mexico, and south to El Salvador. It has been recorded in southern Arizona from the Picacho Mountains (Pinal County) southwest to the Agua Dulce Mountains (Pima County) and Copper Mountains (Yuma County), southeast to the Peloncillo Mountains (Cochise County), and south to the international boundary; and in the boot heel of New Mexico (Hidalgo County).

Within the U.S., habitat types occupied by the lesser long-nosed bat include Sonoran Desert scrub, semi-desert and plains grasslands, and oak and pine-oak woodlands. Farther south, the lesser long-nosed bat occurs at higher elevations. Maternity roosts, suitable day roosts, and concentrations of food plants are all critical resources for the lesser long-nosed bat. All of the factors that make roost sites suitable have not yet been identified, but maternity roosts tend to be

very warm and poorly ventilated (U.S. Fish and Wildlife Service 1997). Such roosts reduce the energetic requirements of adult females while they are raising their young (Arends *et al.* 1995).

Roosts in Arizona are occupied from late April to September (Cockrum and Petryszyn 1991) and on occasion, as late as November (Sidner 2000); the lesser long-nosed bat has only rarely been recorded outside of this time period in Arizona (U. S. Fish and Wildlife Service 1997, Hoffmeister 1986, Sidner and Houser 1990). In New Mexico, lesser long-nosed bats typically occupy roosts in late summer and fall. In spring, adult females, most of which are pregnant, arrive in Arizona and gather into maternity colonies in southwestern Arizona. These roosts are typically at low elevations near concentrations of flowering columnar cacti. After the young are weaned, these colonies mostly disband in July and August; some females and young move to higher elevations, primarily in the southeastern parts of Arizona near concentrations of blooming paniculate agaves. Adult males typically occupy separate roosts forming bachelor colonies. Males are known mostly from the Chiricahua Mountains and, recently, the Galiuro Mountains (personal communication with Tim Snow, Arizona Game and Fish Department, 1999), but also occur with adult females and young of the year at maternity sites (U. S. Fish and Wildlife Service 1997). Throughout the night between foraging bouts, both sexes will rest in temporary night roosts (Hoffmeister 1986).

Lesser long-nosed bats appear to be opportunistic foragers and extremely efficient fliers. They are known to fly long distances from roost sites to foraging sites. Night flights from maternity colonies to foraging areas have been documented in Arizona at up to 25 miles, and in Mexico, at 25 miles and 36 miles (one way) (Ober *et al.* 2000; Dalton *et al.* 1994, Ober and Steidl 2004, Lowery *et al.* 2009). Lowery *et al.* (2009) and Steidl (personal communication, 2001) found that typical one-way foraging distance for bats in southeastern Arizona is roughly 6 to 18 miles. A substantial portion of the lesser long-nosed bats at the Pinacate Cave in northwestern Sonora (a maternity colony) fly 25-31 miles each night to foraging areas in OPCNM (U.S. Fish and Wildlife Service 1997). Horner *et al.* (1990) found that lesser long-nosed bats commuted 30-36 miles round trip between an island maternity roost and the mainland in Sonora; the authors suggested these bats regularly flew at least 47 miles each night. Lesser long-nosed bats have been observed feeding at hummingbird feeders many miles from the closest known potential roost site (Lowery *et al.* 2009; personal communication with Yar Petryszyn, University of Arizona 1997).

Lesser long-nosed bats, which often forage in flocks, consume nectar and pollen of paniculate agave flowers; and pollen and fruit produced by a variety of columnar cacti. Nectar of these cacti and agaves is high energy food. Concentrations of some food resources appear to be patchily distributed on the landscape, and the nectar of each plant species used is only seasonally available. Cacti flowers and fruit are available during the spring and early summer; blooming agaves are available primarily from July through October. In Arizona, columnar cacti occur in lower elevational areas of the Sonoran Desert region, and paniculate agaves are found primarily in higher elevation desert scrub areas, semi-desert grasslands and shrublands, and into the oak and pine-oak woodlands (Gentry 1982). Lesser long-nosed bats are important pollinators for agave and cacti, and are important seed dispersers for some cacti.

The conservation and recovery of lesser long-nosed bats requires the presence of secure and appropriate roost sites throughout the landscape (including maternity roost sites, as well as transitional and migration roost sites) and adequate forage resources in appropriate juxtaposition to provide for life history needs including breeding, parturition, and migration.

Status and Threats

Recent information indicates that lesser long-nosed bat populations appear to be increasing or stable at most Arizona roost sites identified in the recovery plan (Arizona Game and Fish Department 2005, Tibbitts 2005, Wolf and Dalton 2005, U.S. Fish and Wildlife Service 2007b; electronic mail from Tim Tibbitts 2009). Lesser long-nosed bat populations additionally appear to be increasing or stable at other roost sites in Arizona and Mexico not included for monitoring in the recovery plan (Sidner 2005, Arizona Game and Fish Department 2009). Less is known about lesser long-nosed bat numbers and roosts in New Mexico. Though lesser long-nosed bat populations appear to be doing well, many threats to their stability and recovery still exist, including excess harvesting of agaves in Mexico; collection and destruction of cacti in the U.S.; conversion of habitat for agricultural and livestock uses, including the introduction of bufflegrass, a non-native, invasive grass species; wood-cutting; alternative energy development (wind and solar power); illegal border activities and required law enforcement activities; drought and climate change; fires; human disturbance at roost sites; and urban development.

Approximately 25 – 30 large lesser long-nosed bat roost sites, including maternity and late-summer roosts, have been documented in Arizona and New Mexico. Of these, 10 – 20 are monitored on an annual basis depending on available resources (U.S. Fish and Wildlife Service 2007b). Monitoring in Arizona in 2004 documented approximately 78,600 lesser long-nosed bats in late-summer roosts and approximately 34,600 in maternity roosts. More recently, in 2008, the numbers were 63,000 at late-summer roosts and 49,700 at maternity roosts (Arizona Game and Fish Department 2009). Ten to 20 lesser long-nosed bat roost sites in Mexico are also monitored annually. Over 100,000 lesser long-nosed bats are found at just one natural cave at the Pinacate Biosphere Reserve, Sonora, Mexico (Cockrum and Petryszyn 1991). The numbers above indicate that although a relatively large number of lesser long-nosed bats exist, the relative number of known large roosts is quite small.

The primary threat to lesser long-nosed bat is roost disturbance or loss. The colonial roosting behavior of this species, where high percentages of the population can congregate at a limited number of roost sites, increases the risk of significant declines or extinction due to impacts at roost sites. Lesser long-nosed bats remain vulnerable because they are so highly aggregated (Nabhan and Fleming 1993). Some of the most significant threats known to lesser long-nosed bat roost sites are impacts resulting from use and occupancy of these roost sites by individuals crossing the border illegally for a number of reasons. Mines and caves, which provide roosts for lesser long-nosed bats, also provide shade, protection, and sometimes water, for border crossers. The types of impacts that result from illegal border activities include disturbance from human occupancy, lighting fires, direct mortality, accumulation of trash and other harmful materials, alteration of temperature and humidity, destruction of the roost itself, and the inability to carry out conservation and research activities related to lesser long-nosed bats. These effects can lead to harm, harassment, or, ultimately, roost abandonment (U.S. Fish and Wildlife Service 2005).

For example, the illegal activity, presumably by individuals crossing the border, at the Bluebird maternity roost site, caused bats to abandon the site in 2002, 2003, and 2005. Other reasons for disturbance or loss of bat roosts include the use of caves and mines for recreation; the deliberate destruction, defacing or damage of caves or mines; roost deterioration (including both buildings or mines); short or long-term impacts from fire; and mine closures for safety purposes. The presence of alternate roost sites may be critical when this type of disturbance occurs.

Threats to lesser long-nosed bat forage habitat include excess harvesting of agaves in Mexico; collection and destruction of cacti in the U.S.; conversion of habitat for agricultural and livestock uses; the introduction of bufflegrass and other invasive species that can carry fire in Sonoran Desert scrub; wood-cutting; urban development; fires; and drought and climate change.

Large fires supported by invasive vegetation in 2005 affected some lesser long-nosed bat foraging habitat, though the extent is unknown. For example, the Goldwater, Aux, and Sand Tank Fire Complexes on BMGR-East burned through and around isolated patches of saguaros. Rogers (1985) showed that saguaros are not fire-adapted and suffer a high mortality rate as a result of fire. Therefore, fire can significantly affect forage resources for lesser long-nosed bats in the Sonoran desert. Monitoring of saguaro mortality rates should be done to assess the impacts on potential lesser long-nosed bat foraging habitat. More recently, the summer of 2011 saw huge wildfires burning across Arizona. The Wallow Fire (538,049 acres) set a new state record, burning a larger area than the 2002 Rodeo-Chediski Fire (468,638 acres). The Horseshoe 2 Fire (222,954 acres) burned approximately 70% of the Chiricahua Mountains and became the 4th largest fire in Arizona history. In addition to the Horseshoe 2 Fire, two other large wildfires (Murphy Complex and the Monument Fire) and numerous smaller fires burned a total of 366,679 acres in the Coronado National Forest. The Horseshoe 2, Monument, and Murphy fires affected lesser long-nosed bat forage and roost resources throughout those mountain ranges. Fire suppression activities associated with wildfires could also affect foraging habitat. For example, slurry drops can leave residue on saguaro flowers, which could impact lesser long-nosed bat feeding efficiency or result in minor contamination.

Drought may affect lesser long-nosed bat foraging habitat, though the effects of drought on bats are not well understood. The drought in 2004 resulted in near complete flower failure in saguaros throughout the range of lesser long-nosed bats. During that time however, in lieu of saguaro flowers, lesser long-nosed bats foraged heavily on desert agave (*Agave deserti*) flowers, an agave species used less consistently by lesser long-nosed bats (Tibbitts 2006). Similarly, there was a failure of the agave bloom in southeastern Arizona in 2006, probably related to the ongoing drought. As a result, lesser long-nosed bats left some roosts earlier than normal and increased use of hummingbird feeders by lesser long-nosed bats was observed in the Tucson area (personal communication with Scott Richardson, FWS, January 11, 2008). Climate change impacts to the lesser long-nosed bats in this portion of its range likely include loss of forage resources. Of particular concern is the prediction that saguaros, the primary lesser long-nosed bat forage resource in the Sonoran Desert, will decrease or even disappear within the current extent of the Sonoran Desert as climate change progresses (Weiss and Overpeck 2005, p. 2074). Monitoring bats and their forage during drought years is needed to better understand the effects of drought on this species.

The lesser long-nosed bat recovery plan (U.S. Fish and Wildlife Service 1997) identifies the need to protect roost habitats and foraging areas and food plants, such as columnar cacti and agaves. The lesser long-nosed bat recovery plan provides specific discussion and guidance for management and information needs regarding bat roosts and forage resources (U.S. Fish and Wildlife Service 1997). More information regarding the average size of foraging areas around roosts would be helpful to identify the minimum area around roosts that should be protected to maintain adequate forage resources.

We have produced numerous BOs on the lesser long-nosed bat since it was listed as endangered in 1988, some of which anticipated incidental take. Incidental take has been in the form of direct mortality and injury, harm, and harassment and has typically been only for a small number of individuals. Because incidental take of individual bats is difficult to detect, incidental take has often been quantified in terms of loss of forage resources, decreases in numbers of bats at roost sites, or increases in proposed action activities.

Examples of more recent BOs that anticipated incidental take for lesser long-nosed bats are summarized below. The 2013 BO for the Rosemont Copper Mine anticipated take of up to (1) 6,000 individuals harassed at three post-maternity roosts; (2) ten individuals harmed at known lesser long-nosed bat roosts subject to the implementation of protective measures; and (3) 5,401 acres of affected habitat lost containing Palmer's agave, a surrogate measure of take (via harm and harassment) of individuals. The 2010 BO related to the National Park Service's abandoned mine closure program, anticipated the direct take of up to 115 lesser long-nosed bats as a result of collisions with mine closure structures, and the abandonment of one roost site due to mine closure activities. The 2009 and 2008 BOs for implementation of the SBI*net* Ajo 1 and Tucson West Projects, including the installation, operation, and maintenance of communication and sensor towers and other associated infrastructure, each included incidental take in the form of 10 bats caused by collisions with towers and wind turbine blade-strike mortality for the life (presumed indefinite) of the proposed action. The 2007 BO for the installation of one 600 kilowatt wind turbine and one 50KW mass megawatts wind machine on Fort Huachuca included incidental take in the form of 10 bats caused by blade-strikes for the life (presumed indefinite) of the proposed action (U.S. Fish and Wildlife Service 2007c). The 2005 BO for implementation of the Coronado National Forest Land and Resource Management Plan (U.S. Forest Service) included incidental take in the form of harm or harassment. The amount of take for individual bats was not quantified; instead take was to be considered exceeded if simultaneous August counts (at transitory roosts in Arizona, New Mexico, and Sonora) drop below 66,923 lesser long-nosed bats (the lowest number from 2001 – 2004 counts) for a period of two consecutive years as a result of the action. The 2004 BO for the Bureau of Land Management Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management included incidental take in the form of harassment. The amount of incidental take was quantified in terms of loss of foraging resources, rather than loss of individual bats. The 2003 BO for MCAS–Yuma Activities on the BMGR included incidental take in the form of direct mortality or injury (five bats every 10 years). Because take could not be monitored directly, it was to be considered exceeded if nocturnal low-level helicopter flights in certain areas on the BMGR increased significantly or if the numbers of bats in the Agua Dulce or Bluebird Mine roosts decreased significantly and MCAS-Yuma activities were an important cause of the decline. The 2007 BO for Department of the Army Activities at and near Fort Huachuca (Fort), Arizona anticipated incidental take in the form of

direct mortality or injury (six bats over the life of the project), harassment (20 bats per year), and harm (10 bats over the life of the project) (U.S. Fish and Wildlife Service 2007a).

The lesser long-nosed bat recovery plan (U.S. Fish and Wildlife Service 1997), listing document (53 FR 38456), and the 5-year review summary and evaluation for the lesser long-nosed bat (U.S. Fish and Wildlife Service 2007b), all discuss the status of the species, and threats, and are incorporated by reference.

Mexican Long-nosed Bat

The Mexican long-nosed bat was listed as endangered under the ESA on September 30, 1988 (53 FR 38456). A Recovery Plan was completed in September 1994 (USFWS 1994), and notice of a pending 5-year review was given by the USFWS in February of 2009 (USFWS 2009). There is no designated critical habitat for the species.

Distribution

The Mexican long-nosed bat is primarily a Mexican species, ranging as far south as central Guatemala, but occurs in the United States during the summer months in mountains of the Trans-Pecos area of Texas along the Rio Grande (Barbour and Davis 1969; Schmidly 1991), and in southern Hidalgo County, New Mexico. The first confirmed day-roost site in the United States was a maternity roost in Big Bend National Park (BBNP) (Easterla 1972). Mexican long-nosed bats were also captured in mist nets in southern Hidalgo County, leading to the discovery of two roost sites shared with lesser long-nosed bats (Bogan *et al.* 2006; Cryan 2007). Both sites are caves in the Animas and Big Hatchet mountains. There are additional netting records from the Chinati Mountains of Presidio County, Texas, and Guadalupe Canyon in the southern Peloncillo Mountains of New Mexico (Hoyt *et al.* 1994; Arita and Humphrey 1988).

A single Mexican long-nosed bat was captured in a mist n*et al*ong the Gila River near the Grant-Hidalgo county line in New Mexico, well outside the previously known range of the species (M. Ramsey, personal communication). Juvenile Mexican long-nosed bats have been documented to make wide-ranging, apparently exploratory flights outside of their normal foraging range (England 2012). However, no additional information is available to indicate whether this record represents juvenile dispersal, a vagrant adult, or a roost site that may be previously unknown, intermittently used, or recently colonized. Known lesser long-nosed bat roosts are present in the Peloncillo Mountains, approximately 30 to 40 miles from this capture record, indicating the possible presence of a Mexican long-nosed bat roost because these species are known to roost together in New Mexico.

Habitat and Life History

The Mexican long-nosed bat is a colonial, cave-roosting species. These bats appear to prefer montane habitats, mostly at or above the transition from lowland forests to pine-oak (Barbour and Davis 1969; Schmidly 1991). Mexican long-nosed bats broadly overlap with the range of the lesser long-nosed bat, but Mexican long-nosed bats prefer higher and cooler elevations (Arita 1991). They feed on nectar and pollen, generally using species of *Agave* as their primary food

source while in the United States (Barbour and Davis 1969; Schmidly 1991). Palmer's century plant is the primary food source for the species in New Mexico, and Havard's century plant (*A. havardiana*) is the primary food source in Texas (England 2012).
Estimates of the numbers of bats at the BBNP cave site have varied from more than 13,000 to complete absence in some years. The roost sites in New Mexico have not been entered for censuses, although exit counts combining both species have exceeded 7,000 individuals. Lesser long-nosed bats appear to outnumber Mexican long-nosed bats in New Mexico roosts, based on mist-netting results, although behavioral differences may have influenced relative capture success for both species (Bogan *et al.* 2006).

The presence of this species in the United States at the northern edge of its range may reflect fluctuation of the core population in Mexico from year to year, or dispersal due to a lack of food resources within the core range (Schmidly 1991). While the bats typically roost at higher elevations, they may visit lower elevations while foraging, as evidenced by a netting record along the Rio Grande (Barbour and Davis 1969).

Threats to the Survival of the Mexican long-nosed bat

A primary threat to the species is disturbance or killing of bats in roosts (USFWS 1994). Loss of food resources from conversion of land for agriculture or agave harvesting in Mexico could adversely affect the species (Moreno-Valdez *et al.* 2004).

Previous consultations for the Mexican long-nosed bat include the October 24, 2002 consultation AESO/SE 2-21-98-F-399-R1, Reinitiation of Biological Opinion 2-21-98-F-399; Continuation of Livestock Grazing on the Coronado National Forest (Arizona), the May 14, 2008 consultation 22410-2008-F-0053 reinitiating consultation on several allotment on the Douglas Ranger District, Coronado National Forest, and the November 13, 2013 consultation 02EAAZ00-2013-F-0168 for the SunZia Southwest Transmission Line Project.

Pima Pineapple Cactus

The Pima Pineapple cactus was listed as an endangered species without critical habitat on September 23, 1993 (58 FR 49875). Factors that contributed to the listing include habitat loss and degradation, habitat modification and fragmentation, limited geographical distribution and species rareness, illegal collection, and difficulties in protecting areas large enough to maintain functioning populations. In 2005, a 5-year review was initiated for the Pima Pineapple cactus (70 FR 5460). This review was completed in 2007 and recommended no change to the cactus's classification as an endangered species (U.S. Fish and Wildlife Service 2007).

Recent investigations of taxonomy and geographical distribution focused, in part, on assessing the validity of the taxon (see Baker 2004, Baker 2005, and Schmalzel *et al.* 2004). Although there is evidence for a general pattern of clinal variation across the range of the species (Schmalzel *et al.* 2004), this does not preclude the recognition of taxonomic varieties within *C. sheeri* (= *C. robustispina*). Baker (2005) found that there are distinct geographical gaps between the distribution of this subspecies and the other subspecies, which occur in eastern Arizona, New Mexico, and Texas, and that the subspecies are morphologically coherent within

their respective taxa (Baker 2004). His geographical and morphological work supports the idea that the sub-specific groups within *C. robustispina* are indeed discrete, and merit separate taxonomic status as subspecies (U.S. Fish and Wildlife Service 2007).

We have determined that Pima Pineapple cactus that are too isolated from each other may not be effectively pollinated. For example, the major pollinator of Pima Pineapple cactus is thought to be *Diadasia rinconis*, a ground-nesting, solitary, native bee. McDonald (2005) found that Pima Pineapple cactus plants need to be within approximately 600 m (1,969 ft) of each other in order to facilitate effective pollination. Based on this information and other information related to similar cacti and pollinators, we have determined that Pima Pineapple cactus plants that are located at distances greater than 900 meters from one another become isolated with regard to meeting their life history requirements. The species is an obligate outcrosser (not self-pollinating), so it is important for plants to be within a certain distance to exchange pollen with each other. Also, the study found that pollination was more effective when other species of native cacti are near areas that support Pima Pineapple cactus. The native bees pollinate a variety of cacti species and the sole presence of Pima Pineapple cactus may not be enough to attract pollinators.

The Pima Pineapple cactus occurs south of Tucson, in Pima and Santa Cruz counties, Arizona, as well as in adjacent northern Sonora, Mexico. In Arizona, it is distributed at very low densities throughout both the Altar and Santa Cruz valleys, and in low-lying areas connecting the two valleys. This cactus generally grows on slopes of less than 10 percent and along the tops (upland areas) of alluvial bajadas. The plant is found at elevations between 2,360 feet (ft) and 4,700 ft (Phillips *et al.* 1981, Benson 1982, Ecosphere Environmental Services Inc. 1992), in vegetation characterized as either or a combination of Arizona upland of the Sonoran desertscrub community and semi-desert grasslands (Brown 1982, Johnson 2004). Paredes-Aguilar *et al.* (2000) reports the subspecies from oak woodlands in Sonora. Several attempts have been made to delineate habitat within the range of Pima Pineapple cactus (McPherson 2002, RECON Environmental Inc. 2006, U.S. Fish and Wildlife Service unpublished analysis) with limited success. As such, we are still unable to determine exact ecological characters to help us predict locations of Pima Pineapple cactus or precisely delineate Pima Pineapple cactus habitat (U.S. Fish and Wildlife Service 2007), except perhaps in localized areas (U.S. Fish and Wildlife Service 2005).

As a consequence of its general habitat requirements, considerable habitat for this species appears to exist in Pima and Santa Cruz counties, much of which is unoccupied. Pima Pineapple cactus occurs at low densities, widely scattered, sometimes in clumps, across the valley bottoms and bajadas. The species can be difficult to detect, especially in dense grass cover. For this reason, systematic surveys are expensive and have not been conducted extensively throughout the range of the Pima Pineapple cactus. As a result, location information has been gathered opportunistically, either through small systematic surveys, usually associated with specific development projects, or larger surveys that are typically only conducted in areas that seem highly suited for the species. Furthermore, our knowledge of the distribution and status of this species is gathered primarily through the section 7 process; and we only see projects that require a Federal permit or have Federal funding. There are many projects that occur within the range of Pima Pineapple cactus that do not undergo section 7 consultation, and we have no information

regarding the status or loss of plants or habitat associated with those projects. For these reasons, it is difficult to address abundance and population trends for this species.

The AGFD maintains the Heritage Data Management System (HDMS), a database identifying elements of concern in Arizona and consolidating information about their distribution and status throughout the state. This database has 5,553 Pima Pineapple cactus records, with 5,449 Pima Pineapple cactus that have coordinates. Some of the records are quite old, and we have not confirmed whether the plants are still alive. We also cannot determine which plants may be the result of multiple surveys in a given area. Of the known individuals (5,553), approximately 1,340 Pima Pineapple cactus plants are documented in the database as extirpated as of 2003. There have been additional losses since 2003, but that information is still being compiled in the database. The database is dynamic, based on periodic entry of new information, as time and staffing allows. As such, the numbers used from one biological opinion to the next may vary and should be viewed as a snapshot in time at any given moment. We have not tracked loss of habitat because a limited number of biological assessments actually quantify habitat for Pima Pineapple cactus.

We do know the number and fate of PPC that have been detected during surveys for projects that have undergone section 7 consultation. Through 2014, section 7 consultations on development projects (e.g., residential and commercial development, mining, infrastructure improvement) considered 2,939 PPC plants found on approximately 15,771 acres within the range of the PPC. Of the total number of plants, 2,170 PPC (74 percent) were destroyed, removed, or transplanted as a result of development, mining, and infrastructure projects. In terms of PPC habitat, some of the 15,771 acres likely did not provide PPC habitat, but that amount is difficult to quantify because PPC habitat was not consistently delineated in every consultation. Of the 15,771 acres, however, we are aware that 15,106 acres (96 percent) have been either permanently or temporarily impacted. Some of these acres may still provide natural open space, but we have not been informed of any measures (e.g., conservation easements) that have been completed to ensure these areas will remain open. Through section 7 consultation on non-development-related projects (e.g., fire management plans, grazing, buffelgrass control), we are aware of an additional 781 plants within an unknown number of acres; we do not know the number of acres because these types of projects are often surveyed for PPC inconsistently, if at all. Across the entire PPC range, it is difficult to quantify the total number of PPC lost and the rate and amount of habitat loss for three reasons: 1) we review only a small portion of projects within the range of PPC (only those that have Federal involvement and are subject to section 7 consultation), 2) development that takes place without any jurisdictional oversight is not tracked within Pima and Santa Cruz counties, and 3) many areas within the range of the PPC have not been surveyed; therefore, we do not know how many plants exist or how much habitat is presently available.

Some additional information related to the survival of Pima Pineapple cactus comes from six demographic plots that were established in 2002 in the Altar Valley. The results from the first year (2002-2003) indicate that the populations were stable; out of a total of over 300 Pima Pineapple cactus measured, only 10 died, and two Pima Pineapple cactus seedlings were found (Routson *et al.* 2004). The plots were not monitored in 2004, but were visited again starting in May 2005. In the two years between September 2003 and September 2005, 35 individuals, or 13.4 percent, of the original population had died and no new seedlings were found (Baker

2006a). Baker (2006a) suggests that recruitment likely occurs in punctuated events in response to quality and timing of precipitation, and possibly temperature, but there is little evidence until such events occur. He goes on to say that further observations need to be made to determine the rate at which the population is declining, because, based on an overall rate of die-off of 13.4 percent every two years, few individuals will be alive at this site after 15 years. As this monitoring program continues, critical questions regarding the life cycle of this species will be answered.

Threats to Pima Pineapple cactus continue to include habitat loss and fragmentation, competition with non-native species, and inadequate regulatory mechanisms to protect this species. We believe residential and commercial development, and its infrastructure, is by far the greatest threat to Pima Pineapple cactus and its habitat. However, we have only a limited ability to track the cumulative amount of development within the range of Pima Pineapple cactus. What is known with certainty is that development pressure continues in Pima and Santa Cruz counties.

Invasive grass species may be a threat to the habitat of Pima Pineapple cactus. Habitat in the southern portion of the Altar Valley is now dominated by Lehmann lovegrass (*Eragrostis lehmanniana*). According to Gori and Enquist (2003), Boer lovegrass (*Eragrostis chloromelas*) and Lehmann lovegrass are now common and dominant on 1,470,000 acres in southeastern Arizona. They believe that these two grass species will continue to invade native grasslands to the north and east, as well as south into Mexico. These grasses have a completely different fire regime than the native grasses, tending to form dense stands that promote higher intensity fires more frequently. Disturbance (like fire) tends to promote the spread of these non-natives (Ruyle *et al.* 1988, Anable *et al.* 1992). Roller and Halvorson (1997) hypothesized that fire-induced mortality of Pima Pineapple cactus increases with Lehmann lovegrass density. Buffelgrass (*Pennisetum ciliare*) has become locally dominant in vacant areas in the City of Tucson and along roadsides, notably in the rights-of-way along Interstate 10 and State Route 86. Some portions of Pima Pineapple cactus habitat along these major roadways are already being converted to dense stands of buffelgrass, which can lead to recurring grassland fires and the destruction of native desert vegetation (Buffelgrass Working Group 2007).

The effects of climate change (i.e., decreased precipitation and water resources) are a threat to the long-term survival and distribution of native plant species, including the Pima Pineapple cactus. For example, temperatures rose in the twentieth century and warming is predicted to continue over the twenty-first century. Although climate models are less certain about predicted trends in precipitation, the southwestern United States is expected to become warmer and drier. In addition, precipitation is expected to decrease in the southwestern United States, and many semi-arid regions will suffer a decrease in water resources from climate change as a result of less annual mean precipitation and reduced length of snow season and snow depth. Approximately half of the precipitation within the range of the Pima Pineapple cactus typically falls in the summer months; however, the impacts of climate change on summer precipitation are not well understood. Drought conditions in the southwestern United States have increased over time and may have contributed to loss of Pima Pineapple cactus populations through heat stress, drought stress, and related insect attack, as well as a reduction in germination and seedling success since the species was originally listed in 1993, and possibly historically. Climate change trends are

likely to continue, and the impacts on species will likely be complicated by interactions with other factors (e.g., interactions with non-native species and other habitat-disturbing activities).

The Arizona Native Plant Law can delay vegetation clearing on private property for the salvage of specific plant species within a 30-day period. Although the Arizona Native Plant Law prohibits the taking of this species on State and private lands without a permit for educational or research purposes, it does not provide for protection of plants *in situ* through restrictions on development activities. Even if Pima Pineapple cactus are salvaged from a site, transplanted individuals only contribute to a population if they survive and are close enough (within 900 m [(2,970 ft]) to other Pima Pineapple cactus to be part of a breeding population from the perspective of pollinator travel distances and the likelihood of effective pollination. Transplanted Pima Pineapple cactus have variable survival rates, with moderate to low levels of survival documented. Past efforts to transplant individual Pima Pineapple cactus to other locations have had limited success. For example, on two separate projects in Green Valley, the mortality rate for transplanted Pima Pineapple cactus after two years was 24 percent and 66 percent, respectively (SWCA, Inc. 2001, WestLand Resources, Inc. 2004). One project southwest of Corona de Tucson involved transplanting Pima Pineapple cactus into areas containing *in situ* plants. Over the course of three years, 48 percent of the transplanted individuals and 24 percent of the *in situ* individuals died (WestLand Resources, Inc. 2008). There is also the unquantifiable loss of the existing Pima Pineapple cactus seed bank associated with the loss of suitable habitat. Furthermore, once individuals are transplanted from a site, Pima Pineapple cactus is considered to be extirpated from that site, as those individuals functioning in that habitat are moved elsewhere. There are currently two ongoing research projects related to the relocation of Pima Pineapple cacti which should give us additional information related to the effectiveness of this potential conservation strategy.

Pima County regulates the loss of native plant material associated with ground-disturbing activities through their Native Plant Protection Ordinance (NPPO) (Pima County 1998). The NPPO requires inventory of the site and protection and mitigation of certain plant species slated for destruction by the following method: the designation of a minimum of 30 percent of on-site, permanently protected open space with preservation in place or transplanting of certain native plant species from the site. There are various tables that determine the mitigation ratio for different native plant species (e.g. saguaros, ironwood trees, Pima Pineapple cactus) with the result that mitigation may occur at a 1:1 or 2:1 replacement ratio. Mitigation requirements are met through the development of preservation plans. The inadvertent consequence of this ordinance is that it has created a "market" for Pima Pineapple cactus. Any developer who cannot avoid this species or move it to another protected area must replace it. Most local nurseries do not grow Pima Pineapple cactus (and cannot grow them legally unless seed was collected before the listing). As a result, environmental consultants are collecting Pima Pineapple cactus seed from existing sites (which can be done with a permit from the Arizona Department of Agriculture and the permission of the private landowner), germinating seed, and placing Pima Pineapple cactus plants grown from seed back on these sites. There have been no long-term studies of transplant projects, thus the conservation benefit of these actions is unknown. Moreover, growing and planting Pima Pineapple cactus does not address the loss of Pima Pineapple cactus habitat that necessitated the action of transplanting cacti in the first place.

Other specific threats that have been previously documented (58 FR 49875), such as overgrazing, illegal collection, prescribed fire, and mining, have not yet been analyzed to determine the extent of effects to this species. However, partial information exists. Overgrazing by livestock, illegal collection, and fire-related interactions involving exotic Lehmann lovegrass and buffelgrass may negatively affect Pima Pineapple cactus populations. Mining has resulted in the loss of hundreds, if not thousands, of acres of potential habitat throughout the range of the plant.

The protection of Pima Pineapple cactus habitat and individuals is complicated by the varying land ownership within the range of this species in Arizona. An estimated 10 percent of the potential habitat for Pima Pineapple cactus is held in Federal ownership. The remaining 90 percent is on Tribal, State, and private lands. Most of the federally-owned land is either at the edge of the plant's range or in scattered parcels. The largest contiguous parcel of federally-owned habitat is the Buenos Aires National Wildlife Refuge, located at the southwestern edge of the plant's range at higher elevations and with lower plant densities. No significant populations of Pima Pineapple cactus are known from Sonora or elsewhere in Mexico (Baker 2005).

There have been some notable conservation developments for this species. As of 2010, there are two conservation banks for Pima Pineapple cactus, one on a private ranch in the Altar Valley (Palo Alto Ranch Conservation Bank) and another owned by Pima County that includes areas in both the Altar Valley and south of Green Valley. In the Palo Alto Ranch Conservation Bank, 131.6 acres have been conserved to date. In Pima County's Bank, a total of 530 acres are under a conservation easement at this time (the County offsets its own projects within this bank). Additionally, three large blocks of land totaling another 1,078 acres have been set aside or are under conservation easements through previous section 7 consultations (see consultations 02-21-99-F-273, 02-21-01-F-101, and 02-21-03-F-0406). While not formal conservation banks, these areas, currently totaling 1,739.6 acres, are set aside and managed specifically for Pima Pineapple cactus as large blocks of land, and likely contribute to recovery of the taxon for this reason; therefore, we consider these acres conserved. Another 647 acres of land have been set aside as natural open space within the developments reviewed through section 7 consultation between 1995 and 2010. However, these are often small areas within residential backyards (not in a common area) that are difficult to manage and usually isolated within the larger development, and often include areas that do not provide Pima Pineapple cactus habitat (e.g., washes). Some conservation may occur onsite because of these open space designations, but long-term data on conservation within developed areas are lacking; the value of these areas to Pima Pineapple cactus recovery over the long-term is likely not great.

In summary, Pima Pineapple cactus conservation efforts are currently hampered by a lack of information on the species. Specifically, we have not been able to determine exact ecological characters to help us predict locations of Pima Pineapple cactus or precisely delineate its habitat, and considerable area within the Pima Pineapple cactus range has not been surveyed. Further, there are still significant gaps in our knowledge of the life history of Pima Pineapple cactus; for instance, we have yet to observe a good year for seed germination. From researcher observations and motion sensing cameras, we have learned that ants, Harris' antelope squirrels, and jackrabbits act as seed dispersal agents. Demographic plots have been only recently established,

and information is just now beginning to be reported with regard to describing population dynamics for Pima Pineapple cactus in the Altar Valley.

Development and associated loss of habitat remain important and continuing threats to this taxon. However, the expanding threat of non-native grasses and resulting altered fire regimes are a serious concern for the long-term viability of the species, as is ongoing drought. The full impact of drought and climate change on Pima Pineapple cactus has yet to be studied, but it is likely that, if recruitment occurs in punctuated events based on precipitation and temperature (Baker 2006a), Pima Pineapple cactus will be negatively affected by these forces. Already we have seen a nearly 25% loss of individuals across six study sites in the Altar Valley between 2010 and 2011; these deaths were attributed largely to drought and associated predation by native insects and rodents (Baker 2011). Conservation efforts that focus on habitat acquisition and protection, like those proposed by Pima County and the City of Tucson, are important steps in securing the long-term viability of this taxon. Regulatory mechanisms, such as the native plant protection ordinances, provide conservation direction for Pima Pineapple cactus habitat protection within subdivisions, and may serve to reduce Pima Pineapple cactus habitat fragmentation within areas of projected urban growth.

Southwestern Willow Flycatcher

The flycatcher was listed as endangered, without critical habitat on February 27, 1995 (60 FR 10694). Final designated critical habitat was published on January 3, 2013 ((78 FR 344). The southwestern willow flycatcher recovery plan (U.S. Fish and Wildlife Service 2002) (RP) describes reasons for endangerment, flycatcher status, addresses recovery actions, includes detailed issue papers, and provides recovery goals. Recovery is based on reaching numerical and habitat related goals for each specific Management Unit (MU) established throughout the subspecies' range and establishing long-term conservation plans.

Description

The southwestern willow flycatcher is a small grayish-green passerine bird (Family Tyrannidae) measuring approximately 5.75 inches. The song is a sneezy "fitz-bew" or a "fit-a-bew", the call is a repeated "whit." It is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). It is a neotropical migrant that breeds in the southwestern U.S. and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Stiles and Skutch 1989, Peterson 1990, Ridgely and Tudor 1994, Howell and Webb 1995). The historical breeding range of the southwestern willow flycatcher included southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).

Habitat

The southwestern willow flycatcher breeds in dense riparian habitats from sea level in California to approximately 8,500 feet in Arizona and southwestern Colorado. Historical egg/nest collections and species' descriptions throughout its range describe the southwestern willow

flycatcher's widespread use of willow (*Salix* spp.) for nesting (Phillips 1948, Phillips *et al.* 1964, Hubbard 1987, Unitt 1987). Currently, southwestern willow flycatchers primarily use Geyer willow (*S. geyeriana*), coyote willow (*S. exigua*), Goodding's willow (*S. gooddingii*), boxelder (*Acer negundo*), saltcedar (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolio*), and live oak (*Quercus agrifolia*) for nesting. Other plant species less commonly used for nesting include: buttonbush (*Cephalanthus* sp.), black twinberry (*Lonicera involucrata*), cottonwood (*Populus* spp.), white alder (*Alnus rhombifolia*), blackberry (*Rubus ursinus*), and stinging nettle (*Urtica* spp.). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the southwestern willow flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge *et al.* 1997). The southwestern willow flycatcher is an insectivore, foraging in dense shrub and tree vegetation along rivers, streams, and other wetlands.

The flycatcher's habitat is dynamic and can change rapidly: nesting habitat can grow out of suitability; saltcedar habitat can develop from seeds to suitability in about four to five years; heavy runoff can remove/reduce habitat suitability in a day; or river channels, floodplain width, location, and vegetation density may change over time. The flycatcher's use of habitat in different successional stages may also be dynamic. For example, over-mature or young habitat not suitable for nest placement can be occupied and used for foraging and shelter by migrating, breeding, dispersing, or non-territorial southwestern willow flycatchers (McLeod *et al.* 2005, Cardinal and Paxton 2005). Flycatcher habitat can quickly change and vary in suitability, location, use, and occupancy over time (Finch and Stoleson 2000).

Tamarisk is an important component of the flycatcher's nesting and foraging habitat in the central part of the flycatcher's breeding range in Arizona, southern Nevada and Utah, and western New Mexico. In 2001 in Arizona, 323 of the 404 (80 percent) known flycatcher nests (in 346 territories) were built in a tamarisk tree (Smith *et al.* 2002). Tamarisk had been believed by some to be a habitat type of lesser quality for the southwestern willow flycatcher, however comparisons of reproductive performance (U. S. Fish and Wildlife Service 2002), prey populations (Durst 2004) and physiological conditions (Owen and Sogge 2002) of flycatchers breeding in native and exotic vegetation has revealed no difference (Sogge *et al.* 2005).
The introduced tamarisk leaf beetle was first detected affecting tamarisk within the range of the southwestern willow flycatcher in 2008 along the Virgin River in St. George, Utah. Initially, this insect was not believed to be able to move into or survive within the southwestern United States in the breeding range of the flycatcher. Along this Virgin River site in 2009, 13 of 15 flycatcher nests failed following vegetation defoliation (Paxton *et al.* 2010). As of 2012, the beetle has been found in southern Nevada/Utah and northern Arizona/New Mexico within the flycatcher's breeding range. Because tamarisk is a component of about 50 percent of all known flycatcher territories (Durst *et al.* 2008), continued spread of the beetle has the potential to significantly alter the distribution, abundance, and quality of flycatcher nesting habitat and impact breeding attempts.

Arizona Distribution and Abundance

While numbers have significantly increased in Arizona (145 to 459 territories from 1996 to 2007) (English *et al.* 2006, Durst *et al.* 2008), overall distribution of flycatchers throughout the state has not changed much. Currently, population stability in Arizona is believed to be largely dependent on the presence of two large populations (Roosevelt Lake and San Pedro/Gila River confluence). Therefore, the result of catastrophic events or losses of significant populations either in size or location could greatly change the status and survival of the bird. Conversely, expansion into new habitats or discovery of other populations would improve the known stability and status of the flycatcher.

Factors Affecting the Species

The evidence suggests that fire was not a primary disturbance factor in southwestern riparian areas near larger streams (U. S. Fish and Wildlife Service 2002). Yet, in recent time, fire size and frequency has increased on the lower Colorado, Gila, Bill Williams, and Rio Grande rivers. The increase has been attributed to increasing dry, fine fuels as a result of the cessation of flood flows and human caused ignition sources. The spread of the highly flammable plant, tamarisk, and drying of river areas due to river flow regulation, water diversion, lowering of groundwater tables, and other land practices is largely responsible for these fuels. A fire in June 1996 destroyed approximately a half mile of occupied tamarisk flycatcher nesting habitat on the San Pedro River in Pinal County. That fire resulted in the forced dispersal or loss of up to eight pairs of flycatchers (Paxton *et al.* 1996). Smaller fires have occurred along the upper most portion of the San Pedro River closer to the Mexico Border and another large fire occurred on the lower San Pedro River at the Nature Conservancy's San Pedro Preserve between Winkelman and Dudleyville in 2004. Recreationists cause over 95 percent of the fires on the lower Colorado River (U. S. Fish and Wildlife Service 2002).

There are no extensive records for the actual causes of adult southwestern willow flycatcher mortality. Incidents associated with nest failures, human disturbance, and nestlings are typically the most often recorded due to the static location of nestlings, eggs, and nests. As a result, nestling predation and brood parasitism are the most commonly recorded causes of southwestern willow flycatcher mortality. Also, human destruction of nesting habitat through bulldozing, groundwater pumping, and aerial defoliants has been recorded in Arizona (T. McCarthey, AGFD, pers. comm.). Human collision with nests and spilling the eggs or young onto the ground have been documented near high use recreational areas (U. S. Fish and Wildlife Service 2002). A southwestern willow flycatcher from the Greer Town site along the Little Colorado River in eastern Arizona was found dead after being hit by a vehicle along SR 373. This route is adjacent to the breeding site (T. McCarthey, AGFD, pers. comm.).

Since listing in 1995, approximately 210 Federal agency actions have undergone (or are currently under) formal section 7 consultation throughout the flycatcher's range. This list of consultations can be found in the administrative record for this consultation. Since flycatcher critical habitat was finalized in 2005, at least 33 formal opinions have been completed in Arizona (within and outside designated critical habitat). While many opinions were issued for the

previous critical habitat designation, the stream reaches and constituent elements have changed under the more recent designation.

Activities continue to adversely affect the distribution and extent of all stages of flycatcher habitat throughout its range (development, urbanization, grazing, recreation, native and non-native habitat removal, dam operations, river crossings, ground and surface water extraction, etc.). Introduced tamarisk eating leaf beetles were not anticipated to persist within the range of the southwestern willow flycatcher. However, they were detected within the breeding habitat (and designated critical habitat) of the flycatcher in 2008 along the Virgin River near the Town of St. George, Utah. In 2009, beetles were also known to have been detected defoliating habitat within the range of flycatcher habitat in southern Nevada, and along the Colorado River in the Grand Canyon and near Shiprock in Arizona. Stochastic events also continue to change the distribution, quality, and extent of flycatcher habitat.

Conservation measures associated with some consultations and Habitat Conservation Plans have helped to acquire lands specifically for flycatchers on the San Pedro, Verde, and Gila rivers in Arizona and the Kern River in California. Additionally, along the lower Colorado River, the U.S. Bureau of Reclamation is currently attempting to establish riparian vegetation to expand and improve the distribution and abundance of nesting flycatchers. A variety of Tribal Management Plans in California, Arizona, and New Mexico have been established to guide conservation of the flycatchers. Additionally, during the development of the critical habitat rule, management plans were developed for some private lands along the Owens River in California and Gila River in New Mexico. These are a portion of the conservation actions that have been established across the subspecies' range.

Critical Habitat

Critical habitat has been designated along approximately 1,975 stream kilometers (1,227 stream miles). The designation includes the stream segments, with the lateral extent including the riparian areas and streams that occur within the 100-year floodplain or flood-prone areas encompassing a total area of approximately 84,569 hectares (208,973 acres). Critical habitat units have been designated in areas within California, Arizona, and New Mexico. Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the southwestern willow flycatcher are:

1. *Riparian vegetation.* Riparian habitat along a dynamic river or lakeside, in a natural or manmade successional environment (for nesting, foraging, migration, dispersal, and shelter) that is comprised of trees and shrubs (that can include Gooddings willow, coyote willow, Geyer's willow, arroyo willow, red willow, yewleaf willow, pacific willow, boxelder, tamarisk, Russian olive, buttonbush, cottonwood, stinging nettle, alder, velvet ash, poison hemlock, blackberry, seep willow, oak, rose, sycamore, false indigo, Pacific poison ivy, grape, Virginia creeper, Siberian elm, and walnut) and some combination of:

    a. Dense riparian vegetation with thickets of trees and shrubs that can range in height from about 2 meters (m) to 30 m (about 6 feet (ft) to 98 ft). Lower stature thickets (2 to 4 m or 6 to 13 ft tall) are found at higher elevation riparian forests, and tall-stature thickets are found at middle- and lower elevation riparian forests;

b. Areas of dense riparian foliage at least from the ground level up to approximately 4 m (13 ft) above ground or dense foliage only at the shrub or tree level as a low, dense canopy;

c. Sites for nesting that contain a dense (about 50 percent to 100 percent) tree or shrub (or both) canopy (the amount of cover provided by tree and shrub branches measured from the ground);

d. Dense patches of riparian forests that are interspersed with small openings of open water or marsh or areas with shorter and sparser vegetation that creates a variety of habitat that is not uniformly dense. Patch size may be as small as 0.1 hectare (ha) (0.25 acre (ac)) or as large as 70 ha (175 ac).

2. *Insect prey populations.* A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, which can include: flying ants, wasps, and bees (Hymenoptera); dragonflies (Odonata); flies (Diptera); true bugs (Hemiptera); beetles (Coleoptera); butterflies, moths, and caterpillars (Lepidoptera); and spittlebugs (Homoptera).

A complete description of the biology of the southwestern willow flycatcher (*Empidonax traillii extimus*) is contained in the *Southwestern Willow Flycatcher Recovery Plan* U. S. Fish and Wildlife Service 2002).

Northern Mexican Gartersnake

The northern Mexican gartersnake was listed as threatened under the Act on July 8, 2014 (79 FR 38678). Critical habitat was proposed on July 10, 2013 (78 FR 41550), with a final determination in preparation. Refer to these two rules for more in-depth information on the ecology and threats to the species, including references. The proposed rules are incorporated here by reference.

Description

The northern Mexican gartersnake ranges in color from olive to olive-brown or olive-gray with three lighter-colored stripes that run the length of the body, the middle of which darkens towards the tail. It may occur with other native gartersnake species and can be difficult for people without specific expertise to identify. The snake may reach a maximum length of 44 in (112 cm). The pale yellow to light-tan lateral stripes distinguish the northern Mexican gartersnake from sympatric gartersnake species because a portion of the lateral stripe is found on the fourth scale row, while it is confined to lower scale rows for other species. Paired black spots extend along the olive dorsolateral fields (region adjacent to the top of the snake's back) and the olive-gray ventrolateral fields. The scales are keeled.

Habitat and Natural History

Throughout its rangewide distribution, the northern Mexican gartersnake occurs at elevations from 130 to 8,497 feet (40 to 2,590 meters) (Rossman *et al.* 1996) and is considered a "terrestrial-aquatic generalist" by Drummond and Marcías-García (1983). The northern Mexican gartersnake is a riparian obligate (generally found near water when not dispersing) and occurs chiefly in the following habitat types: 1) Source-area wetlands (e.g., cienegas [mid-elevation wetlands with highly organic, reducing {basic or alkaline} soils], or stock tanks); 2) large-river

riparian woodlands and forests; and 3) streamside gallery forests (as defined by well-developed broadleaf deciduous riparian forests with limited, if any, herbaceous ground cover or dense grass) (Hendrickson and Minckley 1984, Rosen and Schwalbe 1988). When surveying in the upper Verde River region, Emmons and Nowak (2013) found this subspecies most commonly in protected backwaters, braided side channels and beaver ponds, isolated pools near the river mainstem, and edges of dense emergent vegetation that offered cover and foraging opportunities.

The northern Mexican gartersnake is surface active at ambient (air) temperatures ranging from 71 degrees Fahrenheit (°F) to 91 °F (22 degrees Celsius (°C) to 33 °C) and forages along the banks of waterbodies (Rosen 1991, p. 305, Table 2). While conducting visual surveys, Rosen (1991, pp. 308–309) found that northern Mexican gartersnakes spent up to 60 percent of their time moving, 13 percent of their time basking on vegetation, 18 percent of their time basking on the ground, and 9 percent of their time under surface cover. However, preliminary telemetry data from a population of northern Mexican gartersnakes at the Bubbling Ponds State Fish Hatchery show individuals were surface active during 16 percent of telemetry observations, not surface active during 64 percent of telemetry observations, and surface activity was undetermined for 20 percent of the telemetry observations (Boyarsky 2013, pers. comm.); at Tavasci Marsh along the upper Verde River, they were inactive 60 percent of the time (Emmons 2013b, pers. comm.). In the northern-most part of its range, the northern Mexican gartersnake appears to be most active during July and August, followed by June and September (Emmons and Nowak 2013, p. 14). Northern Mexican gartersnakes may use different sites as hibernacula during a single cold-season and will bask occasionally (Emmons 2014, pers. comm.).

The northern Mexican gartersnake is an active predator and is believed to heavily depend upon a native prey base (Rosen and Schwalbe 1988). Northern Mexican gartersnakes forage along vegetated banklines, searching for prey in water and on land, using different strategies (Alfaro 2002). Generally, its diet consists of amphibians and fishes, such as adult and larval (tadpoles) native leopard frogs (e.g., lowland leopard frog [*Lithobates yavapaiensis*] and Chiricahua leopard frog), as well as juvenile and adult native fish species (e.g., Gila topminnow, desert pupfish, and roundtail chub [*G. robusta*]) (Rosen and Schwalbe 1988). Drummond and Marcías-García (1983) found that as a subspecies, Mexican gartersnakes fed primarily on frogs. Auxiliary prey items may also include young Woodhouse's toads (*Anaxyrus woodhousei*), treefrogs (Family Hylidae), earthworms, deermice (*Peromyscus* spp.), lizards of the genera Aspidoscelis and Sceloporus, larval tiger salamanders (*Ambystoma tigrinum*), and leeches (Gregory *et al.* 1980, Holm and Lowe 1995, Degenhardt *et al.* 1996, Rossman *et al.* 1996, Manjarrez 1998). In situations where native prey species are rare or absent, this snake's diet may include nonnative species, including larval and juvenile bullfrogs (*Lithobates catesbeianus*), western mosquitofish (*Gambusia affinis*) (Holycross *et al.* 2006, Emmons and Nowak 2013), or other soft-rayed fishes. Venegas-Barrera and Manjarrez (2001) reported the first observation of a snake in the natural diet of any species of Thamnophis after documenting the consumption by a Mexican gartersnake (subspecies not provided) of a Mexican alpine blotched gartersnake (*T. scalaris*).

Historical Distribution

Within the United States, the northern Mexican gartersnake historically occurred predominantly in Arizona at elevations ranging from 130 to 6,150 ft (40-1,875 m). It was generally found where water was relatively permanent and supported suitable habitat. The northern Mexican gartersnake historically occurred in every county and nearly every subbasin within Arizona, from several perennial or intermittent creeks, streams, and rivers as well as lentic (still, non-flowing water) wetlands such as cienegas, ponds, or stock tanks. Northern Mexican gartersnake records exist within the following subbasins in Arizona: Colorado River, Bill Williams River, Agua Fria River, Salt River, Tonto Creek, Verde River, Santa Cruz River, Cienega Creek, San Pedro River, Babocomari River, and the Rio San Bernardino (Black Draw) (Woodin 1950, Nickerson and Mays 1970, Bradley 1986, Brennan and Holycross 2006, Cotton *et al.* 2013).

Historically, the northern Mexican gartersnake had a limited distribution in New Mexico that consisted of scattered locations throughout the Upper Gila River watershed in Grant and western Hidalgo Counties, including the Upper Gila River, Mule Creek in the San Francisco River subbasin, and the Mimbres River (Price 1980, Fitzgerald 1986, Degenhardt *et al.* 1996, Holycross *et al.* 2006).

Current Distribution and Population Status

The only viable northern Mexican gartersnake populations in the United States where the subspecies remains reliably detected are all in Arizona: 1) The Page Springs and Bubbling Ponds State Fish Hatcheries along Oak Creek, 2) lower Tonto Creek, 3) the upper Santa Cruz River in the San Rafael Valley, 4) the Bill Williams River, and 5) the upper/middle Verde River. In New Mexico, the northern Mexican gartersnake may occur in extremely low population densities within its historical distribution; limited survey effort is inconclusive with respect to determining extirpation. The status of the northern Mexican gartersnake on tribal lands, such as those owned by the White Mountain or San Carlos Apache Tribes, is poorly known due to historically limited survey access and access to any survey data. As stated previously, less is known specifically about the current distribution of the northern Mexican gartersnake in Mexico due to limited surveys and limited access to information on survey efforts and field data from Mexico. All proposed critical habitat units (see critical habitat section below) are considered occupied (78 FR 41558).

Threats to the Northern Mexican Gartersnake

Riparian and aquatic communities in both the United States and Mexico have been significantly impacted by a shift in species' composition, from one of primarily native fauna, to one being increasingly dominated by an expanding assemblage of nonnative animal species. These nonnative species have been intentionally or accidentally introduced, including crayfish, bullfrogs, and nonnative, spiny-rayed fish. Harmful nonnative species have been introduced or have spread into new areas through a variety of mechanisms, by sport stocking, aquaculture, aquarium releases, and bait-bucket release. The overall effect of these harmful nonnative species on gartersnake populations is two-fold. Harmful nonnative species contribute to starvation of gartersnake populations through competitive mechanisms, and reduce or eliminate

recruitment of young gartersnakes through predation. The threat from harmful nonnative species is the most severe and geographically pervasive of all threats affecting the northern Mexican gartersnake.

The occurrence of harmful nonnative species, such as the bullfrog, the northern (virile) crayfish (*Orconectes virilis*), red swamp crayfish (*Procambarus clarkii*), and numerous species of nonnative, spiny-rayed fish (often referred to as "warm water sportfish"), has contributed to rangewide declines in the northern Mexican gartersnake, and continues to be the most significant threat to the species and to its prey base, as a result of direct predation, competition, and modification of habitat as evidenced in a broad body of literature, the most recent of which extends from 1985 to the present (Papoulias *et al.* 1989, Inman *et al.* 1998, Knapp 2005, Luja and Rodríguez-Estrella 2008, Emmons and Nowak 2013). Tail injuries are also a concern for gartersnake populations that occur with harmful nonnative species (Willis *et al.* 1982, Rosen and Schwalbe1988, Mushinsky and Miller 1993, Fitch 2003) and can affect the majority of individuals within a population (Rosen and Schwalbe1988).

The scientific literature confirms that harmful nonnative species are the most significant and widespread factor that continues to drive further declines in and extirpations of northern Mexican gartersnake populations. Additional threats to their habitat can also contribute to population declines, but should be evaluated in the context of the presence or absence of harmful nonnative species. Researchers agree that the period from 1850 to 1940 marked the greatest loss and degradation of riparian and aquatic communities in Arizona, many of which were caused by anthropogenic (human-caused) land uses and the primary and secondary effects of those uses (Davis 1982, Stromberg *et al.* 1996, Webb and Leake 2005). Degradation of habitats is a well-recognized factor in establishment of nonnative species (Courtenay and Stauffer 1984, Arthington *et al.* 1990, Soule 1990, Aquatic Nuisance Species Task Force 1994).

The presence of water is critical for northern Mexican gartersnakes, as well as their prey base. Of all the activities that may threaten their physical habitat, none are more serious than those that reduce flows or dewater habitat over large reaches or locally. Structures or activities that can cause these effects include dams, diversions, flood-control projects, and groundwater pumping and are widespread in Arizona, largely in response to human population growth. For example, municipal water use in central Arizona increased by 39 percent from 1998 to 2006 (American Rivers 2006), and at least 35 percent of Arizona's perennial rivers have been dewatered, assisted by about 95 dams that are in operation in Arizona today (Turner and List 2007).

Flow regimes within streams are a primary factor that shape fish communities. The timing, duration, intensity, and frequency of flood events has been altered to varying degrees by the presence of dams, which effects fish communities. Specifically, Haney *et al.* (2008) suggested that flood pulses may help to reduce populations of nonnative species (Minckley and Meffe 1987) and efforts to increase baseflows may assist in sustaining native prey species for northern Mexican gartersnakes. However, the investigators in this study also suggest that, because the northern Mexican gartersnake preys on both fish and frogs, it may be less affected by reductions in baseflow of streams (Haney *et al.* 2008). Unregulated flows with elevated discharge events favor native species, and regulated flows, absent significant discharge events, favor nonnative species (Rinne and Miller 2006, Propst *et al.* 2008).

The ecology and natural history of northern Mexican gartersnakes is linked to water. As discussed above, the northern Mexican gartersnake is an aquatic species and relies largely upon other aquatic species, such as ranid frogs and native and nonnative, soft-rayed fish as prey. Therefore, these factors are likely to make northern Mexican gartersnakes vulnerable to effects of climate change and drought.

Many other factors have contributed to the decline of the northern Mexican gartersnake, and in some cases, continue to present a significant threat to low-density populations through synergistic mechanisms. These factors, and their effects to northern Mexican gartersnake populations, were discussed in detail in our 2014 rule to list the subspecies (79 FR 38678) and in the 2013 rule proposing critical habitat (78 FR 41500) which is incorporated by reference here. For more information on these additional threats, please review our rules and references cited.

Proposed Critical Habitat

Critical habitat has been proposed in portions of Arizona and New Mexico totaling 421,423 acres. Within these areas, the primary constituent elements of the physical and biological features essential to the conservation of the northern Mexican gartersnake are:

1. Aquatic or riparian habitat that includes:
    a. Perennial or spatially intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat, and that possess a natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads; or
    b. Lentic wetlands such as livestock tanks, springs, and cienegas; and
    c. Shoreline habitat with adequate organic and inorganic structural complexity to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities (e.g., boulders, rocks, organic debris such as downed trees or logs, debris jams, small mammal burrows, or leaf litter); and
    d. Aquatic habitat with characteristics that support a native amphibian prey base, such as salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present at levels that do not affect survival of any age class of the northern Mexican gartersnake or the maintenance of prey populations.
2. Adequate terrestrial space (600 ft [182.9 m] lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation.
3. A prey base consisting of viable populations of native amphibian and native fish species.
4. An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs, and/or crayfish (*O. virilis, P. clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of northern Mexican gartersnakes and maintenance of viable native fish or soft-rayed, nonnative fish populations (prey) is still occurring.

Yellow-billed Cuckoo, Western Distinct Population Segment

The Western Distinct Population Segment (DPS) of the yellow-billed cuckoo was listed as a threatened species on October 2, 2014 (79 FR 59992). Critical habitat was proposed on August 15, 2014 (79 FR 48548), with a final determination expected sometime in 2015.

Physical Characteristics

Adult yellow-billed cuckoos have moderate to heavy bills, somewhat elongated bodies and a narrow yellow ring of colored bare skin around the eye. The plumage is grayish-brown above and white below, with reddish primary flight feathers. The tail feathers are boldly patterned with black and white below. They are a medium-sized bird about 12 in (30cm) in length, and about 2 oz (60 g) in weight. Males and females differ slightly; the males have a slightly smaller body size, smaller bill, and the white portions of the tail tend to form distinct oval spots. In females the white spots are less distinct and tend to be connected (Hughes 1999, 79 FR 59992).

Morphologically, the yellow-billed cuckoos throughout the western continental United States and Mexico are generally larger than individuals in the eastern United States, with significantly longer wings, longer tails, and longer and deeper bills (Franzreb and Laymon 1993). Birds with these characteristics occupy the Western DPS and are we refer to them as the "western yellow-billed cuckoo." Only the Western DPS has been proposed for listing as a threatened species (78 FR 61622). Yellow-billed cuckoos in the west arrive on the breeding grounds 4 to 8 weeks later than eastern yellow-billed cuckoos at similar latitude (Franzreb and Laymon 1993, Hughes 1999). Some information exists suggesting that the western population segment described in the scientific literature as the western yellow-billed cuckoo (Coccyzus americanus occidentalis) is distinguishable at the subspecific level; however, there is enough literature to conclude that recognition of the subspecies is not justified at this time (79 FR 59992).

Distribution

The yellow-billed cuckoo is a member of the avian family Cuculidae and is a Neotropical migrant bird that winters in South America and breeds in North America. The breeding range of the entire species formerly included most of North America from southeastern and western Canada (southern Ontario and Quebec and southwestern British Colombia) to the Greater Antilles and northern Mexico (American Ornithologists Union 1957, 1983, 1998).

Based on historical accounts, the western yellow-billed cuckoo was formerly widespread and locally common in California and Arizona, more narrowly distributed but locally common in New Mexico, Oregon, and Washington and uncommon along the western front of the Rocky Mountains north to British Columbia (American Ornithologists Union 1998, Hughes 1999). The species may be extirpated from British Colombia, Washington, and Oregon (Hughes 1999). The western yellow-billed cuckoo is now very rare in scattered drainages in western Colorado, Idaho, Nevada, and Utah, with single, nonbreeding birds most likely to occur (66 FR 38611). The largest remaining breeding areas are in southern and central California, Arizona, along the Rio Grande in New Mexico, and in northwestern Mexico U.S. Fish and Wildlife Service 2013).

The current breeding population is low, with estimates of approximately 350 to 495 pairs north of the Mexican border and another 330 to 530 pairs in Mexico for a total of 680 to 1,025 breeding pairs (U.S. Fish and Wildlife Service 2013).

Yellow-billed cuckoos spend the winter in South America, east of the Andes, primarily south of the Amazon Basin in southern Brazil, Paraguay, Uruguay, eastern Bolivia, and northern Argentina (Ehrlich *et al.* 1992, American Ornithologists Union 1998, Johnson *et al.* 2008b). The species as a whole winters in woody vegetation bordering fresh water in the lowlands to 1,500 m (4,921 ft), including dense scrub, deciduous broadleaf forest, gallery forest, secondary forest, subhumid and scrub forest, and arid and semiarid forest edges (Hughes 1999). Wintering habitat of the western yellow-billed cuckoo is poorly known.

Migration

Little is known about migratory habitat for the western yellow-billed cuckoo. Yellow-billed cuckoos may be found in a variety of vegetation types during migration, including coastal scrub, secondary growth woodland, hedgerows, humid lowland forests, and forest edges from sea level to 8,125 ft (2,500 m)(Hughes 1999). Additionally, during migration they may be found in smaller riparian patches than those in which they typically nest. This variety of vegetation types suggests that the habitat needs of the yellow-billed cuckoo during migration are not as restricted as their habitat needs when nesting and tending young.

Habitat and Life History

Yellow-billed cuckoos forage primarily by gleaning insects from vegetation, but they may also capture flying insects or small vertebrates such as tree frogs and lizards (Hughes 1999). They specialize on relatively large invertebrate prey, including caterpillars (Lepidoptera sp.), katydids (Tettigoniidae sp.), cicadas (Cicadidae sp.), and grasshoppers (Caelifera sp.) (Laymon *et al.* 1997). Minor prey include beetles (Coleoptera sp.), dragonflies (Odonata sp.), praying mantis (Mantidae sp.), flies (Diptera sp.), spiders (Araneae sp.), butterflies (Lepidoptera sp.), caddis flies (Trichoptera sp.), crickets (Gryllidae sp.), wild berries, and bird eggs and young (Laymon *et al.* 1997, Hughes 1999). Prey species composition varies geographically. Their breeding season may be timed to coincide with outbreaks of insect species, particularly tent caterpillars (Hughes 1999, 66 FR 38611) or cicadas (Johnson *et al.* 2007, Halterman 2009). In Arizona, fledging occurred at the peak emergence of cicadas (Rosenberg *et al.* 1982).

In the arid West, these conditions are usually found in cottonwood-willow riparian associations along water courses. The arrival of birds and the timing of nesting are geared to take advantage of any short-term abundance of prey. In years of high insect abundance, western yellow-billed cuckoos lay larger clutches (3-5 eggs rather than two), a larger percentage of eggs produce fledged young, and they breed multiple times (2-3 nesting attempts rather than one)(Laymon *et al.* 1997). Western yellow-billed cuckoo food availability is largely influenced by the health, density, and species of vegetation. Desiccated riparian sites produce fewer suitable insects than healthy moist sites.

Western populations of yellow-billed cuckoos breed in dense riparian woodlands, primarily of cottonwood (Populus fremontii), willow (Salix spp.), and mesquite (Prosopis spp.), along

riparian corridors in otherwise arid areas (Laymon and Halterman 1989, Hughes 1999). Dense undergrowth may be an important factor in selection of nest sites. Occupied habitat in Arizona may also contain box elder (*Acer negundo*), Arizona alder (*Alnus oblongifolia*), Arizona walnut (*Juglans major*), Arizona sycamore (*Platanus wrightii*), oak (*Quercus* spp.), netleaf hackberry (*Celtis reticulata*), velvet ash (*Fraxinus velutina*), Mexican elderberry (*Sambuccus mexicanus*), tamarisk (*Tamarix* spp.; also called salt cedar), and seepwillow (*Baccharis glutinosa*) (Corman and Magill 2000). Surveys conducted by the Arizona Breeding Bird Atlas (Corman and Wise-Gervais 2005) reported 68 percent of the yellow-billed cuckoo observations were in lowland riparian woodlands, often containing a variable combination of Fremont cottonwood, willow, velvet ash, Arizona walnut, mesquite, and tamarisk (Corman and Wise-Gervais 2005). Narrow bands of riparian woodland can contribute to the overall extent of suitable habitat. Adjacent habitat on terraces or in the upland (such as mesquite) can enhance the value of these narrow bands of riparian woodland.

Throughout the western yellow-billed cuckoo range, a large majority of nests are placed in willow trees, but alder (*Alnus* spp.), cottonwood, mesquite, walnut (*Juglans* spp.), box elder, sycamore, netleaf hackberry (*Celtis laevigata* var. *reticulata*), soapberry (*Sapindus saponaria*), and tamarisk are also used (Laymon 1980, Hughes 1999, Corman and Magill 2000 , Corman and Wise-Gervais 2005, Holmes *et al.* 2008). Tamarisk is also a riparian species that may be associated with breeding under limited conditions; western yellow-billed cuckoo will sometimes build their nests and forage in tamarisk, but there is usually a native riparian tree component within the occupied habitat (Gaines and Laymon 1984, Johnson *et al.* 2008a).

Western yellow-billed cuckoos reach their breeding range later than most other migratory breeders, often in June (Rosenberg *et al.* 1982). They construct an unkempt stick nest on a horizontal limb in a tree or large shrub. Nest height ranges from 4 ft to (rarely) 100 ft, but most are typically below 30 ft (Hughes 1999). The incubation period for the western yellow-billed cuckoo is 9 to 11 days, and young leave the nest at 7 to 9 days old. Although other species of cuckoos are often or always brood parasites of other birds, yellow-billed cuckoos do so only infrequently, possibly in response to high food resources that allow rapid egg production (Fleischer *et al.* 1985). Nesting usually occurs between late June and late July, but can begin as early as late May and continue until late September (Hughes 1999). In a study on the lower Colorado River, three nests were estimated to have first fledged young during August 25 to 28 had they not failed. If these nests had successfully fledged young, the birds may still have been present at their respective breeding sites at least until September 15 to 18 (previously discussed in McNeil *et al.* 2012).

The western yellow-billed cuckoo primarily breeds in riparian habitat along low-gradient (surface slope less than 3%) rivers and streams, and in open riverine valleys that provide wide floodplain conditions (greater than 325 ft [100 m]). In the southwest, it can also breed in narrower reaches of riparian habitat. Within the boundaries of the distinct population segment (DPS)(see Figure 2 at 78 FR 61631,) these riparian areas are located from southern British Columbia, Canada, to southern Sinaloa, Mexico, and may occur from sea level to 7,000 ft (2,154 m)(or slightly higher in western Colorado, Utah, and Wyoming) in elevation. The moist conditions that support riparian plant communities that provide western yellow-billed cuckoo habitat typically exist in lower elevation, broad floodplains, as well as where rivers and streams

enter impoundments. In southeastern Arizona, however, cuckoos were often found nesting along intermittent drainages with dense stands of velvet mesquite and netleaf hackberry (Corman and Wise-Gervais 2005, Arizona Game and Fish Department 2011). Yellow-billed cuckoos are infrequently encountered along higher mountain drainages where Arizona sycamore or Arizona alder are the dominant riparian species. Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where the species has been studied in California U.S. Fish and Wildlife Service 2001). In the extreme southern portion of their summer range in the States of Sonora (southern quarter) and Sinaloa, Mexico, western yellow-billed cuckoos also nest in upland thorn scrub and dry deciduous habitats away from the riparian zone (Russell and Monson 1998), though their densities are lower in these habitats than they are in adjacent riparian areas.
At the landscape level, the available information suggests the western yellow-billed cuckoo requires large tracts of willow-cottonwood or mesquite forest or woodland for their nesting season habitat. Habitat can be relatively dense, contiguous stands, irregularly shaped mosaics of dense vegetation with open areas, or narrow and linear.

Canopy cover directly above the nest is generally dense and averages 89 percent and is denser at the South Fork Kern River (93 percent) and Bill Williams River (94 percent) than at the San Pedro River (82 percent). Canopy closure in a plot around the nest averages 71 percent and was higher at the Bill Williams River (80 percent) than at the South Fork Kern River (74 percent) or San Pedro River (64 percent) (Laymon *et al.* 1997, Halterman 2003, Halterman 2004, Halterman 2005, Halterman 2006).

The optimal size of habitat patches for the species are generally greater than 200 ac (81 ha) and have dense canopy closure and high foliage volume of willows and cottonwoods (Laymon and Halterman 1989) and thus provide adequate space for foraging and nesting. Tamarisk, a nonnative tree species, may be a component of the habitat, especially in Arizona and New Mexico. Sites with a monoculture of tamarisk are unsuitable habitat for the species. The association of breeding with large tracts of suitable riparian habitat is likely related to home range size. Individual home ranges during the breeding season average over 100 ac (40 ha), and home ranges up to 500 ac (202 ha) have been recorded (Laymon and Halterman 1987, Halterman 2009, Sechrist *et al.* 2009, McNeil *et al.* 2011, McNeil *et al.* 2012).

In addition to the dense nesting grove, western yellow-billed cuckoos need adequate foraging areas near the nest. Foraging areas can be less dense or patchy with lower levels of canopy cover and often have a high proportion of cottonwoods in the canopy. Optimal breeding habitat contains groves with dense canopy closure and well-foliaged branches for nest building with nearby foraging areas consisting of a mixture of cottonwoods, willows, or mesquite with a high volume of healthy foliage (U.S. Fish and Wildlife Service 2013).

Riparian habitat is dynamic, and species may move from one area to another over time. Western yellow-billed cuckoos may nest at more than one location in a year. Some individuals also roam widely (several hundred miles); apparently assessing food resources before selecting a nest site (Sechrist *et al.* 2012).

During movements between nesting attempts western yellow-billed cuckoos are found at riparian sites with small groves or strips of trees, sometimes less than 10 ac (4 ha) in extent (Laymon and Halterman 1989). These stopover and foraging sites can be similar to breeding sites, but are smaller, narrower, and lack understory vegetation when compared to nesting sites.

Habitat for the western yellow-billed cuckoo is largely associated with perennial rivers and streams that support the expanse of vegetation characteristics needed by breeding western yellow-billed cuckoos. The range and variation of stream flow frequency, magnitude, duration, and timing that will establish and maintain western yellow-billed cuckoo habitat can occur in different types of regulated and unregulated flows depending on the interaction of the water and the physical characteristics of the landscape (Poff *et al.* 1997; U. S. Fish and Wildlife Service 2002, 78 FR 61622).

Hydrologic conditions at western yellow-billed cuckoo breeding sites can vary widely between years. At some locations during low rainfall years, water or saturated soil is not available. At other locations, particularly at reservoir inlets, riparian vegetation can be inundated for extended periods in some years and be totally dry in other years. This is particularly true of reservoirs like Lake Isabella in California, Roosevelt and Horseshoe Reservoirs in Arizona, and Elephant Butte Reservoir in New Mexico, all of which have relatively large western yellow-billed cuckoo populations. This year-to-year change in hydrology can affect food availability and habitat suitability for western yellow-billed cuckoos. In some areas, managed hydrologic cycles above or below dams can create temporary western yellow-billed cuckoo habitat, but may not be able to support it for an extended time, or may support varying amounts of habitat at different points of the cycle and in different years. Water management operations create varied situations that allow different plant species to thrive when water is released below a dam, held in a reservoir, or removed from a lakebed, and consequently, varying amounts of western yellow-billed cuckoo habitat are available from month to month and year to year as a result of dam operations. During wet years, habitat within a lake and below a dam can be flooded for extended periods and stressed or killed. During dry years, habitat can be desiccated and stressed or killed because of lack of water (Poff *et al.* 1997, Greco 1999, National Academy of Sciences 2002; U. S. Fish and Wildlife Service 2002, 78 FR 61622).

Humid conditions created by surface and subsurface moisture appear to be important habitat parameters for western yellow-billed cuckoo. The species has been observed as being restricted to nesting in moist riparian habitat in the arid West because of humidity requirements for successful hatching and rearing of young (Hamilton and Hamilton 1965, Gaines and Laymon 1984, Rosenberg *et al.* 1991). Western yellow-billed cuckoos have evolved larger eggs and thicker eggshells, which would help them cope with potentially higher egg water loss in the hotter, dryer conditions (Hamilton and Hamilton 1965, Ar *et al.* 1974, Rahn and Ar 1974). A study on the South Fork Kern River showed that lower temperatures and higher humidity were found at nest sites when compared to areas along the riparian forest edge or outside the forest (Launer *et al.* 1990). Recent research on the lower Colorado River has confirmed that western yellow-billed cuckoo nest sites had significantly higher daytime relative humidity (6–13% higher) and significantly lower daytime temperatures (2–4o F [1–2o C] lower) than average forested sites (McNeil *et al.* 2011, McNeil *et al.* 2012).

Subsurface hydrologic conditions are equally important to surface water conditions in determining riparian vegetation patterns. Depth to groundwater plays an important part in the distribution of riparian vegetation and western yellow-billed cuckoo habitat. Where groundwater levels are elevated so riparian forest trees can access the water, habitat for nesting, foraging, and migrating western yellow-billed cuckoos can develop and thrive. Goodding's willows (*Salix gooddingii*) and Fremont cottonwoods do not regenerate if the groundwater levels fall below 6 ft (2 m)(Shafroth *et al.* 2000). Goodding's willows cannot survive if groundwater levels drop below 10 ft (3 m), and Fremont cottonwoods cannot survive if groundwater drops below 16 ft (5 m)(Stromberg *et al.* 1996). Abundant and healthy riparian vegetation decreases and habitat becomes stressed and less productive when groundwater levels are lowered (Stromberg *et al.* 1996).

The abundance and distribution of fine sediment deposited on floodplains is critical for the development, abundance, distribution, maintenance, and germination of trees in the riparian zone that become western yellow-billed cuckoo habitat. These sediments become seedbeds for germination and growth of the riparian vegetation upon which western yellow-billed cuckoos depend. These sediments must be accompanied by sufficient surface moisture for seed germination and sufficient ground water levels for survival of seedlings and saplings (Stromberg 2001). The lack of hydrologic processes, which deposit such sediments, may lead riparian forested areas to senesce and become degraded and unable to support the varied vegetative structure required for western yellow-billed cuckoo nesting and foraging.

Arizona

At present, it appears that the State's population could be as low as 170 pairs of yellow-billed cuckoos, and probably does not exceed 250 pairs. The population of the western yellow-billed cuckoo in Arizona is the largest in the United States (U.S. Fish and Wildlife Service 2013).

The yellow-billed cuckoo was historically widespread and locally common in Arizona (Phillips *et al.* 1964, Groschupf 1987). Although Arizona probably contains the largest remaining western yellow-billed cuckoo population among states west of the Rocky Mountains, the population has reportedly declined significantly in distribution and abundance over the past 80 years (Corman and Wise-Gervais 2005). During Arizona Breeding Bird Atlas surveys, nesting birds were found to be concentrated in western, central, and southeastern Arizona. According to Corman and Wise-Gervais (2005), western yellow-billed cuckoos were found along most of the 25 drainages where they were reported historically, but they are now much more local in distribution. It is believed that the San Pedro River likely sustains the largest single remaining population of yellow-billed cuckoos (Brand *et al.* 2009).

A 1976 study based on existing habitat and known yellow-billed cuckoo population densities estimated 846 pairs were present on the lower Colorado River and its five major tributaries in Arizona (Groschupf 1987). In a statewide survey in 1999 that covered 265 mi (426 km) of river and creek bottoms, 172 yellow-billed cuckoo pairs and 81 single birds were located in Arizona (Corman and Magill 2000). Yellow-billed cuckoo populations greater than 10 pairs are found at 12 locations in Arizona: Bill Williams River, Colorado River, Gila River, Upper Cienega Creek, Hassayampa River, San Pedro River, Santa Maria River, Verde River, Sonoita Creek, Santa Cruz

River, Altar Valley, and Agua Fria River. Sites with smaller populations are found at the Roosevelt Lake complex, Upper Tonto Creek, Pinto Creek, Sycamore Creek in Pajarito Mountains, Oak Creek, Lower Cienega Creek, Babocomari River, Pinal Creek, Bonita Creek, San Bernardino National Wildlife Refuge (NWR), Hooker Hot Springs, Big Sandy River, and many smaller drainages. However, many drainages have not been thoroughly surveyed and it is likely that some additional yellow-billed cuckoo locations will be discovered. These include, but are not limited to the mountain ranges of southeastern Arizona, Eagle Creek, and along the Gila, San Francisco, and Blue Rivers. Yellow-billed cuckoo sightings reported by birders between 15 June and 31 August, 1998 to 2012, in more than one year in southeastern Arizona mountain ranges include Walker, Madera, and Montosa canyons in the Santa Rita Mountains; Carr Canyon, Ash Canyon, Garden Canyon, Ramsey Canyon, and Miller Canyon in the Huachuca Mountains; Scotia Canyon and Sycamore Canyon in the Atascosa/Pajarito Mountains; French Joe Canyon in the Whetstone Mountains; Kitt Peak on Baboquivari Mountain; Harshaw Canyon and Paymaster Spring in the Patagonia Mountains; and a few locations in the Chiricahua Mountains (Cornell Laboratory of Ornithology 2012). Yellow-billed cuckoos are breeding in at least some of these locations, with nesting confirmed at Sycamore Canyon (AGFD, unpublished data).

Threats

The western yellow-billed cuckoo is threatened by two of the five threat factors evaluated (A and E).

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Within the three States with the highest historical number of yellow-billed cuckoo pairs, past riparian habitat losses are estimated to be about 90 to 95 percent in Arizona, 90 percent in New Mexico, and 90 to 99 percent in California (Ohmart 1994, U.S. Department of Interior 1994, Noss *et al.* 1995, Greco 2008).

The primary threat to the western yellow-billed cuckoo is loss or fragmentation of high-quality riparian habitat suitable for nesting (Corman and Wise-Gervais 2005). Habitat loss and degradation from several interrelated factors include alteration of flows in rivers and streams, encroachment into the floodplain from agricultural and other development activities, stream channelization and stabilization, diversion of surface and ground water for agricultural and municipal purposes, livestock grazing, wildfire, establishment of nonnative vegetation, drought, and prey scarcity due to pesticides (Ehrlich *et al.* 1992, Wiggins 2005, 78 FR 61622). Drought and prey scarcity (especially the loss of sphinx moth caterpillars to pesticides in the West) appear to play a role in yellow-billed cuckoo declines even where suitable nesting habitat remains (Ehrlich *et al.* 1992). These factors also contribute to fragmentation and promote conversion to nonnative plant species and increased incidence of wildfire (Krueper 1993; U. S. Fish and Wildlife Service 2001, 78 FR 61622). A potential factor contributing to declines across the species' range in North America is the loss of forested habitat on its wintering grounds in South America where little is known of its ecology or distribution (Ehrlich *et al.* 1992). The threats affecting western yellow-billed cuckoo habitat are ongoing. Such a loss of riparian habitat leads

not only to a direct reduction in yellow-billed cuckoo numbers but also leaves a highly fragmented landscape, which can reduce breeding success through increased predation rates and barriers to dispersal by juvenile and adult yellow-billed cuckoos U.S. Fish and Wildlife Service 2013).

Factor E. Other Natural or Manmade Factors Affecting Its Continued Existence

Factor E threats, including habitat rarity and small, isolated populations of the western yellow-billed cuckoo, cause the remaining populations in western North America to be increasingly susceptible to further declines through lack of immigration, chance weather events, fluctuating availability of prey populations, pesticides, collisions with tall vertical structures during migration, spread of the introduced tamarisk leaf beetle (*Diorhabda* spp.) as a biocontrol agent in the Southwest, and climate change. The ongoing threat of small overall population size leads to an increased chance of local extirpations through random events (Thompson 1961, McGill 1975, Wilcove *et al.* 1986).

Habitat for the western yellow-billed cuckoo has been modified and curtailed, resulting in only remnants of formerly large tracts of native riparian forests, many of which are no longer occupied by western yellow-billed cuckoos. Despite recent efforts to protect existing, and restore additional, riparian habitat in the Sacramento, Kern, and Colorado Rivers, and other rivers in the range of the western yellow-billed cuckoo, these efforts offset only a small fraction of historical habitat that has been lost. Therefore, we expect the threat resulting from the combined effects associated with small and widely separated habitat patches to continue to affect a large portion of the range of the western yellow-billed cuckoo. This threat is particularly persistent where small habitat patches are in proximity to human-altered landscapes, such as near agricultural fields that dominate the landscape in many areas where the western yellow-billed cuckoo occurs. As a result, the potential exists for pesticides to directly affect (poisoning individual cuckoos) and indirectly affect (reducing the prey base) a large portion of the species. These effects could ultimately result in lower population abundance and curtailment of its occupied range. Mortality from collisions with tall structures is also an ongoing, but largely unquantified effect. We recognize that climate change is a critical issue with potentially severe wide-ranging effects on the species and its habitat. The available scientific literature suggests that the effects of climate change will likely exacerbate multiple existing threats to the western yellow-billed cuckoo and its habitat.

Proposed Critical Habitat

Critical habitat units have been proposed in Arizona, California, Colorado, Idaho, New Mexico, Nevada, Texas, Utah, Wyoming totaling 242,859 acres. Within these areas, the primary constituent elements of the physical or biological features essential to the conservation of western yellow-billed cuckoo consist of three components:

1. *Riparian woodlands.* Riparian woodlands with mixed willow cottonwood vegetation, mesquite-thorn forest vegetation, or a combination of these that contain habitat for nesting and foraging in contiguous or nearly contiguous patches that are greater than 325 feet (100 meters) in width and 200 acres (81 hectares) or more in extent. These habitat patches contain one or more nesting groves, which are generally willow-dominated, have above average

canopy closure (greater than 70 percent), and have a cooler, more humid environment than the surrounding riparian and upland habitats.

2. *Adequate prey base.* Presence of a prey base consisting of large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers, large beetles, dragonflies) and tree frogs for adults and young in breeding areas during the nesting season and in post-breeding dispersal areas.

3. *Dynamic riverine processes.* River systems that are dynamic and provide hydrologic processes that encourage sediment movement and deposits that allow seedling germination and promote plant growth, maintenance, health, and vigor (e.g. lower gradient streams and broad floodplains, elevated subsurface groundwater table, and perennial rivers and streams). This allows habitat to regenerate at regular intervals, leading to riparian vegetation with variously aged patches from young to old. These dynamic riverine processes are considered essential for developing and maintaining the primary constituent elements as described above for Riparian Woodlands and Adequate Prey Base.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Description of the Action Area

The action area for this BO is defined as a one-mile buffer on either side of the centerline of the Agency Preferred Alternative in the New Build Section and a 500-foot corridor (200 feet off of the existing 100-foot-wide ROW) (see BO Figure 1) in the Upgrade Section, as well as any identified substations, staging areas, or access roads outside those corridors.

The New Build Section of the proposed project would be located within the Mexican Highland Subprovince of the Basin and Range Physiographic Province. This area is characterized by numerous elongated, subparallel mountain ranges and intervening broad alluvial basins that formed during Late Cenozoic extension. The Upgrade Section of the proposed project would be located in the eastern edge of the Sonoran Desert Subprovince of the Basin and Range Physiographic Province. This area is dominated by basins filled with sediments separated by uplifted mountain blocks. Major basins include the Avra Valley, Tucson Basin, San Pedro Valley, and Willcox Playa (Trapp and Reynolds 1995). The San Pedro River drains the San Pedro Basin. Mountain ranges include the Tucson Mountains, west of Tucson; the Tortolita Mountains, northwest of Tucson; the Santa Catalina Mountains, northeast of Tucson; and the Rincon Mountains, east of Tucson.

The proposed project would cross six biotic communities of the Southwest (Brown and Lowe 1980), including Semidesert Grassland, Chihuahuan Desertscrub, Playa, Arizona Upland

Subdivision of Sonoran Desertscrub, Lower Colorado River Subdivision of Sonoran Desertscrub, and Madrean Evergreen Woodland.

Status and Factors Affecting the Species and Critical Habitat Within the Action Area

Lesser Long-Nosed Bat

Within the action area there are no known lesser long-nosed bat roost locations. Most records for this species in the United States are from mine or cave roosts (Findley *et al.* 1975, Hoffmeister 1986) and there are multiple roost locations within 40 miles of the action area in Hidalgo, Cochise, Pima, and Pinal counties in route groups 2, 3, and 4 (BO Figure 1). As lesser long-nosed bats are capable of foraging up to 40 miles one way from roost locations each night, it is assumed that the species could be present anywhere along the proposed project in route groups 2–4 where suitable foraging plants are present, and in urban areas where landscape plantings and hummingbird feeders provide a food source for the species. Individuals have been detected in Grant County, New Mexico, north of the project area (M. Ramsey, personal communication), and additional unknown roosts may be present within or near the action area.

Foraging Habitat in the Action Area

Forage plants utilized by lesser long-nosed bats are not uniformly distributed across the landscape in the action area. Saguaro (*Carnegiea gigantea*), *Agave palmeri*, and *Agave chrysantha* are common forage plants in the action area. *Agave parryi* may be found at higher elevations (Kearney and Peebles (1960) describe *Agave parryi* as occurring in Cochise and Pima counties at 4,500 to 8,000 feet). The distribution of saguaro includes the western portion of the action area from the San Pedro Valley extending west to the beginning of developed agricultural lands north of the Tucson Mountains (Shreve and Wiggins 1964). Slauson (2000) mapped the distribution of the lesser long-nosed bat relative to the distribution of *Agave palmeri* and *Agave chrysantha*, indicating the distribution of *A. chrysantha* in the western portion of action area, including the Winchester, Galiuro, Little Rincon, Rincon, and the north side of the Catalina Mountains. Slauson (2000) also indicates the distribution of *Agave palmeri* in the project area from approximately the Arizona-New Mexico state line west to the south end of the Rincon Mountains. Gentry (1982) indicates the distribution of *Agave palmeri* to include Hidalgo and Grant counties south of the Gila River and extreme western Luna County in Southwestern New Mexico in addition to southern Arizona, including portions of the action area. Shreve and Wiggins (1964) describe the saguaro as occurring on gravelly slopes, rocky ridges and outwash fans, the *Agave palmeri* as occurring on rocky hillsides and mesas, and *Agave chrysantha* occurring on arid foothills and mountain slopes. As described by Howell and Roth (1981), and others, *Agave palmeri* is patchily distributed. Ober *et al.* (2005) report variability between years in abundance of agave inflorescences and variation in calculated home ranges of radio telemetered lesser long-nosed bats as food resources varied. Ober *et al.* (2005) found that lesser long-nosed bats would change foraging areas upon cessation of agave nectar production and would vary activity patterns by increasing time spent foraging in periods of reduced forage availability, noting a change from a mean of 2.3 hours per night spent foraging in a relatively good year to 5.1 hours per night the following year when *Agave* inflorescences were less abundant. Since *Agave* plants die after flowering there is likely to be inter-annual variability of

availability of *Agave* nectar, which is further confounded by variability in precipitation affecting *Agave* reproduction and growth. Lesser long-nosed bats forage over large areas in response to food availability both between and within years.

Forage plants for the species include columnar cacti and paniculate agaves, which could be removed or trimmed during construction activities and as needed during maintenance. Lesser long-nosed bat foraging habitat is found predominately in the rebuild section of the project. The existing Saguaro-Tucson and Tucson-Apache 115 kV transmission lines that would be upgraded have been in place since the 1950s on a 100-foot ROW and vegetation within the ROW has been maintained to comply with conductor to vegetation clearance standards on an as needed basis. From the Saguaro Substation to the Tucson Substation saguaros are generally found in foothill and mountainous areas although individual plants can occur on the valley floor. More specifically, saguaros occur as individuals or in groups of 2-3 from Twin Peaks Road to Silverbell Road and west of Silverbell Road in undeveloped areas. From the Tucson Substation eastward Saguaros occur as scattered individuals from Silverbell Road to Anklam Road, across the Tumamoc Hill property to Starr Pass Boulevard, and in open areas to Ajo Way. From Ajo Way to Mission Road the existing line to be replaced is a very high span from Ajo Way to the top of a ridge in Tucson Mountain Park then down again as a high span, with clumps of saguaro occurring west of Mission Road. From Swan Road to Wentworth Road saguaros occur as scattered individuals. Because of the scattered nature of saguaro distribution impacts to foraging habitat will be localized. Paniculate agaves are localized in hilly terrain east of Highway 83 to Apache Substation. Impacts to saguaros and paniculate agaves may occur from offsetting the ROW for the rebuild section to allow construction while maintaining service on the existing lines and from vegetation maintenance along the rebuilt transmission line.

In the new build section of the project, impacts to lesser long-nosed bat paniculate agave based foraging habitat are most likely where the route crosses mountainous terrain, particularly crossing the Peloncillo Mountains, east to the Hidalgo Substation.

Mexican Long-nosed Bat

Within the action area there are no known Mexican long-nosed bat roost locations. However, there are multiple roost locations in the boot heel of New Mexico that the species utilizes along with the lesser long-nosed bat within 40 miles of the project area. The nearest known roost location is approximately 10 miles south of the proposed project area along segment LD4. Because Mexican long-nosed bats are capable of foraging up to 40 miles one way from day roost locations each night, it is assumed that the species could be present anywhere along the preferred alternative in route groups 1 and 2 (BO Figure 1) where suitable forage plants (agaves) are present, and in urban areas where landscape plantings and hummingbird feeders provide a food source for the species. Individuals have been detected in Grant County, New Mexico, north of the project area (M. Ramsey, personal communication), and additional unknown roosts may be present within or near the action area. See discussion of agave foraging habitat in the action area under lesser long-nosed bat.

Pima Pineapple Cactus

The portions of the action area that could support the Pima pineapple cactus are, generally, from the area of the Pantano Substation, between Cienega Creek and Davidson Canyon and the area of Del Bac Substation, near Interstate 19 and Valencia Road. Roller (1996) mapped the known distribution of Pima pineapple cacti, locating the species in the vicinity of Vail north and south of Interstate 10 and east and west of State Route 83 and west of Interstate 19 south of Tucson. Baker (2006b) surveyed lands along a portion of the proposed project route and modelled predicted habitat based on sightings of Pima pineapple cacti. Based on Baker (2006b) polygons within 500 meters of known individual Pima pineapple cacti and of predicted habitat overlay the proposed project route. Pima pineapple cacti have been found in the vicinity of the Nogales Substation within the area of the proposed project (Johnida Dockens, Pers. Comm.).

Southwestern Willow Flycatcher

Within the action area at the proposed crossings of the San Pedro River and Cienega Creek, there is no southwestern willow flycatcher nesting habitat. These areas lack a permanent or semi-permanent water source and water is likely only present in the area as a result of precipitation events. A review of Google Earth images of the proposed crossing of the San Pedro River for November 14, 1992, May 31, 1996, October 5, 2002, September 20, 2003, December 22, 2005, October 1, 2006, June 20, 2007, May 23, 2009, September 9, 2010, April 29, 2011, and June 11, 2011 showed water in the river channel only on October 1, 2006. A review of Google Earth images of the proposed crossing of Cienega Creek for November 14, 1992, May 31, 1996, September 20, 2003, May 30, 2005, June 15, 2006, June 20, 2007, September 9, 2010, and June 11, 2011 showed no water in the creek channel.

No southwestern willow flycatcher designated critical habitat is present in the action area. Critical habitat is found along the San Pedro River approximately 10 airline miles north (downstream) of the proposed project area and along Cienega Creek approximately 4.9 airline miles south (upstream) of the proposed project area.

The proposed crossing of the San Pedro River floodplain is approximately 850 feet wide, including an open, active, channel approximately 100 feet wide. A stand of salt cedar (*Tamarix ramossisma*) occurs on the west-side floodplain. There is a density gradient within the stand with the densest areas of salt cedar occurring on the western edge of the floodplain on a point bar, extending approximately 400 feet to the east. The eastern bank of the San Pedro River channel is a high cut bank with little streambank vegetation. Velvet mesquite (*Prosopis velutina*)–dominated shrublands occur east of the eastern bank. The proposed crossing lacks a permanent or semi-permanent source of water or saturated soils that are typically found in areas utilized by southwestern willow flycatcher for breeding, but the area provides migratory and foraging habitat for southwestern willow flycatcher.

At the proposed crossing of Cienega Creek, the active, open, channel of the creek is approximately 215 feet wide with a band of velvet mesquite trees on the west bank approximately 40-45 feet wide. The proposed crossing lacks a permanent or semi-permanent source of water or saturated soils that are typically found in areas utilized by southwestern

willow flycatcher for breeding but the area provides migratory and foraging habitat for southwestern willow flycatcher.

The proposed crossings of the Santa Cruz River occur within urban habitats and are generally in areas of limited to no riparian vegetation that are not habitat for the species. In areas where riparian vegetation is present within the project area, habitat may be suitable for migrating southwestern willow flycatchers. In the Saguaro Substation-Tucson Substation segment within the action area, the proposed project route parallels riparian habitat, supported by sewage effluent, including a total of approximately 2.5 linear miles of project length, between El Camino del Cerro and Ina Road, east of Silverbell Road. However, there are no records of the species from the Santa Cruz River in the action area.

No southwestern willow flycatcher populations are known in the action area in New Mexico.

Northern Mexican Gartersnake

Northern Mexican gartersnakes were historically found in most permanent rivers and streams in southern and central Arizona, including Cienega Creek and the San Pedro River. Vegetation and habitat conditions at the proposed crossings of the San Pedro River and Cienega Creek are described under southwestern willow flycatcher above. Habitat at the proposed crossings of the San Pedro River and Cienega Creek does not include perennial or semi-permanent aquatic habitat (see discussion of water in the stream under southwestern willow flycatcher above). The project area is considered occupied because the project area crosses proposed critical habitat (78 FR 41558). We anticipate that individuals occur intermittently in the project area when dispersing to areas with perennial water or when prey are conspicuously present in the project area. Most use by individuals would be in the riparian area, but some use may occur outside the riparian area within the dryer terrestrial habitat. Within the San Pedro River and Cienega Creek, northern Mexican gartersnakes are more likely to occur in those areas with appropriate prey species (native fish) and less likely to occur in areas with non-native predators/competitors (bullfrogs, spiny-rayed fish).

The FWS is proposing critical habitat for this species along both Cienega Creek and the San Pedro River (78 FR 41549) in areas that would be crossed by the proposed project. The proposed project would cross proposed critical habitat in the Cienega Creek Subbasin Critical Habitat Unit and the San Pedro River Subbasin Critical Habitat Unit.

Yellow-billed Cuckoo

No species-specific surveys have been conducted for yellow-billed cuckoo for the purposes of this proposed project. However, the yellow-billed cuckoo is known from the San Pedro River to the south and north of the action area (79 FR 48565). The San Pedro River at the proposed crossing location is approximately 850 feet wide with a thick stand of saltcedar (*Tamarix* sp.) trees in the channel and velvet mesquite (*Prosopis velutina*)–dominated shrublands on the eastern bank. This area lacks a permanent or semi-permanent water source and water is likely only present in the area as a result of precipitation events. The riparian vegetation in this area lacks the multiple layers of canopy and subcanopy and well developed understory preferred as

breeding habitat by the yellow-billed cuckoo. Also lacking are the native tree species that are important components to breeding habitat. Foraging and migratory habitat in the form of sparse riparian deciduous and upland mesquite vegetation is present at the proposed crossing of the San Pedro River and Cienega Creek. Large blocks of riparian vegetation utilized by the species for breeding are not present in the project area, but the area along Cienega Creek downstream are consistently used for breeding (79 FR 48565).

The proposed crossings of the Santa Cruz River occur within urban habitats and are generally in areas of limited to no riparian vegetation that are not habitat for the species. In areas where riparian vegetation is present within the project area, habitat may be suitable for migrating yellow-billed cuckoo. There are records of the species from the Santa Cruz River near the study area, but no records of breeding.

No yellow-billed cuckoo populations are known in the study area in New Mexico, but the species could occur where the Gila River watershed overlaps with the study area. Thus some individual birds could follow drainages within the study area during migration.
The San Pedro River is not a regulated river but flows are subject to depletion through groundwater pumping. Entrenchment of the upper San Pedro and deposition of alluvium downstream has altered the river from the pre-settlement period, apparently due to historic heavy livestock use and flooding (Hereford 1993). These factors constrain development of physical and biological features of habitat for yellow-billed cuckoo. The San Pedro River from San Manuel upstream to St. David has not been well surveyed for yellow-billed cuckoo and much of it is private land. However, suitable habitat exists in this reach. Yellow-billed cuckoos are documented at the Three Links conservation property approximately 12 miles north of the proposed project crossing. Although the number of breeding territories at the Three Links site is unknown, repeated yellow-billed cuckoo detections a) during at least 2 of 3 southwestern willow flycatcher survey periods in 2004, 2005, 2006, 2008, 2009, 2010, 2011, and 2013 and b) during yellow-billed cuckoo breeding season playback surveys in 2012 and 2013 indicate a breeding population exists (Tucson Audubon, unpublished data; USBR, unpublished data). The area beginning approximately nine miles south of the proposed project crossing and extending southward is one of the largest remaining breeding groups of the western yellow-billed cuckoo and is consistently occupied by a large number of pairs (79 FR 48563).

Proposed critical habitat occurs in lower Cienega Creek in Unit 38. There is very little habitat for cuckoos within this area, but portions of Unit 38 downstream of the project area are consistently occupied by cuckoos during the breeding season (79 FR 48565).

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Emergency maintenance may be needed during the life of the permit in order continue transmission of power. This may include repair of transmission lines or repair or replace damaged equipment. Effects to habitat will be the same as the installation and regular maintenance of the transmission line. Emergency actions may occur during breeding seasons, which may affect migrating or foraging individuals, which are addressed for each species.

While changes to vegetation and water availability may occur during the 50-year life of the permit, we do not expect these changes to be substantial so the condition of the action area will not change substantially for the species addressed, e.g., breeding habitat for riparian species will not develop where there is no breeding habitat now. Climate change will continue to limit increases in water flow, riparian vegetation development, and, possibly, upland vegetation development, and maintenance activities will continue to limit development of large trees along the line.

Lesser Long-Nosed Bat

There are no known mines, caves, or lesser long-nosed bat roost sites within the action area. The nearest known lesser long-nosed bat roost site is approximately 10 miles from the proposed project. As such, no impacts on known roost sites or individual bats at roost sites from the proposed project are anticipated. Recent ongoing research has detected additional roosts in southern Arizona and New Mexico, and other roosts may be present and undetected thus far.

Potential impacts on the lesser long-nosed bat from the proposed project would include the loss or alteration of suitable foraging habitat. Forage plants for the species, including columnar cacti and paniculate agaves, would be removed or trimmed during construction activities and as needed during maintenance. Approximately 1,084 acres of disturbance would occur to vegetation communities where suitable forage plants for the lesser long-nosed bat would be present in route groups 2–4 (BO Figure 1). This would be approximately 25 percent of the 4,270 acres of available habitat within the proposed ROW and less than 2 percent of the approximately 68,856 acres of available habitat within the action area (500-foot -wide corridor on rebuild and 2-mile-wide corridor on new build).

As forage plants are not present throughout the entire area to be disturbed, the total area of lesser long-nosed bat foraging habitat impacted would be less than the area of disturbance. Within the area to be disturbed, areas with saguaros (*Carnegiea gigantea*) and paniculate agaves would be avoided where possible. Where removal of these plants would be required they would be transplanted outside of the area of ground disturbance and would be used in reclamation activities. Agave and saguaros would be augmented as necessary to achieve a goal of no net loss of mature flowering plants. Mortality of some plants would be expected during transplanting operations and, despite mitigation, a temporary loss of foraging plants would occur during the establishment of salvaged and additional agaves and saguaros used to achieve no net loss of mature flowering plants. Foraging by lesser long-nosed bats would continue in the general area at current levels because of the relatively small area of forage that will be affected.

Mexican Long-nosed Bat

There are no known mines, caves, or Mexican long-nosed bat roost sites within the ROW for the proposed project. The nearest known Mexican long-nosed bat roost site is approximately 10 miles from the proposed project. As such, no impacts on known roost sites or individual bats from the proposed project are anticipated. Recent ongoing research has detected additional roosts in southern Arizona and New Mexico, and other roosts may be present and undetected thus far.

Potential impacts on the Mexican long-nosed bat from the proposed project would include the loss or alteration of suitable foraging habitat and potential noise and vibration impacts. Forage plants for the species, including columnar cacti and paniculate agaves, would be removed or trimmed during construction activities and as needed during maintenance. Approximately 509 acres of disturbance would occur in vegetation communities where suitable forage plants for the Mexican long-nosed bat are present in route groups 1 and 2. This would be approximately 23 percent of the 2,215 acres of available habitat within the proposed ROW. As foraging plants are not present throughout the entire area to be disturbed, the total area of Mexican long-nosed bat foraging habitat impacted would be less than the area of disturbance. Within the area to be disturbed, areas with paniculate agaves would be avoided where possible. Where removal of these plants would be required, they would be transplanted outside of the area of ground disturbance and used in reclamation activities. Agave and saguaros would be augmented as necessary to achieve a goal of no net loss of mature flowering plants. Mortality of some plants would be expected during transplanting operations and, despite mitigation, a temporary loss of foraging plants would occur while salvaged and additional agaves and saguaros used to achieve no net loss of mature flowering plants become established. Foraging by Mexican long-nosed bats would continue in the general area at current levels because of the relatively small area of forage that will be affected.

Pima Pineapple Cactus

Potential impacts on the Pima pineapple cactus from the proposed project include direct loss of individual plants and changes to habitat from the establishment and spread of invasive plants. Ground disturbance to Pima pineapple cactus habitat would occur during the construction phase of the proposed project from the construction of new access roads, pulling and tensioning sites, and structure work areas. Ground disturbance may directly affect the Pima pineapple cactus through direct loss of individual plants and may indirectly affect the species by facilitating the establishment and spread of invasive plant species. Ground disturbance would occur on approximately155 acres of Pima pineapple cactus habitat within the project ROW. This would be approximately 28 percent of the 554 acres of habitat within the 150-foot-wide ROW and 8 percent of the approximately 1,845 acres of habitat in the 500-foot-wide action area. Ground-disturbing activities could lead to increased establishment and spread of invasive plant species, which can compete with the Pima pineapple cactus for space and resources and could modify fire regimes in habitat that could lead to increased mortality for the species and degradation of habitat. Measures to minimize the establishment and spread of invasive plant species would minimize the potential for indirect effects on the Pima pineapple cactus from the proposed project. Effects to individuals will be minimized through implementation of conservation

measures, including purchasing credits in a FWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of disturbance to Pima pineapple cactus habitat; flagging individuals prior to the commencement of work to avoid accidental damage during construction; and relocating any Pima pineapple cactus that cannot be avoided, if possible.

Southwestern Willow Flycatcher

Nesting habitat for the southwestern willow flycatcher is not currently present at the proposed crossings of the San Pedro River, Santa Cruz River, or Cienega Creek. Surface water at the proposed crossings is present ephemerally and only in response to precipitation events. We do not expect that the conditions at these crossings will change during the life of the permit. Thus, no impacts from the proposed project on nesting southwestern willow flycatchers are anticipated.

Habitat at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River is suitable for foraging and migrating southwestern willow flycatchers. Construction activities would avoid ground disturbance and would not place structures or access roads in riparian woodlands. The areas with riparian woodland vegetation would be spanned by the proposed transmission line. All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of southwestern willow flycatchers.

Vegetation within the ROW would be managed to maintain clearance between vegetation and transmission lines. This could include removing vegetation or topping of trees in the ROW. This maintenance would occur as needed, likely every three to five years. To avoid impacts on or disturbance to southwestern willow flycatcher, any vegetation management at the crossings of the San Pedro River and Cienega Creek would occur outside of the breeding season with the exception of emergency situations, and would be limited to the minimum vegetation removal required to maintain clearance between vegetation and the transmission lines. Emergency maintenance may occur during the breeding season, which may result in migrating or foraging southwestern willow flycatchers to be displaced temporarily. This displacement will not affect their survival, and individuals will likely resume normal behavior after the emergency maintenance is complete. We anticipate that vegetation conditions will remain that provide foraging and migrating habitat.

The presence of a larger set of cables (from 3 conductors and 2 shield wires on the existing transmission line to 6 conductors and 2 shield wires on the rebuilt line) replacing the existing line across the San Pedro River, Cienega Creek, and the Santa Cruz River could increase the potential for southwestern willow flycatcher collisions with the transmission lines. However, the likelihood of collisions increasing would be small due to the size and maneuverability of the species. In order to minimize the potential risk for bird collisions with transmission lines, the lines and structures would be designed in accordance with "Reducing Avian Collision with Power Lines" (APLIC 2012) and line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River.

No designated critical habitat for the southwestern willow flycatcher is present in the action area. The nearest designated critical habitat is approximately 9 miles north of the action area

(downstream) on the San Pedro River and approximately 12 miles north (upstream) of the action area along the Gila River in New Mexico. As no designated critical habitat is present in the proposed project area and there would be no impacts downstream, no effects from the proposed project on southwestern willow flycatcher designated critical habitat are anticipated.

Northern Mexican Gartersnake

Potential direct effects to individuals would include being harmed or killed by vehicles and other equipment used during installation and maintenance activities outside the riparian area. Considering that individuals would occur intermittently and that ground actions would occur outside the riparian area in the drier terrestrial areas, we are reasonably certain that the likelihood of individuals being directly affected would be small. We do not expect changes to the habitat in the area to occur that would change use by the northern Mexican gartersnakes to be other than intermittent in the future.

No ground disturbance would occur in riparian areas at the proposed crossings of Cienega Creek and the San Pedro River. Habitat upslope of riparian areas may be affected within the right-of-way to maintain clearance between vegetation and transmission lines. This maintenance would occur as needed, likely every three to five years. To minimize impacts on northern Mexican gartersnake habitat and proposed critical habitat, any vegetation management at the crossings of the San Pedro River and Cienega Creek would be limited to the minimum vegetation removal required to maintain clearance between vegetation and the transmission lines, maintaining some habitat characteristics for northern Mexican gartersnakes.

The proposed action would not affect any of the proposed critical habitat PCEs for aquatic or riparian habitat that would preclude development for gartersnakes, but may affect the PCE of adequate terrestrial space by removing some vegetation. None of these actions are expected to preclude development of habitat in the general area if water availability changes.

Yellow-billed Cuckoo

Yellow-billed cuckoo nesting habitat is not present within the project area, but is present downstream of the project area at Cienega Creek. No impacts from the proposed project on nesting yellow-billed cuckoos are anticipated because nesting habitat will not be affected and we do not anticipate that nesting habitat will develop within the project area during the life of the permit.

Habitat at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River is likely suitable as foraging and/or migratory habitat for the species. Siting of the proposed transmission line would be done in a way that no ground disturbance, structures, or access roads would occur within riparian woodlands. Vegetation would be managed within the ROW to maintain vertical clearance between vegetation and transmission lines. This could include removing vegetation in the ROW. This maintenance would occur as needed, likely every three to five years. To avoid impacts on yellow-billed cuckoo any vegetation management at the crossings of the San Pedro River, Cienega Creek, and Santa Cruz River would occur outside of the breeding season with the exception of emergency situations, and would be limited to the minimum vegetation removal required to maintain clearance between vegetation and the

transmission lines. Emergency maintenance may occur during the breeding season, which may result in migrating or foraging yellow-billed cuckoos to be displaced temporarily. This displacement will not affect their survival, and individuals will likely resume normal behavior after the emergency maintenance is complete.

The presence of a larger set of cables (from 3 conductors and 2 shield wires on the existing transmission line to 6 conductors and 2 shield wires on the rebuilt line) replacing the existing line across the San Pedro River, Cienega Creek, and the Santa Cruz River could increase the potential for southwestern willow flycatcher collisions with the transmission lines. In order to minimize the potential risk for bird collisions with transmission lines the lines and structures would be designed in accordance with "Reducing Avian Collision with Power Lines" (APLIC 2012) and line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River.

Proposed critical habitat

Maintenance of the line may affect riparian woodlands along the line within the project area because vegetation, including trees, will be managed to maintain clearance between the lines and vegetation. This may involve the trimming or removal of trees, which will limit canopy cover. The action area outside the project area will not be affected, so that the size of riparian woodlands, in general, will continue to increase and decrease under current processes which will not be affected by the proposed action.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Lesser Long-Nosed Bat and Mexican Long-nosed Bat

Livestock grazing on private property and on lands managed by the ASLD and New Mexico State Land Office may affect foraging habitat for the long-nosed bats. Other unregulated activities including trespass livestock, inappropriate off-highway vehicle (OHV) use, and cross-border activities could impact lesser long-nosed bat habitat.

Pima Pineapple Cactus

Habitat for the Pima pineapple cactus includes areas of private lands and lands managed by the ASLD where livestock grazing could occur. Livestock grazing activities could lead to direct mortality of Pima pineapple cactus and modification of habitat through the establishment and spread of invasive plant species. Other, unregulated, activities, including trespass livestock, inappropriate OHV use, and cross-border activities, could impact Pima pineapple cactus habitat.

Southwestern Willow Flycatcher

The proposed crossing of the San Pedro River is located on private land and cattle grazing on these lands could impact habitat for the species. Upstream water use and groundwater pumping in the area limit opportunities for development of quality habitat for southwestern willow flycatcher in the vicinity of the proposed crossing. The proposed crossing of Cienega Creek is on Arizona State Trust Land and cattle grazing could impact habitat for the species. Inappropriate off-high-vehicle (OHV) use could impact southwestern willow flycatcher habitat.

Northern Mexican Gartersnake

The proposed crossing of the San Pedro River is located on private land and cattle grazing on these lands could directly impact or impact habitat for the species. Upstream water use and groundwater pumping in the area limit opportunities for development of quality habitat for northern Mexican gartersnake in the vicinity of the proposed crossing. The proposed crossing of Cienega Creek is on Arizona State Trust Land and cattle grazing could directly or indirectly impact habitat for the species. Inappropriate off-high-vehicle (OHV) use could impact northern Mexican gartersnake habitat.

Yellow-billed Cuckoo

Cumulative impacts to habitat at the San Pedro River and Cienega Creek crossing are similar to the southwestern willow flycatcher.

CONCLUSION

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

Lesser Long-nosed Bat

After reviewing the current status of the lesser long-nosed bat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the lesser long-nosed bat. No critical habitat has been designated for the lesser long-nosed bat, therefore, none will be affected. We base these conclusions on the following reasons:

1. No lesser long-nosed bat roosts would be affected.
2. Forage plants will not be affected to the extent that would preclude bat foraging within the action area because of the relatively small area of forage that will be affected.

3. Forage plants will be avoided where possible, and some plants will be transplanted and used in reclamation activities to achieve a goal of no net loss of mature flowering bat forage plants.

Mexican long-nosed bat

After reviewing the current status of Mexican long-nosed bat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Mexican long-nosed bat. No critical habitat has been designated for the lesser long-nosed bat, therefore, none will be affected. We base these conclusions on the following reasons:

1. No known Mexican long-nosed bat roosts would be affected.
2. Forage plants will not be affected to the extent that would preclude bat foraging within the action area because of the relatively small area of forage that will be affected.
3. Forage plants will be avoided where possible, and some plants will be transplanted and used in reclamation activities to achieve a goal of no net loss of mature flowering bat forage plants.

Pima pineapple cactus

After reviewing the current status of Pima pineapple cactus, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Pima pineapple cactus. No critical habitat has been designated for the lesser long-nosed bat, therefore, none will be affected. We base these conclusions on the following reasons:

1. Individual plants will be avoided when possible. If avoidance is not possible, individual plants will be relocated.
2. Credits will be purchased in a FWS-approved conservation bank, corresponding to the area of disturbance to Pima pineapple cactus habitat resulting from the proposed action.

Southwestern willow flycatcher and critical habitat

After reviewing the current status of southwestern willow flycatcher, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is neither likely to jeopardize the continued existence of the southwestern willow flycatcher, nor likely to destroy or adversely modify designated critical habitat for southwestern willow flycatcher. We base these conclusions on the following reasons:

1. Breeding will not be affected because there is no breeding habitat within the project area, and breeding habitat is not expected to develop during the term of the permit.
2. Most migrating and foraging individuals will not be affected during development or regular maintenance because proposed actions will occur at the crossings of the San Pedro River and

Cienega Creek only outside of the breeding season. Emergency maintenance may affect migrating or foraging individuals, but this will not affect their survival, and individuals will resume their normal activities after the emergency maintenance.

3. Habitat within riparian areas would only be affected by maintenance actions which would require the removal of vegetation to maintain line clearance. This would affect trees within the project area, but would not affect trees within the remainder of the action area.
4. Critical habitat would not be affected because none occurs within the action area.

Northern Mexican gartersnake and proposed critical habitat

After reviewing the current status of the northern Mexican gartersnake, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the northern Mexican gartersnake, and it is our conference opinion that the proposed action is not likely to destroy or adversely modify proposed critical habitat for the northern Mexican gartersnake. We base these conclusions on the following reasons:

1. The likelihood of individuals being directly affected would be small, considering that significant populations of known prey species are not known within the proposed action's footprint, individuals would occur intermittently in the project area (likely only during dispersal or flooding events), ground-disturbing actions would occur outside the riparian area in the dryer terrestrial areas, and no changes to the habitat in the action area are expected to occur that would change use by the northern Mexican gartersnakes to be other than intermittent in the future.
2. No ground disturbance would occur in riparian habitat at the proposed crossings of the San Pedro River and Cienega Creek. Maintaining clearance between vegetation and transmission lines may affect some habitat characteristics, but this would be limited to only what is necessary, maintaining some habitat characteristics.
3. Proposed critical habitat PCEs of aquatic or riparian habitat will not be affected. Some characteristics of adequate terrestrial space may be affected by removing vegetation, but none of these actions are expected to preclude development or maintenance of habitat in the general area.

Yellow-billed cuckoo western distinct population segment and proposed critical habitat

After reviewing the current status of yellow-billed cuckoo, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS's biological opinion that the proposed action is not likely to jeopardize the continued existence of the yellow-billed cuckoo, and it is our conference opinion that the proposed action is not likely to destroy or adversely modify proposed critical habitat for yellow-billed cuckoo. We base these conclusions on the following reasons:

1. Breeding will not be affected because there is no breeding habitat within the project area, and breeding habitat is not expected to develop during the term of the permit.
2. Most migrating and foraging individuals will not be affected during installation or regular maintenance because proposed actions will occur at the crossings of the San Pedro River and Cienega Creek only outside of the breeding season. Emergency maintenance may affect migrating or foraging individuals, but this will not affect their survival, and individuals will resume their normal activities after the emergency maintenance.
3. Habitat within riparian areas would only be affected by maintenance actions which would require the removal of vegetation to maintain line clearance. This would affect trees within the project area, but would not affect trees within the remainder of the action area.
4. While maintenance of the line may affect the riparian woodlands PCE of proposed critical habitat within the project area, the action area outside of the project area will not be affected, so that the size of riparian woodlands, in general, will continue to increase and decrease under current processes, which will not be affected by the proposed action.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm," is defined (50 CFR 17.3) and means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. "Harass" is defined (50 CFR 17.3) and means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Federal action agencies so that they become binding conditions of any grant or permit issued to Southline Transmission, LLC, as appropriate, for the exemption in section 7(o)(2) to apply. The Federal action agencies have a continuing duty to regulate the activity covered by this incidental take statement. If the Federal action agencies (1) fails to assume and implement the terms and conditions or (2) fails to require Southline Transmission, LLC to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the

impact of incidental take, the Federal action agencies or Southline Transmission, LLC must report the progress of the action and its impact on the species to the FWS as specified in the incidental take statement. [50 CFR § 402.14(i)(3)].

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally-listed endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law.

AMOUNT AND EXTENT OF TAKE

Lesser long-nosed bat and Mexican long-nosed bat

We do not anticipate that implementation of the proposed action is reasonably certain to result in the incidental take of any lesser long-nosed bat or Mexican long-nosed bat because:

1. No known bat roost would be affected, and
2. Forage plants will not be affected sufficient to preclude bat foraging from the action area because of the relatively small area of forage that will be affected.

Southwestern willow flycatcher and proposed yellow-billed cuckoo

We do not anticipate that implementation of the proposed action is reasonably certain to result in incidental take of any southwester willow flycatcher or yellow-billed cuckoo because:

1. Breeding will not be affected because there is no breeding habitat within the project area, and breeding habitat is not expected to develop during the term of the permit.
2. Most migrating and foraging individuals will not be affected during installation or regular maintenance because proposed actions will occur at the crossings of the San Pedro River and Cienega Creek only outside of the breeding season. Emergency maintenance may affect migrating or foraging individuals, but this will not affect their survival, and individuals will resume their normal activities after the emergency maintenance.

Northern Mexican gartersnake

We do not anticipate that implementation of the proposed action is reasonably certain to result in incidental take of any northern Mexican gartersnake because 1) significant populations of known prey species are not known within the proposed actions' footprint; 2) individuals would occur intermittently in the project area (likely only during dispersal or flooding events); 3) ground-disturbing actions would occur outside the riparian area in the dryer terrestrial areas; and 4) no changes to the habitat in the area are expected to occur that would change use by the northern Mexican gartersnakes to be other than intermittent in the future.

The Fish and Wildlife Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-

668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 4901 Paseo del Norte NE, Suite D, Albuquerque, New Mexico, 87113, telephone (505) 248-7889, within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

Lesser Long-nosed Bat

- We recommend that the Federal action agencies work with us, Arizona Game and Fish Department (AGFD), and New Mexico Department of Game and Fish (NMDGF) to implement recovery actions for lesser long-nosed bat.

Mexican long-nosed bat

- We recommend that the Federal action agencies work with us, AGFD, and NMDGF to implement recovery actions for Mexican long-nosed bat.

Southwestern willow flycatcher

- We recommend that the Federal action agencies work with us, AGFD, and NMDGF to implement recovery actions for Southwestern willow flycatcher.

Northern Mexican Gartersnake

- We recommend that the Federal action agencies work with us, AGFD, and NMDGF to participate in recovery planning and implementation of conservation actions for northern Mexican gartersnake, particularly on efforts to remove harmful nonnative species from occupied northern Mexican gartersnake habitat.
- We recommend that Federal action agencies and Southline refrain from using erosion control products, such as wattles, that contain a mesh size of 0.5" (or 1.27 cm) within proposed critical habitat for the northern Mexican gartersnake. This mesh size has been documented in the literature as being associated with direct mortality, via entanglement, in numerous species of snakes, including those in the gartersnakes genus *Thamnophis*. Alternatively, please

consider using the smallest mesh size possible (<0.5") or preferably, products that do not contain any mesh- or net-like attributes near occupied northern Mexican gartersnake habitat.

Yellow-billed cuckoo

- We recommend that the Federal action agencies work with us, AGFD, and NMDGF to participate in recovery planning and implementation of conservation actions for yellow-billed cuckoo.

Pima Pineapple Cactus

- We recommend that the Federal action agencies coordinate with the Arizona-Sonoran Desert Museum in salvaging for their collection some individual cacti that cannot be relocated for some reason.

In order for the FWS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the FWS requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes the conference for the Southline Transmission Project. You may ask the FWS to confirm the conference opinion as a biological opinion issued through formal consultation if the proposed species is listed or critical habitat is designated. The request must be in writing. If the FWS reviews the proposed action and finds there have been no significant changes in the action as planned or in the information used during the conference, the FWS will confirm the conference opinion as the biological opinion for the project and no further section 7 consultation will be necessary.

After listing as threatened or endangered and any subsequent adoption of this conference opinion, the Federal agency shall request reinitiation of consultation if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect the species in a manner or to an extent not considered in the conference opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the species that was not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action.

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR '402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances

where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The FWS appreciates the Federal action agencies' and Western's efforts to identify and minimize effects to listed species from this project. For further information please contact Scott Richardson (x242). Please refer to consultation number 02EAAZ00-2014-F-0140 in future correspondence concerning this project.

Steven L. Spangle

cc: Field Supervisor, Fish & Wildlife Service, Phoenix, AZ (2 copies)
Jean Calhoun, Assistant Field Supervisor, Fish & Wildlife Service, Tucson, AZ
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Alexa Sandoval, Director, New Mexico Department of Game and Fish, Santa Fe, NM
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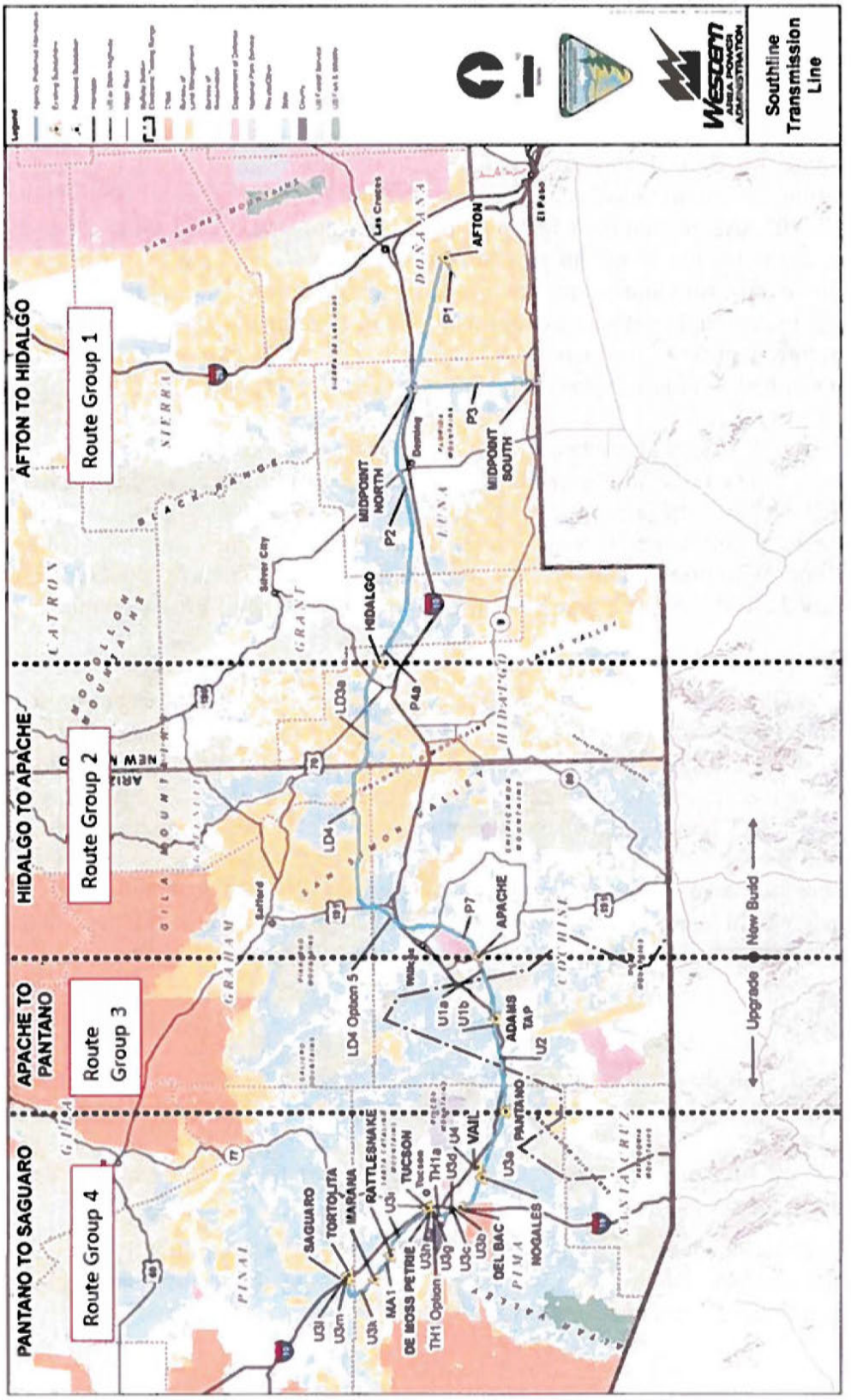
Figure 1. Action Area



Gila chub

We listed the Gila chub as endangered with critical habitat on November 2, 2005 (70 FR 66664). Historically, Gila chub were recorded from rivers, streams, and spring-fed tributaries throughout the Gila River basin in southwestern New Mexico, central and southeastern Arizona, and northern Sonora, Mexico. Today the Gila chub is restricted to small, isolated populations scattered throughout its historical range. Critical habitat includes approximately 160 miles of stream reaches in Arizona and New Mexico, organized into seven river units. Decline of the Gila chub is due to habitat loss from past and current dewatering of rivers, springs, and cienegas (e.g. from diversions, impoundments, and groundwater pumping), poor land management practices (e.g. excessive livestock grazing) resulting in erosion and arroyo formation, and the concomitant introduction of predacious and competing non-indigenous fish species. Life history information can be found in the final rule and references cited therein.

No species-specific surveys have been conducted for the Gila chub for the purposes of this proposed project. The Gila chub does not occur within the project area where it would cross the San Pedro River and Cienega Creek. Both the San Pedro River and Cienega Creek lack a permanent or semi-permanent water source at the proposed crossings and water is likely only present in response to precipitation events. Designated critical habitat for the Gila chub occurs approximately 2.5 miles downstream (north) of where the proposed Project would cross Cienega Creek.

No impacts on Gila chub individuals are anticipated because no individuals are present in the proposed project area. No ground disturbance would occur within Gila chub designated critical habitat because none occurs in the project or study areas. However, ground-disturbing activities as a result of construction and maintenance would occur on the banks, and possibly within 300 feet, of the Cienega Creek stream channel approximately 2.5 miles upstream of designated critical habitat. These ground-disturbing activities may result in an increase in erosion and sedimentation, indirectly impacting some of the PCEs of Gila chub designated critical habitat. These impacts would be temporary and minimal, and we expect that the quality and quantity of PCEs will return to pre-disturbance conditions and be maintained in the long-term.

CONCLUSION

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the Gila chub or its critical habitat. Our concurrence is based on the following:

1. There will no effect to individuals because none occur in the project area, and habitat does not occur in the project area.
2. Critical habitat downstream of the project area may be affected indirectly through actions in the project area, but these effects will be insignificant, and the quality and quantity of PCEs will return to pre-disturbance conditions.

Huachuca water-umbel

The Huachuca water-umbel was listed as an Endangered species in 1997 (62 FR 3),with critical habitat designated in 1999 (64 FR 37441). A total of 51.7 miles of critical habitat was designated at seven locations along streams and rivers in Cochise and Santa Cruz counties in Arizona. The nearest designated critical habitat for the species is approximately 12 miles south of the proposed project along the San Pedro River in Cochise County.

No species-specific surveys have been conducted for Huachuca water-umbel for the purposes of this proposed project. However, the only locations in the study area that could support the Huachuca water-umbel are at the proposed crossings over the San Pedro River and Cienega Creek (segments U2 and U3a). These proposed crossings lack a permanent or semi-permanent source of water and water is likely only present in response to precipitation events. The proposed crossings lack the perennial surface water required by the species. The nearest designated critical habitat for the species is approximately 12 miles south (upstream) of the proposed project along the San Pedro River in Cochise County.

The proposed project would not disturb habitat for the Huachuca water-umbel because none occurs in the project area. The proposed project would not occur in or near designated critical habitat; therefore, the proposed project would have no effect on designated critical habitat for the species.

CONCLUSION

We concur with your determination that the proposed action may affect, but is not likely to adversely affect, the Huachuca water umbel or its critical habitat. Our concurrence is based on the following:

1. Effects to individuals or habitat are discountable because none occurs in or near the project area.
2. Effects to critical habitat are discountable because the nearest critical habitat is approximately twelve mile upstream of the project area.

Appendix B - Conference Report – Northern Aplomado Falcon

Consultation History

- March 4, 2014 Biological assessment and request for conference received by Service from the BLM

Description of the Proposed Action

The proposed action is: for the BLM to issue a right-of-way grant to Southline Transmission, LLC (Southline) for the construction and operation of a 345 kV transmission line from the Afton Substation in New Mexico to the Apache Substation in Arizona (Figure1); for Western Area Power Administration (Western) to authorize and participate with Southline in the upgrade an existing Western transmission line and associated facilities from 115 kV to 230 kV from Apache Substation to Saguaro Substation in Arizona (BO Figure 1); for the U.S. Forest Service to authorize the upgrade of the Western line across Forest Service managed land in Cochise County, Arizona; and for the U.S. Bureau of Reclamation (Reclamation) to authorize the upgrade of the Western line across Reclamation managed lands in Pima and Pinal counties, Arizona. Because multiple Federal agencies have actions that are required by the project, this Conference Report evaluates all of these proposed actions and provides section 7 compliance for all of these agencies' actions. The BLM is acting as the lead action agency with regard to this conference.

The Southline Transmission Line Project (project) is a proposed electrical transmission line project that would consist of two sections. The first section would entail construction of approximately 240 miles of new double-circuit 345-kilovolt (kV) transmission line in a 200-foot right-of-way (ROW) between the Afton Substation, south of Las Cruces in Doña Ana County, New Mexico, and Western's Apache Substation, south of Willcox in Cochise County, Arizona (New Build Section). The second section would entail the upgrade of approximately 120 miles of Western's existing Saguaro–Tucson and Tucson–Apache 115-kV transmission lines to a double-circuit 230-kV transmission line in a 100-foot existing ROW (Upgrade Section). The Upgrade Section would originate at the Apache Substation and terminate at the Saguaro Substation northwest of Tucson in Pinal County, Arizona (BO Figure 1). Both new permanent ROW and temporary construction ROW would be required in the New Build Section and in some portions of the Upgrade Section for the transmission line, substations, access roads, and other permanent and temporary project components; the anticipated ROW width for the Upgrade Section 230-kV transmission line would be 150 feet. The proposed project would also include installation of new communications equipment, and connect to 14 substations distributed throughout southern New Mexico and Arizona, including expanding/upgrading existing substations and potentially constructing a new substation in Luna County, New Mexico. The proposed project would also include installation of new communications equipment to facilitate operations. The proposed action includes proponent committed environmental measures, best management practices (BMPs), and additional proposed species-specific conservation measures (BA Table 3-7, included herein by reference).

Conservation measures

AF-1: Preconstruction surveys would take place in habitat classified as moderate or high suitability for the northern aplomado falcon within the proposed ROW and a 1-mile buffer. Surveys should be conducted several times from January 15 to June 30 in order to detect breeding activity.

AF-2: All existing raptor nests or other large nests found during preconstruction surveys would be preserved in place, if possible, or relocated if necessary. No relocation of active nests would occur, and no nests would be relocated until after consultation with the Federal action agencies and FWS.

AF-3: Construction would not take place within 1 mile of occupied northern aplomado falcon nests between January 15 and September 1. Aplomado falcons are frequently observed on their breeding territories in southern New Mexico in January. Therefore, January 15 is the start date for seasonal restrictions.

Status of the Species in the Action Area

Aplomado falcons in Arizona and New Mexico are part of a non-essential population (NEP) established in 2006 (71 FR 42298), and as such are subject to advisory conference with the USFWS under Section 7(a)(4) of the ESA rather than consultation under Section 7(a)(2), when outside of the National Park Service and NWR systems. No portion of the project would cross National Park or NWR lands; thus, conference rather than consultation is required for the aplomado falcon. Critical habitat is not designated for NEPs.

A broad area of northern aplomado falcon habitat occurs within the action area. For the purposes of analysis, all of the grassland vegetation types within the study area in route groups 1–3 (see Figure 1 in BO) were considered habitat for the northern aplomado falcon. No northern aplomado falcons have been seen in Arizona since an observation in Cochise County in 1977 (AGFD 2001a). Future recovery of the species may allow for dispersal into habitat in Arizona. In southern New Mexico, there are numerous sightings each year in a variety of locations, and breeding pairs were observed in 2013 and 2014.

Effects of the Action

The proposed project would result in temporary and permanent northern aplomado falcon habitat loss and degradation. The proposed project would disturb approximately 624 acres of habitat for the species. This would be approximately 23 percent of the 2,713 acres of habitat within the ROW and 0.5 percent of the approximately 114,089 acres of habitat within the study area. Areas of temporary disturbance would be restored; however, restoration in arid environments is difficult and slow and may require 50 to 100 or more years. As such, impacts from ground disturbance on northern aplomado falcon would be long-term. Habitat loss could reduce overall prey abundance; however, the species utilizes large home ranges which would reduce the potential effects of habitat loss and degradation on northern aplomado falcon prey species.

Conclusion

After reviewing the proposed action, with included conservation measures, we conclude the project is not likely to jeopardize the continued existence of the 10(j) non-essential, experimental population of northern aplomado falcon. Because of the northern aplomado falcon's status as a non-essential experimental population in New Mexico and Arizona, they are treated as proposed for listing for section 7 consultation purposes. By definition, a nonessential experimental population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species. With full implementation of the proposed conservation measures, the presence of large areas of available unoccupied habitat, and the naturally low densities of aplomado falcons, there should be only insignificant effects resulting from the proportionately small areas of habitat loss.

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Appendix C: Technical Guidance

Sonoran Desert Tortoise

Conservation measures for the Sonoran desert tortoise would include proponent proposed measures (see Appendix D Mitigation and Avoidance Measures) and:

DT-1: Pre-construction desert tortoise surveys would be conducted in suitable habitat. A worker education program including information on desert tortoises would be implemented. Any desert tortoises encountered during preconstruction surveys or during construction activities would be handled in accordance with the AGFD "Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects" (AGFD 2007).

In addition, we recommend that BLM and Western coordinate with the FWS prior to initiation of biological field work for the latest recommendations for Sonoran desert tortoise surveys and monitoring protocols.

Sprague's Pipit

Project-wide Mitigation and Avoidance Measures described in the BA would minimize ground disturbance and the potential for the establishment and spread of non-native grass and other invasive plant species within habitat for Sprague's pipit. We also recommend that Federal action agencies and the applicant minimize disturbance in all potential Sprague's pipit wintering habitat through use of existing access roads, avoid vegetation clearing, and avoid locating pull sites in potential habitat. Implementation of the Avian Protection Plan (APP) will further protect individual birds.

Literature Cited

Arizona Game and Fish Department (AGFD). 2007. *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects.* Accessed online at http://www.azgfd.gov/hgis/pdfs/Tortoisehandlingguidelines.pdf on January 23, 2014.

Appendix D: Mitigation and Avoidance Measures

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Standard Mitigation				
The boundaries of construction activities would be predetermined and staked or flagged prior to any construction activity. No paint or permanent markings would be applied to rocks or vegetation.	X			
Prior to construction, all construction personnel would be instructed on the protection of cultural and ecological resources.	X			
All vehicle movement would be restricted to designated access, contracted acquired access, or public roads.	X	X	X	X
To limit disturbance, existing access roads would be used to the extent practicable, providing that doing so does not additionally impact resource values. Widening and grading of roads would be kept to the minimum required for access by Project construction equipment.	X	X	X	X
Structures and/or ground wire would be marked with high-visibility devices such as vibration dampers, where required by government agencies such as the FAA.	X	X	X	
Transmission line materials would be designed and tested to minimize audible noise, radio interference, electromagnetic interference (EMI), and television interference due to corona.	X	X	X	
No widening or upgrading of existing roads would be undertaken in the area of construction and operations, where soils and vegetation are sensitive to disturbance, in areas of critical habitat for vegetation or wildlife, in areas of habitat for BLM special status species, or where archaeological sites are present.		X	X	
During operation of the transmission lines, the ROW would be maintained free of non-biodegradable debris. Desert vegetation would be crushed in place to promote seeding and revegetation, and reduce erosion potential.			X	
BLM and Western road construction specifications would be followed where unimproved spur roads cannot be employed.		X	X	
Unimproved spur roads would be used to the extent practicable in areas where no grading would be warranted to access work areas, within the approved ROW. Unimproved spur roads would be used to access a site without specifically blading a road or significantly modifying the landscape. All vehicle movement would be restricted to designated access, even if that is unimproved access. Vegetation would be crushed, not cut. For all access types, soil would be compacted, but not removed.		X	X	X
Structures would be placed to avoid, and/or to allow conductors to span, sensitive features such as riparian areas, waterways, roads, trails, and cultural sites within limits of standard transmission line structure design. This would minimize the amount of sensitive features disturbed and/or reduce visual contrast.	X	X	X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Clearing of trees in and adjacent to the ROW would be minimized to the extent practicable to satisfy conductor-clearance requirements (NESC and up to 10 years' timber growth). Trees and other vegetation would be selectively removed to blend the edge of the ROW into adjacent vegetation patterns, as appropriate.		X	X	
Separation between transmission lines and existing utilities, roads, and railroads would be minimized to the extent practicable. Opportunities to share portions of adjacent ROWs would also be explored.	X			
All construction vehicle movement would be restricted to predesignated access, contractor-acquired access, and public roads.		X		
The width of construction and new temporary access roads would be sited to keep to the minimum needed to avoid sensitive areas and to limit ground disturbance.		X		
Surface elevations would be returned to approximate pre-Project conditions, as practicable.		X		X
A WEAP would be prepared. All construction crews and contractors would be required to participate in WEAP training prior to starting work on the Project. The WEAP training would include a review of the special status species; WUS; riparian habitat; cultural, paleontological, and other sensitive resources that could exist in the project area; the locations of sensitive biological resources and their legal status and protections; and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel would be maintained during the construction period.	X	X		
The process by which the BLM, Western, and Southline and its construction contractor would conduct environmental monitoring, compliance, and reporting activities during construction would be described in a project compliance plan that would be prepared by the compliance inspection contractor (CIC) after they have been selected. After issuance of the notice to proceed, a CIC, designated by the BLM and Western, would provide environmental oversight and compliance monitoring during Project construction to ensure compliance with all design features and mitigation measures.	X	X		
Reclamation				
A Reclamation, Vegetation, and Monitoring Plan would be developed and implemented.		X	X	X
Reclamation would be accomplished with native species, unless otherwise approved.		X	X	X
Seeding would occur between November and March to ensure a greater chance of success. This would be tied to replacement of conserved topsoil with its natural seed stock.		X	X	X
Air Quality and Climate Change				
Project activities would be in compliance with all applicable Federal, State, and local laws and regulations concerning prevention and control of air pollution during construction and operation.		X	X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
An Erosion, Dust Control, and Air Quality Plan would prepared as part of the final POD. The plan would be developed and implemented to minimize and mitigate potential air quality and climate change impacts.	X	X	X	X
All necessary air quality permits would be obtained prior to construction or operating equipment that would result in regulated atmospheric or fugitive dust emissions.	X			
Dust control measures consistent with all applicable State or local standards, as outlined in the Erosion, Dust Control, and Air Quality Plan, would be implemented; these include the following reasonable precautions: 1) frequent watering (trucked in, no new water sources) or stabilization of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes visible emissions of fugitive dust beyond the work area; 2) reduction in the amount of disturbed area where possible; 3) planting of vegetative ground cover, as appropriate, in disturbed areas after construction activities have ended, and treatment of actively disturbed areas with BLM-approved dust palliatives.		X		
Trackout control devices such as grizzly bars, wheel washers, and gravel pads would be located at all entrances and exits.		X		
Haul-truck cargo beds would be covered with tarps and travel speeds would be limited to no more than 15 miles per hour on unpaved roads.		X		
Combustion emissions from mobile sources would be minimized by proper maintenance and tune-up of equipment.		X	X	
To reduce the potential for greenhouse gas emissions, only properly trained Project personnel would handle sulfur hexafluoride, and a sulfur hexafluoride recovery and recycling program would be implemented.		X	X	X
Cultural Resources				
Cultural resources would continue to be considered during post-EIS phases of work. Specific cultural resource inventory, protection, and mitigation measures to be employed would be outlined in the Project-specific Programmatic Agreement, in accordance with Section 106 of the NHPA. The final POD would include the signed Programmatic Agreement.	X	X	X	X
The area of potential effects will be defined, consisting of the approved alternative corridor and all areas and ancillary features that sustain ground disturbance (access roads, construction yards, etc.) will be subject of 100% pedestrian cultural resources survey in order to identify all cultural resources that may be adversely impacted by the Project. Survey and reporting requirements would follow BLM Handbook 8110 and 8111 requirements for a Class III Intensive Field Survey (BLM 2004).	X			

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
An HPTP would be developed and implemented to avoid, minimize, and mitigate the adverse effects of the Project on known cultural resources. Mitigation measures may range from avoidance and preservation in place to data recovery excavations conducted before the destruction of a site if avoidance is not a feasible option. The HPTP would include a monitoring and discovery plan detailing procedures to be followed in the inadvertent discovery of a potentially significant archaeological site or human remains.	X	X	X	
To the extent practical, all ground-disturbing activities and other Project components would be micro-sited to avoid or minimize impacts on cultural resources listed as or potentially eligible for listing as, unique archaeological sites, historical resources, or historic properties.	X	X		
Before construction, and as described in the WEAP, Southline and its construction contractor would provide cultural resources sensitivity training to all construction personnel so that Project personnel understand the procedures in the monitoring and discovery portion of the HPTP.	X			
Hazardous Materials and Waste				
Several framework plans prepared as part of the final POD would be developed and implemented to minimize and mitigate potential hazardous materials and waste; plans include SWPPP, SPCC, Soil Management, and Hazardous Materials Management. These plans would include requirements by the EPA, OSHA, Arizona Department of Environmental Quality, and the New Mexico and Arizona Departments of Transportation.	X	X	X	X
The SWPPP would include BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. The SWPPP is required by, and enforced by, the EPA in New Mexico, and the Arizona Department of Environmental Quality in Arizona.	X	X	X	
All construction, operation, and maintenance crew members would be properly trained to deal with a spill, and appropriate spill containment material would be on hand at every work site. Careful handling and designation of specific equipment repair and fuel storage areas, as outlined in the SPCC Plan, would reduce the potential for oil and fuel spills. In the event that there is an oil or fuel spill, immediate measures would be taken to control the spill, and the BLM, National Response Center, and/or Arizona Department of Environmental Quality or New Mexico Environment Department would be notified immediately as defined in the SPCC Plan.	X	X	X	X
The Soil Management Plan would provide guidance for the proper handling, on-site management, and disposal of contaminated soil, if encountered during construction, operation, and maintenance activities. Appropriately trained personnel would be on-site during preparation, grading, and related earthwork activities to monitor the soil conditions encountered.	X	X	X	X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
The Project-specific Hazardous Materials Management Plan and program would outline proper hazardous materials use, storage, and transport requirements and applicable handling procedures. EPA procedures for handling and storage of hazardous materials, OSHA requirements for proper storage and labeling on the job site, and New Mexico and Arizona Department of Transportation requirements for transportation of hazardous materials would be followed.	X	X	X	X
Personnel, contractors, and transporters involved with hazardous materials management would be required to comply with Federal and State regulations established for the transportation, storage, handling, and disposal of hazardous substances, materials, and wastes. "Hazardous material" means any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.		X	X	X
New or expanded substation locations that involve the purchase or long-term leasing of land, purchased transmission line ROWs, and any other property to be acquired would be screened for environmental liabilities. The degree and level of screening would be based on knowledge or information available on the property to determine the probability of contaminants of concern or other environmental impairment. A Phase I Environmental Site Assessment would be conducted if preliminary screening indicates a reasonable risk that such environmental conditions may exist on the property and the property continues to be targeted for acquisition by the Project, consistent with American Society for Testing and Materials Standard E1527-05.	X			
In the event of a spill, workers in the immediate area would cease work, begin spill cleanup operations, and notify appropriate agencies as required by law and specified in the SPCC Plan. Southline and its construction contractor is responsible for cleanup and assumes liability for any and all releases of hazardous substances disposed on public land, in accordance with State, Federal, and local laws and regulations. Southline would immediately notify the BLM authorized officer of any and all releases of hazardous substances on public land.		X	X	X
If backfill material to be used is derived from a site that could possibly have contamination, it would be sampled and determined to be free of regulated contaminants before it is used to fill excavations. The results of any tested soils should be shared with the appropriate surface managing agency. No contaminated soils would be used as fill material for the Project.		X		
All construction and demolition waste, including trash and litter, garbage, and other solid waste, would be removed and transported to an appropriately permitted recycling or disposal facility. Southline and its construction contractor would prepare a construction waste disposal plan for all nonhazardous wastes generated during construction of the Project. The plan would contain a description of all nonhazardous solid and liquid construction wastes, recycling plans, and waste management methods to be used for each type of waste.		X		X
Southline or the applicable contractors would maintain all vehicles in good working order. Equipment would be properly tuned and maintained to avoid leaks of fluids.		X	X	X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Service and refueling procedures would not be conducted within 500 feet of a seep, wash, or other water body. Routine service of any vehicles or equipment would not be done within the ROW.		X	X	X
Health and Human Safety				
The HASP and Fire Protection Plan prepared as part of the final POD would be developed and implemented to minimize and mitigate potential health and human safety impacts. Southline and its contractors would work with the appropriate surface managing agencies to incorporate any fire restrictions that are put into effect during construction, operation, and decommissioning of the project.	X	X	X	X
The HASP would address potential situations that workers could encounter during construction and maintenance. The purpose and goal of the worker safety and environmental training would be to communicate Project-related environmental and safety concerns and appropriate work practices to all field and construction personnel prior to the start of construction, including spill prevention, emergency response measures, accident prevention, use of protective equipment, medical care of injured employees, safety education, and fire protection. Training would encompass environmental training related to road designations and speed limits, promote "good neighbor" policies, and institute BMPs for construction. The training would emphasize site-specific physical conditions to improve hazard prevention in accordance with OSHA requirements (29 CFR 1910).	X	X	X	
Southline and its construction contractor would locate overhead and underground utilities that may reasonably be expected to be encountered during construction. If a utility service interruption is known to be unavoidable, Southline and its construction contractor would coordinate with the service provider to notify members of the public, the jurisdiction, and the service providers affected by the interruption via letters and newspapers notices published no later than 7 days prior to the first interruption. Copies of the notices would be provided to the BLM and Western following notification.	X	X		
All permanent metallic objects within the Project's transmission line ROWs would be grounded in accordance with industry standards.	X	X	X	
Farmlands and Grazing				
Fences and gates would be repaired or replaced to their original, predisturbed condition (or better), as required by the landowner, BLM authorized officer, or other land managing entity if they are damaged or destroyed by construction activities. New temporary and/or permanent gates would be installed only with the permission of the landowner or the BLM. Temporary gates not required for postconstruction access control would be removed following construction completion and in accordance with the POD.		X		X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Water facilities (e.g., tanks, developed springs, water lines, wells, etc.) would be repaired or replaced to their predisturbed condition if they are damaged or destroyed by construction, operation, or maintenance activities, as required by the landowner of land management agency. Temporary watering facilities would be provided for wildlife and livestock until permanent repair or replacement is complete.		X	X	X
On agricultural land, ROWs would be aligned, in so far as practicable, to reduce the impact to farm operations and agricultural production. This would typically be done in conjunction with negotiating ROW agreements with landowners.	X	X		
Military Operations				
The transmission line operator would work with Buffalo Soldier Electronic Testing Range (BSETR) to coordinate, and possibly limit, interconnections to the proposed Project to the extent allowed by the Federal Energy Regulatory Commission.	X			
Southline and Western would work with BSETR to identify micro-siting opportunities during Project design.	X			
The transmission line operator would coordinate with BSETR during the design phase of the proposed Project to limit EMI. The proposed Project would be constructed using the best available construction techniques and technology (i.e., use of grounding, selective conductor type and arrangement, and conductor surface gradients), to the extent feasible and reasonably economical, in order to minimize EMI.	X			
The transmission line operator would coordinate with BSETR to allow for an updated measure of the "floor value" of the proposed Project, once the proposed line is energized. Such cooperation could include provision of real-time operating and load information to BSETR to help calibrate the floor value of EMI.	X	X	X	
The transmission line operator would coordinate with BSETR to develop reporting standards, for potential inclusion in the transmission line maintenance and inspection program, to the extent allowable by the Federal Energy Regulatory Commission. While normal inspection maintenance would take care of typical EMI issues, specific incidents such as storm damage or vandalism would need to be responded to outside of the normal maintenance cycle. If not detectable through transmission line monitoring, the operator would need to hear from someone experiencing interference in order to respond.	X	X	X	
The transmission line operator would coordinate planned outages (curtailment of power line operations for BSETR to implement testing) with BSETR to the extent feasible in order to meet necessary contractual commitments, utility mandates, laws and regulations, and power system requirements. The operator is very limited in the timing and duration of potential outages; outages stress the rest of the system, which can cause system failures.	X		X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Noise				
Construction would comply with local noise ordinances. There may be a need to work outside the local ordinances to perform work during available line outage windows in order to take advantage of low electrical draw periods during nighttime hours. The construction contractor would comply with variance procedures required by local authorities.		X		
Construction equipment would be maintained in good working order in accordance with manufacturer's recommendations.		X		X
Idling of construction equipment and vehicles would be minimized during construction.		X		
Workers would be provided with appropriate hearing protection, if necessary, as described in the HASP.		X	X	X
Paleontology				
In consultation with appropriate land management agencies, Southline and its contractor would participate in the preparation of a Monitoring Plan, paleontological surveys, personnel education, monitoring ground disturbance for fossils, curation of fossils, and deposition of fossils in a paleontological repository, as necessary in areas of highest likelihood of encountering resources.	X	X		
If significant fossils are encountered during construction, construction activities would be temporarily diverted away from the discovery. The monitor would notify all concerned parties and collect matrix for testing, processing, and documentation, as directed by the authorized officer of the BLM.		X		
Recreation				
Southline and its contractor would coordinate with the BLM to display appropriate "closed" signage at the entrance to new spur roads to structure locations and access roads located on BLM-managed lands. This includes temporary signs during the construction phase of the Project and permanent signs and/or vehicle barriers that would close the spur routes to public travel during the operational phase. Signs would be removed as appropriate upon decommissioning.	X	X	X	X
If temporary short-term closures to recreational areas are necessary for construction activities, Southline and its contractor would coordinate those closures with recreational facility owners. To the extent practicable, Southline and its construction contractor would schedule construction activities to avoid heavy recreational use periods (e.g., holidays or tournaments). Southline and its construction contractor would coordinate with the facility owner to post notice of the planned closure on-site 14 calendar days prior to the closure.	X	X	X	X

If the Arizona National Scenic Trail must be temporarily closed during construction, an alternate trail route (detour) would be provided during the closure. If it is necessary for trail users to leave the trail during the temporary closure, trail users would need to obtain permission from the ASLD.	X	X		X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Soils				
As appropriate and feasible, Southline and its construction contractor would implement topsoil segregation and conservation practices at substation sites and as directed by the BLM and Western.		X		
In construction areas (i.e., temporary use areas, structure sites, access roads, etc.) where grading is required, surface restoration would be implemented as required by the landowner or BLM authorized officer. The method of restoration would normally consist of returning disturbed areas back to their normal contour, replacing topsoil, reseeding (where required), installing cross drains for erosion control, placing water bars in the road, and filling ditches. The Reclamation, Vegetation, and Monitoring Plan would include final details on the details of restoration.		X		
Transportation				
Prior to the start of construction, Southline and its construction contractor would prepare a Traffic and Transportation Management Plan for the Project to address the timing and routing of Project trips in an effort to minimize Project impacts on local streets, highways, and railroad operations.	X			
At least 90 days prior to any helicopter use on the Project, Southline and its construction contractor would coordinate with the FAA for review and approval of plans for any helicopter flights that would take place during construction and operation. Southline and its construction contractor would then provide information to the BLM and Western regarding the intended need and use of helicopters during construction and operation of the Project, including the Flight and Safety Plan; the estimated number of days and hours that the helicopter would operate; the type and number of helicopters that would be used; the location, size, and number of staging areas for helicopter takeoffs and landings; and written approval from property owners for use of helicopter staging areas.	X	X	X	
Transmission structures would be identified with high-visibility markers in areas where they intersect or parallel military training routes.			X	
Gates and fencing would be provided in areas where off-highway-vehicle use would be restricted due to military operations, or to protect sensitive resources.		X	X	X
Vegetation				

Preconstruction native plant inventories and surveys for noxious weed species as stipulated by the appropriate land managing agency would be conducted once transmission line centerline, access road, and transmission line structure sites have been located.	X

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Every effort would be made to minimize vegetation removal and permanent loss at construction sites to the extent practicable. Access would not be graded unless necessary for erosion control or other engineering reason. Final structure and spur road locations would be selected to avoid sensitive vegetation to the greatest extent feasible.		X		
In construction areas where grading is not required, vegetation would be left in place wherever possible, and original contours would be maintained to avoid excessive root damage and allow for regrowth. All existing roads would be left in a condition that is equal to or better than their condition before the construction of the transmission lines, as determined by the appropriate land managing agency.		X		
Southline and its construction contractor would develop a Reclamation, Vegetation, and Monitoring Plan that would guide restoration and revegetation activities for all disturbed lands associated with construction of the Project and its eventual termination and decommissioning. The plan would address all land disturbances, regardless of ownership. It would be developed in consultation with appropriate agencies and landowners and would be provided to these entities for review and concurrence. The plan would provide details on topsoil segregation and conservation, vegetation treatment and removal, salvage of appropriate species, and revegetation methods, including use of native seed mixes, application rates, transplants, and criteria to monitor and evaluate revegetation success.	X	X	X	X
Special status plants, including the Pima pineapple cactus, would be avoided. Where avoidance is not possible, special status plants would be conserved by relocating plants and/or reseeding, replacing topsoil with existing topsoil that was removed, and regrading in compliance with local ordinances (Pima County). Measures to conserve special status plants would be implemented through the Reclamation, Vegetation, and Monitoring Plan.	X	X		X
Removal of riparian scrubland vegetation would be avoided where possible. Natural regeneration of native plants would be supported by selectively cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.		X	X	X
Southline and its construction contractor would provide training to all personnel working in the project area to identify noxious weeds and prevent spread. Training would discuss known invasive and noxious weed species, known locations, identification methods, and treatment protocols. Training materials and a list of Project personnel completing the course would be provided to the BLM and Western.		X		
In consultation with local BLM field offices and local resource agencies, Southline and its construction contractor would develop and implement a Noxious Weed Management Plan.	X	X	X	X
Invasive and noxious weed populations would be mapped and reported to BLM/Western. BLM and Western will determine in which areas vehicle washing would be required, based on the results of the invasive/noxious weed surveys.	X	X		

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
As required, equipment would be cleaned before ingress to minimize the potential for the spread of invasive species. These details would be described in the Noxious Weed Management Plan. Buffelgrass would be specifically addressed in the plan, which would outline efforts to eliminate it from within areas disturbed by the proposed Project to ensure that it does not spread to adjoining lands.	X	X	X	X
Visual Resources				
In order to restore disturbed areas to an appearance that would blend back into the overall landscape, seeding and/or planting would be conducted in any area that has been cleared or disturbed during construction. Seed mix would be tailored to an area's soil type, existing vegetation, and native species.		X		X
The Project would incorporate nonspecular conductors into the Project design to decrease reflectivity and visibility of Project features, where specified by the BLM authorized officer.	X	X		
Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted in earth tones or in a color designed to reduce color contrasts with the surrounding landscape. A dark, neutral color, such as the BLM Standard Environmental Color, "Carlsbad Canyon," or similar is recommended because the hue tends to blend into desert landscape at varying distances.		X	X	
"Dulled" metal or self-weathering finish structures would be used to reduce visual impacts, if specified by the BLM authorized officer.	X	X		
The alignment of any new access roads (including unimproved spur roads) would stay within the designated access ROW and would follow the designated area's landform contours and avoid steep areas as much as feasible, provided that such alignment does not additionally impact resource values. This would minimize ground disturbance and/or reduce scarring (visual contrast).	X	X		
Aerial markers or warning lights would be required for conductors or structures, in keeping with FAA, U.S. Customs and Border Protection, and Department of Defense regulations for structures over 130 feet. The use of red strobe lighting would reduce potential impacts from artificial night lighting and would reduce impacts from night brightness and viewing of night skies. The minimum number and intensity of lights would be used, given that the tallest structures are under the 200-foot FAA requirement (FAA Advisory Circular 70/7460-1K (FAA 2007)). Exterior lights installed on conductors or other facilities would be aviation warning lights, or FAA L-864 aviation red-colored flashing lights with 20 to 40 flashes per minute standard flashing range.		X	X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Water Resources				
A Project-specific construction SWPPP would be prepared prior to the start of construction of the transmission line and substations in compliance with CWA Section 402, if required. The SWPPP would use BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. As part of the SWPPP, soil disturbance at structure construction sites and access roads would be the minimum necessary for construction and would be designed to prevent long-term erosion, through activities such as restoration of disturbed soil, revegetation, and/or construction of permanent erosion control structures. A Department of the Army permit application would be prepared prior to the start of construction of the transmission line and substations for the discharge of dredged or fill material in compliance with CWA Section 404, if required. Activities in and around streams and wetlands would be designed to avoid, minimize, and mitigate impacts to WUS.	X	X		
Roads would be built as close as possible to right angles to the streams and washes. Culverts or temporary bridges would be installed where conditions warrant. All construction and operations activities shall be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.		X		
To the extent practicable, structures would be sited with a minimum distance of 200 feet from streams.	X			
Construction equipment would be kept out of flowing stream channels. Structures would be located to avoid active drainage channels, especially downstream of steep slope areas, to minimize the potential for damage by flash flooding and mud and debris flows.	X	X		X
Flood control devices would be located where required to protect structures or other Project structures from flooding or erosion. Appropriate design of structure foundations would be used to prevent scour or inundation by a 100-year flood to avoid disturbed areas. The locations of transmission structures would be designed to avoid steep, disturbed, or otherwise unstable slopes. If drainages cannot be avoided by structure placement, Southline and its construction contractor would design drainage crossings to accommodate estimated peak flows and ensure that natural volume capacity can be maintained throughout construction and upon postconstruction restoration.	X	X		
Wildlife				
In consultation with the BLM and Western, Southline and its construction contractor would prepare and implement a Biological Monitoring Plan prior to issuance of a notice to proceed and prior to construction that would specify the level of biological monitoring to be provided throughout construction activities in all construction zones with the potential for presence of sensitive biological resources. The number of monitors and monitoring frequency would be specified for each work zone.	X	X		

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Preconstruction surveys would be required in areas where Sonoran desert tortoise (now a separate species: Morafka's desert tortoise (*Gopherus morafkai*)), Gila monster, and Tucson shovel-nosed snake are expected to occur. In consultation with the BLM and Western, Southline and its construction contractor would hire qualified biologists to conduct preconstruction surveys in ground disturbance areas within suitable habitat for appropriate special status species.	X			
To reduce impacts on the Sonoran (Morafka's) desert tortoise, known to exist in the western portion of the project area, only authorized biologists with a valid Arizona Game and Fish Department (AGFD) permit would handle desert tortoises if encountered within the project area, following the most current desert tortoise handling guidelines published by the AGFD.		X		X
Preconstruction surveys for species listed under the ESA or specified by the appropriate land management agency as sensitive or of concern would be conducted in areas of known occurrences or suitable habitat. Timing of the surveys would be determined by FWS approved species-specific survey protocol.	X			
Monitoring of construction activities would be required in some areas to ensure that effects on these species are avoided during construction. If bald eagle or golden eagle nests are identified during preconstruction surveys, seasonal restrictions on construction within a specified buffer would be implemented where applicable, according to FWS protocols, to comply with the Bald and Golden Eagle Protection Act. Preconstruction nesting-season surveys for migratory birds and surveys for burrowing owls in suitable habitat would be conducted as needed to comply with the Migratory Bird Treaty Act.		X		
Surveys for bat roosts would be conducted within 0.25 mile of the Project ROW in areas that potentially contain caves, karst features, or mines. Occupied bat roosts would be avoided.	X			
Access roads in Tucson shovel-nosed snake habitat would be posted closed to off-road-vehicle use and gated if appropriate to decrease the potential for vehicles striking the subspecies.		X	X	
Where appropriate, protective drift fencing would be placed along access roads and disturbance areas in suitable Tucson shovel-nosed snake habitat during the active season of the snake to limit the potential for vehicle strikes.		X	X	
In Tucson shovel-nosed snake habitat, temporarily disturbed areas will be revegetated with native shrubs, grasses, and forbs to reduce impacts on habitat for prey populations of the Tucson shovel-nosed snake.		X		X
Tucson shovel-nosed snake identification and avoidance measures would be included in the worker training program. If during construction activities Tucson shovel-nosed snakes are discovered in or near areas being disturbed, biological monitors would be required to be present on-site during construction activities.	X	X		

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
To reduce impacts on migratory birds and raptors, especially near the Willcox Playa: 1) Southline and its construction contractor would consult with the appropriate agencies (BLM or FWS) on a case-by-case basis when active nests are found in project areas, unless directed to do otherwise by these same agencies; 2) active bird nests would not be moved during breeding season, in compliance with the Migratory Bird Treaty Act, unless the Project is expressly permitted to do so by the FWS or BLM, depending on the location of the nest; 3) all active nests and disturbance or harm to active nests would be reported to the FWS or BLM, upon detection; and 4) work would halt if it is determined that active nests would be disturbed by construction activities, until further direction or approval to work is obtained from the appropriate agencies.	X	X		
Clearing, grubbing, blading, and access road improvements occurring within identified sensitive areas would be conducted outside the breeding season for most desert-nesting migratory birds.	X	X		
Construction holes left open overnight would be appropriately fenced or covered to prevent damage to wildlife or livestock.		X		
To reduce impacts on golden eagles and other raptors, Southline and its construction contractor would develop and implement an APP, in coordination with the BLM and Western for approval. The plan would be prepared in accordance with guidance provided by the FWS and in consultation with best practices such as the "Suggested Practices for Avian Protection on Power Lines" (APLIC 2006).	X	X	X	X
Southline and its construction contractor would follow Pima County guidelines for surveys prior to disturbance in priority conservation areas located in Pima County for western burrowing owls.	X	X		
Final structure and spur road locations would be adjusted to avoid sensitive wildlife resources to the greatest extent feasible.	X	X	X	
Additional Avoidance and Mitigation Measures for Special Status Species				
Lesser long-nosed bat and Mexican long-nosed bat				
All paniculate agaves (*Agave palmeri*, *A. parryi*, and *A. chrysantha*) and saguaros (*Carnegiea gigantea*) would be inventoried within the proposed ROW, and the potential to avoid or salvage each plant would be assessed. The priority would be avoidance when feasible.	X			
All suitable (e.g., healthy, undamaged, not flowering) paniculate agaves that could not be avoided would be salvaged using methods approved by the BLM/Western and FWS, but larger agaves would be given preference for avoidance when feasible. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside disturbed areas if necessary.	X	X		

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Saguaros less than 15 feet in height would be salvaged, unless prevented by site-specific conditions or poor plant health. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside of disturbed areas if necessary. Larger saguaros would be avoided whenever feasible, but would be topped or removed if necessary.	X	X		
Agave and saguaro salvage would be augmented, as necessary, within 3 years after completion of initial restoration activities. Augmentation would occur within the ROW in areas of higher value to bats (e.g., in the vicinity of active roosts, within areas of high concentration agaves) to achieve a goal of no net loss of forage plants. Stocks from local sources or approved nursery-grown plants would be used.	X	X		
Salvaged plants would be monitored following reclamation for a period of 3 years, as described in the POD. Supplementary water would be provided, if monitoring indicates that rainfall is insufficient to achieve the goal of no net loss of forage plants. Plant survival through the monitoring period would be reported annually to the BLM/Western and FWS.		X	X	
Northern Aplomado Falcon				
Preconstruction surveys would take place in habitat classified as moderate or high suitability for the northern aplomado falcon within the proposed ROW and a 1-mile buffer.	X			
All existing raptor nests or other large nests found during preconstruction surveys would be preserved in place, if possible, or relocated if necessary. No relocation of active nests would occur, and no nests would be relocated until after consultation with the BLM and FWS.	X	X		
Construction would not take place within 1 mile of occupied northern aplomado falcon nests between February 1 and September 1.		X		
Yellow-billed Cuckoo				
All non-emergency Construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of yellow-billed cuckoos.		X	X	
Line marking devices would be placed at the proposed crossings of the San Pedro River and Cienega Creek to minimize the potential for avian collisions with transmission lines.		X		
Southwestern Willow Flycatcher				
All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of southwestern willow flycatchers		X	X	
Line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River to minimize the potential for avian collisions with transmission lines.				
Pima Pineapple Cactus				

For Pima pineapple cactus that cannot be avoided, Southline will purchase credits in an FWS-approved conservation bank for Pima pineapple cactus, corresponding to the area of permanent disturbance to occupied habitat. Alternative, Southline may purchase suitable mitigation lands within Pima County's Pima pineapple cactus priority conservation areas.		X	X	

Table 3-7. Mitigation and Avoidance Measures for Environmental Protection by Resource (Continued)

Measures by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Any Pima pineapple cactus that are not within the area of permanent disturbance but are present within the Project vicinity shall be flagged by a qualified biologist prior to the commencement of work to avoid accidental damage during construction.	X	X		
Plant species protected under the Arizona Native Plant Law (cactus, yucca, and native trees) shall be avoided to the extent practicable during construction. If impacts to native plants cannot be avoided, the plants shall be treated in accordance with state law. All Pima pineapple cactus within the area of permanent disturbance shall be salvaged and replanted on Conservation Lands north of the substation footprint by a biologist with previous experience transplanting Pima pineapple cactus. Transplantation would be accomplished in accordance with the cactus transplantation methodology described by the University of Arizona (2009).	X	X		
Prior to construction, protocol-level surveys for Pima pineapple cactus shall be conducted to identify any individuals that could be affected by construction activities. These surveys would be limited to areas of suitable habitat that could be disturbed by construction and maintenance activities.	X			

Appendix N

DRAFT NEPA PLAN OF DEVELOPMENT

SOUTHLINE TRANSMISSION LINE PROJECT
DRAFT: NEPA PLAN OF DEVELOPMENT

VOLUME I

Prepared for
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Las Cruces District Office
1800 Marquess Street
Las Cruces, New Mexico 88005
BLM/NM/OL-14-01-1610

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Text in red indicates content to be included with Final POD (post Final EIS) - not included herein

Map Set 1 – Project and Environmental Features (1" = 2,000′)

Map Set 2 – Key Mitigation Measures and Reclamation Practice (1" = 400′)

Map Set 3 – Access Roads (1" = 400′)

Chapter 1

INTRODUCTION

1.1 INTRODUCTION

Southline Transmission, LLC (Southline), a subsidiary of Hunt Power, L.P., submitted Standard Form (SF-) 299, "Application for Transportation and Utility Systems and Facilities on Federal Lands," to the Bureau of Land Management (BLM) for a right-of-way (ROW) to use BLM-administered public lands for a portion of the Southline Transmission Line Project (Project) on December 4, 2009. Southline amended its application on December 22, 2010 to add an additional section to the proposed Project. The Plan of Development (POD) has also been amended in response to Project changes and recommendations from the BLM, Western Area Power Administration (Western), other agencies, and public comment. This application has been assigned BLM Case File No. NMNM-124104.

Southline has also filed a Statement of Interest with Western's Transmission Infrastructure Program (TIP) because it may seek to use Western's borrowing authority under the 2009 amendment of the Hoover Power Plant Act (Public Law (PL) 98-381, Title III, § 301) ("the Hoover Act") for the proposed Project. Western needs to determine whether it will provide Hoover Act funding for the proposed Southline Project, and if it does provide funding, the nature and extent of Western's participation in the proposed Project. Western may also participate under a trust funding agreement with the Desert Southwest Region if TIP funding is not provided. In the context of making these determinations, Western will evaluate the upgrade of its existing Saguaro–Tucson and Tucson–Apache 115-kilovolt (kV) transmission lines.

1.2 PROJECT OVERVIEW

The proposed Project would consist of two sections. The first section would entail construction of approximately 240 miles of new double-circuit 345-kV transmission line in a new 200-foot ROW between the Afton Substation, south of Las Cruces, New Mexico, and Western's Apache Substation, south of Willcox, Arizona (Afton–Apache Section or New Build Section). The second section would entail the upgrade of approximately 120 miles of Western's existing Saguaro–Tucson and Tucson–Apache 115-kV transmission lines in a 100-foot-wide existing ROW to a double-circuit 230-kV transmission line (Saguaro–Apache Section or Upgrade Section) with up to 50 feet of new ROW in places. The Upgrade Section would originate at the Apache Substation and terminate at the Saguaro Substation northwest of Tucson, Arizona. Both new permanent ROW and temporary construction ROW would be required in the New Build Section and in some portions of the Upgrade Section for the transmission line, substations, access roads, and other permanent and temporary Project components; the anticipated ROW width for the Upgrade Section 230-kV transmission line would be 150 feet where expansion to that width is feasible.

The New Build Section (Afton–Apache) would include construction and operation of:

- 205 miles of 345-kV double-circuit electric transmission line in New Mexico and Arizona with a planned bidirectional capacity of up to 1,000 megawatts (MW). This section is defined by endpoints at the existing Afton Substation, south of Las Cruces in Doña Ana County, New Mexico, and Western's existing Apache Substation, south of Willcox in Cochise County, Arizona;

- 5 miles of 345-kV single-circuit electric transmission line between the existing Afton Substation and the existing Luna–Diablo 345-kV transmission line;
- 30 miles of 345-kV double-circuit electric transmission line between New Mexico State Route 9 (NM 9) and Interstate 10 (I-10) east of Deming in Luna County, New Mexico, to provide access for potential renewable energy generation sources in southern New Mexico. This segment of the proposed Project is included in the analysis, but development of this segment would be determined at a later date;
- one new substation in Luna County (proposed Midpoint Substation) to provide an intermediate connection point for future interconnection requests; and
- installation of new communications equipment at, and connection to, two existing substations in New Mexico and one in Arizona.

The Upgrade Section (Apache–Saguaro) would include:

- replacing 120 miles of Western's existing Saguaro–Tucson and Tucson–Apache 115-kV single-circuit electric wood-pole H-frame transmission lines, which date to 1951, with a 230-kV double-circuit electric steel-pole transmission line. In locations where needed and where possible, an additional 50 feet of ROW adjacent to the existing 100-foot ROW would be obtained for the new 230-kV line. This Upgrade Section is defined by endpoints at the existing Apache Substation, south of Willcox in Cochise County, Arizona, to the existing Saguaro Substation, northwest of Tucson in Pinal County, Arizona;
- 2 miles of new build double-circuit 230-kV electric transmission line to interconnect with the existing Tucson Electric Power Company (TEP) Vail Substation, located southeast of Tucson and just north of the existing 115-kV Tucson–Apache line; and
- Interconnection with and upgrade of 12 existing substations along Western's existing lines in Arizona. Substation expansions would be required for installation of new communications equipment. In some cases expansion may require a separate yard.

1.3 PURPOSE OF THE PLAN OF DEVELOPMENT

This POD was developed to meet the requirements outlined in 43 Code of Federal Regulations (CFR) 2804.25(b). Under these requirements, the BLM may request information necessary to process a ROW application; this request for information may include a detailed construction, operation, rehabilitation, and environmental protection plan, i.e., a "Plan of Development," and any needed cultural resource surveys or inventories for threatened or endangered species. On Federal lands administered by the BLM, the POD is an enforceable stipulation of the BLM ROW grant and pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they would adopt the stipulations and measures in the POD, where appropriate.

This POD outlines the stipulations and mitigation measures (herein also Proponent Committed Environmental Measures (PCEMs)) identified in the Environmental Impact Statement (EIS) that must be followed during construction, operation, and maintenance of the proposed Project, for which the BLM and Western are the joint lead federal agencies. The POD also is intended to be used Project-wide as (1) a summary of Project environmental requirements and protection measures, and (2) a description of the processes and procedures that will be used to ensure compliance with the requirements of the BLM, Western, and other Federal, State, and/or local agencies, as appropriate.

While neither BLM nor Western has the authority to enforce the POD and its PCEMs on State or private lands, BLM and Western expect that most landowners will want the same protections afforded resources on BLM administered lands to be extended to their properties as well. Therefore, the agencies anticipate that the PCEMs and other specific stipulations and methods identified in the POD will largely be implemented over the entire length of the Project, regardless of jurisdiction. The agencies also recognize that the POD is a living document and as such provisions therein may be modified, augmented, or deleted as appropriate. For non-BLM administered lands Western will likely be the lead Federal agency overseeing implementation of and compliance with the suite of PCEMs and other environmental protections identified in the EIS and supporting documents. State and private landowners may add additional requirements to those identified in the EIS and POD, or opt out of certain measures, as negotiated by Southline and/or Western with each landowner during ROW acquisition. Certain parts of the POD will not be applicable to or appropriate for non-BLM administered lands; examples include BLM reporting requirements, stipulations specific to the BLM's ROW grant, or the BLM variance process. BLM's environmental inspection and verification process is also quite different from Western's, and Western's process would be followed on State and private lands. Regardless of which agency is the lead, or the differences in the process followed, the environmental protections identified and committed to would be implemented (with the possible exception of the landowner required additions or deletions mentioned above). On BLM administered land, all stipulations and PCEMs identified as applicable in any of the POD volumes should be adhered to for the life of the BLM ROW grant. The BLM Las Cruces District Office and the Safford and Tucson field offices have required ROW grant holders to contract with an independent entity (i.e., a compliance inspection contractor (CIC)), who will conduct environmental compliance inspections during the construction phase of the Project. The objective is to monitor for compliance with environmental stipulations designed to protect the environment and prevent impacts from exceeding those described in the EIS or other permit approvals. The CIC will monitor and oversee implementation of the POD on all BLM-administered lands, as described in Appendix A6 – Environmental Compliance Management Plan of this POD.

1.4 ORGANIZATION OF THE PLAN OF DEVELOPMENT

The POD is organized into two major volumes. Volume I contains chapters 1 through 6 and the appendices. Volume II includes engineering, mitigation, and environmental mapping, which support information presented in Volume I. Following is an overview of the information contained in these two volumes.

1.4.1 Volume I

Volume I of the POD is intended to provide the reader with a general overview of the Project and key elements of the POD (chapters 1–6) and detailed information regarding the required PCEMs, protocols, and procedures for the construction, operation, and maintenance of the transmission line and ancillary facilities (appendices). While chapters 1 through 6 provide general information, the appendices (along with the mapping materials in Volume II) are more detailed and have been designed to serve as stand-alone documents that may be readily updated and refined. Following is an outline summary of the information and materials presented in chapters 1 through 6 and the appendices of this POD.

Chapters 1 through 6 include the following information:

Chapter 1 – Introduction – Introduces the Project, discusses the purpose and organization of the POD; explains the POD's relationship to other documents; and lists required authorizations, permits, and approvals required for construction.

Chapter 2 – Roles and Responsibilities – Explains the roles and responsibilities of the Project team, and discusses Project communications and notification procedures.

Chapter 3 – Project Description – Describes the Project components/facilities (structures, foundations, conductors, access roads, substations, etc.), land requirements, construction disturbance, ROWs, and the Project's relationship with other related ROWs and utilities.

Chapter 4 – Operation and Maintenance – Provides information related to the operation and maintenance of the Project's transmission line(s) once construction is complete, including public and environmental protection and vegetation management.

Chapter 5 – Environmental Mitigation Measures – Includes a brief overview and introduction of the key environmental concerns associated with the construction of the Project and relevant mitigation measures/PCEMs to be applied in order to avoid or minimize potential effects.

Chapter 6 – Literature Cited – Provides the references and literature cited in preparing the POD.

There are four appendices (A through D), organized as presented below:

Appendix A – Construction Considerations – This appendix provides detailed information about the specifics of construction, including the following:

A1 Flagging, Fencing, and Signage Plan
A2 Geotechnical Investigation
A3 Project Construction
A4 Special Construction Techniques
A5 Construction Workforce
A6 Environmental Compliance Management Plan

Appendix B – Environmental Protection / Framework Plans – This appendix includes the following:

B1 Access Road Plan
B2 Traffic and Transportation Management Plan
B3 Stormwater Pollution Prevention Plan
B4 Spill Prevention, Control, and Countermeasures Plan
B5 Historic Properties Treatment Plan
B6 Blasting Plan
B7 Plant and Wildlife Species Conservation Measures Plan
B8 Erosion, Dust Control, and Air Quality Plan
B9 Hazardous Materials Management Plan (HMMP)
B10 Emergency Preparedness and Response Plan
B11 Noxious Weed Management Plan
B12 Fire Protection Plan
B13 Stream, Wetland, Well, and Spring Protection Plan
B14 Soil Management Plan
B15 Reclamation, Vegetation, and Monitoring Plan
B16 Health and Safety Plan (HASP)
B17 Avian Protection Plan (APP)
B18 Waste Management Plan
B19 Helicopter Flight Plan/Flight and Safety Plan
B20 Decommissioning Plan

Appendix C – Transmission Construction and Vegetation Management Standards – This appendix includes the following:

C1 Transmission Construction Standards
C2 Vegetation Management Standards

Appendix D – Land (Legal) Description of Proposed Route Across Federal Lands – This appendix provides a legal description of the Project facilities across Federal land.

1.4.2 Volume II

Three sets of maps form Volume II of the Final POD. These maps contain regional to detailed information, including site-specific instructions to guide the construction of the transmission line and associated facilities as described below. ***Files to be included with Final POD (post Final EIS) – not included herein.***

1.5 RELATIONSHIP WITH OTHER ENVIRONMENTAL DOCUMENTS

This POD includes measures for avoidance, minimization, and mitigation of environmental impacts resulting from the implementation of this Project as identified in the EIS (called PCEMs) and approved in the BLM Record of Decision (ROD). This POD incorporates the various regulatory approvals, permits, and other authorizations that contain environmental requirements, including those measures stipulated in Resource Management Plans (RMPs) for the BLM Las Cruces District Office and the Safford and Tucson field offices. The relevant approved and proposed management plans (and plan amendments) are presented in table 1.

Table 1. Applicable BLM Land Use Plans and Planning Documents

Resource Management Plan	Plan Date	Lead Office	Project Applicability
Mimbres Resource Area*	December 1993	Las Cruces District Office	Afton–Apache
Safford District RMP	August 1991	Safford District Office	Apache–Saguaro
Las Cienegas RMP	July 2003	Tucson Field Office	Apache–Saguaro
Phoenix RMP	December 1988	Phoenix District Office, Tucson Field Office, Safford Field Office	Apache–Saguaro
Restoration Design Energy Project	January 2013	Arizona State Office	Arizona
Solar Programmatic EIS (PEIS)	October 2012	BLM Department of the Interior (DOI)	Arizona, New Mexico
West-wide Energy Corridor PEIS	November 2008	BLM DOI	Arizona, New Mexico

* The TriCounty RMP is in progress. When approved, the TriCounty RMP would amend the portion of the 1993 Mimbres RMP (BLM 1993) that covers Doña Ana County.

1.6 FEDERAL, STATE, AND LOCAL PERMITS

Table 2 provides a listing of the laws, regulations, and guidelines that are related to energy generation and development of transmission infrastructure and the associated permits and approvals.

Table 2. List of Required Federal and State Permits and Approvals

Regulatory Authority/Agency	Permit/Approval	Project Trigger	Relevant Law/Regulation
Federal			
BLM	ROW grant, land use plan amendment	Request for ROW across BLM lands	43 United States Code (U.S.C.) 1761–1771
BLM	Permit for archaeological investigations	Federal undertaking with the potential to affect historic properties	Archaeological Resources Protection Act (ARPA), Antiquities Act of 1906, Federal Land Policy and Management Act (FLPMA)
BLM	Permit for collection of paleontological resources	Potential for disturbance of paleontological resources and need for collection	Paleontological Resources Preservation Act, FLPMA
BLM *In consultation with Western, State Historic Preservation Offices (SHPOs), Advisory Council on Historic Preservation, tribes, other Federal, State, and local agencies and consulting parties*	Compliance with Section 106 of the National Historic Preservation Act (NHPA)	Potential to disturb historic properties	NHPA (16 U.S.C. 470); 36 CFR 800
Western	Determine whether Southline can upgrade Western's lines and use existing transmission easements as part of the proposed Project; determine feasibility and impacts of proposed Project; and determine the nature of Western's participation in the proposed Project	Proposal to upgrade a segment of Western's transmission system and have Western obtain updated and new transmission line easements, and to use Western funding	Hoover Power Plant Act 98-381, as amended Reclamation Law, including but not limited to the Reclamation Act of 1902, 43 U.S.C. 391, Hayden O'Mahoney Amendment, 43 U.S.C. 391a-1 and 392a; the Reclamation Project Act of 1939, Section (c) 43 U.S.C. 485h(c); Flood Control Act of 1944, Section 5, 16 U.S.C. 825s; Department of Energy Organization Act, 42 U.S.C. 7152a; Energy Policy Act of 1992, 16 U.S.C. 796, 824j, 824k, and 824l; Energy Policy Act of 2005 Contributed Funds Act, 43 U.S.C. 395; Antideficiency Act, 31 U.S.C. 1341; and associated regulations, orders, and policies

Table 2. List of Required Federal and State Permits and Approvals (Continued)

Regulatory Authority/Agency	Permit/Approval	Project Trigger	Relevant Law/Regulation
Federal, cont'd.			
Bureau of Reclamation	Easement or ROW use authorization	Substation expansion	The Reclamation Act of June 17, 1902, 32 Stat. 388, 43 U.S.C. 371, et seq., specifically 32 Stat. 389, 43 U.S.C. 421 and the Flood Control Act of 1944, 58 Stat. 887, 890, 16 U.S.C. 825s, as amended and supplemented by subsequent acts or enactments; the Reclamation Project Act of 1939, 53 Stat. 1187, 43 U.S.C. 485; the Rivers and Harbors Act of August 30, 1935, 49 Stat. 1028, 1039, 33 U.S.C. 540; the Act of May 28, 1954, Ch. 12, 68 Stat. 143, and other acts specifically applicable to this project; the Act of August 1, 1888, 25 Stat. 357, 40 U.S.C. 257, repealed and reenacted as 40 U.S.C. 3113; the Act of February 26, 1931, 46 Stat. 1421, 40 U.S.C. 3114; the Department of Energy Organization Act of August 4, 1977, 91 Stat. 565, 42 U.S.C. 7101, specifically 91 Stat. 578, 42 U.S.C. 7152; and the Omnibus Appropriations Bill of FY 2009, PL 111-8
Bureau of Indian Affairs	ROW Easement	Upgrade of existing Western line across tribal land	25 CFR 169
U.S. Forest Service	Special use permit (SUP)	Upgrade of existing Western line across Coronado National Forest	36 CFR 212.51(a)(8)
U.S. Forest Service – Coronado National Forest	SUP	Potential for disturbance of cultural resources on the Coronado National Forest	ARPA, FLPMA
U.S. Army Corps of Engineers	Section 404 permit	Impacts to jurisdictional waters of the U.S.	Clean Water Act, 33 U.S.C. 1251, et seq.
U.S. Fish and Wildlife Service	Biological opinion, concurrence, or incidental take permit	Potential impact to threatened or endangered species	Endangered Species Act, 16 U.S.C. 1531–1544
U.S. Environmental Protection Agency	National Pollutant Discharge Elimination System (New Mexico)	Stormwater management from potential discharges greater than 5 acres	40 CFR 122.26
Department of Defense (DOD)	Easement or ROW use authorization	Construction, operation, and decommissioning of transmission line across DOD-administered land	10 U.S.C. 2668
Federal Aviation Administration (FAA)	A "No-hazard Declaration" required if structure is more than 200 feet high	Location of structure relative to airports and airspace if structure is more than 200 feet high	FAA Act of 1958, 14 CFR 77

Table 2. List of Required Federal and State Permits and Approvals (Continued)

Regulatory Authority/Agency	Permit/Approval	Project Trigger	Relevant Law/Regulation
New Mexico			
New Mexico Public Regulation Commission	Application for approval of location of transmission line and certificate of public convenience and need	Construction of a transmission line greater than 230 kV	New Mexico Statutes Annotated (NMSA) 62-9-3; 17.9.592 New Mexico Administrative Code (NMAC), and NMSA 62-9-1; 17.1.2.9 NMAC
New Mexico Department of Transportation (DOT)	Access or public highway utility accommodation permit	Upgrading access roads, use of public highway to transport oversize loads, or installation of transmission lines within DOT ROW	18.31.6 NMAC, and 17.4.2 NMAC
New Mexico State Land Office	ROW or easement permit	Construction, operation of a transmission line on State lands	NMSA 19-7-57
New Mexico SHPO		Federal undertaking with the potential to affect historic properties	NHPA, Section 106 (36 CFR 800)
New Mexico State Historic Preservation Division	Permit for archaeological investigations	Potential for disturbance of cultural resources on State land	NMSA 18-6
New Mexico Department of Energy, Minerals, and Natural Resources Forestry Division	Collection permit	Displacement or removal of any State endangered plant species	NMSA 75-6-1; 19.21.2 NMAC
Arizona			
Arizona Corporation Commission	Certificate of Environmental Compatibility	Construction of a transmission line greater than 115 kV	Title 40 Arizona Revised Statutes (ARS) Chapter 2, Article 6.2 (40-360–40-360.13)
Arizona State Land Department	ROW/right-of-entry permit	Survey, construction, operation of a transmission line on State lands	ARS 37-461
Arizona DOT	Crossing or encroachment permit, permit for use of highway ROW	Construction, operation, abandonment of transmission lines within State highway ROW	ARS 28-7053, Arizona Administrative Code R17-3-501–509
Arizona SHPO		Federal undertaking with the potential to affect historic properties	NHPA, Section 106 (36 CFR 800)
Arizona State Museum (ASM)	Arizona Antiquities Act (AAA) blanket permit or Project-specific permit	Potential for disturbance of cultural resources on State land	AAA ARS 41-841 through 41-847
ASM	Permission to disturb human remains	Potential for disturbance of human or funerary objects remains on State or private land	AAA ARS 41-844 and ARS 41-865
ASM	AAA blanket permit	Potential for disturbance of paleontological resources on State land	AAA ARS 41-841

Table 2. List of Required Federal and State Permits and Approvals (Continued)

Regulatory Authority/Agency	Permit/Approval	Project Trigger	Relevant Law/Regulation
Arizona, cont'd.			
Arizona Department of Environmental Quality	Arizona Pollutant Discharge Elimination System	Stormwater management from potential discharges greater than 5 acres	ARS 49-255.01
Tohono O'odham Nation	Permit to conduct archaeological work	Potential for disturbance of cultural resources on Tohono O'odham Nation land	Title 8, Chapter 1, "Archaeological Resources Protection" (Ordinance No. 06-84) of the Tohono O'odham Nation Tribal Code
Arizona Department of Agriculture	Application for Arizona native plant and wood removal	Displacement or removal of any listed native plant species	Native Plant Law, ARS Title 3 (Chapter 7)
Local*			
Development Services, Public Works, DOT	ROW use permit, encroachment permit	Potential encroachment onto County/City ROW	Varies; County/local ordinance or municipal code
Planning and Zoning, Community Development	Special use, conditional use permits	Change zoning or land use to allow construction of the transmission line and associated facilities	Varies; County/local ordinance or municipal code
Floodplain Departments	Floodplain use permit	Construction of project facilities in flood-prone areas as defined by Federal Emergency Management Agency	Varies; County ordinance
Public Works Department	Grading/excavation/building permit	Construction	Varies; County/local ordinance or municipal code
Department of Environmental Quality, Air Quality Districts	Fugitive dust control permits	Construction	Varies; County ordinance

Note: This list is not exhaustive.

* Local permits are only examples of permits that may be required by various local agencies (County/City).

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Chapter 2

ROLES AND RESPONSIBILITIES

2.1 INTRODUCTION

The various parties involved with the construction, operation, and maintenance of the Project include the Proponent (Southline), BLM, Western, BLM's third-party CIC, all of Southline's construction contractor(s), and the environmental resource specialists/monitors. Other subcontractors may be engaged, as needed. As noted in section 1.3 of this POD, the POD is an enforceable stipulation of the BLM ROW grant for the portions of the Project on Federal lands administered by BLM. Where Western is involved in the Project, they would adopt the stipulations and measures in the POD, where appropriate.

2.1.1 The Proponent

Southline is responsible for requirements of the administration of the ROW and coordination between the Project engineer and construction contractor(s) on BLM-managed lands. Southline and their construction contractors will be responsible for the construction of the transmission line(s) and ancillary facilities in a manner that complies with the conditions outlined in the BLM ROW grant, and other required permits listed in table 2; Southline will be responsible for facility operation and maintenance. Western is responsible for administering the ROW where they are involved in the Project, which at a minimum includes the Upgrade Section of the project.[1] Western and their construction contractor will be responsible for the construction, operation, and maintenance of the Upgrade Section of the transmission line(s) and ancillary facilities in a manner that complies with the conditions outlined in Western's construction contract.

Southline will be the ultimate authority for their contractors; however, for the execution purposes of this document, it will refer specifically to the construction contractor(s) when needed to define their activities.

To help ensure construction activities are conducted in a manner that complies with all Federal, State, and local regulations, the construction contractor(s) will contract a team of environmental inspectors (e.g., biological, cultural, and paleontological resources, and dust (where applicable)) to work jointly and cooperatively with the CIC (see Section 2.1.2.1 – Compliance Inspection Contractor and Appendix A6 – Environmental Compliance Management Plan). Each of Southline's environmental inspectors will provide copies of their daily reports to the CIC as described in Appendix A6 – Environmental Compliance Management Plan.

Construction Contractor(s)

The construction contractor(s) will be responsible for the final engineering design, procurement, construction, testing, and reclamation of the Project. The construction contractor(s) will be retained by Southline to construct the transmission line(s) and ancillary facilities, including construction of new or improved roads, a communication system, and temporary work areas associated with construction activities. The construction contractor(s) will also be responsible for addressing reclamation activities, as well as addressing all environmental protection stipulations.

[1] POD v3 footnote: when Western has made a decision regarding their ultimate involvement in the Project, more detail will be included regarding their role and responsibilities.

The construction workforce may include, but is not limited to, the following:

- general contractor, specializing in transmission line construction
- substation construction contractor
- survey crews
- tree clearing crews
- road construction crews
- foundation and anchor installation crews
- structure steel haul crews
- structure assembly and erection crews
- wire installation crews
- cleanup crews
- restoration contractor/crews
- quality assurance inspectors
- drilling and blasting contractor
- restoration/reseeding subcontractor

The construction contractor's construction manager will be responsible for enforcing the contract requirements. The construction contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the stipulations and PCEMs set forth in the POD. The selected construction contractor(s) will attend a preconstruction meeting with the BLM, Western, other agencies as appropriate, the CIC, and Southline following the award of the construction contract.

2.1.2 Federal Agencies

There are 104.4 miles of transmission line route that cross Federal land, including lands administered by the BLM (100.4 miles), the U.S. Forest Service (Forest Service) (0.5 mile), the Department of Defense (DOD) (0.2 mile), the Bureau of Reclamation (Reclamation) (0.4 mile), and the Bureau of Indian Affairs (BIA) (2.9 miles). Each agency has designated an officer who will provide oversight for the Project on the ROW they administer. The authorized officers for the BLM are the Las Cruces District Manager and the New Mexico State Director. Each of the authorized officers may designate certain responsibilities to their appropriate personnel, such as BLM project managers and resource specialists.

The Administrator and CEO for Western is Mark A. Gabriel, who is ultimately responsible for Western's participation in the Project. Western's designated Project Manager will provide oversight and direction for the Project as it moves from the environmental planning phase into the design and construction phase.

Each authorized Officer/administrator will be responsible for administering and enforcing the right-of-way grant and permit provisions for their respective agencies. Each authorized officer/administrator will also ensure stipulations and PCEMs included in the POD are adhered to during Project construction, operation, and maintenance, where appropriate. The authorized officer/administrator will also be responsible for written stop-and-resume-work orders, as applicable, and resolving any conflicts that arise relating to the Project on the lands they administer. Compliance will be managed by the appropriate designees of the authorized officer/administrator and resource specialists as needed, for their respective lands, in conjunction with the CIC. The process by which the BLM, Western, and Southline's

construction contractor(s) conduct environmental monitoring, compliance, and reporting activities is outlined in Appendix A6.

Compliance Inspection Contractor

The CIC will represent the BLM during the construction and reclamation phases of the Project on BLM-administered lands to ensure (1) compliance with the BLM ROW grant and (2) that environmental impacts associated with Project do no exceed estimates disclosed in the EIS and approved by the BLM in its ROD. The CIC may also coordinate with Western on those portions of the Project where Western is involved in the Project.

The CIC shall work under the direct supervision and control of the BLM during the construction and reclamation phases of the Project on BLM-managed administered lands. On those portions of the Project where Western is involved, the CIC shall take direction from Western; the CIC shall not take any direction with respect to the manner of conducting monitoring from Southline or its construction contractor(s). The CIC's primary role is to observe work activities; verify, document, and monitor compliance; and bring noncompliant situations to the attention of the appropriate party and offer recommendations on how to prevent non-compliance prior to commencement of work.
The responsibilities of the CIC are outlined in detail in Appendix A6 – Environmental Compliance Management Plan.

However, the CIC and Southline's Project Manager shall work together to support the Project's timely and effective construction. All efforts shall be made to coordinate closely with Southline's Project Manager and its construction contractor(s) to report and document noncompliance concerns not otherwise identified by these parties, giving Southline's Project Manager, construction contractor(s), and CIC the opportunity to resolve the concerns. Through this collaboration, every effort shall be made to limit any work stoppage to situations involving immediate threats to sensitive resources or emergency situations. The CIC is not otherwise, at any time or way, authorized to direct work undertaken by the construction contractor(s), with the exception of stop work orders. The role of the CIC is not to direct the work of either Southline or the construction contractor(s).

Prior to construction, the CIC will develop a Project Compliance Plan, to be reviewed by the BLM and Western. This plan will describe how the Project Proponent will uphold, document, and manage environmental compliance with the terms specified in the ROW grant, the POD, landowner agreements, and all Federal, State, and local permits. The Project Compliance Plan will include, but is not limited to, the following elements:

- the roles and responsibilities of participants necessary to facilitate environmental compliance with the terms and conditions of the ROW grant and the POD in the field during construction
- a comprehensive inspection and monitoring program
- corrective procedures in the event of non-compliance
- a standard protocol for variance requests
- a communication plan describing primary channels of routine communication between parties for Project updates and compliance-related issues
- a reporting process that includes forms and reports to be completed on a regular basis during the course of construction
- a comprehensive Project-specific environmental compliance training program that may include sections prepared by specific resource specialists

The CIC will report directly to the BLM or Western as appropriate, who will coordinate with other cooperating agencies, where appropriate. The duties of the CIC in support of the Project will include:

- preparation of a Project Compliance Plan
- coordination of Notice-to-Proceed meeting(s)
- preparation and maintenance of a Key Contacts List
- periodic meetings with the BLM authorized officer and resource specialists
- daily field inspection of the Project area
- coordination with Southline's Environmental Compliance Manager and environmental inspectors (see Appendix A6 – Environmental Compliance Management Plan)
- completion of a daily compliance inspection report and submittal of a weekly summary
- completion of reports with applicable photographs to the BLM and Proponent
- attendance at weekly construction meetings
- review of variance requests
- completion of an End of Construction Project Report

The Project has the potential to affect sensitive resources; thus, required stipulations and PCEMs have been developed to minimize potential impacts to these resources. These stipulations and PCEMs are specified in the POD. The proactive implementation of these terms and requirements will facilitate timely and efficient construction of the Project while protecting sensitive resources. The CIC shall be completely knowledgeable of the POD, its associated plans, and all environmental requirements.

2.1.3 Communication Procedures and Notification Protocols

Effective communication between the parties mentioned above is a critical component to the success of the Project. Communication protocols related to environmental compliance monitoring, reporting requirements, and Project variance requests are described further in Appendix A6 – Environmental Compliance Management Plan. Additional details regarding emergency agency notification (e.g., in case of wildfire, unanticipated discoveries of cultural resources, hazardous material spill, etc.) are presented in the various plans included as appendices to the POD. The selected construction contractor(s) will attend preconstruction conferences with the BLM, Western as appropriate, and Proponent following award of the construction contract.

The CIC will develop a Project contact directory that will be updated by all parties, as needed, to provide a convenient reference during the construction phase of the Project. This contact list will include the name, agency, office phone number, cell phone number, and email address of those individuals working on the Project; this list will be updated as required.

The construction contractor will be responsible for maintaining a list of all emergency notification contacts and numbers (local law and fire officials, hospitals, etc.) for events such as wildfires, hazardous material spills, accidents, etc. Southline will be responsible for notifying private landowners of upcoming construction activities, where appropriate. After construction, Southline will be responsible for maintaining the key contacts list and for all notifications required during the operation and maintenance of the Project.

Chapter 3

PROJECT DESCRIPTION

3.1 INTRODUCTION

This section describes the Project and associated facilities, including transmission line, substation, and ancillary facilities. Specifically, this section includes descriptions of the transmission route and facility design, including tower and pole structures, foundations, hardware, communication facilities, other electrical and non-electrical hardware, substation equipment, and access roads. Also included in this section is information regarding induced currents on adjacent facilities, land requirements, and construction disturbance.

Southline proposes to construct a high-voltage electric transmission line and associated facilities in southern New Mexico and southern Arizona (see figures 1.1 through 1.9). The proposed Project, as described in this document, is based on the Agency Preferred Alternative in the Final EIS. The route would cross private, State, and public lands, including lands managed by the BLM (New Build and Upgrade sections), DOD (New Build Section only), Forest Service (Upgrade Section only), Reclamation (Upgrade Section only), New Mexico and Arizona State lands, (New Build and Upgrade sections), Arizona Game and Fish Department (AGFD) lands (New Build only), and the Tohono O'odham Nation (Upgrade Section only).

3.2 PROPOSED FACILITIES

This section describes the typical characteristics of the Project facilities, including the New Build Section 345-kV double-circuit transmission line, the Upgrade Section 230-kV double-circuit transmission line, and associated facilities, substation improvements, and ancillary facilities (e.g., access roads).

3.2.1 Transmission Structures

345-kV Structures – New Build Section

Two types of steel structures could be potentially used for the 345-kV transmission line. These include self-supporting lattice and monopole tubular structures, as shown in table 3 and figures 2 through 6.

Table 3. Typical Design Characteristics of the Proposed New Build Section 345-kV Transmission Line

Feature	Proposed (Description)	Option (Description)
General Description		
Structure type	Self-supporting steel lattice structures (see figures 2–4)	Tubular steel poles (see figures 5 and 6)
Structure height	110–170 feet	90–150 feet
Span length	1,000–1,400 feet	800–1,100 feet
Number of structures per mile*	4–5	4–6
ROW width†	200 feet	

Table 3. Typical Design Characteristics of the Proposed New Build Section 345-kV Transmission Line (Continued)

Feature	Proposed (Description)	Option (Description)
Electrical Properties		
Normal voltage	345,000 volts (345 kV)	
Capacity	1,000 MW (initial) 2,000 MW (ultimate)	
Circuit configuration	Double-circuit	
Conductor size‡	792–1,272 kcmil ACSR (two subconductors per phase)	
Shield wire size‡	7/16-inch extra-high-strength steel wire	
Ground clearance of conductor§	30 feet	

Notes: ACSR = aluminum conductor steel reinforced; kcmil = a thousand circular mils (a unit used to express large conductor sizes).

* Variable, depending on structure type and terrain.

† During design, a wider temporary and/or permanent ROW may be needed only in specific locations to accommodate rough terrain or long spans.

‡ Shield wire size: one shield wire position to be occupied by optical ground wire about 0.5 inch in diameter with 48 optical fibers.

§ Design minimum at temperature of 100 degrees Celsius.

The use of either a lattice structure or tubular steel structure would be primarily based on site-specific engineering design needs, as well as economic and visual considerations, or delivery timing.

The lattice structures would be constructed of galvanized steel with a height ranging from 110 to 170 feet and a width at the base of approximately 25 feet. The exact height of the structure would be determined by topography and design requirements for conductor clearance. The distance between each structure would depend on site-specific characteristics but would generally be an average of 1,200 feet (or approximately 4 to 5 structures per mile). Spacing between structures would be designed to allow for the longest spans practical for this type of construction. Each lattice structure would have four legs, each set on concrete foundations placed in the ground. Foundations would be up to approximately 4 feet in diameter each, and would be from approximately 18 to 50 feet deep. Foundations would be designed for each structure site consistent with geotechnical conditions. See discussion below for temporary and permanent disturbance estimates for structure foundations.

To accommodate the 345-kV line, the tubular steel poles are expected to be constructed of galvanized or self-weathering steel and would range in height from 90 to 150 feet. The exact height of the structure would be determined by topography and design requirements for conductor clearance. The tubular steel poles would have an approximate diameter at the structure base of 7 to 8 feet and would range from approximately 18 feet deep up to 50 feet deep, depending on the structure type and geological conditions. Foundation depths would be consistent with geotechnical conditions at each structure site. The distance between each structure would depend on site-specific characteristics but is expected to be an average of approximately 900 feet (or approximately 5 to 6 structures per mile). Spacing between structures would be designed to allow for the longest spans practical for this type of construction. Tubular steel poles would be set on a concrete foundation placed in the ground. See discussion below for temporary and permanent disturbance estimates for structure foundations.

Structure selection and individual structure placement would be determined during the final design phase of the Project. The height and spacing of each structure would also be determined during the final design phase of the plan and profile drawings, would be based on detailed engineering, and would depend on the type of terrain. Aerial marker spheres or aircraft warning lighting may be required in certain locations in accordance with Federal Aviation Administration (FAA) requirements. Structure height and proximity to airports are the main factors in determining whether FAA regulations would apply.

Figure 1.1. Project overview 1.

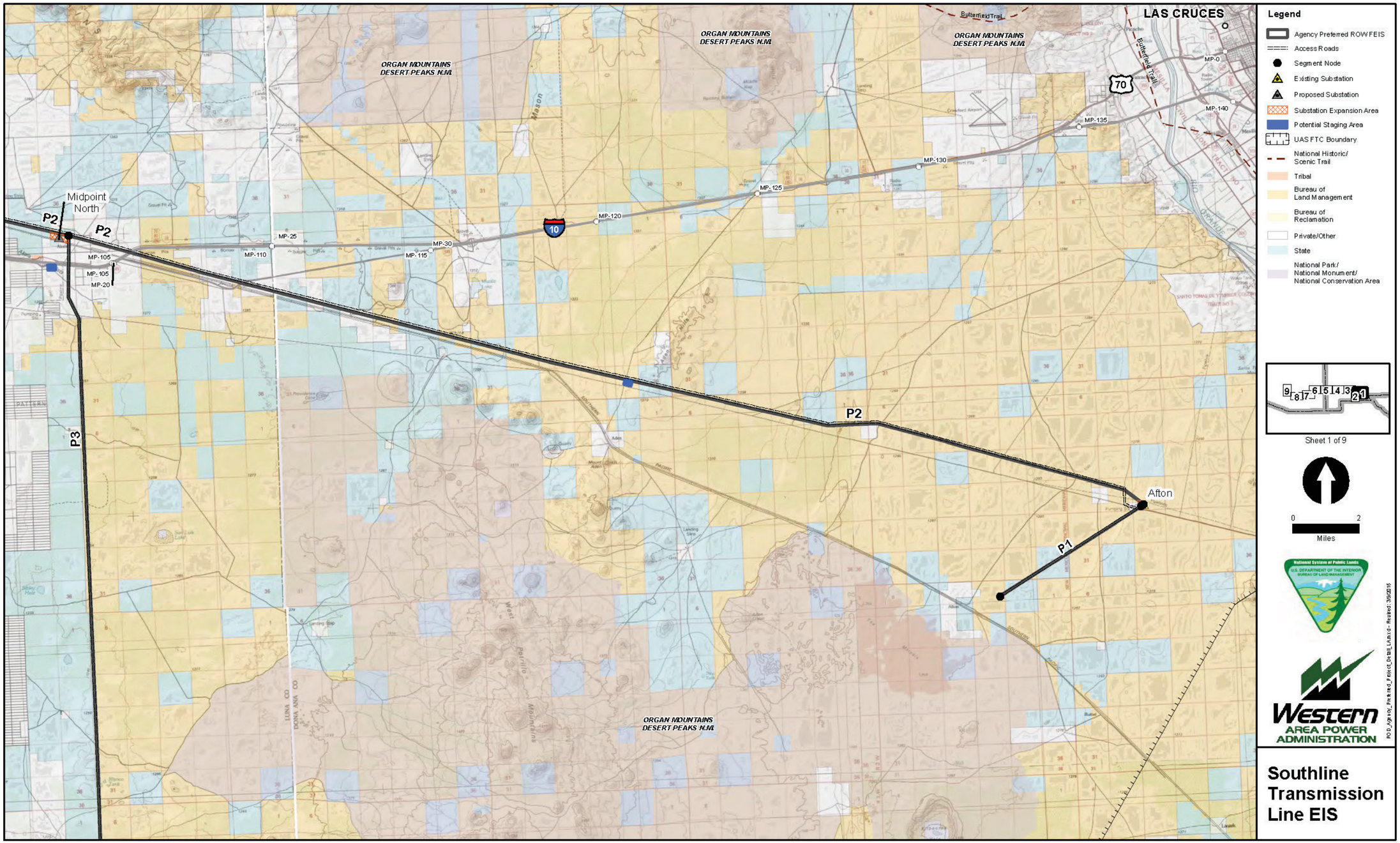

Figure 1.2. Project overview 2.

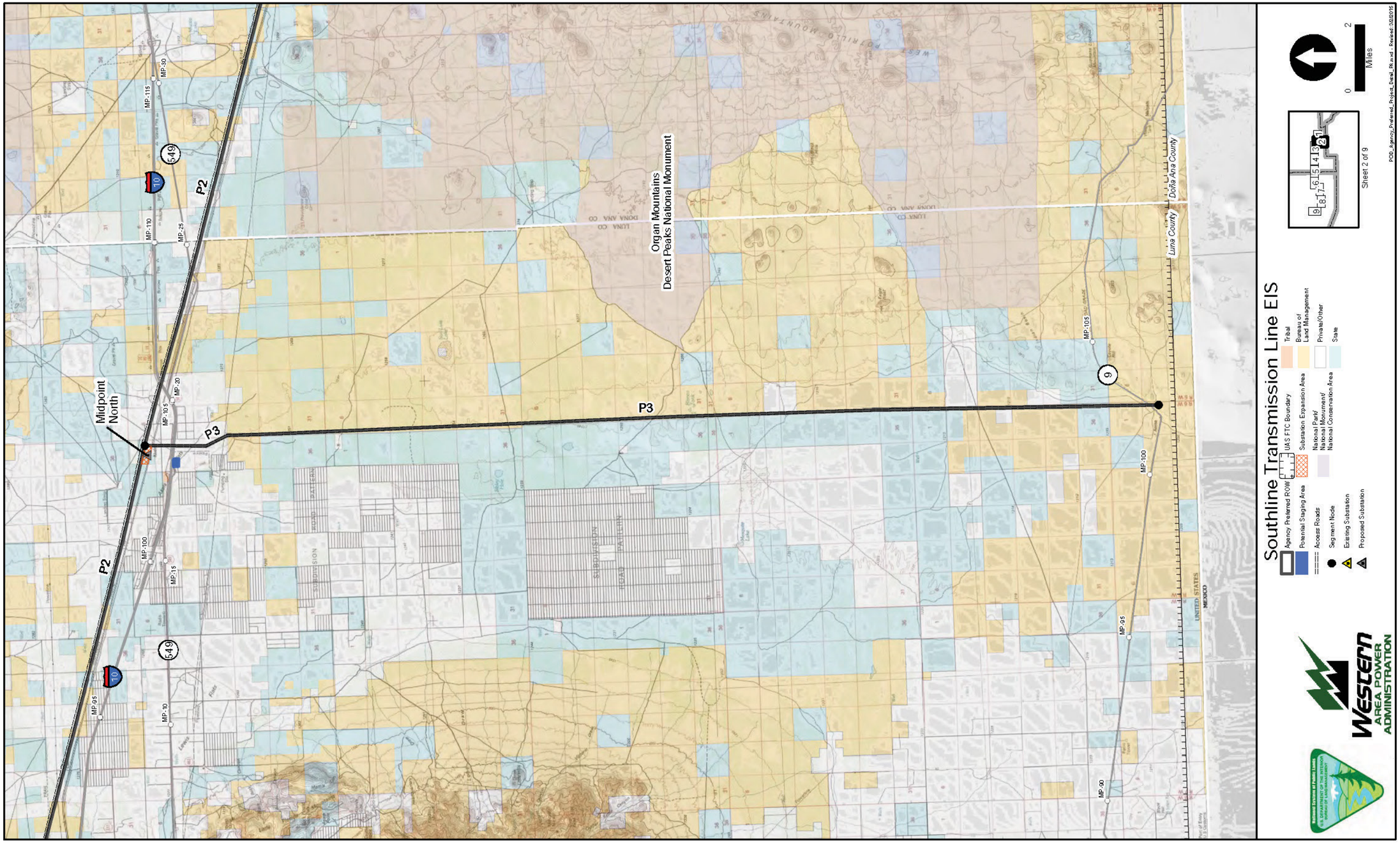

Figure 1.3. Project overview 3.

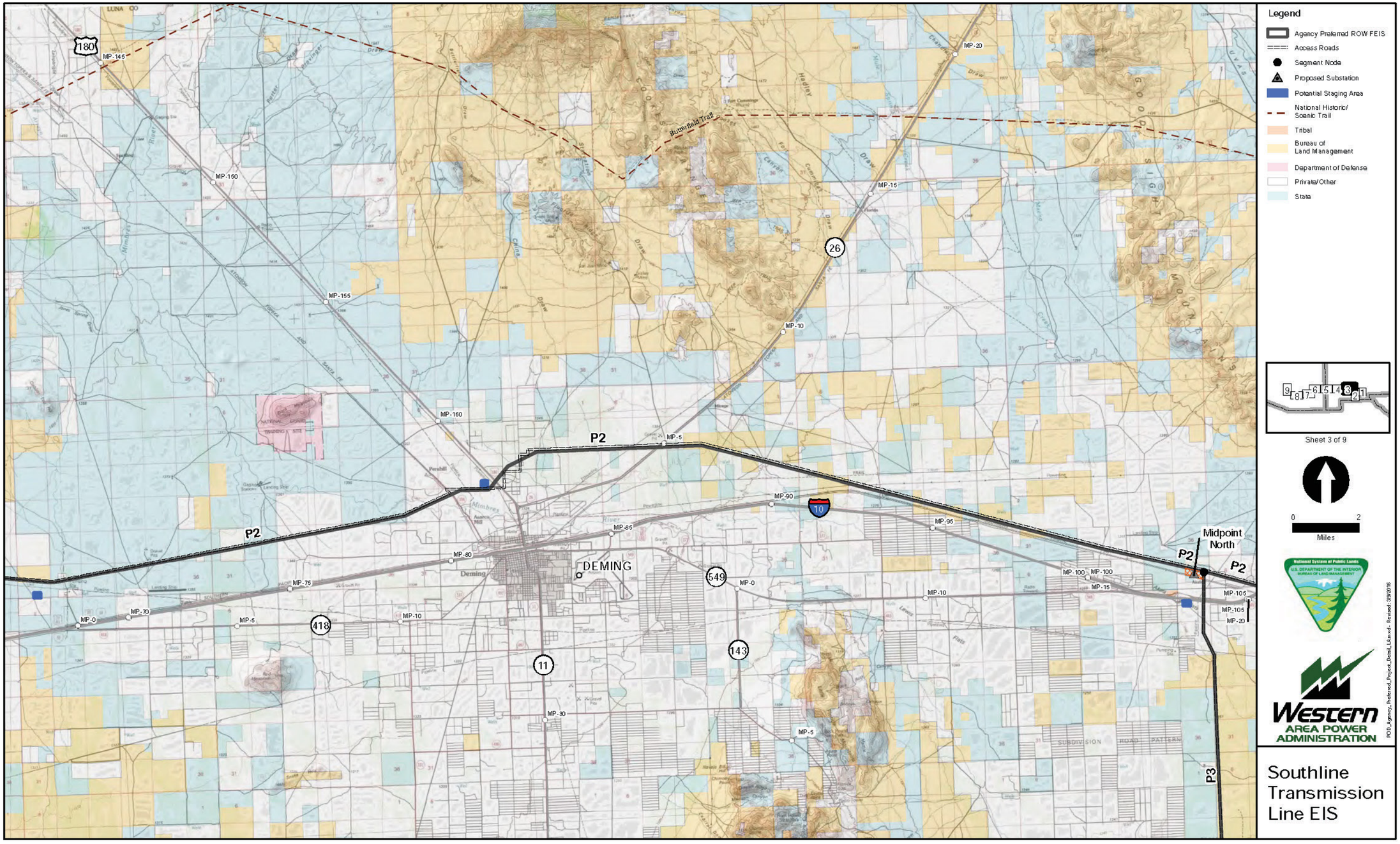

Figure 1.4. Project overview 4.

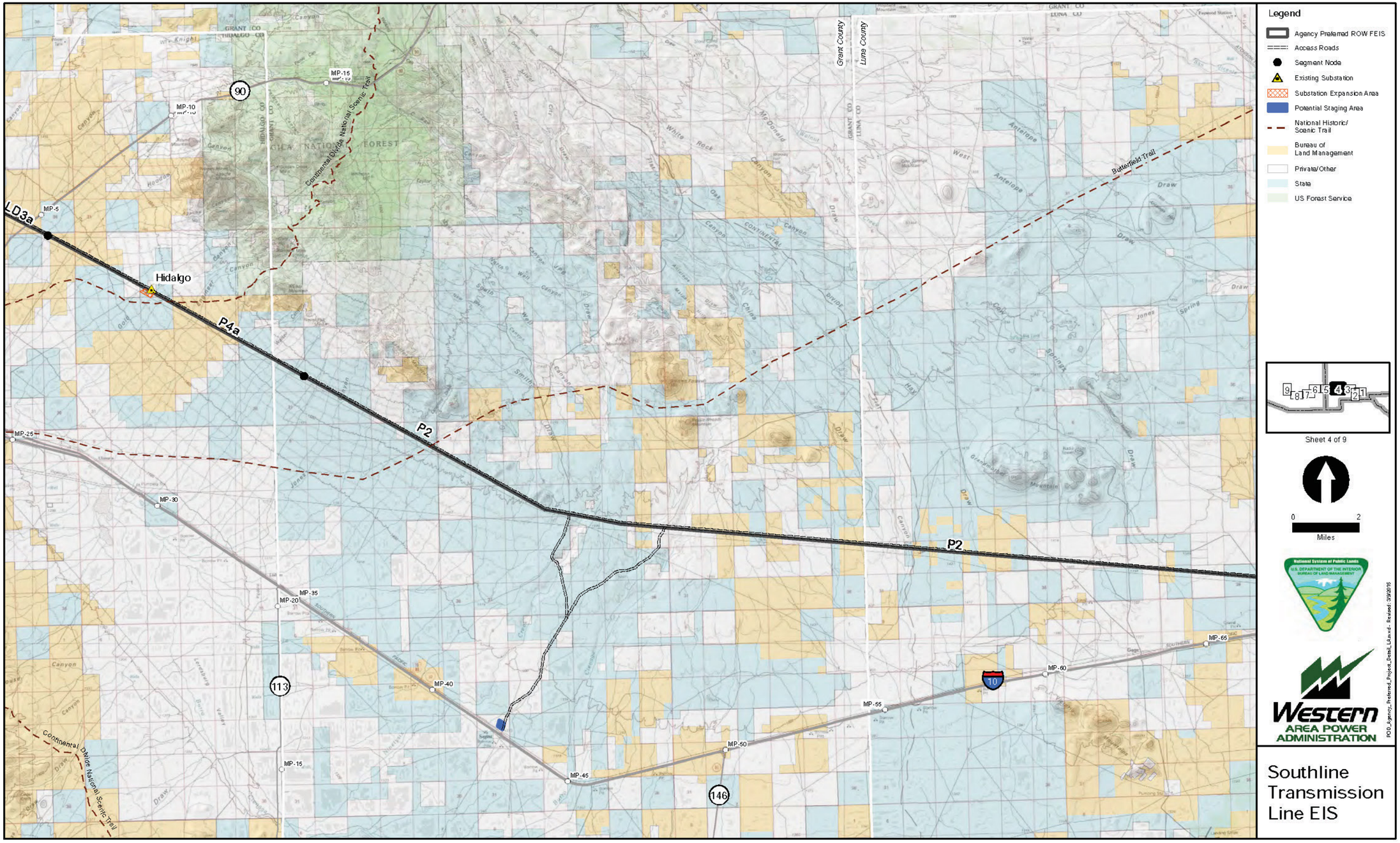

Figure 1.5. Project overview 5.

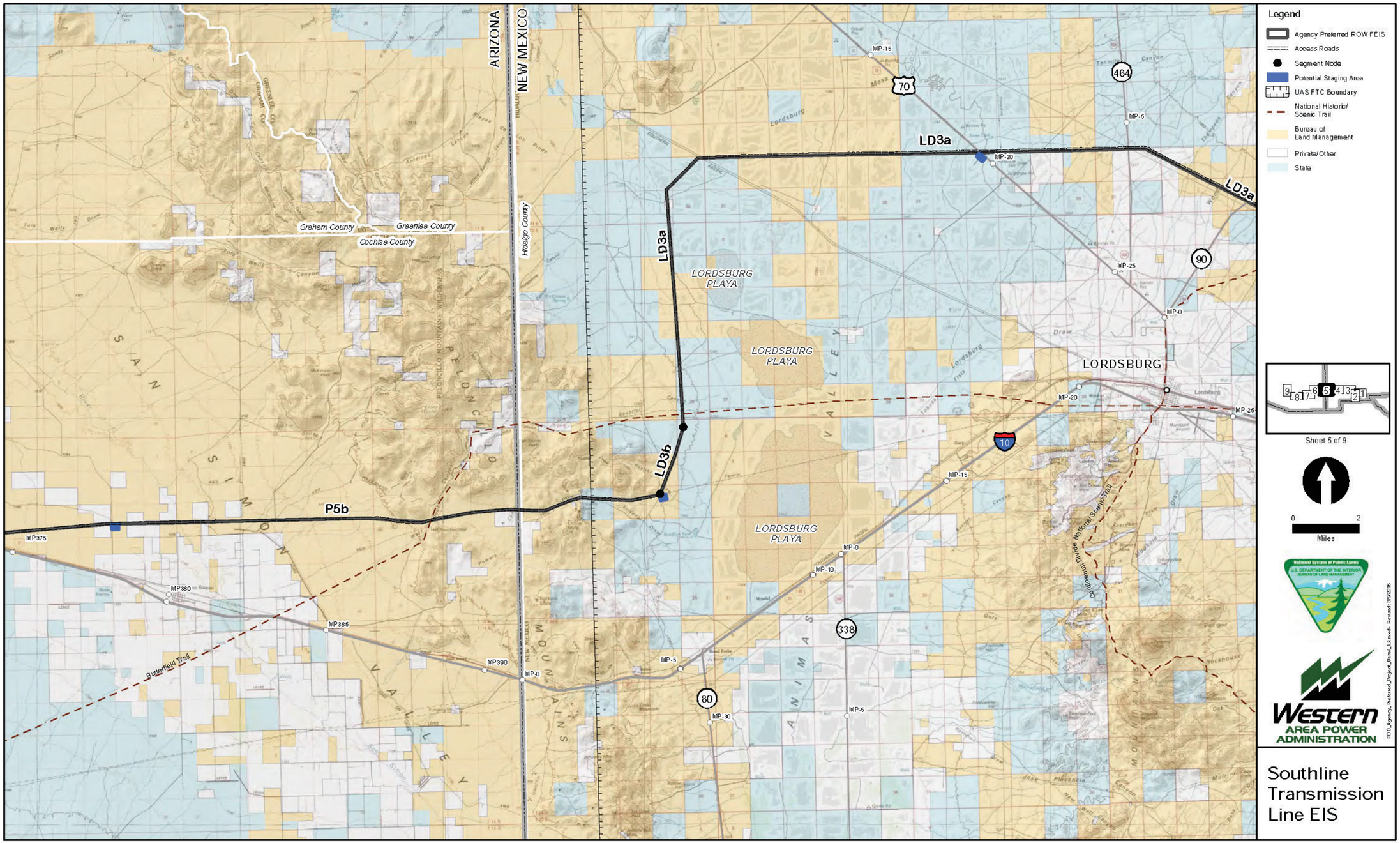

Figure 1.6. Project overview 6.

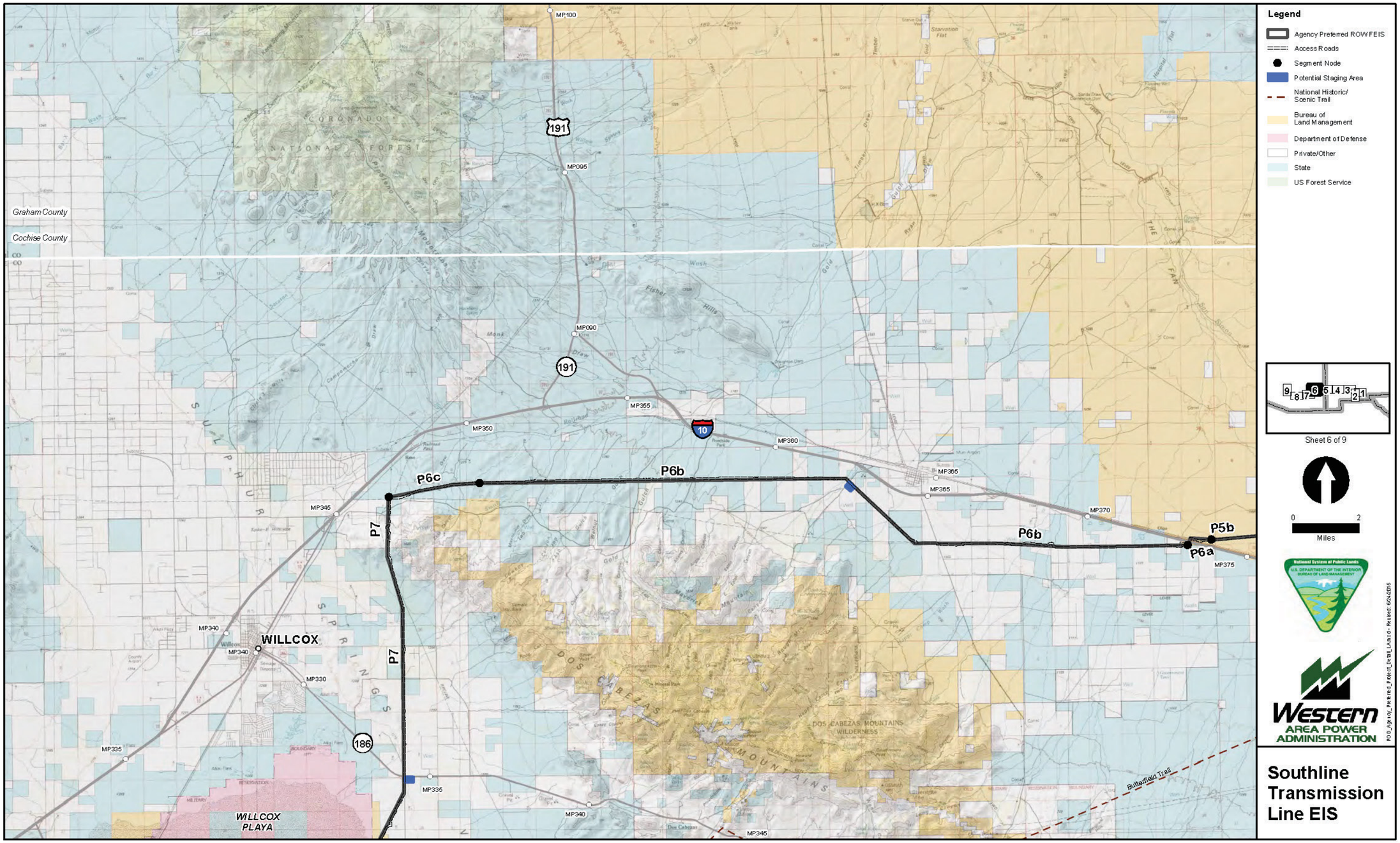

Figure 1.7. Project overview 7.

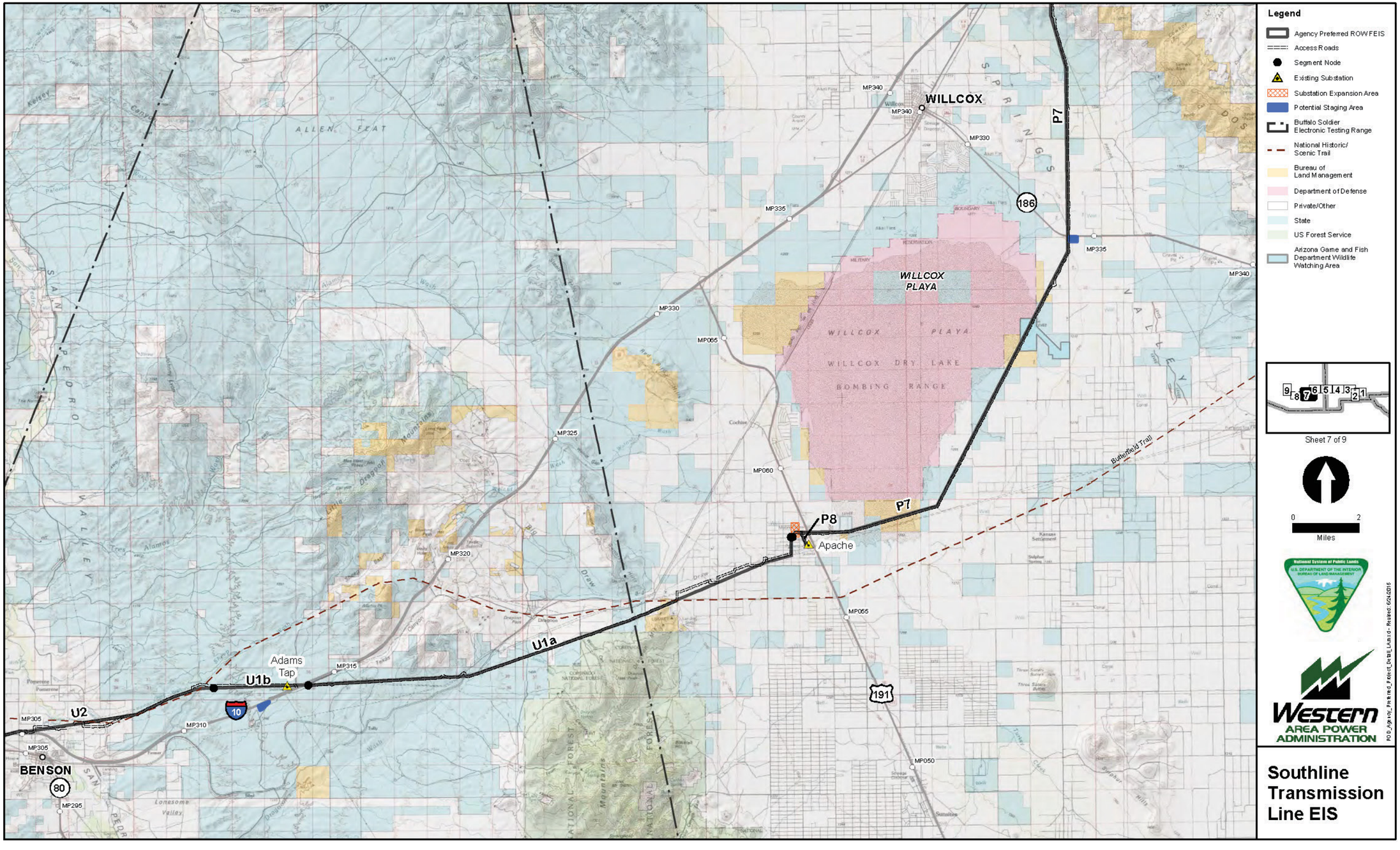

Figure 1.8. Project overview 8.

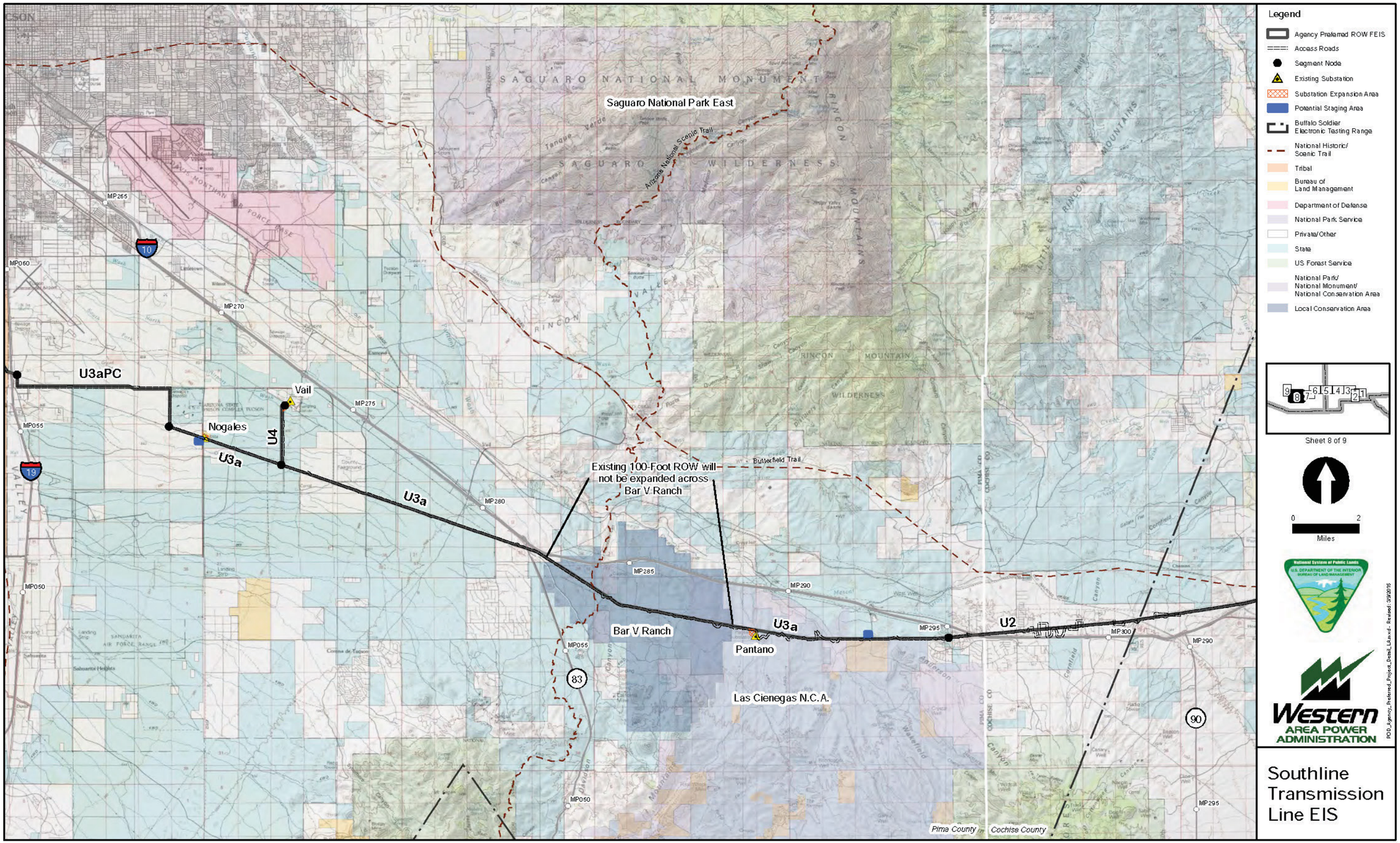

Figure 1.9. Project overview 9.

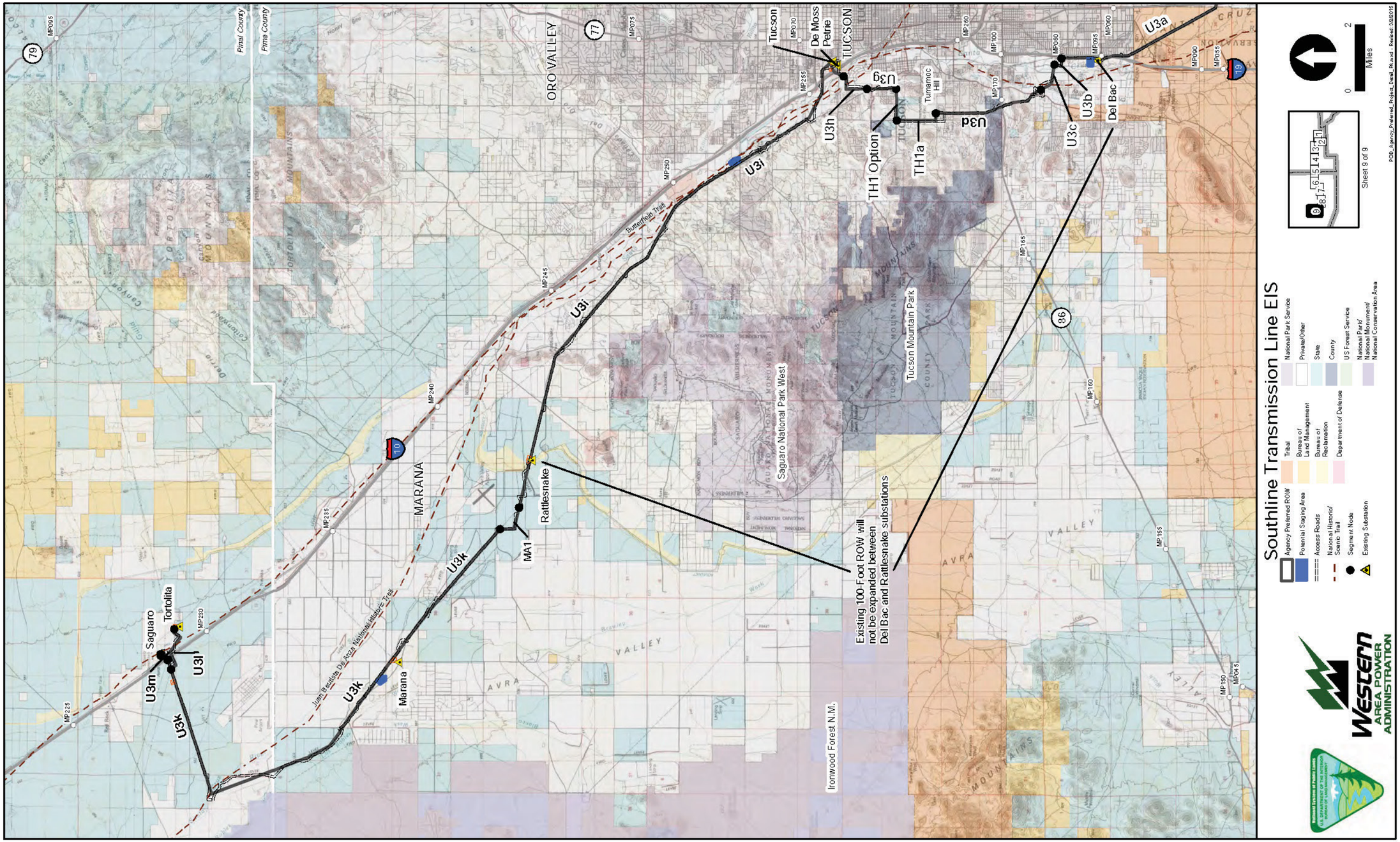

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Figure 2. Typical 345-kV tangent lattice structure diagram.

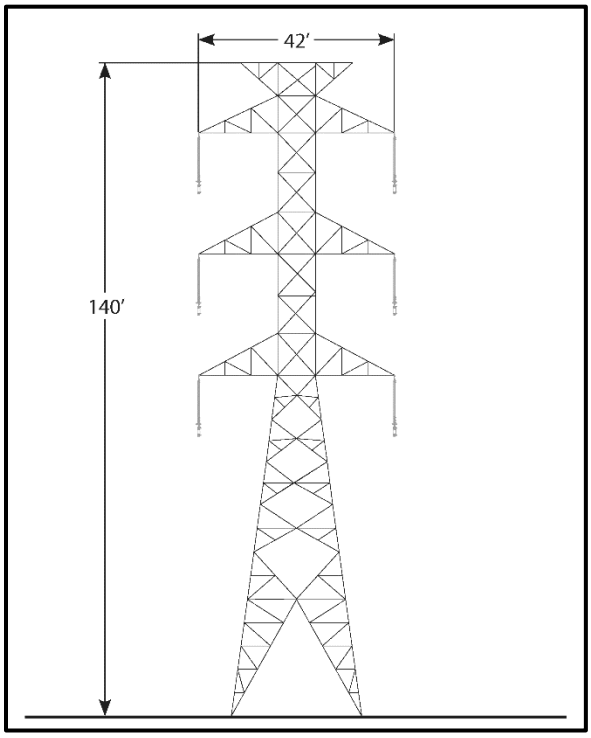


Figure 3. Typical 345-kV angle lattice structure diagram.

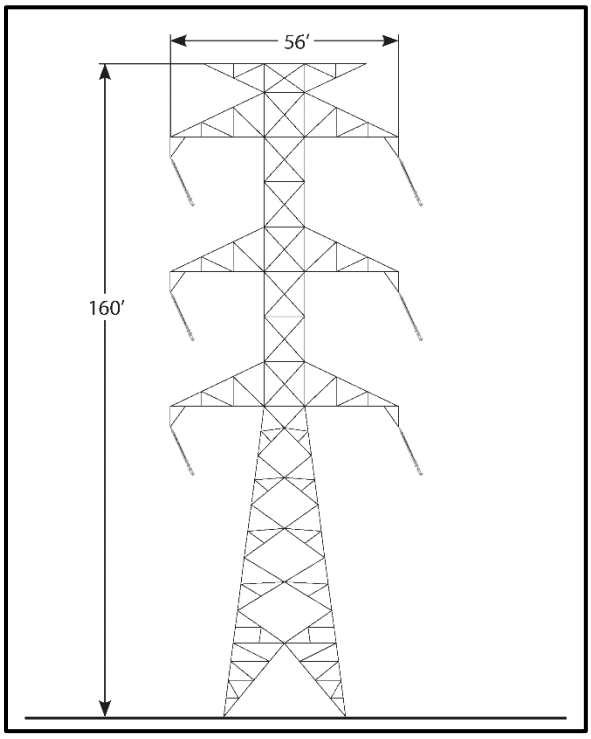


Figure 4. Typical 345-kV dead-end lattice structure diagram.

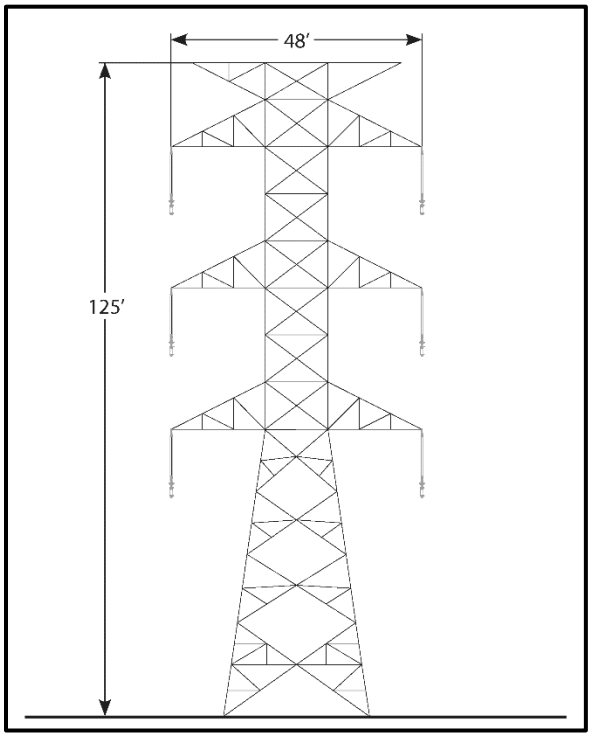


Figure 5. Typical 345-kV tangent tubular steel pole diagram.

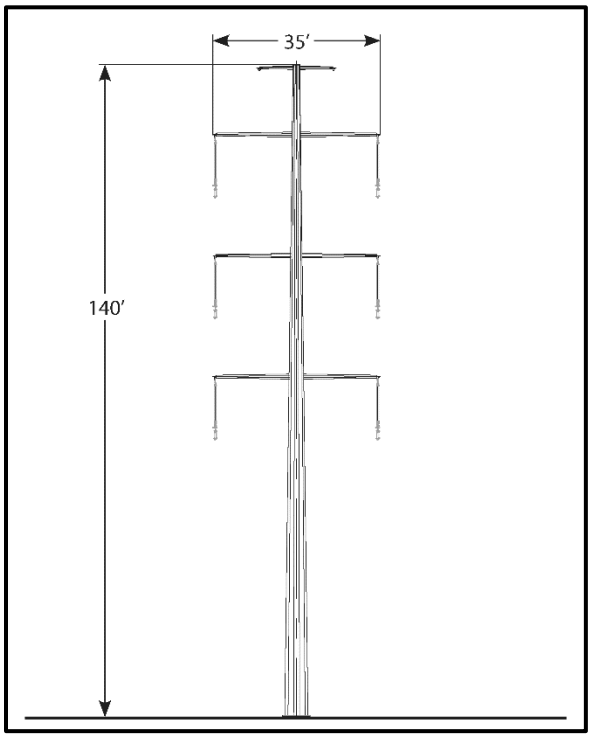
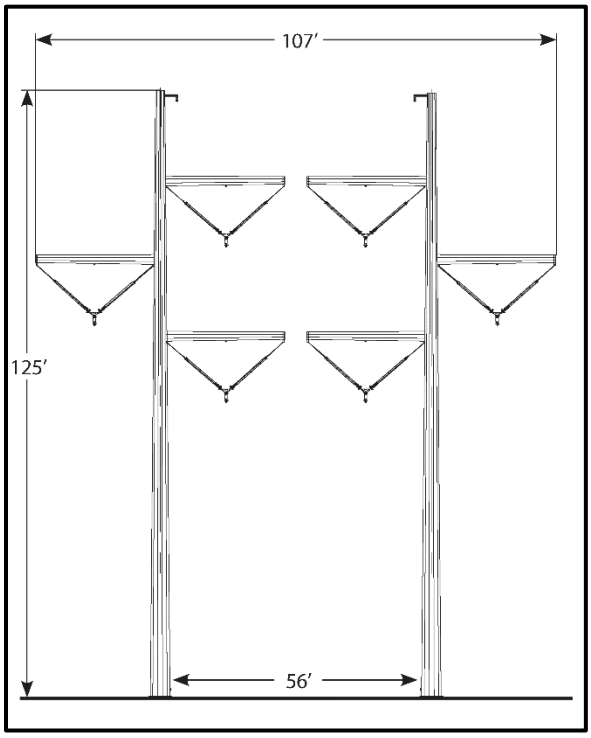


Figure 6. Typical 345-kV transposition tubular steel pole diagram.



It should be noted that the Department of Homeland Security, U.S. Customs and Border Protection, and/or DOD may have additional requirements beyond those described in chapter 5 below. Electrical properties, as described in table 3, indicate that the initial capacity on the New Build Section line would be 1,000 MW, but could ultimately be up to 2,000 MW. The proposed Project has been designed to meet a proposed Western Electricity Coordinating Council (WECC) path rating of 1,000 MW in each direction. Studies conducted to date in support of the WECC path rating (WECC 2015) indicate that the proposed Project would be limited to approximately 1,000 MW to ensure a high degree of reliability in the transmission system. If the existing system is improved and the elements limiting the proposed Project's rating are upgraded, then the Project could potentially have a higher rating in the future based on its physical capacity, which would need to be confirmed with new WECC studies and additional National Environmental Policy Act (NEPA) review as appropriate.

230-kV Structures – Upgrade Section

The 230-kV double-circuit transmission line is proposed to be tubular steel structures (figures 7–10; see also table 4). To accommodate the 230-kV line, the tubular steel structures are expected to be constructed of galvanized or self-weathering steel, with a height ranging from 100 to 140 feet. The exact height of the structure would be determined by topography and safety requirements for conductor clearance. Most tubular steel poles would have an approximate diameter at the structure base of 6 feet or less.

The distance between structures would depend on site-specific characteristics but is expected to be an average of 900 feet (or approximately 5 to 6 structures per mile). By comparison, the distance between existing structures averages approximately 700 feet. Therefore, although the proposed new structures that would be replacing the old structures would be taller, there would be fewer structures per mile. Spacing between the proposed structures would be designed to allow for the longest spans practical for this type of

construction. Each structure would be either directly embedded or foundation mounted in concrete. See discussion below for temporary and permanent disturbance estimates.

Figure 7. Typical 230-kV direct embedded tangent tubular steel pole diagram.

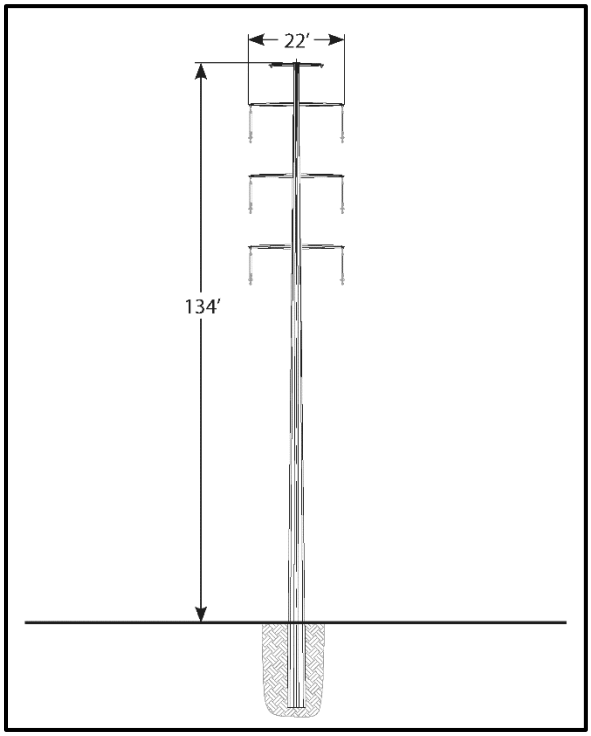


Figure 8. Typical 230-kV tangent tubular steel pole diagram (foundation type).

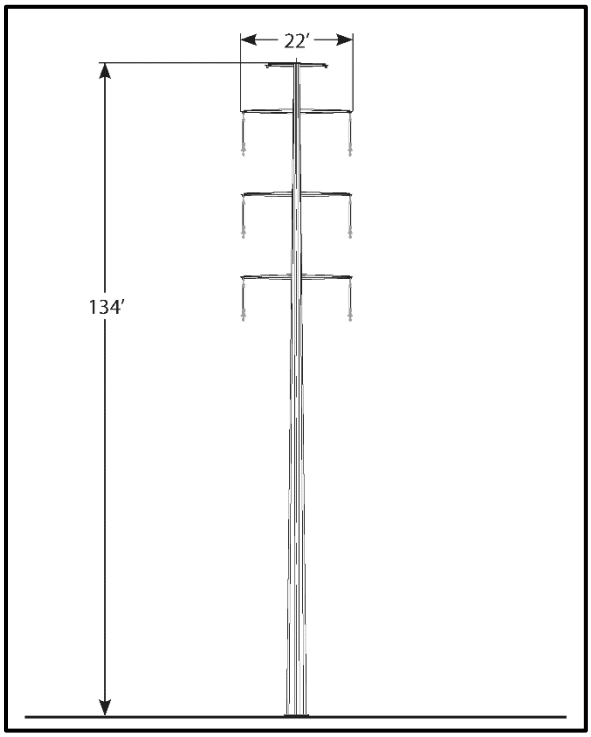


Figure 9. Typical 230-kV suspension angular tubular steel pole diagram.

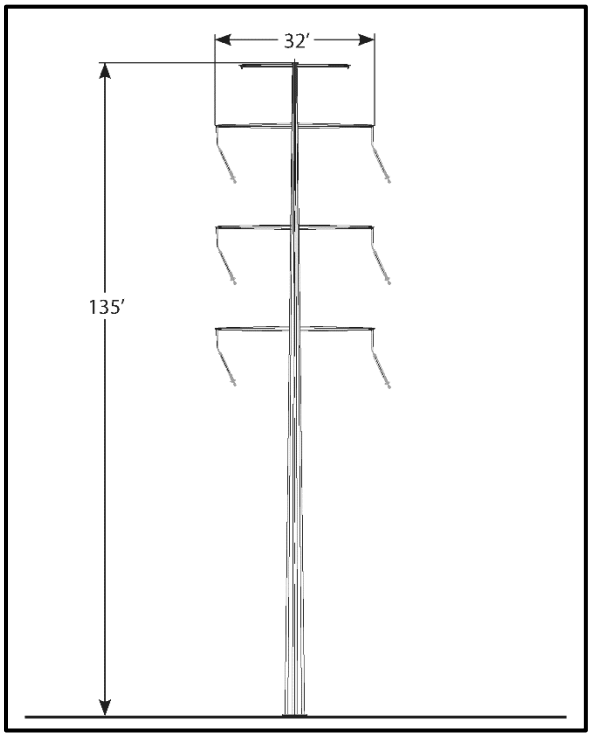


Figure 10. Typical 230-kV dead-end tubular steel pole diagram.

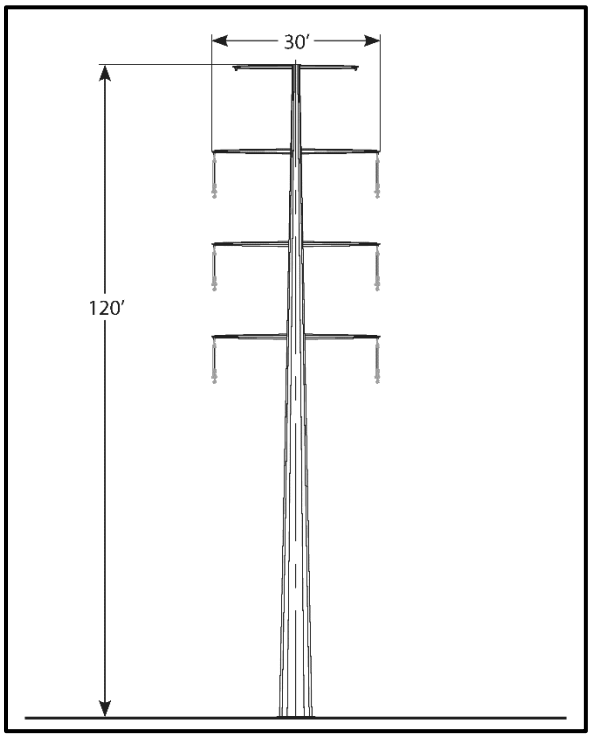


Table 4. Typical Design Characteristics of the Proposed Upgrade Section 230-kV Transmission Line

Feature	Proposed (Description)
General Description	
Structure type	Tubular steel poles (see figures 7–10)
Structure height	100–140 feet
Span length	700–1,100 feet
Number of structures per mile*	5–6
ROW width†	150 feet
Electrical Properties	
Normal voltage	230,000 volts (230 kV)
Capacity	1,000 MW (initial) 1,500 MW (ultimate)
Circuit configuration	Double-circuit
Conductor size	1,272–kcmil ACSR (1 subconductor per phase)
Shield wire size‡	7/16-inch extra-high-strength steel wire
Ground clearance of conductor§	28 feet

Notes: ACSR = aluminum conductor steel reinforced; kcmil = a thousand circular mils (a unit used to express large conductor sizes).

* Variable, depending on structure type and terrain.

† During design, a wider temporary and/or permanent ROW may be needed only in specific locations to accommodate rough terrain or long spans. Through urban Tucson, between Del Bac and Rattlesnake substations, the ROW will likely remain at the existing 100-foot width.

‡ Shield wire size: one shield wire position to be occupied by optical ground wire about 0.5 inch in diameter with 48 optical fibers.

§ Design minimum at temperature of 100 degrees Celsius.

Electrical properties, as described in table 4, indicate that the initial capacity on the Upgrade Section of the proposed line would be approximately 1,000 MW, but could ultimately be up to 1,500 MW. The proposed Project has been designed to meet a proposed WECC path rating of 1,000 MW in each direction. If the existing system is improved and the elements limiting the proposed Project's rating are upgraded, then the Project could potentially have a higher rating in the future based on its physical capacity, which would need to be confirmed with new WECC studies (WECC 2015).

3.2.2 Structure Foundations

Depending on soil and structure type, lattice structures and tubular steel structures are typically supported by cast-in-place drilled concrete pier foundations with detailed design to be completed once site-specific soil conditions can be evaluated. For lattice structures, steel reinforcing cages and stub angles would be installed. For tubular steel structures, either steel reinforcing cages with anchor bolts would be installed or the poles would be embedded directly into the ground. In rocky areas, foundation holes may be excavated by methods such as drilling or detonation of small charges in the drill holes used to break up the rock, or by installing special rock anchor or micro-pile type foundations. The rock anchoring or micro-pile system would be used in areas where site access is limited or where adjacent structures could be damaged as a result of rock breaking or hauling activities.

Each structure location would be evaluated individually during final engineering design to determine the recommended foundation dimensions and types. Anticipated structure type and associated foundation disturbance identified during final engineering would be accounted for in the Final POD.

Temporary and permanent land requirements for the foundations of the various types of both lattice structures and single-pole tubular steel structures for the 345-kV and 230-kV transmission lines are presented in table 5.

Table 5. Typical Structure Foundations – Temporary and Permanent Land Requirements

New Build Section	Disturbance Area
Temporary	
Structure work area	100 × 200 feet (20,000 square feet)
Wire pulling and tensioning (dead-end/angle)	200 × 500 feet (110,000 square feet)
Permanent	
Lattice (tangent)	1,225 square feet 35 × 35–foot structure base
Lattice (angle)	1,600 square feet 40 × 40–foot structure base
Lattice (dead-end)	2,025 square feet 45 × 45–foot structure base
Single-pole tubular steel pole (tangent)	40 square feet 7-foot-diameter foundation
Single-pole tubular steel pole (dead-end/angle)	100 square feet 2 poles × 8-foot-diameter foundation
Upgrade Section	
Temporary	
Structure work area	100 × 200 feet (20,000 square feet)
Wire pulling and tensioning (dead-end/angle)	150 × 500 feet (75,000 square feet)
Permanent	
Single-pole tubular steel pole (tangent)	30 square feet 6-foot-diameter foundation
Single-pole tubular steel pole (dead-end/angle)	50 square feet 8-foot-diameter foundation

3.2.3 Transmission Line Hardware

Conductors

Conductor is the wire cable strung between transmission line structures through which the electric current flows. The New Build Section 345-kV double-circuit transmission line would consist of a double-conductor bundle with two subconductors per phase; there would be three phases per circuit (six total). The subconductors are typically spaced approximately 18 inches apart in a vertical or horizontal configuration. For the 230-kV transmission line Upgrade Section, it is anticipated that one conductor per phase would be used. The conductor would be sized to provide adequate current-carrying capacity.

To minimize wind vibration flowing over the conductors, vibration dampers would be used. The type and number of dampers needed would be determined during final design. Each conductor span is anticipated to have two Stockbridge-type vibration dampers per wire; each shield wire/optical ground wire is anticipated to have four spiral dampers per wire for the 345-kV lines and two spiral dampers per wire for the 230-kV lines.

The minimum design height of the conductor aboveground at the maximum operating temperature would be 30 feet on the New Build Section and 28 feet on the Upgrade Section. Conductor phase-to-phase and phase-to-ground clearance parameters are determined in accordance with National Electric Safety Code (NESC) American National Standards Institute (ANSI) C2. This code provides recommendations for the minimum distances between the conductors and ground, crossing points of other lines and the transmission support structure and other conductors, and minimum working clearances for personnel during energized operation and maintenance activities (Institute of Electrical and Electronics Engineers 2007).

Avian Power Line Interaction Committee (APLIC) standards would be used in final design to minimize avian conflicts. The configuration of the bundle would be designed to provide adequate current-carrying capacity while minimizing interference from audible noise and to radio operations.

Insulators and Associated Hardware

Insulators, which are made of an extremely low-conducting material, such as porcelain, glass, or polymer, are used to suspend the conductors from each structure. Insulators inhibit the flow of electrical current from the conductor to the structure. The assemblies of insulators are designed to maintain appropriate electrical clearances between the conductor, the ground, and the structure. The New Build Section would have insulator assemblies that consist of single string or two strings of insulators, predominantly in the form of a "V." The Upgrade Section would have insulator assemblies that consist of suspension strings or braced post insulators.

Overhead Ground Wire

Overhead shield wires and optical ground wires would be installed between each structure for lightning protection. Current from lightning strikes would be transferred through the ground wires and structures into the ground.

Grounding

For the New Build and Upgrade sections, a grounding system would be installed at the base of each transmission structure that would consist of copper or copper-weld ground rods embedded into the ground in immediate proximity to the structure foundation and connected to the structure by buried copper or other suitable conductor.

3.2.4 Other System Facilities

Communication Systems

The proposed Project would include a communications system consisting of a fiber-optic network necessary for control and protection of the transmission system (referred to as supervisory control and data acquisition). For redundancy purposes, a secondary communications path would be provided via a power line carrier or microwave system. The type of communication system would be determined during final design.

The communication system is needed to transfer data for operation of the line and substations. The system would be reserved for the operation of the power system only, and would not be made available for commercial use. Primary communications for relaying and control would be provided via one optical ground wire that would be installed on one of the shield wire positions on the transmission line structures.

As the optical data signal is passed through the optical fiber cable, the signal degrades with distance. Consequently, communication regeneration stations are required to amplify the signals if the distance along the cable exceeds approximately 50 miles.

Communication Regeneration Station

Approximately two new communication regeneration stations would be required along the New Build Section: one between Apache and Hidalgo substations, and one between Hidalgo Substation and a new substation facility proposed for Luna County, New Mexico (referred to as Midpoint Substation). The two new fiber-optic regeneration sites would be located next to or in the ROW such that they would be accessed by access roads already required for transmission line maintenance. The existing substations along the Upgrade Section of the Project are close enough together that required communication equipment would be located within the substation perimeter (either existing or proposed new yards, as described above).

New communication regeneration sites would typically be 100 × 100 feet, with a fenced-in area of 75 × 75 feet. A 12 × 12 × 9–foot tall building (metal or concrete) would be placed on the site, and access would be available from the transmission line access roads. Entrances above the door of each building would be lit to allow for safe entrance and exit, but the rest of the site would not be lit at night.

Microwave regeneration sites would be co-located with fiber-optic sites if possible along the Upgrade Section, and are only anticipated to be needed along the New Build Section of the Project. As above, the existing substations along the Upgrade Section of the Project are close enough together that required communication equipment would be located within the substation perimeter (either existing or proposed new yards, as described above). The two new microwave regeneration sites along the New Build Section would be located off the ROW and their final location would be determined based on line of sight between substations. These locations would be determined during final engineering but would be located such that they would be accessed by access roads already required for transmission line maintenance.

New microwave communication regeneration sites would typically be 100 × 100 feet, with a fenced-in area of 75 × 75 feet. A typical site consists of a microwave equipment building, which houses telecommunication and network equipment, backup batteries, and chargers. The building would be approximately 12 × 12 × 9 feet tall and, where possible, microwave regeneration sites would be co-located with the fiber-optic regeneration site buildings (i.e., all equipment would be housed in the same building). Buildings would be finished to minimize visual impact, and lighting at night would be limited to an entrance light above the door for security and to allow for safe entrance and exit. The site would also have a microwave antenna installed on a self-standing tower approximately 100 feet tall.

Communication Regeneration Station Distribution Supply Lines

Power would likely be provided from a local electric distribution line, located in proximity to the regeneration site. The voltage of the distribution supply line is typically 12 kV or lower and carried on wooden poles. For the estimated two new sites, it would be necessary to extend the electric distribution line from a take-off point on the existing distribution line to the new site. The location and routing of the existing distribution lines to the new sites would be determined during the final design process.

3.2.5 Other Electrical Hardware

In addition to the conductors, insulator, and overhead shield and optical ground wires, other associated hardware would be installed on the structure as part of the insulator assembly to support the conductors

and shield wires. This hardware might include clamps, shackles, links, plates, and various other pieces composed of steel and aluminum.

3.2.6 Other Non-Electrical Hardware

Other hardware not associated with the transmission of electricity may be installed as part of the Project. This hardware may include aerial marker spheres or aircraft warning lighting, which may be required for the conductor on certain spans in accordance with FAA guidelines.

3.2.7 Substations

The proposed Project involves interconnection with and upgrades of 14 existing substations along the Project route in New Mexico and Arizona, and the potential construction of the proposed Midpoint Substation.

Project design has progressed resulting in a more refined Project description. As a result, at four substation locations within the Upgrade Section where the proposed Project was anticipated to include expansion of existing facilities, these expansions would more accurately be described as "new" substations. These four substation locations are Apache, Pantano, Marana, and Saguaro. Please note that these changes are only a refinement of the project description and do not change the disturbance areas and impact estimates.

A summary of substations associated with the proposed Project, land ownership, and the respective owner/operator is provided in table 6. Of the existing substations, there are two on BLM lands (Afton and Nogales), three on State lands in Arizona (Adams Tap, Pantano, and Tortolita), one on Reclamation lands (Rattlesnake), and eight on private land (Hidalgo, Apache, Vail, Del Bac, Tucson, DeMoss Petrie, Marana, and Saguaro). The Midpoint North Substation would be on New Mexico State Land Office–administered State and private lands.

Table 6. Project Interconnection Substations (Existing and Proposed)

Interconnection Substation	Owner/Operator	Section	Land Status
Afton	El Paso Electric	New Build	BLM
Midpoint*	Southline (owner); operator TBD	New Build	New Mexico State Land Office and private
Hidalgo	El Paso Electric	New Build	New Mexico State Land Office and private
Apache*	Southwest Transmission Cooperative (SWTC) and Southline	Upgrade	Private
Adams Tap	Western	Upgrade	Arizona State Land Department
Pantano*	SWTC and Southline	Upgrade	Arizona State Land Department
Vail	TEP	Upgrade	Arizona State Land Department and private
Nogales	Western	Upgrade	BLM
Del Bac	Western	Upgrade	Arizona State Land Department
Tucson	Western	Upgrade	Private
DeMoss Petrie	TEP	Upgrade	Private
Rattlesnake	Western	Upgrade	Reclamation
Marana*	SWTC and Western	Upgrade	Private

Table 6. Project Interconnection Substations (Existing and Proposed), Continued

Interconnection Substation	Owner/Operator	Section	Land Status
Tortolita	TEP	Upgrade	Arizona State Land Department
Saguaro*	Arizona Public Service and Western	Upgrade	Arizona State Land Department and private

* Midpoint Substation is a new proposed substation that is not interconnected with an existing adjacent substation. Apache Southline, Marana Tap-Sawtooth, and Sasco substations are new substation yards proposed to interconnect with neighboring substations ; all other substations in this table are existing substations.

As shown in table 6, substations along the New Build Section include the existing Afton and Hidalgo substations, as well as the proposed Midpoint Substation in New Mexico. Substations along the Upgrade Section include Apache/Apache (Southline), Adams Tap, Pantano/Pantano (Southline), Vail, Nogales, Del Bac, Tucson, DeMoss Petrie, Rattlesnake, Marana/Marana Tap-Sawtooth, Tortolita, and Saguaro/Sasco. Substation expansions and upgrades vary by substation.

3.2.8 Preliminary Access Road Information

Access roads would be required during construction for the movement of trucks, cranes, concrete trucks, bulldozers, and other light and heavy construction equipment to and along the ROW. Access roads would also serve as the primary means of movement for construction crews and Project materials. During operation, these roads would be needed to access transmission lines, substations, and ancillary facilities for period line inspections and scheduled and emergency maintenance over the life of the Project. As such, access roads must be sufficient to support the weight of construction equipment; upon completion of the proposed Project, access roads would be used by operation and maintenance vehicles.

The proposed Project would be designed, as feasible, to use existing access roads with minimal improvement. The level of construction for access roads would range from unimproved cross-country travel to completely bladed roads (see below for a description of access types A–E). For example, unimproved cross-country travel access (two-track) would be on flat, sparsely vegetated areas, and would be used to maintain the maximum amount of native vegetation and minimize overall disturbance instead of creating new roads, as appropriate. Improvements to existing roads that would be used as access roads would occur in areas where occasional blading would be needed on rough spots and would transition to more blading with other improvements on steep, rocky, or rough country. The intent is to do no more than is necessary to get equipment in and out safely and to prevent erosion. All roads would be within designated ROW, whether inside the main transmission line ROW, or outside in a 30-foot access road ROW.

In areas where improvements are required, access roads would be graded, as needed, to provide a smooth travel surface. Such improvements could include blading, widening of the road, or installing drainage structures, such as culverts. No graveling or paving is planned. Typically, Project access roads would have a travel surface width of 12 to 16 feet but could have a maximum width of 24 feet, depending on site-specific circumstances, such as steep terrain, and where needed to accommodate expanded turning areas for cranes and pole trucks. After construction, wider parts of the access roads would be revegetated. Access road types that could be used for this Project include existing roads that require no improvements, existing roads that require improvements, and new access roads.

Access roads would be designed to go directly from structure to structure, except in difficult terrain or where sensitive resources need to be avoided. In such cases, the road would follow suitable topography from structure to structure and would be built in areas that generally cause the least amount of overall disturbance, which may be outside the ROW in cases of difficult terrain. Typically, where the line spans a

river channel, or large steep-sided wash, access may come from either side to avoid damage to riparian vegetation.

The Access Road Plan for the proposed Project assumes that five primary types of access would be used[2]:

- **Access Type A** – Access from adequate private roads. This type of access would be used when there is no existing road adjacent or parallel to the alignment, but where there is a patchwork of existing roads in the area that would be crossed by the proposed Project ROW, and could be used to access the ROW and get close to the structure locations. Grading between the existing roads and each structure location would only be conducted where necessary and would depend on site conditions. Grading and other improvements may not be necessary, depending on site conditions. Typically, overall disturbance would be limited to a width of 16 feet or less. The purpose of using existing access from private roads would be to minimize overall disturbance.
- **Access Type B** – Parallel to maintained public roads. This type of access would be used when the alignment roughly parallels a nearby public road that is either paved or has gravel surfacing. Short spur roads would be used from the existing roads to each structure location as described below under access type E. Except in rare cases, the existing roads would not be upgraded, but any damage to public roads from construction activities would be repaired. The purpose of access roads parallel to a nearby public road would be to consolidate and minimize overall disturbance.
- **Access Type C** – Parallel to existing utility roads. This type of access would be used when the alignment roughly parallels an existing utility that already has an existing access road. Spur roads would be used from the existing utility roads to each structure location as described below under access type E. Generally, the existing utility roads would be improved. Grading between the existing utility roads and each structure location would only be conducted where necessary and would depend on site conditions. Grading and other improvements may not be necessary, depending on site conditions. Typically, overall disturbance would be limited to a width of 16 feet or less. The purpose of access roads parallel to a utility road would be to consolidate and minimize overall disturbance.
- **Access Type D** – New down-ROW primary access. This type of access would only be used when access types A–C are not feasible. It would consist of a 16-foot-wide road (12-foot travel surface plus 2 feet on either side for berms/ditches). As much as possible, new access would be entirely within the ROW. Typically, new down-ROW access would be used if any parallel roads are more than 700 feet from the alignment. This access type would also normally be used for alignments that parallel interstate highways and railroads because the owners of those facilities generally place restrictions on the use of their ROWs; these restrictions do not allow for the addition of spur roads or their related ROW crossings and gates in ROW fences.
- **Access Type E –** Spur roads–improved and unimproved access. Spur roads would be used to connect type A, B, and C access roads to the ROW and for temporary access to stringing and splicing sites. Spur roads would be unimproved (two-track) roads except in areas where grading may be required based on terrain, with an average of one new spur road per mile for temporary access and approximately five spur roads per mile in areas where type A, B, and C access roads are used for permanent access to structure locations. Only where necessary, spur roads would be improved, and the roads would be graded to 10 to 12 feet wide. Otherwise, spur roads would not be improved in areas with flat terrain and within grassland, desertscrub, sand scrub, and sand dune vegetation communities. Vegetation on unimproved roads may be crushed by driving, but cropping or blading vegetation would not be conducted. This would avoid removal of root mass

[2] Draft NEPA POD Note: Access roads and staging area locations shown in figures are preliminary only (especially along segments LD3a, LD3b, and P7a) and will be refined for the final POD.

and organics in the soil (no surface soil would be removed). The purpose of unimproved spur roads would be to preserve the maximum amount of native vegetation and minimize overall disturbance.

Once design is finalized, all access roads described above would be surveyed, appropriate ROW would be acquired, and ROW would be mapped and incorporated into the Access Road Plan and Management Plan.

3.3 INDUCED CURRENTS ON ADJACENT FACILITIES

Alternating current (AC) transmission lines have the potential to induce currents on adjacent metallic structures such as other transmission lines, railroads, pipelines, fences, or structures that are parallel to, cross, or are adjacent to the transmission line. To address induced-current effects on metallic facilities or structures within 200 feet of the proposed Project center line, these structures would be properly grounded as needed. This would eliminate the electric shock potential a person may experience when touching a metallic object near the proposed Project. Typically, the NESC determines what structures beyond 200 feet or more from the center line would require grounding. If grounding were required outside the ROW, a temporary use permit would be obtained, as needed.

3.4 LAND REQUIREMENTS AND CONSTRUCTION DISTURBANCE

The proposed ROW width for the New Build Section 345-kV double-circuit transmission line is 200 feet. The anticipated ROW width for the Upgrade Section 230-kV transmission line is 150 feet except in urban Tucson between Del Bac and Rattlesnake substations, where the ROW will likely remain at the existing width of 100 feet. These ROW widths have been requested to allow for the safe movement and operation of construction, operation, and maintenance equipment and to allow for sufficient clearance between conductors and the ROW edge, as well as equipment like bucket trucks, as required by the NESC. Southline is also requesting ROWs for ancillary Project facilities and for access to the transmission line.

3.4.1 Right-of-Way / Special-use Authorization Acquisition

New permanent and temporary ROW land rights would be required for the New Build Section.
The requested ROW width for the New Build Section 345-kV double-circuit transmission line is 200 feet. New and temporary ROW may be required in areas along the Upgrade Section, depending on the final design considerations. No new ROW is anticipated in the Upgrade Section across Bar V Ranch in Pima County, and between the Del Bac and Rattlesnake substations; in these areas, the tear-down and rebuild in place method of construction would be necessary because in these congested areas, an additional 50 feet of ROW is not available. Tearing the line out and rebuilding in place requires outages on the existing line while construction is accomplished.

Temporary ROWs are also being requested for construction of the proposed Project facilities. These temporary use areas would include access to work areas at transmission line structure locations, material laydown yards, tensioning and pulling areas, splicing locations, and staging areas. Construction activities would be expected to occur over a 24-month period. Where access is needed outside the transmission line ROW, permanent ROWs for access roads to structure sites are also being requested in order to conduct maintenance throughout Project operation. Where ROW acquisitions are found to be necessary, Western or Southline would negotiate rights and compensate landowners. The landowner would retain the title and use of the easement with a few restrictions.

Before the start of construction of a project element, Southline would obtain a complete project element ROW through a combination of a ROW grant, special use permit, and easements from applicable Federal, State, and local governments, tribes, and private landowners. Close coordination with all property owners and land agencies during surveys and the construction phase of the proposed Project would be important for successful completion of the proposed Project. In the early stages of the proposed Project, landowners would be contacted to obtain right-of-entry for surveys and for geotechnical drilling at selected locations. Additional landowners would be contacted as needed throughout the proposed Project for additional surveys, including geotechnical work. Each landowner along the final centerline route would be contacted to explain the proposed Project and to secure right-of-entry and access to the ROW. Geotechnical drilling on Federal lands may require additional environmental analysis and field clearance under NEPA.

All negotiations with landowners would be conducted in good faith, and the proposed Project's effect on the parcel or other landowner concerns would be addressed. ROWs for transmission line facilities on private lands would be obtained as easements. Land for substation or regeneration stations would be obtained in fee simple where located on private land. A good-faith effort would be made to purchase the land and/or obtain easements on private lands through reasonable negotiations with the landowners. If Southline is unable to negotiate an easement or obtain clear title for the land right, Western may negotiate the easement, or obtain the necessary rights through condemnation proceedings, in accordance with Federal law. Western's policy is to avoid condemnation if at all possible.

Additional ROW may be required, depending upon site geography and terrain. These areas are identified to the extent possible during the NEPA process; however, some needs might be identified during the final engineering, preconstruction, or construction phases of the proposed Project. In some areas, longitudinal access roads would be sited within the transmission line ROW. In other areas, spur roads would connect existing roads to the transmission line ROW. Specific access road locations would be identified in the POD and subject to BLM approval through the ROD, as well as through the issuance of notice to proceed from the BLM. These areas would be subject to field surveys for cultural and biological resources, including native plant surveys and salvage prior to any disturbance. Planned access roads would be surveyed and specific ROW easements obtained from the landowners. All applicable PCEMs, as well as conditions in the Framework Plans, would apply.

3.4.2 Temporary and Permanent (Long-term) Construction Disturbance

Table 7 below includes a breakdown of potential temporary and permanent construction disturbance estimates, based on the proposed Project as described above and in the EIS. The component descriptions precede this section.

Table 7. Summary of Project Components and Estimated Temporary and Permanent Disturbance by Subroute, Segment, and Local Alternative

Subroute	Total Length (miles)	Land Ownership (miles)								Access Road Type (miles)					Total Length Access Roads (miles)	Total New Disturbance Access Roads (acres) (using road types C and D at 16-foot width less any existing disturbance and road type E at 12-foot width)	Subroute Structure Ground Disturbance Estimates				Substation Expansion (acres)		Construction Laydown Yard (acres)	Total Temporary Disturbance (acres) (structure, substation, and construction laydown yards)	Total Permanent Disturbance (acres) (access, substation expansion, and structure foundations)
																	Temporary Disturbance		Permanent Disturbance						
		BLM	BIA	DOD	Forest Service	Reclamation	State	County	Private	A	B	C	D	E			Acres	Acres/ Mile	Acres	Acres/ Mile	Temp	Perm			
New Build Route Group 1: Afton (New Mexico) to Hidalgo (New Mexico)																									
P1	5.1	3.0	0.0	0.0	0.0	0.0	1.9	0.0	0.2	0.0	0.0	0.0	5.1	0.0	5.1	9.9	28.7	5.6	0.5	0.1				28.7	10.4
P2	102.0	32.8	0.0	0.0	0.0	0.0	31.3	0.0	37.9	4.9	11.8	98.1	0.0	29.3	144.1	125.9	571.0	5.6	10.2	0.1			80.0	651.0	136.1
P3	31.1	25.4	0.0	0.0	0.0	0.0	1.4	0.0	4.2	0.0	0.0	0.0	31.1	0.0	31.1	60.3	174.2	5.6	3.1	0.1			20.0	194.2	63.4
P4a	8.9	4.2	0.0	0.0	0.0	0.0	3.7	0.0	1.1	0.0	0.0	8.8	0.0	1.9	10.7	10.2	50.0	5.6	0.9	0.1				503.0	11.1
Total	**147.1**	**65.5**	**0.0**	**0.0**	**0.0**	**0.0**	**38.3**	**0.0**	**43.4**	**4.9**	**11.8**	**106.9**	**36.2**	**31.2**	**206.3**	**206.3**	**824.0**		**14.7**		**20.0**	**35.0**	**100.0**	**944.0**	**256.0**
New Build Route Group 2: Hidalgo (New Mexico) to Apache (Arizona)																									
P5b	21.1	17.9	0.0	0.0	0.0	0.0	1.0	0.0	2.2	0.0	0.0	21.2	0.0	2.7	23.9	19.4	118.1	5.6	2.1	0.1			20.0	138.1	21.5
P6a	0.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.1	0.8	0.6	4.9	5.6	0.1	0.1			20.0	24.9	0.7
P6b	22.5	0.2	0.0	0.0	0.0	0.0	12.6	0.0	9.7	0.0	0.0	20.8	2.3	2.7	25.8	23.5	125.9	5.6	2.2	0.1				125.9	25.8
P6c	2.8	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	2.8	0.0	0.4	3.2	2.9	15.8	5.6	0.3	0.1			20.0	35.8	3.2
P7	22.3	2.3	0.0	0.2	0.0	0.0	8.5	0.0	11.3	0.0	0.5	22.1	0.0	3.8	26.4	21.6	125.1	5.6	2.2	0.1	0.0	0.0	20.0	145.1	23.8
P8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.5	0.1	2.8	5.6	0.1	0.1	0.0	0.0	0.0	2.8	0.1
LD3a	26.6	11.7	0.0	0.0	0.0	0.0	11.8	0.0	3.1	0.0	0.4	17.3	11.4	3.0	32.1	41.2	148.8	5.6	2.7	0.1			20.0	168.8	43.9
LD3b	2.2	1.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	2.0	0.0	2.2	0.0	2.2	4.2	12.2	5.6	0.2	0.1			20.0	32.2	4.4
Total	**98.8**	**34.3**	**0.0**	**0.2**	**0.0**	**0.0**	**37.6**	**0.0**	**26.8**	**0.5**	**0.9**	**84.9**	**15.9**	**12.8**	**114.9**	**113.5**	**553.5**		**9.9**		**20.0**	**53.0**	**120.0**	**693.5**	**176.4**

Table 7. Summary of Project Components and Estimated Temporary and Permanent Disturbance by Subroute, Segment, and Local Alternative (Continued)

Subroute	Total Length (miles)	Land Ownership (miles)								Access Road Type (miles)					Total Length Access Roads (miles)	Total New Disturbance Access Roads (acres) (using road types C and D at 16-foot width less any existing disturbance and road type E at 12-foot width)	Subroute Structure Ground Disturbance Estimates				Substation Expansion (acres)		Construction Laydown Yard (acres)	Total Temporary Disturbance (acres) (structure, substation, and construction laydown yards)	Total Permanent Disturbance (acres) (access, substation expansion, and structure foundations)
																	Temporary Disturbance		Permanent Disturbance						
		BLM	BIA	DOD	Forest Service	Reclamation	State	County	Private	A	B	C	D	E			Acres	Acres/ Mile	Acres	Acres/ Mile	Temp	Perm			
Upgrade Route Group 3: Apache (Arizona) to Pantano (Arizona)																								
U1a	16.1	0.4	0.0	0.0	0.5	0.0	8.8	0.0	6.4	4.9	0.0	11.9	0.0	7.0	23.9	18.9	81.9	5.1	0.2	0.01				81.9	19.1
U1b	2.9	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	2.7	0.0	0.1	2.8	2.5	14.8	5.1	0.0	0.01			20.0	34.8	2.5
U2	15.8	0.0	0.0	0.0	0.0	0.0	3.3	0.0	12.5	1.5	0.0	21.0	0.0	7.0	29.6	28.1	80.6	5.1	0.2	0.01				80.6	28.2
U3a	30.7	0.2	2.9	0.0	0.0	0.2	19.6	0.0	7.7	0.8	0.0	36.2	0.0	3.9	40.9	32.0	156.3	5.1	0.3	0.01			60.0	216.2	32.3
Total	**65.4**	**0.6**	**2.9**	**0.0**	**0.5**	**0.2**	**34.6**	**0.0**	**26.6**	**7.2**	**0.0**	**71.9**	**0.0**	**18.1**	**97.1**	**81.4**	**333.6**		**0.7**		**0.0**	**5.7**	**80.0**	**413.6**	**87.8**
Upgrade Route Group 4: Pantano (Arizona) to Saguaro (Arizona)																									
U3b	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.0	0.2	0.0	0.1	0.5	0.3	2.3	5.1	0.0	0.01				2.3	0.3
U3c	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.7	0.0	0.0	0.0	0.1	0.8	0.2	4.9	5.1	0.0	0.01				4.9	0.2
U3d	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.0	3.1	0.0	1.8	0.0	1.0	5.8	2.7	17.5	5.1	0.0	0.01				17.5	2.8
U3g	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.0	0.3	0.0	0.1	1.3	0.4	4.6	5.1	0.0	0.01				4.6	0.4
U3h	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.9	0.0	0.0	0.0	0.1	1.0	0.1	5.6	5.1	0.0	0.01				5.6	0.2
U3i	18.2	0.0	0.0	0.0	0.0	0.2	2.7	0.0	15.3	7.4	0.0	12.8	0.0	2.1	22.3	13.9	93.0	5.1	0.2	0.01			20.0	113.0	14.1
U3k	16.7	0.0	0.0	0.0	0.0	0.0	10.8	0.0	5.9	3.3	0.0	15.1	0.0	5.7	24.1	21.1	85.2	5.1	0.2	0.01			20.0	105.2	21.3
U3l	1.6	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.4	0.6	0.0	0.4	0.2	0.3	1.6	1.3	7.9	5.1	0.0	0.01				7.9	1.3
U3m	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.4	0.0	0.0	0.0	0.1	0.5	0.1	3.0	5.1	0.0	0.01				3.0	0.2
U4	1.9	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	1.8	0.0	0.5	2.3	1.6	9.8	5.1	0.0	0.01				9.8	1.6

Table 7. Summary of Project Components and Estimated Temporary and Permanent Disturbance by Subroute, Segment, and Local Alternative (Continued)

Subroute	Total Length (miles)	Land Ownership (miles)								Access Road Type (miles)					Total Length Access Roads (miles)	Total New Disturbance Access Roads (acres) (using road types C and D at 16-foot width less any existing disturbance and road type E at 12-foot width)	Subroute Structure Ground Disturbance Estimates				Substation Expansion (acres)		Construction Laydown Yard (acres)	Total Temporary Disturbance (acres) (structure, substation, and construction laydown yards)	Total Permanent Disturbance (acres) (access, substation expansion, and structure foundations)
																	Temporary Disturbance		Permanent Disturbance						
		BLM	BIA	DOD	Forest Service	Reclamation	State	County	Private	A	B	C	D	E			Acres	Acres/ Mile	Acres	Acres/ Mile	Temp	Perm			
U3aPC	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0	4.7	1.5	0.0	1.3	7.5	3.1	31.6	5.1	0.1	0.01				31.6	3.2
MA1	1.1	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.0	0.0	0.0	0.0	0.2	1.2	0.3	5.6	5.1	0.0	0.01				5.6	0.3
TH1a	1.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.2	0.0	1.5	0.0	0.0	0.2	1.7	0.3	7.2	5.1	0.0	0.01				7.2	0.3
TH1-Option	1.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.3	0.0	0.4	0.0	0.0	0.1	0.5	0.1	5.0	5.1	0.0	0.01				5.0	0.1
Total	**55.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**18.9**	**0.4**	**36.0**	**18.5**	**6.6**	**33.9**	**0.2**	**11.9**	**71.2**	**47.3**	**283.07**		**0.6**		**36.0**	**45.4**	**40.0**	**359.1**	**93.3**

Note: Segment information presented only for the Agency Preferred Alternative in the Final EIS.

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Chapter 4

OPERATION AND MAINTENANCE

4.1 INTRODUCTION

Regular inspection and maintenance of transmission lines, substations, and support systems is critical for safe, efficient, and economical operation of the Project. This section provides information describing operation and maintenance activities, including transmission line patrols, inspections, tower and wire maintenance, vegetation maintenance, maintenance of access roads, and emergency maintenance.

4.2 SYSTEM INSPECTION, MAINTENANCE, AND REPAIR

Responsibly conducted inspections and routine maintenance activities are anticipated to have minimal impacts and are usually authorized under the transmission line easements and ROW grant. While carrying out routine maintenance activities, field personnel and contractors would adhere to basic standards and guidelines contained in other sections of the Project POD, special use stipulations, and any additional requirements (such as periodic review of the implementation plans associated with operation and maintenance) identified in the decision documents that apply to the specific area where work is to be done.

With the exception of emergency maintenance activities (refer to Section 4.2.3 – Emergency Maintenance Activities), Southline and Western would coordinate with the appropriate land management agency to review any new information or specific requirements concerning cultural, paleontological, and biological resources (e.g., federally listed species, special status species, seasonal restrictions, habitat concerns, etc.), prior to initiating inspection, maintenance (including vegetation management), and/or repair activities. PCEMs (refer to Chapter 5 – Environmental Mitigation Measures) apply to construction and operation and maintenance activities. If for any reason the operation or maintenance activities require deviation from the basic standards and guidelines or those approved by the land management agency, field personnel and contractors would coordinate with the designated agency contacts prior to initiating the activity and/or during the activity if any unanticipated biological, cultural, or paleontological resource issues are encountered.

This section describes the typical activities involved in the inspection and maintenance of the transmission line. The different activities can be categorized in three groups: Routine Activities (Section 4.2.1), Major Maintenance Activities (Section 4.2.2), and Emergency Maintenance Activities (Section 4.2.3).

4.2.1 Routine Activities

Routine Inspection

Regular ground and aerial inspections would be performed in accordance with the applicable Western/Southline requirements, which are in turn based on regulations, industry standards, and best management practices (BMPs). The transmission lines and substations would be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other mechanical problems. The need for vegetation management would also be determined during inspection patrols. Annual maintenance activities are typically conducted by using helicopters, ground vehicles (4 × 4 trucks or all-terrain

vehicles), or on foot. Visual or infrared inspections of the entire Project would be conducted annually. Typically, 10 percent of all structures would be inspected during annual structure-climbing inspections, so that each structure is inspected every 10 years. Aerial inspection would be conducted by helicopter, generally in the spring and fall.

Aerial inspection by helicopter is conducted during the spring and fall of each year based on weather conditions, helicopter availability, and statutory requirements of the states served by Southline. The aerial inspections are conducted to identify ROW encroachments and conditions that pose an immediate hazard to the public or employees, or that risk immediate loss of supply or damage to the electrical system. The aerial inspections use helicopters to get an observer in a position for observation above the transmission line. The observer assesses the condition of the transmission lines and hardware to determine whether any components need to be repaired or replaced or if other conditions exist that require maintenance or modification activities. Any conditions identified are to be resolved prior to peak demand in the summer and winter months. The aerial inspections are dependent on weather, flight-control restrictions, and the extent of damage assessment required.

Ground inspections would be done on approved access roads or along the transmission line ROW to each structure as appropriate and are anticipated to occur every 2 to 3 years. The inspector would access each of the structures and check all equipment and other components that could require repairs. Inspections assess the condition of the line and hardware to determine whether any component needs to be repaired or replaced and whether other conditions exist that may require maintenance or modification. Inspections also assess any unauthorized encroachments and/or trash dumping in the ROW that could constitute a safety hazard. Inspectors performing such inspections would use conventional four-wheel-drive trucks or four-wheel-drive all-terrain vehicles, or the inspector may walk the line. The annual ground inspection would be conducted at a time deemed appropriate based on the weather conditions, results of aerial inspections, and other conditions subject to change on an annual basis. Southline may perform minor repairs during its ground inspections such as installing new numbers, installing/repairing ground wire, or performing other minor tasks that would not involve long duration, specialized equipment, or large work crews. Climbing inspections would be conducted to coincide with bolt checking and tightening on lattice structures.

In the event of an outage or interruption in the transmission of electricity or other failure, Southline or its contractor would perform detailed inspections of the transmission line to determine the cause. The extent of activities associated with outage inspections is explained in more detail below in section 4.2.3.

Routine Maintenance

Routine maintenance activities are ordinary maintenance tasks that have historically been performed on a routine basis. In the Upgrade Section these activities have been performed following Western's standard procedures. Routine maintenance would include the replacement of individual structures, components, cables, lines, insulators, and other facilities that, due to obsolescence, age, wear, or isolated damage such as lightning or gunshot, are in need of replacement or repair. The work performed is typically repair or replacement of individual components, performed by relatively small crews using a minimum of equipment, and usually is conducted within a period from a few hours up to a few days. Routine maintenance activities may consist of more immediate activities, where repairs must be made within a short period of time in order to ensure the line does not suffer an outage or cause safety concerns, or longer-term routine maintenance activities, where repairs may be made during regularly scheduled maintenance activities.

The type of equipment used to perform routine maintenance activities varies depending on the extent of the work to be performed. Typical equipment used for these kinds of activities include four-wheel-drive

pickups, man-lifts, material flatbeds, line trucks, cranes, tractor trailer, high-reach boom trucks, and bulldozer/caterpillar.

Workers require access to the damaged portion of the line to allow for a safe and efficient repair of the facility. Equipment required for this work may include four-wheel-drive trucks, material (flatbed) trucks, low-reach boom trucks, high-reach boom trucks, bulldozer/caterpillar, or man lifts. Routine maintenance is scheduled and is typically required due to issues found during inspections. Typical items that may require periodic replacement on towers include conductors, insulators, shield wires, fiber-optic lines, and related equipment. It is expected these replacements would be required infrequently (every 5 to 10 years) or as determined by inspection.

Maintenance on transmission lines can often be completed safely using live-line techniques in order to avoid interruption of service to critical transmission line infrastructure. High-reach boom trucks, along with other equipment, are used to conduct these activities.

Typically, maintenance vehicles and equipment would remain within the permanent maintenance work area that surrounds the structure, and no new ground disturbance would be required. If maintenance activities and/or equipment are required beyond the permanent maintenance work area, maintenance crews would coordinate with the land management agency to obtain any required temporary use approval/permits to complete the work, and maintenance activities would be conducted within the previously disturbed temporary work areas from Project construction. In such cases, reapplication of reclamation treatments may be required after completion of maintenance activities, as determined by the appropriate land management agency. All PCEMs outlined in this POD apply to design, construction, and maintenance activities as reflected in Chapter 5 – Environmental Mitigation Measures.

Routine Vegetation Management

Work areas adjacent to electrical transmission structures and along the ROW would be maintained for vehicle and equipment access necessary for operations, maintenance, and repair. Vegetation management practices along the ROW would be in accordance with NESC ANSI A300 Part 7, “American Operations Integrated Vegetation Management” (BLM’s Integrated Vegetation Management Handbook – H 1740-02, March 25) (BLM 2008), Western Order 430.1A and Order 450.3A (see Appendix C2 – Vegetation Management Standards), electric utility ROWs, and International Society of Arboriculture BMPs (Kempter 2004).

At a minimum, trees and brush, when present, would be cleared within a 10-foot radius of the base or foundation of all electrical transmission structures. Within or adjacent to the ROW, mature vegetation would be removed under or near the conductors to provide adequate electrical clearance, as required by the North American Electric Reliability Corporation (NERC) and Department of Energy. Trees and other vegetation would be removed selectively to provide the required transmission line clearance. Vegetation management activities would focus on establishing sustainable native plant communities that are compatible with the electric facilities. Establishment of vegetation would also reduce the potential for noxious weeds to become established in the ROW. If there is a conflict between the requirements of the land management agency or landowner and Western’s standard procedures for vegetation management, the land management agency or landowner requirements would be followed unless they directly result in a violation of NERC standards. Where practicable, vegetation that does not pose a fire hazard or physical impedance would not be cleared.

The proposed Project primarily crosses areas of low-growing shrubs and grasses. Where needed, vegetation would be removed using mechanical equipment, such as chain saws, weed trimmers, rakes, shovels, mowers, and brush hooks. Shrubs and other obstructions would be removed regularly near

structures to facilitate inspection and maintenance of equipment comply with NERC Reliability Standard FAC-003-1, and ensure system reliability. In limited areas, chain saws may be required for trimming larger trees. The duration of activities and the size of crew and equipment required would be dependent on the amount and size of the vegetation to be trimmed or removed. It is assumed that a crew size of four with a working foreman would be able to complete 2 miles a day of vegetation maintenance. Although unlikely to be necessary, species-dependent herbicide could be applied subsequent to vegetation clearing to prevent regrowth of that vegetation and/or noxious and invasive weeds. All pesticide and herbicide applications would be performed by a licensed applicator and in accordance with all label instructions and Federal, State, and local regulations, and in compliance with land management agency and/or landowner requirements, including obtaining a Pesticide Use Permit if herbicide is used on agency-administered lands. Aerial application of herbicide would not be performed.

Routine Right-of-Way and Access Road Maintenance

Repairs to access roads within the ROW would be scheduled as a result of line inspections or would occur in response to a significantly degraded condition or an emergency situation. Ground disturbance during maintenance activities would be approved by the BLM authorized officers or would be authorized at Western's Desert Southwest Region. Where access would be required for maintenance of the line, Southline/Western shall maintain the approved access roads in a safe, usable condition, as directed in consultation with the appropriate land management agency. Required maintenance equipment may include a small bulldozer, a backhoe, a four-wheel-drive pickup truck, a front-end loader, and, on rare occasion, a motor grader. The bulldozer and loader have steel tracks or large tires, whereas the grader, backhoe, and truck typically have rubber tires.

Access road repairs include grading or repair of existing maintenance access roads and work areas and spot repair of sites subject to flooding or scouring. In some cases, cut and/or fill of foreign material may be required to repair the access roads into suitable condition for safe travel of maintenance repair vehicles such as high-reach boom trucks. When an approved access route into a structure location would need improvement, heavy equipment appropriate for the required work would be used after notifying the appropriate land management agency. Any berms or boulders that were in place to limit access would also be reclaimed after completion of the maintenance work. Activities related to ROW repair are usually conducted outside of the rainy season.

Routine Substation and Communication Regeneration Site Maintenance

Substation and regeneration stations are unmanned stations. Monitoring and control are performed remotely. Unauthorized entry into facilities is prevented with the provision of fencing and locked gates. Warning signs would be posted and entry to the operating facilities would be restricted to authorized personnel. Remotely monitored security systems would be installed. Several forms of security would be planned for each of the locations. Security measures may include fire detection in the control building via the remote monitoring system, alarming for forced entry, and a perimeter security system coupled with remote-sensing infrared camera equipment in the fenced area of the station to provide the system operator with visual observation of disturbances at the fence line. Minimal lighting for routine needs at the substation would be provided inside the substation fence. Maintenance crews would bring adequate lighting in the event that emergency repair work is required. All lighting would be shielded downward to minimize contributions to sky glow.

Maintenance activities include equipment testing, equipment monitoring and repair, and emergency and routine procedures for service continuity and preventive maintenance. It is anticipated that maintenance at each substation would require approximately six trips per year by a two- to four-person crew. Routine

operations would require one or two workers in a light utility truck to visit the substations monthly. Typically, a major maintenance inspection would take place once per year, requiring up to 15 personnel for 1 to 3 weeks. Regeneration stations would be visited every 2 to 3 months by one individual in a light truck to inspect the facilities. Annual maintenance would be performed by a two-person crew in a light truck over a 2- to 5-day period.

4.2.2 Major Maintenance Activities

Major maintenance activities would be relatively large-scale efforts that occur on an infrequent basis. These activities require planning and budgeting in advance, as well as agency coordination. They may involve larger work crews than routine maintenance activities and a variety of equipment, including heavy equipment, and usually require several days or longer to complete. Examples of major maintenance activities include structure relocation, conductor replacement, or access route reconstruction and relocations. Generally, these types of activities would occur on approximately 1 percent of structures annually, but may also occur during emergency outage conditions to replace damaged infrastructure.

Southline would identify proposed major maintenance activities and notify the designated contact for the appropriate land management agency before initiating major maintenance activities. Southline and the land management agency would identify what, if any, special notification or additional clearance approvals are required prior to conducting the proposed major activities.

When Southline's field personnel and contractors carry out major maintenance activities, they would be required to adhere to all standards and guidelines contained in the approved POD, terms and conditions of the ROD, any site-specific activity or timing constraints, and the requirements of any mutually agreed-upon additional clearance or special notification requirements. On BLM- administered public land, all stipulations and PCEMs identified as applicable in any of the POD volumes should be adhered to for the life of the BLM ROW grant.

4.2.3 Emergency Maintenance Activities

During the operation and maintenance of the transmission line, Southline would reduce or prevent, to the greatest extent possible, any emergency activities (defined as situations that could threaten life, property, or resources). Even so, unforeseen emergency conditions may arise. The operation of the system is remotely managed and monitored from control rooms at Southline's operation center in Arizona. Electrical outages or variations from normal operating protocols would be sensed and reported at this operation center. As well, the substations are equipped with remote monitoring, proximity alarms, and in some cases video surveillance.

Examples of emergency maintenance include activities necessary to restore power due to a transmission structure or conductor failure due to natural hazard, fire, or human-caused damages to a line. Such work is required to eliminate a safety hazard, prevent imminent damage to the power line, or restore service if there is an outage. In an emergency, Southline must respond as quickly as possible to restore power.

In practice, as soon as an incident is detected, the control room dispatchers would notify the responsible operations staff in the area(s) affected and crews and equipment would be organized and dispatched to respond to the incident. In these cases, Southline would notify the designated contact from the appropriate land management agency concurrently with responding to the emergency. The land management agency may elect to have a representative present during emergency operations and/or to conduct a post-event site visit to evaluate Southline's response, assess impacts, and propose remedial measures for discussion.

Southline would adhere to the same constraints identified for routine and major maintenance activities to minimize impacts to resources, when possible.

The equipment necessary to carry out emergency repairs is similar to that necessary to conduct routine maintenance, in most cases. Emergency response to outages may require additional equipment to complete the repairs.

Southline's employees and contractors would be equipped with approved suppression tools and equipment. Southline or their construction contractor(s) would notify local fire authorities and the appropriate land management agency if a Project-related fire occurs within or adjacent to a construction area.

If Southline becomes aware of an emergency situation caused by a fire on or threatening agency-managed lands and that could damage the transmission lines or their operation, they would notify the appropriate agency contact (refer to Appendix B10 – Emergency Preparedness and Response Plan for a complete list of appropriate emergency contacts). Specific construction-related activities and safety measures would be implemented during construction of the transmission line to prevent fires and to ensure quick response and suppression if a fire occurs.

Emergencies are events requiring immediate response to a condition and may include fires, car-to-pole contact, downed poles, transformer outages, vandalism, etc. All applicable fire laws and regulations, including land management agency fire-safety standards, would be observed during the operation period. If extreme fire conditions occur, the land management agency representatives would be contacted and access could be restricted. Maintenance personnel would coordinate with the agency representatives and implement practical measures to report and suppress fires. Measures may include brush clearing, stationing a water truck at the site to keep ground vegetation moist in extreme fire conditions, enforcing red flag warnings, etc.

Chapter 5

ENVIRONMENTAL MITIGATION MEASURES

5.1 INTRODUCTION

This section briefly describes the environmental issues by resources and the framework plans to be included as appendices to this POD, when finalized. Environmental mitigation measures are referred to in the EIS as PCEMs.

5.2 SUMMARY OF ENVIRONMENTAL ISSUES BY ENVIRONMENTAL RESOURCE

The summary in this section is intended to provide an overview of the types of environmental impacts associated with the construction, operation, and maintenance of the Project and context for the design features for environmental protection in the Project description and site-specific PCEMs.

5.2.1 Air Quality

Construction of the transmission lines and substations would result in emissions of air pollutants from equipment exhaust, vehicle exhaust from travel to and from construction areas, and fugitive dust from soil disturbance. Overall, impacts on air quality from the Project construction would be temporary, localized to the vicinity of the activity, and would disperse quickly or settle. The overall level of impact would be minor.

5.2.2 Noise

Construction of the transmission line may result in audible noise from Project equipment and vehicles. Unmitigated noise levels could result as high as 83 A-weighted decibels (dBA) to sensitive receptors near proposed Project construction activities (within 100 feet); however, construction noise would be major but temporary.

Corona-generated noise for both the New Build and Upgrade sections of the proposed Project would be highest in areas where the new lines would be constructed in close proximity to existing transmission lines. Overall, because of the relatively dry nature of the area crossed by the proposed Project, the overall level of operational noise would be minimal.

5.2.3 Geology and Mineral Resources

The only potential impacts identified for geology and mineral resources would be indirect impacts to mining districts during operation and maintenance of the transmission line. The New Build Section crosses small areas of active and inactive mining districts; however, no known mines, active or inactive, would be crossed. No metal or nonmetallic resources were specifically identified within the Upgrade Section. No known mines, active or inactive, would be crossed by the Upgrade Section. The Project would not produce obvious changes to the baseline conditions of the resource, and potential impacts would be minor.

5.2.4 Soil Resources

Potential impacts to the soil resources include accelerated rates of erosion and loss of soil productivity due to the removal of soils during construction of access roads, and at structure and substation sites. Clearing of vegetation and topsoil, as well as grading, would result in newly exposed, disturbed soils that could be subject to accelerated rates of erosion by wind or water. Construction may also cause disturbance to fragile biological crusts, increasing erosion and delaying reestablishment of plant communities. Indirect impacts associated with soil removal may include invasive plant colonization, soil erosion, and reduction in soil water retention due to compaction. Overall impacts to soil resources would be minor.

5.2.5 Paleontological Resources

Potential negative impacts to paleontological resources could result from the loss of important fossils due to ground-disturbing activities during construction in sensitive geological deposits. Potential positive impacts to paleontological resources could result from the discovery of important fossils as an inadvertent result of ground-disturbing activities that would otherwise be unavailable for study. The New Build Section crosses through areas with High Sensitivity for paleontological resources, whereas the Upgrade Section is almost entirely classified as Low Sensitivity.

Overall impacts to paleontological resources would range from no impact to moderate impact. If fossils are present, adverse impacts to paleontological resources would be mitigated in accordance with applicable laws and regulations. PCEMs would include paleontological surveys of sensitive geological deposits, the development and implementation of a Paleontological Resources Treatment Plan, education of construction and maintenance personnel, construction monitoring, and preparation and curation of collected fossils.

5.2.6 Water Resources

Potential impacts to water resources include the potential for discharge of pollutants, including sediment, to groundwater or surface water, the placement of larger structures within floodplains, and potential disturbance of waters of the U.S. (WUS) or wetlands. Proper implementation of BMPs and controls would prevent discharge of pollutants. Avoidance measures during final siting would prevent most disturbances of WUS or wetlands, and impacts would be minor.

5.2.7 Biological Resources

The construction, operation, and maintenance of the Project would result in both direct and indirect effects on biological resources. Direct effects associated with construction activities would likely include (1) behavioral disturbance and the displacement of wildlife (temporary); (2) habitat loss, modification, and fragmentation, including increased potential for the establishment and spread of noxious weeds in disturbed areas (long-term); (3) the long-term displacement of individual animals; and (4) the potential for mortality, primarily for wildlife species with limited mobility (temporary).

Indirect effects associated with Project-related activities can result from the construction of permanent access roads, which can be used by the general public to access currently inaccessible habitats. This additional human presence and activity and vehicle noise can result in displacement, abandonment of habitat, behavioral disruption, and additional stress during critical periods. New access into previously inaccessible habitats can increase displacement of wildlife and mortality by legal hunting or poaching.

Public use of access roads can facilitate the spread of noxious weeds and increase the risk of human-caused wildfire. These indirect effects can be permanent.

Vegetation

The proposed Project would involve the removal of vegetation during construction activities, resulting in the direct loss of plant communities. The primary direct and indirect impacts to vegetation and special status species during construction and operation of the proposed facilities would be associated with removal and/or crushing of vegetation communities from construction of the proposed Project; decreased plant productivity from fugitive dust; and plant community fragmentation.

There would also be indirect effects resulting from the fragmentation of connected vegetation types. Edge areas have different microclimatic conditions and structure, which could lead to a different species composition than in the interior area. The introduction and colonization of disturbed areas by invasive exotic plant species also would lead to changes in vegetation communities, including the possible shift to a more wildfire-prone vegetation that favors invasive exotic species over native species.

Much of the Project is located in previously disturbed areas and with the application of PCEMs, impacts to vegetation resources would be minor. PCEMs would be applied to reduce, avoid, or otherwise provide compensation for impacts to sensitive vegetation: (1) vegetation disturbance would be minimized to the extent practicable; (2) a Reclamation, Vegetation, and Monitoring Plan would be developed and implemented; (3) a Plant and Wildlife Species Conservation Measures Plan would be developed and implemented; (4) clearing of riparian vegetation would be avoided where possible; (5) a Noxious Weed Management Plan would be developed and implemented; and (6) construction equipment would be washed prior to moving onto the construction site to limit introduction and spread of noxious weeds. Additional mitigation provided by the AGFD around the Willcox Playa Wildlife Area is also considered.

Wildlife

Potential Project-related impacts on wildlife include the loss, degradation, and/or fragmentation of habitat; collisions with and crushing by construction vehicles; loss of burrowing animals in burrows in areas where grading would occur; increased invasive and noxious weed establishment and spread; increased noise/vibration levels; increased potential for migratory birds to strike transmission lines; and increased access for off-highway-vehicle (OHV) users.

The transmission line ROW would serve as a movement corridor for some species and as a barrier to others. The proposed Project would increase the amount of edge habitat along the ROW. Effects from increased amounts of edge would include decreased habitat block size. Decreased habitat block size may negatively impact those species that require large blocks of contiguous habitat and benefit other species that use edge habitats or have more general habitat requirements.

The following impacts to general wildlife and special status species may occur with construction and operation of the proposed transmission line:

- Habitat for the northern aplomado falcon (*Falco femoralis septentrionalis*), Sprague's pipit (*Anthus spragueii*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), Mexican long-nosed bat (*Leptonycteris nivalis*), and Sonoran desert tortoise (*Gopherus morafkai*) would be impacted. Restoration of disturbed areas, measures to minimize invasive plant establishment and spread, and closure of access roads to OHV use would reduce impacts on habitat for these species.

- Segment P7 would pass northwest of Crane Lake and through the AGFD-managed Willcox Playa Wildlife Area. Mitigation (PCEMs) requested by the AGFD includes (1) funding the relocation of Crane Lake away from P7, (2) funding riparian emergent wetlands along Kansas Settlement Road, and (3) funding the management of non-native vegetation; these would be implemented to reduce the intensity of impacts to habitat in the Willcox Playa Wildlife Area.
- Potential mortality of wintering sandhill cranes (*Grus canadensis*) could occur at Willcox Playa where the proposed Project would intersect their daily migration flights to feed in agricultural fields to the south and east. There is the potential for sandhill crane collisions with the transmission line during daily migration, which could impact individual sandhill cranes. Implementing PCEMs such as the relocation of Crane Lake (see above), and installation of line marking devices, would decrease the potential for birds striking transmission lines near Willcox Playa.
- Impacts to northern Mexican gartersnake (*Thamnophis eques megalops*) proposed critical habitat at the Cienega Creek and San Pedro River crossings would be avoided through Project siting.
- Impacts on Gila chub (*Gila intermedia*) designated critical habitat downstream from the Cienega Creek crossing would be avoided through Project siting and erosion-control measures.
- Habitat for BLM Sensitive Species, New Mexico Wildlife Conservation Act Species, New Mexico Species of Greatest Conservation Need, Arizona Wildlife Species of Concern, Arizona Species of Greatest Conservation Need, and migratory birds would be lost, fragmented, and degraded. Measures to limit ground disturbance, avoid aquatic and riparian habitats, limit invasive plant establishment and spread, and restore disturbed areas would reduce impacts on habitat for these species.
- Habitat for the Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*) would be impacted near the Santa Cruz River crossing in segment U3k.

With the application of PCEMs, impacts to wildlife resources would be minor. PCEMs to minimize impacts to wildlife habitat could include limiting the area of disturbance and restoration of disturbed areas, and avoidance of aquatic and riparian areas. PCEMs could also include preconstruction surveys, erosion-control measures, a worker training program, and measures to limit invasive species establishment and spread.

5.2.8 Cultural Resources

Potential impacts to cultural resources such as archaeological sites, historic built environment resources, trails, and American Indian traditional use areas and sacred sites could result from construction, operation, and maintenance of the proposed Project. Loss of integrity would be the primary adverse direct or indirect impact to cultural resources. In terms of historic properties, loss of integrity often stems from alterations of a resource's characteristics that make it eligible for the National Register of Historic Places (NRHP). During construction, direct impacts would result from ground disturbance if resources are present and would be long term; indirect impacts would result from visual encroachment on a resource's setting during structure and facility installation and would be long term. During operation and maintenance, long-term visual impacts would occur from the presence of the transmission line if resources are present.

Avoidance of resources through design and micro-siting would be the preferred mitigation measure (PCEMs). Even with the application of PCEMs, there would be some major impacts to cultural resources. If avoidance is not feasible, other types of mitigation such as monitoring or data recovery would be needed. A Historic Properties Treatment Plan (HPTP) would be developed to outline all non-avoidance

mitigation. Consultation with agencies, the New Mexico and Arizona State Historic Preservation Officers, and interested parties is ongoing, including the development of a Programmatic Agreement (PA). The PA outlines steps by the agencies, the Project proponent, and other consulting parties to be taken prior to construction and during operation and maintenance of the proposed Project to comply with the National Historic Preservation Act (NHPA).

5.2.9 Visual Resources

Regional landscapes in the Project area range from developed urban and suburban landscapes to rural areas and areas of intact character. Features within the Project area include foothills, mountains, basins, playas, valleys, and agricultural development ranging across the Chihuahuan and Sonoran deserts.

The construction, operation, and maintenance of the Project would result in direct effects on visual resources where:

- Landscape scenery would be degraded by the presence of vertical elements in the landscape (transmission line structures), areas of cleared vegetation (ROW clearing), and exposed soil from the construction of new permanent access roads.
- Views from sensitive viewpoints would be adversely modified through the introduction of Project components into the landscape
- The Project would not comply with Federal agency visual management objectives where Project components would contrast with or modify the characteristic landscape to a level that would not be consistent with the established management objectives or applicable planning documents.

During Project siting and engineering and design, PCEMs, where feasible, would be applied to all areas of potential moderate/high and moderate initial impacts to reduce impact levels where necessary and effective. Even with the application of PCEMs some minor to major impacts to visual resources would remain.

5.2.10 Land Use, Including Farm and Range and Military Operations

Land Use

The proposed Project would be constructed across lands owned and managed by Federal, State, private, or other entities, under a variety of RMPs, comprehensive plans, or other land use plans. The proposed Project cross large tracts of undeveloped land, as well as urban and suburban areas. Federal and State-managed lands are generally used for grazing, farming, recreation, and open space. BLM and State lands are primarily used for grazing or recreation in open-space areas. Residential uses are located on private lands in rural areas and near small cities and towns.

Major portions of the proposed Project parallel existing linear facilities in disturbed corridors, including transmission and distribution lines, roads, and abandoned railroad ROWs. The eastern portion (New Build Section) of the proposed Project would be located in open range–type land uses, crossing mountain ranges (including the Continental Divide) and valley/basins. Farther west (Upgrade Section), the distance between the valley/basins and mountain ranges becomes less, and urban populations surround the Tucson metropolitan area.

In general, land use impacts would be minimized where linear utilities are constructed within established or designated corridors. The alignment of the transmission line route was sited to maximize the use of established utility corridors, and to avoid conflicts with incompatible land uses such as wilderness, national parks and monuments, special management areas, conservation areas, densely populated areas, and military installations. Impacts to land uses would occur in some form along portions of the route that cross undeveloped lands, irrigated agricultural lands, residential subdivisions, and areas used for industrial or military testing and training. PCEMs would be effective in avoiding or minimizing direct impacts with land uses in most conditions. There would be no direct displacement of existing land use authorizations or ROWs, or residential, business, or industrial structures. Impacts to land use, including farm and range resources and military operations, would be minor.

Farm and Range Resources

Construction of the transmission line would have direct effects on farmlands and rangelands by removing land acreage from productivity. In the Upgrade Section, the existing transmission line has already resulted in conversion of Natural Resources Conservation Service–classified farmland to non-farmable condition. The proposed Project of upgrading to monopoles may have less of an impact on farmland than the existing H-frame transmission line. Except under extraordinary circumstances, all operation and maintenance activities would occur within the transmission line ROW and access roads. These activities would not directly or indirectly impact adjacent farmlands or rangelands. Landowners would continue to have use of the land within the ROW, and no new fences would be constructed that would block access unless specifically requested by the landowner. No direct effect would occur on farmlands and rangelands during the operation and maintenance phase of the proposed Project beyond the long-term loss of lands resulting from Project construction.

Military Operations

Impacts to military operations could occur from construction, operation, and maintenance of the proposed Project where the transmission line, substations, and ancillary facilities intersect with military-owned, leased, or withdrawn (including Electronic Proving Ground) lands. These lands could include military training visual routes or areas where training is for electronics and communications. Impacts would be below thresholds since the sections that may intersect military training areas include existing transmission line facilities, and the military operations have operated in conjunction with these facilities previously.

5.2.11 Special Designations

BLM special designations include congressionally designated national wild and/or scenic rivers; national conservation areas; national byways; and national scenic, historic, or recreation trails. The BLM may also create special designations through administrative resource inventories or during the planning process, such as cooperative management areas and protection areas, outstanding natural areas, forest reserves, wilderness study areas, areas of critical environmental concern, research natural areas, special recreation management areas, special management areas, backcountry byways, and energy zones.

Impacts from construction activities would include direct ground disturbance and temporary increases in ambient noise levels in areas where the transmission line, substations, and ancillary facilities intersect or are adjacent to special designations. Overall impacts on special designations would be minor.

5.2.12 Wilderness Characteristics

The proposed Project would not directly impact wilderness characteristics (naturalness and opportunities for solitude or primitive, unconfined recreation). Potential indirect impacts could result from construction activities and temporary increases in ambient noise levels in areas where the Project is near lands with wilderness characteristics.

5.2.13 Recreation

The proposed Project would result in minor changes to the recreation setting and desired recreation experiences during construction. The changes would be minor because the majority of the segments that form the proposed Project would follow existing facilities; thus, the recreation setting and desired recreation experiences would already include/anticipate the presence of transmission lines.

Where the proposed Project does not follow existing ROWs, the recreation setting and desired recreation experiences would change from the existing conditions of undeveloped landscape to a developed landscape. This change to the recreation setting is not anticipated to preclude any desired recreation experiences since recreational opportunity for all recreational pursuits in the area would still be available within the area except within the footprints of the transmission line towers. During construction, disrupted hunting opportunities would not be a significant impact, since the areas within game management units that are outside of the proposed Project footprint would remain available for hunting. No hunting opportunities would be displaced during operation and maintenance of the proposed Project. Overall impacts from the proposed Project on recreation would be minor.

5.2.14 Socioeconomics

In general, the proposed Project would not have a significant impact on regional population or housing as a result of construction or operation. Construction of the transmission line would directly and indirectly create jobs, some of which would be filled by local workers. The addition of non-local construction workers has the potential to create isolated, short-term shortages in temporary housing, especially in the more remote portions of the project area. The proposed Project would generate State and local tax revenues during both construction and operation/maintenance; overall impacts would be minor.

5.2.15 Environmental Justice

A high proportion of the census tracts crossed by the proposed Project can be defined as environmental justice communities, meaning they either have higher minority populations or a greater proportion of residents living below the poverty line, or both. These communities may be adversely affected by localized impacts, including noise and other disruptions during the construction phase, and potentially diminished property values and visual characteristics during the operation and maintenance of the Project.

Environmental justice communities may also be positively affected by the benefits of the proposed Project, including the short-term economic stimulus from construction activities and expenditures, short-term and longer-term increases in tax revenues, and added capacity and reduced congestion for electricity transmission. Because these benefits are likely to be more geographically dispersed than the localized adverse effects, however, it is uncertain whether or not low-income and minority populations would receive disproportionate benefits from the proposed Project. Given the prevalence of low-income and minority residents throughout the area, impacts on these groups are likely inevitable from any feasible transmission line alignment. Overall impacts from the proposed Project would be minor.

5.2.16 Public Health and Safety

Potential risks to public health and safety associated with construction activities would include, but would not be limited to, electrocution, exposure to extreme weather, falling, exposure to hazardous materials, and injury from equipment and materials. The implementation of Occupational Safety and Health Administration (OSHA) safety requirements through the use of PCEMs, and other safety requirements would minimize the chance that an accident could occur. Potential impacts could occur as a result of increase of electromagnetic fields in areas where they do not currently occur. However, with implementation of the PCEMs, the impacts to public health and safety would be expected to be minor.

5.2.17 Hazardous Materials and Hazardous and Solid Waste

All construction, operation, and maintenance activities would comply with all applicable Federal, State, and local regulations regarding the use of hazardous substance. Hazardous materials would not be drained into the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. Portable toilets will be located at designated construction sites. All construction waste, including trash, litter, garbage, and other solid waste, petroleum products, human waste, and other potentially hazardous materials would be removed and transported to a disposal facility authorized to accept such materials. PCEMs would be implemented to prevent spills and leaks of hazardous materials and provide for adequate containment and cleanup if spills and leaks do occur; no impacts are anticipated.

5.2.18 Transportation

In general, the proposed Project would cross a sparsely populated rural area in the New Build Section and in the Upgrade Section with the exception of the Tucson metropolitan area. Traffic would be generated primarily during the construction, but also minimally during the maintenance and operation phases. Continued coordination with Federal, State and local transportation agencies would ensure that the proposed Project would not impact transportation plans in the New Build and Upgrade sections. Continued coordination with airports would ensure that the proposed Project would not interfere with flight paths or airport plans adjacent to the Project area.

The proposed Project in the New Build and Upgrade sections would impact BLM roads by increasing opportunities for illegal access to roads/areas currently closed to public access. This impact would most likely occur from the construction of new access roads. The impact of increasing access to BLM roads would be considered minor.

5.2.19 Intentional Acts of Destruction

Intentional acts of destruction could include sabotage or terrorism. Predicting the occurrence of intentional acts of sabotage or terrorism or the potential damage from these acts is not possible. By constructing and operating new transmission lines, saboteurs and terrorists would have a new potential target to carry out their acts. Historically, acts of sabotage and terrorism on transmission infrastructure have been rare, and the effects of events that have occurred have not had a significant impact to adjacent lands or public health and safety. Moreover, the addition of transmission lines and associated facilities generally strengthens the reliability of delivering electricity to the general public, because if one line is affected by an intentional act of destruction or any other disruption, other lines would be available to continue the delivery of electricity. Therefore, the potential impacts from the unlikely event of an act of terrorism or sabotage would be considered minor, and no impacts are anticipated.

5.3 OVERVIEW OF PROPONENT COMMITTED ENVIRONMENTAL MEASURES (BY RESOURCE)

Activities under the proposed Project would include PCEMs that are an integral part of the proposed Project. These design features are measures included in the project design by the Proponent in order to reduce or avoid potential environmental impacts resulting from Project-related activities. The PCEMs are presented in table 8. In addition, the PCEMs also include agency mitigation measures developed by the BLM and Western, as well as based on feedback from cooperating agencies and the public. All PCEMs listed in table 8 would be followed on any route selected, as site-specific circumstances dictate.

Table 8 presents a summary of the PCEMs required for the project. PCEMs are described in table 8 for the following:

- Standard mitigation
- Reclamation (site restoration, revegetation)
- Air quality and climate change
- Cultural resources
- Hazardous materials and waste
- Health and human safety
- Land use
- Farmlands and rangeland
- Geology and minerals
- Military operations
- Noise
- Paleontology
- Recreation
- Wilderness
- Trails
- Soils
- Socioeconomics
- Transportation
- Vegetation
- Visual resources
- Water resources
- Wildlife

BLM requires that a grant holder post a surety bond to ensure compliance with the terms, conditions, and stipulations of the grant, if issued, which would include PCEMs. The grant authorization, if issued, would be contingent upon Southline's complying with a list of terms, conditions, and stipulations.

Application of PCEMs will be considered and authorized, as part of detailed design and included in the final POD and associated Framework Plans, post-EIS. Because the final POD and Framework Plans are subject to approval by the BLM Authorized Officer, and the PCEMs found in table 8 are also included in the final POD, each PCEM is subject to review and approval by the BLM authorized officer.

5.4 OVERVIEW OF APPENDIX B

Southline and Western would ensure that their respective responsibilities and the requirements for each of the following Framework Plans are implemented. These plans have been developed to cover the entire Project, regardless of the responsible entity (e.g., landowner, ROW administrator, etc.).

5.4.1 Access Road Plan

Access road planning would be finalized if the proposed Project is approved. With the approved route known, the exact location of all access roads would be refined through detailed engineering. Once road locations are known, cultural resource and biological surveys would be conducted and road locations adjusted to avoid sensitive resources discovered during the surveys. No field disturbance would occur before the completion of these surveys and the completion of any necessary mitigation or treatment measures. Although the exact locations of final access roads are not yet known, the general location of needed access is known and has been used to define the potential environmental impacts for purposes of the EIS. Access road construction and improvement would include erosion, stabilization/reclamation/revegetation, and dust control measures. Access roads would be designed to ensure that slopes do not cause erosion and that turning radii are sufficient. The road locations would also be georeferenced and the location recorded, and appropriate access rights would be obtained from the landowner.

All roads would be constructed and maintained in accordance with Western and BLM standards for access roads and specified in the Access Road Plan, to be included as a Framework Plan in the POD.

5.4.2 Traffic and Transportation Management Plan

The purpose of a Traffic and Transportation Management Plan is to describe how roads would be improved and maintained for construction of the proposed Project; and to minimize the potential impacts of construction traffic at staging areas, work areas, and other places where traffic may increase. The plan would address equipment access to and from the proposed Project ROW, drainage improvements, dust control and maintenance measures, and reclamation and abandonment of roads. This plan is generally required by the BLM as a condition of the ROW grant and sometimes is required by State or local departments of transportation.

5.4.3 Stormwater Pollution Prevention Plan

Stormwater discharges from construction activities (such as clearing, grading, excavating, and stockpiling) that disturb 1 or more acres are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater program. Prior to discharging stormwater, construction operators must obtain coverage under an NPDES permit, which is administered by either the U.S. Environmental Protection Agency (EPA) (as is the case in New Mexico) or the State (as in Arizona). Construction stormwater discharges are normally permitted under the Construction General Permit, which requires compliance with effluent limits and other standard permit requirements, such as the development of a Stormwater Pollution Prevention Plan (SWPPP).

Table 8. Environmental Protection Measures by Resource

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Standard Mitigation						
	X	The boundaries of construction activities would be predetermined and staked or flagged prior to any construction activity. No permanent markings would be applied to rocks or vegetation.	X			
	X	Prior to construction, all construction personnel would be instructed on the protection of cultural and ecological resources.	X			
	X	All vehicle movement would be restricted to designated access, contracted acquired access, or public roads.	X	X	X	X
	X	To limit disturbance, existing access roads would be used to the extent practicable, provided that doing so does not additionally impact resource values. Widening and grading of roads would be kept to the minimum required for access by Project construction equipment.	X	X	X	X
	X	Structures and/or ground wire would be marked with high-visibility devices such as aerial marker balls, where required by government agencies such as the FAA.	X	X	X	
	X	Transmission line materials would be designed and tested to minimize audible noise, radio interference, electromagnetic interference (EMI), and television interference due to corona.	X	X	X	
	X	No widening or upgrading of existing roads would be undertaken in the area of construction and operations, except for repairs or modifications to make roads safely passable, where soils and vegetation are sensitive to disturbance, in areas of critical habitat for vegetation or wildlife, in areas of habitat for BLM special status species, or where such activities could harm historic properties.		X	X	
	X	During operation of the transmission lines, the ROW would be maintained free of non-biodegradable debris. Desert vegetation would be crushed in place to promote seeding and revegetation, and reduce erosion potential.			X	
	X	BLM and Western road construction specifications would be followed where unimproved spur roads cannot be employed.		X	X	
	X	Unimproved spur roads would be used to the extent practicable in areas where no grading would be warranted to access work areas, within the approved ROW. Unimproved spur roads would be used to access a site without specifically blading a road or significantly modifying the landscape. All vehicle movement would be restricted to designated access, even if that is unimproved access. Vegetation would be crushed where feasible, not cut. For all access types, soil would be compacted, but not removed, except when grading requires displacement of surface soil.		X	X	X
	X	Where new roads would be required, water bars and/or rolling dip cross-drains would be utilized to minimize erosion. Details of their use would be documented in the SWPPP.	X	X	X	
	X	Structures would be placed to avoid, and/or to allow conductors to span, sensitive features such as riparian areas, waterways, roads, trails, and cultural sites within limits of standard transmission line structure design. This would minimize the amount of sensitive features disturbed and/or reduce visual contrast.	X	X	X	
	X	Clearing of trees in and adjacent to the ROW would be minimized to the extent practicable to satisfy conductor-clearance requirements (NESC and up to 10 years' timber growth). Trees and other vegetation would be selectively removed to blend the edge of the ROW into adjacent vegetation patterns, as appropriate.		X	X	
	X	Separation between transmission lines and existing utilities, roads, and railroads would be minimized to the extent practicable. Opportunities to share portions of adjacent ROWs would also be explored.	X			
	X	All construction vehicle movement would be restricted to predesignated access, contractor-acquired access, and public roads.		X		
	X	The width of construction and new temporary access roads would be sited to keep to the minimum needed to avoid sensitive areas and to limit ground disturbance.		X		
	X	Surface elevations would be returned to approximate pre-Project conditions, as practicable.		X		X
WILD-1		A Worker Environmental Awareness Program (WEAP) would be prepared. All construction crews and field contractors would be required to participate in WEAP training prior to starting work on the Project. The WEAP training would include instructions for crews to report any issues; a review of the special status species; WUS; riparian habitat; cultural, paleontological, and other sensitive resources that could be impacted by the proposed Project; the locations of sensitive biological resources and their legal status and protections; and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel would be maintained during the construction period.	X	X		
	X	The process by which the BLM, Western, and Southline and its construction contractor would conduct environmental monitoring, compliance, and reporting activities during construction would be described in a Project compliance plan that would be prepared by the CIC after the CIC has been selected and reviewed by BLM. After issuance of the notice to proceed, a CIC, designated by the BLM and Western, would provide environmental oversight and compliance monitoring on BLM-managed lands during Project construction to ensure compliance with all design features and mitigation measures.	X	X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Reclamation						
	X	A Reclamation, Vegetation, and Monitoring Plan would be developed and implemented.		X	X	X
	X	Reclamation would be accomplished with native species unless otherwise approved.		X	X	X
	X	Seeding would occur between November and March to ensure a greater chance of success. This would be tied to replacement of conserved topsoil with its natural seed stock.		X	X	X
Air Quality and Climate Change						
	X	Project activities would be in compliance with all applicable Federal, State, and local laws and regulations concerning prevention and control of air pollution during construction and operation.		X	X	
	X	An Erosion, Dust Control, and Air Quality Plan would be prepared as part of the final POD. The plan would be developed and implemented to minimize and mitigate potential air quality and climate change impacts. The Erosion, Dust Control, and Air Quality Plan would include a section detailing the Construction Emissions Mitigation Plan (CEMP). See appendix A6 of this POD for an outline of the information in the Erosion, Dust Control, and Air Quality Plan, including the CEMP.	X	X	X	X
	X	All necessary air quality permits would be obtained prior to construction or operating equipment that would result in regulated atmospheric or fugitive dust emissions.	X			
	X	Trackout control devices such as grizzly bars, wheel washers, gravel pads, etc., would be located at all entrances and exits.		X		
	X	Where implementation of these measures would have a meaningful impact on air quality, haul-truck cargo beds would be covered with tarps and travel speeds would be limited to no more than 15 miles per hour (mph) on unpaved roads.		X		
	X	Combustion emissions from mobile sources would be minimized by proper maintenance of equipment.		X	X	
AIR-1		Dust control measures consistent with all applicable State or local standards, as outlined in the Erosion, Dust Control, and Air Quality Plan, would be implemented; these include the following reasonable precautions: (1) frequent watering (no new water sources developed), stabilization, or covering (as appropriate) of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes visible emissions of fugitive dust beyond the work area; (2) reduction in the amount of disturbed area where possible; (3) planting of vegetative ground cover, as appropriate, in disturbed areas after construction activities have ended; and/or (4) treatment of actively disturbed areas with BLM-approved dust palliatives.		X		
AIR-2		To reduce the potential for greenhouse gas emissions, only properly trained Project personnel would handle sulfur hexafluoride, and a sulfur hexafluoride recovery and recycling program would be implemented.		X	X	X
Cultural Resources						
	X	Cultural resources would continue to be considered during post-EIS phases of work. Specific cultural resource inventory, protection, and mitigation measures to be employed would be outlined in the Project-specific PA, in accordance with Section 106 of the NHPA. The final POD would include the signed PA and the HPTP.	X	X	X	X
	X	A Native American Graves Protection and Repatriation Act (NAGPRA) Plan of Action would be developed to outline the procedures to be followed in the event that human remains are encountered during ground disturbance. The NAGPRA Plan of Action would be applicable to discoveries of human remains on Federal and Tribal land, and compatible with State laws from Arizona and New Mexico, which protect human remains on State or private lands. For State and private lands in Arizona, “burial agreements” are developed through the Arizona State Museum with each tribe that may claim cultural affiliation to possible human remains discoveries.	X	X	X	
CR-1	X	The area of potential effects would be defined in the PA and would consist of the approved alternative corridor and appropriate buffers; all areas and ancillary features that would sustain ground disturbance (access roads, construction yards, etc.) would be subjected to a Class III, 100 percent–coverage pedestrian inventory to identify all historic properties that may be affected by the proposed Project. Survey and reporting requirements would follow BLM Handbook 8110 requirements for a Class III Intensive Field Survey (BLM 2004).	X			
CR-2		Before construction, and as described in the WEAP, Southline and its construction contractor would provide cultural resources sensitivity training to all construction personnel so that Project personnel understand the procedures in the monitoring and discovery portion of the HPTP.	X	X		
CR-3		An HPTP would be developed and implemented to avoid, minimize, and mitigate the adverse effects of the Project on historic properties. Mitigation measures may range from avoidance and preservation in place to data recovery excavations conducted before the destruction of a site if avoidance is not feasible. The HPTP would include a Monitoring and Discovery Plan detailing procedures to be followed in the inadvertent discovery of a potentially significant archaeological site or human remains.	X	X	X	
CR-4		Ground-disturbing activities and other proposed Project components would be sited to avoid or minimize direct impacts on cultural resources listed as, or potentially eligible for listing as, unique archaeological sites, historical resources, or historic properties.	X	X	X	

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Cultural Resources, cont'd.						
CR-5		Establish and maintain a protective buffer zone around each recorded archaeological site within or immediately adjacent to the ROW that would be treated as an "environmentally sensitive area" within which construction activities and personnel are not permitted.	X	X		
CR-6		Evaluate the significance of archaeological resources, buildings, and structures in the area of potential effects in terms of their eligibility for inclusion in the NRHP.	X			
CR-7		Activities would minimize ground surface disturbance within the bounds of significant archaeological sites, historical resources, or historic properties.	X	X		
CR-8		During construction, it is possible that previously unknown archaeological or other cultural resources or human remains could be discovered. Prior to construction, the Proponent would prepare a Construction Monitoring and unanticipated cultural resources Discovery Plan to be implemented if an unanticipated discovery is made.		X		
Hazardous Materials and Waste						
	X	Framework Plans prepared as part of the final POD would be developed and implemented to minimize and mitigate potential hazardous materials and waste; plans include SWPPP; SPCC Plan; Soil Management Plan; and HMMP. These plans would include requirements by the EPA, OSHA, Arizona Department of Environmental Quality, and the New Mexico and Arizona Departments of Transportation.	X	X	X	X
	X	The SWPPP would include BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. The SWPPP is required by, and enforced by, the EPA in New Mexico, and the Arizona Department of Environmental Quality in Arizona.	X	X	X	
	X	Construction, operation, and maintenance crew members who handle oil or other hazardous substances described in the SPCC Plan would be properly trained to deal with a spill, and appropriate spill response or containment material would be available for use at applicable work sites. Careful handling and designation of specific equipment repair and fuel storage areas, as outlined in the SPCC Plan, would reduce the potential for oil and fuel spills. In the event that there is an oil or fuel spill, immediate measures would be taken to control the spill, and the BLM, National Response Center, and/or Arizona Department of Environmental Quality or New Mexico Environment Department would be notified as defined in the SPCC Plan.	X	X	X	X
	X	Personnel, contractors, and transporters involved with hazardous materials management would be required to comply with Federal and State regulations established for the transportation, storage, handling, and disposal of hazardous substances, materials, and wastes. "Hazardous substances" means any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.		X	X	X
HAZ-1		The Project-specific HMMP and program would outline proper hazardous materials use, storage, and transport requirements and applicable handling procedures. EPA procedures for handling and storage of hazardous materials, OSHA requirements for proper storage and labeling on the job site, and New Mexico and Arizona Department of Transportation requirements for transportation of hazardous materials would be followed.	X	X	X	X
HAZ-2		If backfill material to be used is derived from a site that could possibly have contamination, it would be sampled and determined to be free of regulated contaminants before it is used to fill excavations. The results of any tested soils should be shared with the appropriate surface managing agency. No contaminated soils would be used as fill material for the Project.		X		
HAZ-3		New or expanded substation locations that involve the purchase or long-term leasing of land, purchased transmission line ROWs, and any other property to be acquired would be screened for environmental liabilities. The degree and level of screening would be based on knowledge or information available on the property to determine the probability of contaminants of concern or other environmental impairment. A Phase I Environmental Site Assessment would be conducted if preliminary screening indicates a reasonable risk that such environmental conditions may exist on the property and the property continues to be targeted for acquisition by the Project, consistent with American Society for Testing and Materials Standard E1527-13.	X			
HAZ-4		The Soil Management Plan would provide guidance for the proper handling, onsite management, and disposal of contaminated soil, if encountered during construction, operation, and maintenance activities. Appropriately trained personnel would be onsite during preparation, grading, and related earthwork activities to monitor the soil conditions encountered.	X	X	X	X
HAZ-5		In the event of a spill, workers in the immediate area would cease work, begin spill cleanup operations, and notify appropriate agencies as required by law and specified in the SPCC Plan. Southline and its construction contractor(s) are responsible for cleanup and assume liability for any and all releases of hazardous substances disposed on public land, in accordance with State, Federal, and local laws and regulations. Southline would immediately notify the BLM authorized officer of any and all releases of hazardous substances on public land.		X	X	X
HAZ-6		All construction and demolition waste, including trash and litter, garbage, and other solid waste, would be removed and transported to an appropriately permitted recycling or disposal facility. Southline and its construction contractor would prepare a Construction Waste Disposal Plan for all nonhazardous wastes generated during construction of the Project. The plan would contain a description of all nonhazardous solid and liquid construction wastes, recycling plans, and waste management methods to be used for each type of waste.		X		X
HAZ-7		Southline or the applicable contractors would maintain all vehicles in good working order. Equipment would be properly tuned and maintained to avoid leaks of fluids.		X	X	X
HAZ-8		Service and refueling procedures would not be conducted within 500 feet of a seep, wash, or other water body. Routine service of any vehicles or equipment would not be done within the ROW.		X	X	X

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Health and Human Safety						
HEA-1 HEA-3		The HASP and Fire Protection Plan prepared as part of the Final POD would be developed and implemented to minimize and mitigate potential health and human safety impacts. Southline and its contractors would work with the appropriate surface-managing agencies to incorporate any fire restrictions that are put into effect during construction, operation, and decommissioning of the Project.	X	X	X	X
HEA-2		Southline and its construction contractor would locate overhead and underground utilities that may reasonably be expected to be encountered during construction. If a utility service interruption is known to be unavoidable, Southline and its construction contractor would coordinate with the service provider to notify members of the public, the jurisdiction, and the service providers affected by the interruption via letters and newspapers notices published no later than 7 days prior to the first interruption. Copies of the notices would be provided to the BLM and Western following notification.	X	X		
HEA-4		All permanent metallic objects within the Project's transmission line ROWs would be grounded in accordance with industry standards.	X	X	X	
		Southline and its construction contractor would provide a safety representative at all times with the construction crews, first aid kits stored in each construction vehicle, a worker trained in first aid included in each work group during construction, and the development and implementation of a HASP.		X		
	X	The HASP would address potential situations that workers could encounter during construction and maintenance. The purpose and goal of the worker safety and environmental training would be to communicate Project-related environmental and safety concerns and appropriate work practices to all field and construction personnel prior to the start of construction, including spill prevention, emergency response measures, accident prevention, use of protective equipment, medical care of injured employees, safety education, and fire protection. Training would encompass environmental training related to road designations and speed limits, promote "good neighbor" policies, and institute BMPs for construction. The training would emphasize site-specific physical conditions to improve hazard prevention in accordance with OSHA requirements (29 CFR 1910 and/or 1926, as applicable).	X	X	X	
Land Use						
		Although disturbance to Pima County Conservation Lands would primarily occur within the existing Western ROW for the existing line, every effort would be made to minimize and avoid impacts to these lands (such as Bar V Ranch, Tumamoc Hill, etc.), to the extent practicable.		X	X	
Farmlands and Rangeland						
FARM-1	X	Fences and gates would be repaired or replaced to their original, predisturbed condition (or better), as required by the landowner, BLM authorized officer, or other land managing entity if they are damaged or destroyed by construction activities. New temporary and/or permanent gates would be installed only with the permission of the landowner or the BLM. Temporary gates not required for postconstruction access control would be removed following construction completion and in accordance with the POD.		X		X
	X	Water facilities (e.g., tanks, developed springs, water lines, wells, etc.) would be repaired or replaced to their predisturbed condition if they are damaged or destroyed by construction, operation, or maintenance activities, as required by the landowner of land management agency. Temporary watering facilities would be provided for wildlife and livestock until permanent repair or replacement is complete.		X	X	X
	X	Laydown areas and substation development would be located on previously disturbed land, where possible, to reduce the impact to farm operations and production in active farmlands. If laydown areas cannot avoid farmlands, Southline would receive approval from the landowner of the farmland to lease the land required for the laydown area.	X	X		
	X	Temporary gates would be installed to prevent livestock from escaping rangelands and accessing roadways. Fences and gates would be repaired or replaced to their original, predisturbed condition, as required by the landowner or the BLM authorized officer if they are damaged or destroyed by construction activities. Cattle guards would be installed at access points to prevent livestock from exiting unsecured gates onto roadways.	X	X		
	X	On agricultural land, ROWs would be aligned, in so far as practicable, to reduce the impact to farm operations and agricultural production. This would typically be done in conjunction with negotiating ROW agreements with landowners.	X	X		
Geology and Minerals						
GEO-1		Southline would prepare a geotechnical engineering study prior to the final project design to identify site-specific geological conditions and potential geological hazards. The data collected from the study would be used to guide sound engineering practices and mitigate potential geological hazards.	X			

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Military Operations						
DoD-1	X	The transmission line operator would work with Buffalo Soldier Electronic Testing Range (BSETR) to coordinate, and possibly limit, interconnections to the upgraded Tucson–Apache 230-kV transmission line to the extent allowed by Western's Open Access Transmission Service Tariff and Federal Energy Regulatory Commission (FERC) Orders. The transmission line operator would work with interconnection applicants to locate any future interconnection points on Western's upgraded Tucson–Apache 230-kV transmission line outside the BSETR and within 1 mile of its boundaries. New transmission facilities are defined to include substations, switchyards, and converter stations. Western's Open Access Transmission Service Tariff and the Federal Power Act, as amended, provide the framework, in accordance with Federal law, to consider interconnection requests. Western's Tariff substantively conforms with FERC Orders 888, 889, 890, 2003, and 2006, and ensures open access to Western's transmission system on an equal footing with regulated utilities.	X			
DoD-2	X	Southline and Western would work with BSETR to identify micro-siting opportunities during Project design.	X			
DoD-3	X	The transmission line operator would coordinate with BSETR during the design phase of the proposed Project to limit EMI. The proposed Project would be constructed using the best available construction techniques and technology (i.e., use of grounding, selective conductor type and arrangement, and conductor surface gradients), to the extent feasible and reasonably economical, in order to minimize EMI.	X			
DoD-4	X	The transmission line operator would coordinate with BSETR to allow for an updated measure of the "floor value" of the proposed Project over the first 6 months of operation once the proposed line is energized. Such cooperation could include provision of real-time operating and load information to BSETR to help calibrate the floor value of EMI.	X	X	X	
DoD-5	X	The transmission line operator would coordinate with BSETR to develop reporting standards, for potential inclusion in the transmission line maintenance and inspection program, to the extent allowable by FERC and NERC reliability standards. While normal inspection maintenance would take care of typical EMI issues, specific incidents such as storm damage or vandalism would need to be responded to outside of the normal maintenance cycle. If not detectable through transmission line monitoring, the operator would need to hear from someone experiencing interference in order to respond.	X	X	X	
DoD-6	X	The transmission line operator would coordinate planned outages (curtailment of power line operations for BSETR to implement testing) with BSETR to the extent feasible in order to meet necessary contractual commitments, utility mandates, laws and regulations, and power system requirements. The operator is very limited in the timing and duration of potential outages; outages stress the rest of the system, which can cause system failures.	X		X	
X		Use the optional structure height of 90 feet in areas intersecting the military training route (MTR) VR-263, which has a 100 feet above ground level flight altitude. Additionally, do not erect any structures exceeding 200 feet in height in areas intersecting MTRs VR-260 and VR-1233. Towers crossing the MTRs should also have anti-collision lighting to the maximum extent possible in order to make the hazard of transmission lines more apparent to pilots flying low altitude at night. These measures would mitigate impacts to military training and airspace usage, as well as contribute to the safe conduct of missions.	X	X		
X		Chart the transmission lines before they are erected.	X			
X		Identify transmission structures with high-visibility markers in areas where they intersect or parallel MTRs.	X	X		
MIL-1		The appropriate military scheduler(s) and U.S. Border Patrol representative(s) would be contacted to schedule airspace usage for any construction or maintenance activity on lands that could be used by the military and/or U.S. Border Patrol for training activities or other flights. Coordination would occur with the applicable scheduling office to schedule necessary airspace usage prior to maintenance activities.	X	X		
MIL-2		The proposed Project would comply with FAA regulations, including lighting regulations, to avoid potential safety issues associated with proximity to airports, military bases or training areas, or landing strips.	X	X	X	
Noise						
	X	Schedule construction activities and route construction traffic to minimize disruption to nearby residents and existing operations surrounding the Project.		X		
	X	Noisy construction activities (including blasting) should be limited to the least noise-sensitive times of day (daytime only between 7 a.m. and 10 p.m.) and to weekdays. In sensitive wildlife areas, they should be limited to between 1.5 hours after sunrise and 1.5 hours before sunset.		X		
	X	If warranted, in extreme circumstances, erect temporary wooden noise barriers around areas where construction equipment would disturb sensitive receptors[3] near substations. Barriers may reduce noise by 3 to 10 dBA (EPA 1971).		X		
	X	To the extent possible, locate noisy equipment away from sensitive receptors.		X		
	X	Whenever feasible, schedule noise-generating activities to occur at the same time, since additional sources of noise generally do not add noise. That is, less-frequent noise activities would be less annoying than frequent less-noisy activities.		X		
	X	If blasting or other activities that cause loud bursts of noise are required during the construction period, nearby residents would be notified in advance.		X		
	X	If possible, minimize trips for surveillance and monitoring of Project transmission lines.			X	

[3] As identified in the EIS, noise sensitive receptors include residential areas, schools and day care facilities, hospitals, long-term care facilities, places of worship, libraries, parks, and recreational areas specifically known for their solitude and tranquility (such as wilderness areas).

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Noise, cont'd.						
NOI-1		Construction would comply with local noise ordinances. There may be a need to work outside the local ordinances to perform work during available line outage windows in order to take advantage of low electrical draw periods during nighttime hours. The construction contractor would comply with variance procedures required by local authorities.		X		
NOI-2		Construction equipment would be maintained in good working order in accordance with manufacturer's recommendations.		X		X
NOI-3		Idling of construction equipment and vehicles would be minimized during construction.		X		
NOI-4		Workers would be provided with appropriate hearing protection, if necessary, as described in the HASP.		X	X	X
Paleontology						
	X	The Project would avoid Potential Fossil Yield Classification (PFYC) 3 and 4 geological units where possible by spanning resource areas.	X			
PAL-1	X	In consultation with the appropriate land management agencies, Southline and its contractor would develop a Paleontological Monitoring Plan to address paleontological resources within the project area. This plan would address personnel education, predisturbance surveys, monitoring of ground disturbance, and the deposition and curation of fossils in a qualified repository.	X	X		
PAL-2		If scientifically significant fossils are encountered during construction, construction activities would be temporarily diverted away from the discovery and the authorized officer of the BLM would be notified. BLM would then implement the appropriate measures to avoid, protect, and/or recover the fossil remains.		X		
Recreation						
REC-1		Southline would not site additional workspace areas, such as contractor yards, in recreation areas in order to minimize impacts on recreational users during construction.	X	X		
REC-2		Southline and its contractor would coordinate with the BLM to display appropriate "closed" signage at the entrance to new spur roads to structure locations and access roads located on BLM-managed lands. This includes temporary signs during the construction phase of the Project and permanent signs and/or vehicle barriers that would close the spur routes to public travel during the operational phase. Signs would be removed as appropriate upon decommissioning.	X	X	X	X
REC-3		If temporary short-term closures to recreational areas are necessary for construction activities, Southline and its contractor would coordinate those closures with recreational facility owners. To the extent practicable, Southline and its construction contractor would schedule construction activities to avoid heavy recreational use periods (e.g., holidays or tournaments). Southline and its construction contractor would coordinate with the facility owner to post notice of the planned closure onsite 14 calendar days prior to the closure.	X	X	X	X
	X	Construction would be limited to certain areas of the ROW during specified hunting seasons (e.g., big-game hunting seasons) by sequencing construction activities along the ROW, in coordination with New Mexico Department of Game and Fish (NMDGF) and AGFD, in accordance with each agency's hunting regulations. Such coordination would allow the agencies to notify hunters of potential for T-line construction activities to affect their hunt. Where construction cannot avoid hunting seasons (e.g., mountain lion, "varmint," and other species with year-round hunting seasons) hunters would be required to avoid discharging firearms adjacent to the construction areas, in accordance with NMDGF and AGFD hunting regulations.	X	X		
	X	If the Arizona National Scenic Trail must be temporarily closed during construction, an alternate trail route (detour) would be provided during the closure. If it is necessary for trail users to leave the trail during the temporary closure, trail users would need to obtain permission from the Arizona State Land Department.	X	X		X
Wilderness						
	X	Wilderness Inventory Unit users would be notified by publication of the construction schedule in local media, posting the schedule at administering agency offices, posting the schedule at trailheads or other recreation access points to Wilderness Inventory Units, or other means of reaching visitors. This notification process would alert wilderness users to the potential temporary impacts of presence and sound of construction on opportunities for experiences of solitude and primitive recreation settings, and allow visitors to decide whether they want to reschedule their visit.	X	X		X
	X	Feather the edges of the shrubs and trees adjacent to the ROW when recontouring and revegetating the construction ROW in vegetation communities with a large shrub or tree component, to reduce the line or edge that would be apparent between the shrubs and trees and the grass of the reclaimed ROW.	X	X		X
Trails						
	X	In accordance with the "Design Features and Best Management Practices for National Trails and Associated Resources" (see appendix 1 in Manual 6280 (BLM 2012)), proposed projects within a National Trail Management Corridor would be designed and located in a manner that is compatible with trail purposes.	X	X		
	X	Minimize visual contrast of Project through use of Project design such as using low profile buildings; siting using the natural topography to hide or screen development, reducing the aerial extent of impact by clustering developments, using vegetative screening; mimicking the line, form, and texture of the surrounding landscape; painting infrastructure, using colors that camouflage the development and prevent glare; and other techniques developed to address the site-specific conditions (BLM 2012).	X	X		
	X	Avoid the use of dye, restrict administrative vehicle travel off of designated routes to minimize spread of exotic and invasive species with the National Trail Management Corridor, and consider alternative treatment methods such as use of backpacker sprayer (BLM 2012).	X	X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Soils						
SOIL-1		As appropriate and feasible, Southline and its construction contractor would implement topsoil segregation and conservation practices at substation sites and as directed by the BLM and Western.		X		
	X	In construction areas (i.e., temporary use areas, structure sites, access roads, etc.) where grading is required, surface restoration would be implemented as required by the landowner or BLM authorized officer. The method of restoration would normally consist of returning disturbed areas back to approximate their normal contour, replacing topsoil, reseeding (where required), installing cross drains for erosion control, placing water bars in the road, and/or filling ditches. The Reclamation, Vegetation, and Monitoring Plan would include final details on the details of restoration.		X		
Socioeconomics						
	X	Southline should maximize local hiring, to the extent feasible, during construction. Local hiring could both maximize local economic benefits from the proposed Project, and help reduce potential housing issues and new public service demands.	X	X		
	X	Southline would develop plans for housing the temporary construction workforce during the periods of time when construction would focus on the western portions of the New Build Section (e.g., Hidalgo County) and the eastern portion of the Upgrade Section (e.g., northeastern Cochise County). If the Proponent Alternative is selected, housing planning should also include southern Luna County. The plan should be developed with input and review from local authorities in those areas to both minimize potential impacts on housing and public services and inform the communities of potential challenges associated with construction.	X	X		
Transportation						
TRA-1		Prior to the start of construction, Southline and its construction contractor would prepare a Traffic and Transportation Management Plan for the Project to address the timing and routing of Project trips in an effort to minimize Project impacts on local streets, highways, and railroad operations.	X			
TRA-2		At least 90 days prior to any construction-related helicopter use on the Project, Southline and its construction contractor would coordinate with the FAA for review and approval of plans for any helicopter flights that would take place during construction and operation. Southline and its construction contractor would then provide information to the BLM and Western regarding the intended need and use of helicopters during construction and operation of the Project, including the Flight and Safety Plan; the estimated number of days and hours that the helicopter would operate; the type and number of helicopters that would be used; the location, size, and number of staging areas for helicopter takeoffs and landings; and written approval from property owners for use of helicopter staging areas.	X	X	X	
	X	If any existing roads were to be damaged by Southline or its construction contractor during construction activities and/or truck traffic, the road would be repaired.		X		
	X	In order to mitigate traffic impacts on primary roads in metropolitan areas, shift changes for construction crews would not occur during the peak hours for the road during construction. Oversize or overweight vehicle movements would be planned for nighttime hours, where practical and not detrimental to safety or evening residential noise levels, or those specified in permitting regulations in order to minimize traffic disruptions.	X	X		
	X	In order to reduce public access to BLM roads and adjacent lands that are not currently accessible by the public, the Proponent would fence off or place restricted access signage at new access roads, where appropriate.	X	X	X	
	X	Throughout the permitting and design phase, the Proponent would correspond with Federal, State, and local transportation agencies in order to avoid Project inconsistencies with current and future transportation plans.	X			
	X	Throughout the permitting and design phase, the Proponent would correspond with Federal, State, and local airports in order to ensure that the FAA criteria for structures near airports are met, and to avoid Project inconsistencies with identified airport plans.	X			
	X	Identify transmission structures with high-visibility markers in areas where they intersect or parallel MTRs.			X	
	X	Provide gates and fencing in areas where OHV use would be restricted due to military operations, or to protect sensitive resources.		X	X	X
Vegetation						
VEG-1	X	Efforts would be made to minimize vegetation removal and permanent loss at construction sites to the extent practicable. Access would not be graded unless necessary for erosion control or other engineering reason. Final structure and spur road locations would be selected to avoid special status vegetation to the greatest extent feasible.		X		
VEG-2	X	Southline and its construction contractor would develop a Reclamation, Vegetation, and Monitoring Plan that would guide restoration and revegetation activities for all disturbed lands associated with construction of the Project and its eventual termination and decommissioning. The plan would address all land disturbances, regardless of ownership. It would be developed in consultation with appropriate agencies and landowners and would be provided to these entities for review and input. The plan would provide details on topsoil segregation and conservation, vegetation treatment and removal, salvage of appropriate species, and revegetation methods, including use of native seed mixes, application rates, transplants, and criteria to monitor and evaluate revegetation success.	X	X	X	X
VEG-3	X	Special-status plants, including the Pima pineapple cactus (*Coryphantha scheeri* var. *robustispina*), would be avoided. Where avoidance is not possible, special status plants would be conserved by relocating plants and/or reseeding, replacing topsoil with existing topsoil that was removed, and regrading in compliance with local ordinances (Pima County, Tohono O'odham Nation). Measures to conserve special status plants would be implemented through the Reclamation, Vegetation, and Monitoring Plan.	X	X		X

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Vegetation, cont'd.						
VEG-4	X	Removal of riparian scrubland vegetation would be avoided where possible. Natural regeneration of native plants would be supported by selectively cutting vegetation with hand tools, mowing, trimming, or using other removal methods that allow root systems to remain intact.		X	X	X
VEG-5	X	In consultation with local BLM field offices and local resource agencies, Southline and its construction contractor would develop and implement a Noxious Weed Management Plan.	X	X	X	X
VEG-6	(see also PPC-3 and 4)	As required, equipment would be cleaned before ingress to minimize the potential for the spread of invasive species. These details would be described in the Noxious Weed Management Plan. Buffelgrass (*Pennisetum ciliare*) would be specifically addressed in the plan, which would outline efforts to control it within areas disturbed by the proposed Project to ensure that it does not spread to adjoining lands.	X	X	X	X
	X	Preconstruction native plant inventories and surveys for noxious weed species as stipulated by the appropriate land management agency would be conducted once transmission line center line, access road, and transmission line structure sites have been located.	X			
	X	Although the 150-foot ROW across the San Xavier District of the Tohono O'odham Nation was surveyed for Pima pineapple cactus in summer 2014, additional preconstruction species-specific surveys for the Pima pineapple cactus would be conducted once transmission line center line, access road, and transmission line structure sites have been located, as needed.	X			
	X	Preconstruction coordination with Pima County, the University of Arizona, and other appropriate groups would be conducted to minimize impacts to Tumamoc globeberry (*Tumamoca macdougalii*) monitoring plots and plants on Tumamoc Hill. Measures to conserve this plant, as well as other special status plants, would be implemented through the Reclamation, Vegetation, and Monitoring Plan.	X	X		X
	X	In construction areas where grading is not required, vegetation would be left in place wherever feasible, and original contours would be maintained to avoid excessive root damage and allow for regrowth. All existing roads would be left in a condition that is equal to or better than their condition before the construction of the transmission lines, as determined by the appropriate land management agency.		X		
		Field presence/absence surveys would be conducted for special status species in locations where such species are likely to occur within the Project ROW, and specifically locations where vegetation would be impacted, prior to any actual impacts. Surveys would be conducted following established protocols by qualified biologists approved by BLM.	X			
	X	Southline and its construction contractor would provide training to all appropriate field personnel working on the Project to identify noxious weeds and prevent spread. Training would discuss known invasive and noxious weed species, known locations, identification methods, and treatment protocols. Training materials and a list of Project personnel completing the course would be provided to the BLM and Western.		X		
	X	Invasive and noxious weed populations would be mapped and reported to BLM/Western. BLM and Western would determine which areas would necessitate vehicle washing, based on the results of the invasive/noxious weed surveys.	X	X		
	X	Noxious weeds and other exotic, invasive plant species would be inventoried by a qualified biologist in the immediate proximity to any sensitive plant communities and any special status species populations. This noxious weed inventory would then provide information to supplement mitigation plans for sensitive plant communities and/or special status species habitats, to prevent the expansion of any noxious weeds or other exotic invasive plant species into those locations. Mitigation planning shall be included as part of the Plant and Wildlife Species Conservation Measures Plan.	X			
	X	Southwest Regional Gap Analysis Project plant associations (communities) that are considered to be environmentally sensitive would be included in ground-truthing field surveys, such as wetlands, riparian areas, drainages, and special status species habitats, to confirm the presence and extent of such communities. If any such sensitive plant communities are identified and documented, the first response would be a determination regarding whether the sensitive community can be avoided. If avoidance is not possible, a mitigation plan (included as part of the Plant and Wildlife Species Conservation Measures Plan) would be developed as needed for those vegetation communities, including options to reduce impacts to those communities. Exclusion zones (at least 10 feet around the perimeter of the plant community) would be delineated around any such plant communities and marked with flagging. Construction monitoring shall be employed around any such sensitive plant communities, and the biological monitor shall have the authority to halt any construction activity deemed intrusive and causing impacts beyond those stated in the mitigation plan. Any changes in construction plans that occur after the Project approval would require additional field presence/absence surveys for such sensitive plant communities and would require a variance request from the BLM if such communities are found, and the above mitigation measures would apply.	X			
	X	A compensation plan would be developed as part of the Plant and Wildlife Species Conservation Measures Plan, to meet BLM requirements and approval. The compensation plan would include calculations of compensation ratios and mitigation acreages for special status plant species requiring additional mitigation. Compensatory mitigation could include payment of an in-lieu fee; acquiring mitigation land or conservation easements; or a combination of the two.	X			
	PPC-1	For Pima pineapple cactus that cannot be avoided, Southline would purchase credits in a U.S. Fish and Wildlife Service (FWS)-approved conservation bank for Pima pineapple cactus, corresponding to the area of permanent disturbance to occupied Pima pineapple cactus habitat. Alternatively, Southline may purchase suitable mitigation lands within Pima County's Pima pineapple cactus Priority Conservation Areas.	X			
	PPC-2	In compliance with Executive Order 13112 regarding invasive species, all disturbed soils that would not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the project vicinity.		X		
	PPC-3	Also in compliance with Executive Order 13112 regarding invasive species, all earthmoving and hauling equipment shall be washed at the contractor's storage facility prior to arriving onsite to prevent the introduction of invasive species.		X		
	PPC-4	To prevent invasive species propagules from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris identified prior to leaving the construction site.		X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Vegetation, cont'd.						
	PPC-5	Any Pima pineapple cactus that are not within the area of permanent disturbance, but are present within the Project vicinity, shall be flagged by a qualified biologist prior to the commencement of work to avoid accidental damage during construction. Flagging would be removed following construction.	X	X		
	PPC-6	Any Pima pineapple cactus that cannot be avoided would be conserved by relocating plants within the existing ROW, but outside of the area of any ongoing disturbance.	X	X		
	BO-CM (Biological Opinion-Conservation Measures)	BLM and Western would coordinate with the Arizona-Sonoran Desert Museum in salvaging for the museum's collection if individual Pima pineapple cactus cannot be relocated for some reason.	X	X		
		Preconstruction surveys for Chihuahua scurfpea and other special status plant species would occur in suitable habitat and ground disturbance in occupied habitat would be avoided to the extent practicable.	X	X		
Visual Resources						
VIS-1		In order to restore disturbed areas to an appearance that would blend back into the overall landscape, seeding and/or planting would be conducted in any area that has been cleared or disturbed during construction. Seed mix would be tailored to an area's soil type, existing vegetation, and native species.		X		X
VIS-2	X	The alignment of any new access roads (including unimproved spur roads) would stay within the designated access ROW and would follow the designated area's landform contours and avoid steep areas as much as feasible, provided that such alignment does not additionally impact resource values. This would minimize ground disturbance and/or reduce scarring (visual contrast).	X	X		
VIS-3		During the construction period, dust suppression measures would be used to minimize the creation of dust clouds potentially associated with the use of access roads.		X		
VIS-4	X	The Project would incorporate nonspecular conductors into the Project design to decrease reflectivity and visibility of Project features.	X	X		
	X	Non-transmission line structures such as operations and maintenance buildings, microwave equipment buildings, regeneration structures, emergency generators, and other associated structures would be treated or painted with non-reflective, flat-toned surface treatment. The color of the structures would be painted BLM Environmental Color Chart "Shadow Gray," unless otherwise directed by the authorized officer based on a field evaluation of color choices that will demonstrate better measurable performance over Shadow Gray. BLM Visual Resource Management staff shall be consulted and shall approve color selection relative to site-specific structures to be painted.		X	X	
	X	All lattice towers shall be "dulled" non-specular metal and monopoles properly color treated (BLM Environmental Color Chart "Shadow Gray").	X	X		
	X	Aerial markers or warning lights would be installed on conductors or structures if required by FAA, U.S. Customs and Border Protection, and DOD regulations for structures over 130 feet. The use of red strobe lighting would reduce potential impacts from artificial night lighting and would reduce impacts from night brightness and viewing of night skies. The minimum number and intensity of lights would be used, given that the tallest structures are under the 200-foot FAA requirement (FAA Advisory Circular 70/7460-1K (FAA 2007)). Exterior lights installed on conductors or other facilities would be aviation warning lights, or FAA L-864 aviation red-colored flashing lights with 20 to 40 flashes per minute standard flashing range.		X	X	
	X	The alignment of new access roads or cross-country routes would follow the landform contours where practicable to minimize ground disturbance and reduce visual scarring of the landscape, provided that the alignment does not affect other resource values.	X	X	X	
	X	Clearing of trees in and adjacent to the ROW would be minimized to reduce visual contrast to the extent practicable to satisfy conductor-clearance requirements. Trees and other vegetation would be removed selectively to blend the edge of the ROW into adjacent vegetation patterns, as practicable and appropriate.	X	X	X	
	X	All new or improved access that would not be required for maintenance would be closed or rehabilitated to make it less visually apparent.	X	X	X	
		Tower design may be modified, or an alternative tower type may be selected, to minimize visual contrast as appropriate (BLM 2013).	X	X	X	
	X	Standard tower design would be modified to correspond to spacing of existing transmission structures, where feasible and within the limits of standard tower design, to reduce visual contrast (BLM 2013).	X	X		
	X	At highway, canyon, and trail crossings, towers would be placed at the maximum feasible distance from the crossing within the limits of standard tower design to reduce visual impacts.	X	X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Water Resources						
WAT-1		A Project-specific construction SWPPP would be prepared prior to the start of construction of the transmission line and substations in compliance with Clean Water Act (CWA) Section 402, if required. The SWPPP would use BMPs to address the storage and handling of hazardous materials and sediment runoff during construction activities to minimize the risk of an accidental release. As part of the SWPPP, soil disturbance at structure construction sites and access roads would be the minimum necessary for construction and would be designed to prevent long-term erosion, through activities such as restoration of disturbed soil, revegetation, and/or construction of permanent erosion control structures. A U.S. Army Corps of Engineers permit would be obtained prior to the start of construction of the transmission line and substations for the discharge of dredged or fill material in compliance with CWA Section 404, if required. Activities in and around streams and wetlands would be designed to avoid, minimize, and mitigate impacts to WUS.	X	X		
WAT-2		Construction equipment would be kept out of flowing stream channels, unless feasible alternatives are not available. Structures would be located to avoid active drainage channels, especially downstream of steep slope areas, to minimize the potential for damage by flash flooding and mud and debris flows.	X	X		X
WAT-3		Flood-control devices would be located where required to protect structures from flooding or erosion. Appropriate design of structure foundations would be used to prevent scour or inundation by a 100-year flood and to avoid disturbed areas. The locations of transmission structures would be designed to avoid steep, disturbed, or otherwise unstable slopes. If drainages cannot be avoided by structure placement, Southline and its construction contractor would design drainage crossings to accommodate estimated peak flows and ensure that natural volume capacity can be maintained throughout construction and upon post-construction restoration.	X	X		
	X	Roads would be built as close as possible to right angles to the streams and washes. Culverts or temporary bridges would be installed where conditions warrant. All construction and operations activities shall be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.		X		
	X	If a route is approved near the internal border, construction activities should be accomplished in a manner that does not change historic surface runoff characteristics at the international border. Copies of any hydrologic or hydraulic studies and site-specific drawings for work proposed in the vicinity of the international boundary would be submitted to the U.S. International Boundary and Water Commission.	X	X	X	X
	X	To the extent practicable, structures would be sited with a minimum distance of 200 feet from streams.	X			
Wildlife						
WILD-2		In consultation with the BLM and Western, Southline and its construction contractor would prepare and implement a Biological Monitoring Plan prior to issuance of a notice to proceed and prior to construction that would specify the level of biological monitoring to be provided throughout construction activities in all construction zones with the potential for presence of sensitive biological resources. The number of monitors and monitoring frequency would be specified for each work zone.	X	X		
WILD-3		Preconstruction surveys would be required in areas where Sonoran desert tortoise (now a separate species: Morafka's desert tortoise (*Gopherus morafkai*)), and Gila monster (*Heloderma suspectum*) are expected to occur. In consultation with the BLM and Western, Southline and its construction contractor would hire qualified biologists to conduct preconstruction surveys in ground disturbance areas within suitable habitat for appropriate special status species.	X			
WILD-4		To reduce impacts on the Sonoran (Morafka's) desert tortoise, known to exist in the western portion of the project area, only authorized biologists with a valid AGFD permit would handle desert tortoises if encountered within the Project area, following the most current desert tortoise handling guidelines published by the AGFD .		X		X
WILD-5		To reduce impacts on all species protected by the Migratory Bird Treaty Act (MBTA), (1) Southline and its construction contractor would conduct preconstruction surveys for active nests, and consult with the appropriate agencies (BLM or FWS) on a case-by-case basis when active nests are found in Project areas, unless directed to do otherwise by these same agencies; (2) a buffer would be placed around active bird nests, and nests would not be moved during breeding season, in compliance with the MBTA, unless the Project is expressly permitted to do so by the FWS or BLM, depending on the location of the nest; (3) all active nests and disturbance or harm to active nests would be reported to the FWS or BLM, upon detection; and (4) work would halt if it is determined that active nests would be disturbed by construction activities, until further direction or approval to work is obtained from the appropriate agencies.	X	X		
WILD-6		To reduce impacts on golden eagles and other raptors, Southline and its construction contractor would develop and implement an APP, in coordination with the BLM and Western for approval. The plan would be prepared in accordance with guidance provided by the FWS and in consultation with best practices such as the "Suggested Practices for Avian Protection on Power Lines" (APLIC 2006).	X	X	X	X
WILD-7		Southline and its construction contractor would follow Pima County guidelines for surveys prior to disturbance located in Pima County for western burrowing owls (*Athene cunicularia*). Surveys for western burrowing owl would also be conducted in Cochise County near agricultural fields surrounding the Willcox Playa.	X	X		
		Surveys for western burrowing owl in New Mexico would follow the NMDGF "Guidelines and Recommendations for Burrowing Owl Surveys and Mitigation" (NMDGF 2007).	X	X		
WILD-8		Final structure and spur road locations would be adjusted to avoid sensitive wildlife resources to the greatest extent feasible.	X	X	X	
AGFD-1	X	Preconstruction surveys for non-game sensitive species such as ornate box turtle (*Terrapene ornata*), western burrowing owl (*Athene cunicularia*), Texas horned lizard (*Phrynosoma cornutum*), kit fox (*Vulpes macrotis*), etc. Timing of the surveys would be determined through consultation with AGFD and NMDGF.	X			
		Preconstruction surveys for species listed under the Endangered Species Act or specified by the appropriate land management agency as sensitive or of concern would be conducted in areas of known occurrences or suitable habitat. Timing of the surveys would be determined by FWS-approved, species-specific survey protocol.	X			

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Wildlife, cont'd.						
	X	Monitoring of construction activities would be required in some areas to ensure that effects on these species are avoided during construction. If bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*) nests are identified during preconstruction surveys, seasonal restrictions on construction within a specified buffer would be implemented where applicable, according to FWS protocols, to comply with the Bald and Golden Eagle Protection Act. Preconstruction nesting-season surveys for migratory birds and surveys for burrowing owls in suitable habitat would be conducted as needed to comply with the MBTA.		X		
	X	Surveys for bat roosts would be conducted within 0.25 mile of the Project ROW in areas that potentially contain caves, karst features, or mines. Occupied bat roosts would be avoided.	X			
	X	Clearing, grubbing, blading, and access road improvements occurring within identified sensitive areas would be conducted outside the breeding season for most desert-nesting migratory birds.	X	X		
	X	Construction holes left open overnight would be appropriately fenced or covered to prevent damage to wildlife or livestock.		X		
	X	Except where otherwise posted or allowed, a Project speed limit of 25 mph would be designated for all construction areas, spur roads, and new access roads to minimize the potential for construction equipment collisions with wildlife. In areas with mountainous terrain and/or poor site distances, the Project speed limit would be 15 mph.		X		
	X	In construction areas where recontouring is not required, vegetation would be left in place wherever possible, to avoid excessive root damage and allow for resprouting.		X		
	X	If designated suitable bighorn sheep (*Ovis canadensis*) habitat along subroute 1.2 in segment S2 were to become occupied by bighorn sheep, then no Project facilities except transmission lines would be built in that area, if that route is selected.		X		
	X	To avoid impacting roosting bats at the Ina Road bridge, blasting activities would be restricted to less than 130 decibels (dB) at the project site. If this dB limit cannot be met, then blasting activities would be limited to after sunset when the majority of adult bats would be away from the roost foraging, and/or blasting would not occur in April or May while the bat colony is present.		X		
AGFD-2	X	Southline would fund the relocation of Crane Lake, including acquisition of land if necessary, construction of the lake and associated infrastructure, revegetation, and visitor facilities. This would include operation and maintenance costs of the lake and infrastructure for the life of the Project, with the renewal of commitment upon future renewal of the Project permit.	X	X	X	
AGFD-3	X	Southline would provide funding to improve riparian emergent wetlands on three historic ponds near Kansas Settlement Road. Wetlands would be constructed to AGFD specifications and adequately equipped with pumps, liners, and drains to ensure that wildlife values are maintained.	X	X	X	
AGFD-4	X	Southline would fund the removal of non-native flora and revegetation with native flora on the Willcox Playa Wildlife Area.	X	X	X	
	LNB-1	All paniculate agaves (*Agave palmeri*, *A. parryi*, and *A. chrysantha*) and saguaros (*Carnegiea gigantea*) would be inventoried within the proposed ROW, and the potential to avoid or salvage each plant would be assessed. The priority would be avoidance when feasible.	X	X		
	LNB-2	All suitable (e.g., healthy, undamaged, not flowering) paniculate agaves that cannot be avoided would be salvaged using methods approved by the BLM/Western and FWS, but mature agaves would be given preference for avoidance when feasible. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside disturbed areas if necessary.	X	X		
	LNB-3	Other species of agaves, such as *A. schotti,* that are not primary food plants for nectar-feeding bats would be salvaged and used for reclamation in accordance with to the Reclamation, Vegetation, and Monitoring Plan.	X	X		
	LNB-4	Saguaros less than 15 feet in height would be salvaged, unless prevented by site-specific conditions or poor plant health. Plants salvaged from areas of permanent disturbance would be used to reclaim areas of temporary disturbance, or replanted outside of disturbed areas if necessary. Larger saguaros would be avoided whenever feasible, but would be topped or removed if necessary.	X	X		
	LNB-5	Agave and saguaro salvage would be augmented, as necessary within 3 years after completion of initial restoration activities. Augmentation would occur within the ROW in areas of higher value to bats (e.g., in the vicinity of active roosts, within areas of high concentration of agaves) to achieve a goal of no net loss of forage plants. Plant stocks from local sources or approved nursery-grown plants would be used.	X	X		
	LNB-6	Salvaged plants would be monitored following reclamation for a period of 3 years, as described in the POD. Supplementary water would be provided, if monitoring indicates that rainfall is insufficient to achieve the goal of no net loss of forage plants. Plant survival through the monitoring period would be reported annually to the BLM/Western and FWS.	X	X		
	WF-1	All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and the Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of breeding or nesting southwestern willow flycatchers (*Empidonax traillii extimus*).		X		
	WF-2 YBC-2	Line marking devices would be placed at the proposed crossings of the San Pedro River, Cienega Creek, and the Santa Cruz River to minimize the potential for avian collisions with transmission lines.		X		

Table 8. Environmental Protection Measures by Resource (Continued)

PCEM	Agency	Feature by Resource	Preconstruction	Construction	Operation and Maintenance	Decommissioning
Wildlife, cont'd.						
	YBC-1	All non-emergency construction and maintenance in riparian woodlands at the San Pedro River, Cienega Creek, and Santa Cruz River would take place between September 15 and March 1, to avoid disturbance of breeding or nesting yellow-billed cuckoos (*Coccyzus americanus*).		X		
	BAT-1	Construction activities that create sudden and sporadic loud noise (e.g., blasting) within 0.5 mile of the Volcano Mine complex would be limited to Spring (preferably April 1 to May 31), depending on the presence of bats to protect maternity roosts and potential hibernacula.		X		
	BO-CM	BLM and Western would work with FWS, AGFD, and NMDGF to implement recovery actions for lesser long-nosed bat (*Leptonycteris yerbabuenae*), Mexican long-nosed bat (*Leptonycteris curasoae*), southwestern willow flycatcher, and yellow-billed cuckoo.	X			
	BO-CM	BLM and Western would work with FWS, AGFD, and NMDGF to participate in recovery planning and implementation of conservation actions for northern Mexican gartersnake (*Thamnophis eques megalops*), particularly on efforts to remove harmful nonnative species from occupied northern Mexican gartersnake habitat.	X			
	BO-CM	BLM, Western, and Southline would use the smallest mesh size possible (<0.5 inch) for erosion-control products, or products that do not contain any mesh- or net-like attributes near occupied northern Mexican gartersnake habitat. BLM, Western, and Southline would refrain from using erosion-control products (such as wattles), that contain a mesh size of 0.5 inch (or 1.27 cm) within proposed critical habitat for the northern Mexican gartersnake.		X		
	BO-CM (appendix B)	Preconstruction surveys would take place in habitat classified as moderate or high suitability for the northern aplomado falcon (*Falco femoralis septentrionalis*) within the proposed ROW and a 1-mile buffer. Surveys should be conducted several times from January 15 to June 30 in order to detect breeding activity.	X			
	BO-CM (appendix B)	All existing raptor nests or other large nests found during preconstruction surveys would be preserved in place, if possible, or relocated if necessary. No relocation of active nests would occur, and no nests would be relocated until after consultation with the Federal action agencies and FWS.	X	X		
	BO-CM (appendix B)	Construction would not take place within 1 mile of occupied northern aplomado falcon nests between January 15 and September 1. Aplomado falcons are frequently observed on their breeding territories in southern New Mexico in January. Therefore, January 15 is the start date for seasonal restrictions.		X		
	BO-CM (appendix C)	Preconstruction desert tortoise surveys would be conducted in suitable habitat. A WEAP that includes information on desert tortoises would be implemented. Any desert tortoises encountered during preconstruction surveys or during construction activities would be handled in accordance with the AGFD "Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects" (AGFD 2007).	X			

A SWPPP for the proposed Project would identify sources of pollutants associated with construction activity that may affect the quality of stormwater, as well as stormwater management practices to abate pollutants in stormwater discharges from the construction site both during and after construction. The SWPPP would detail structural and non-structural controls that would be put in place to minimize negative impacts caused by offsite stormwater discharges to the environment. BMPs in the plan would include specific stabilization measures and structural controls, spill prevention containment and controls, final stabilization measures to be implemented after construction, and requirements for maintenance and inspection, subject to approval by an Erosion Control Coordinator.

5.4.4 Spill Prevention, Control, and Countermeasures Plan

The Spill Prevention, Control, and Countermeasures (SPCC) Plan would address requirements for petroleum spill prevention, preparedness, response, and notification to prevent oil discharges to waters and adjoining shorelines. The EPA's SPCC rule 40 CFR 112 is part of the Oil Pollution Prevention regulation, which requires specific facilities to prepare, amend, and implement SPCC Plans. The plan would addresses prevention and remediation of oil, hydraulic fluid, and petroleum fuel spills, including spills that could enter WUS.

5.4.5 Historic Properties Treatment Plan

Section 106 of the NHPA requires Federal agencies to consider the effects of their undertakings on historic properties (those cultural resources presently listed or determined to be eligible for listing in the NRHP). Due to the scope and complexity of the proposed Project, and because the effects on historic properties cannot be fully determined prior to the approval of an undertaking, the BLM and Western determined early in the process that the undertaking would have an "adverse effect" on historic properties. To resolve the adverse effects, a Project-specific PA is being developed among the consulting parties.

The PA, an HPTP, and a Monitoring and Discovery Plan would be developed pursuant to the PA, and would be incorporated into the POD. The HPTP provides a framework for conducting historic resource testing and data recovery for the proposed Project. It would describe measures that would be implemented to address the avoidance of impacts, minimization of impacts, and mitigation of possible impacts to historic properties. As noted in the PA, for the purposes of Section 106 of the NHPA, decommissioning would be a new action for Section 106 review and historic properties potentially affected by decommissioning would be considered in the BLM-approved Termination and Reclamation Plan in accordance with the pertinent laws, regulations, and policies extant at the time.

5.4.6 Blasting Plan

A Blasting Plan would outline the procedures and safety measures that the proposed Project contractor would adhere to while implementing blasting activities during construction. It would identify proposed blasting techniques, as well as blasting requirements and procedures such as proposed notification of agencies and affected landowners, safety, use, storage, and transportation of explosives. These procedures must be consistent with the minimum safety requirements defined by Federal, State, and local regulations. This plan would also identify and address areas of potential environmental concern as related to blasting along the proposed Project route. The Blasting Plan would be circulated to the appropriate Federal, State, and local agencies, as appropriate.

5.4.7 Plant and Wildlife Species Conservation Measures Plan

Federal agencies are required to consider the effects of their activities on protected species. The Plant and Wildlife Species Conservation Measures Plan would outline the avoidance and minimization of impacts to special-status plant and wildlife species as related to proposed Project construction activities. It would describe specific measures to be implemented in the event that State or federally listed species, BLM sensitive species, or Forest Service special-status species or their habitats are identified within or adjacent to the proposed Project ROW. The Plant and Wildlife Species Conservation Plan would incorporate appropriate Federal, State, and local agency guidance and regulation, such as the Pima County Regional Flood Control District Regulated Riparian Habitat Mitigation Standards.

5.4.8 Erosion, Dust Control, and Air Quality Plan

In order to maintain air quality in the vicinity of construction areas, the Erosion, Dust Control, and Air Quality Plan would identify sources of fugitive dust, such as grading activities, driving on dirt roads, or wind-driven dust from exposed soil; and then provide appropriate dust mitigation measures (PCEMs) such as application of water or soil additives, control of vehicle access, vehicle speed restrictions, or even work stoppage during extreme wind. The plan would also identify sensitive receptors that could be affected by dust from work areas, and outline dust monitoring and recordkeeping responsibilities.
The Erosion, Dust Control, and Air Quality Plan would incorporate appropriate Federal, State, and local agency guidance and regulation and be circulated to the appropriate agencies to verify that the proposed Project is complying with the applicable air quality rules and regulations. Applicable County Plans, Laws, Ordinances, Regulations, and Standards Related to Air Quality are discussed in chapter 3 of the EIS.

Additionally, the Erosion, Dust Control, and Air Quality Plan would include a Construction Emission Mitigation Plan (CEMP) that would include fugitive dust source controls such as:

- stabilization of open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions;
- installation of wind fencing and phased grading operations where appropriate;
- operation of water trucks for stabilization of surfaces under windy conditions; and
- prevention of spillage when hauling material and operating non-earthmoving equipment and limiting speeds to 15 miles per hour. Limiting speed of earth-moving equipment to 10 miles per hour.

The CEMP would also include mobile and stationary source controls such as:

- planning construction scheduling to minimize vehicle trips;
- limiting idling of heavy equipment to less than 5 minutes and verification through unscheduled inspections;
- maintenance and tuning of engines per manufacturer’s specifications to perform at EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed; and
- where practicable, use new, clean equipment meeting the most current of applicable Federal or State Standards. In general, commit to the best available emissions control technology. Tier 4 engines should be used for Project construction equipment to the maximum extent feasible.

Lacking availability of non-road construction equipment that meets Tier 4 engine standards, the responsible agency should commit to using EPA-verified particulate traps, oxidation catalysts, and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site.

The CEMP would also include administrative controls such as:

- preparation of an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking; and
- development of a construction traffic management plan that maintains traffic flow and plan construction to minimize vehicle trips.

5.4.9 Hazardous Materials Management Plan

The purpose of the HMMP would be to reduce the risks associated with the storage, use, transportation, and disposal of hazardous materials anticipated to be used during the construction phase of the proposed Project. The HMMP would be required to meet BLM ROW grant conditions to provide a basic understanding of the hazards and techniques associated with the handling of hazardous materials so that the proposed Project personnel would be better able to protect their personal health, prevent damage to the environment, and comply with applicable laws, regulations, and policies.

5.4.10 Emergency Preparedness and Response Plan

The purpose of the Emergency Preparedness and Response Plan would be to help prevent emergencies, to ensure preparedness in the event emergencies do occur, and to provide a systematic and orderly response to emergencies. Emergencies may include be medical, fire, hazardous materials, extreme weather, or acts of sabotage. The plan would provide project-specific details regarding steps for various types of emergencies, including emergency notification and evacuation procedures, and would take into account the level of severity of each event.

5.4.11 Noxious Weed Management Plan

The primary focus of the Noxious Weed Management Plan would be to minimize the introduction of any noxious weed infestations, as well as the spread of weeds, during construction of the proposed Project and to eradicate noxious weeds following construction. Regulatory authority and requirements are provided by Federal regulations, including the Executive Order on Invasive Species and the Plant Protection Act, plus State regulations on noxious weeds. The plan would outline that invasive weeds are not controlled to the same standards as noxious weeds and would specifically address the elimination of buffelgrass (*Pennisetum ciliare*) from areas disturbed by the proposed Project to ensure that it does not spread to adjoining lands.

5.4.12 Fire Protection Plan

A Fire Protection Plan would help reduce the risk of fires and minimize the dangers posed by fires during construction and operation phases of the proposed Project. Because the proposed Project would be located in remote and isolated locations, the dangers posed by fire may be increased. The objective of this plan would be to eliminate causes of fire, minimize the potential loss of life and property by fire, and comply with OSHA standards on fire prevention. It also would provide information and guidelines to assist in recognizing, reporting, and controlling fire hazards.

5.4.13 Stream, Wetland, Well, and Spring Protection Plan

General water quality is protected under the Federal Clean Water Act, and a permit may be required if a project would result in discharges to regulated WUS. The purpose of a Stream, Wetland, Well, and Spring Protection Plan would be to describe measures to protect those resources from potential impacts during construction, operation, and maintenance activities. The plan would describe avoidance, minimization, and mitigation measures (PCEMs) and would be intended for use as a guide to determine the appropriate site-specific measures to be implemented during construction activities. The goals of the plan would be to prevent and control the proposed Project-related erosion and sedimentation into streams and wetlands, minimize disturbance and erosion of streambeds and banks, and protect springs and wells from Project impacts due to blasting and hazardous materials contamination. The Stream, Wetland, Well, and Spring Protection Plan would incorporate appropriate Federal, State, and local agency guidance and regulations, such as the Pima County Regional Flood Control District Regulated Riparian Habitat Mitigation Standards.

5.4.14 Soil Management Plan

A Soil Management Plan would define procedures for managing soils that are excavated during construction, along with plans for their storage and later reuse. This plan is often an appendix to a SWPPP. In addition to clean soil excavation, the plan would outline procedures for segregation of potentially contaminated soils, sampling and analysis of those soils, and disposal options if that becomes necessary. It also would define how topsoil would be segregated and stored, how stockpiles would be managed and protected, and used in site restoration. Use of topsoil for restoration activities would be described in the Reclamation, Vegetation, and Monitoring Plan. Erosion and sediment controls for excavated soil would also be discussed.

5.4.15 Reclamation, Vegetation, and Monitoring Plan

The Reclamation, Vegetation, and Monitoring Plan would be prepared for the BLM and Western to address the reconstruction of disturbed ecosystems by returning the land to a stable and productive condition. It would describe reclamation, revegetation, native plant management, and noxious and invasive weed control, with the purpose of restoring areas impacted by construction, operation and maintenance, and decommissioning. The plan would distinguish between Interim Reclamation Activities and Final Reclamation Activities with corresponding goals and objectives. Such plans typically include predisturbance site characterization, waste material management, site preparation and seeding, the use of native seeds, invasive species management, and compliance and effectiveness monitoring. Plan elements would help protect subsurface integrity and eliminate sources of ground and surface water contamination. Implementation of these elements would also maintain the biological, chemical, and physical integrity of the topsoil and subsoil, and reestablish slope stability and surface stability. The Reclamation, Vegetation, and Monitoring Plan would incorporate appropriate Federal, State, and local agency guidance and regulations, such as the Pima County Regional Flood Control District Regulated Riparian Habitat Mitigation Standards.

5.4.16 Health and Safety Plan

A HASP is not typically required by Federal law; however, section 18 of the Occupational Safety and Health Act of 1970 encourages States to develop and operate their own safety and health programs in the workplace. In New Mexico, the Occupational Health and Safety Bureau, part of the New Mexico Environment Department, has the responsibility of enforcing Occupational Health and Safety

Regulations. In Arizona, the Arizona Division of Occupational Safety and Health is responsible for enforcement and voluntary compliance.

The purpose of a HASP would be to ensure the safety of the proposed Project employees, construction personnel, and the public. The HASP would be tailored specifically for the proposed Project, and would include a description of hazards that may be encountered during the life of the proposed Project. The HASP would detail employee safety training procedures that would be used, structural and non-structural safety controls that would be put in place, personal protective equipment that would be required, emergency response procedures, protocols for Project-specific procedures such as confined space entry, and applicable standards, practices, and procedures specified by OSHA (29 CFR 1910).

5.4.17 Avian Protection Plan

An APP would be a Project-tailored plan designed to reduce avian electrocution and collision mortality that result from avian interactions with electric utility facilities. The overall goal of an APP is to reduce avian mortality. The 2005 APLIC and FWS APP Guidelines (APLIC 2005) provide a framework, along with principles and examples of APPs.

The APP would be designed as a living document to be continually evaluated and refined over the life of the proposed Project. The elements of the APP would include training, permit compliance, construction design and siting standards, nest management, a reporting system, risk assessment for evaluating the risks posed to migratory birds. The plan would also identify areas and issues of concern, mortality reduction measures, and avian enhancement options.

Examples of avian protection measures that *could* be included in the APP are:

- Marking wires (bird diverters) and/or using special structure design to increase visibility to birds;
- Applying special structural design to decrease the heights of ground wires and conductors;
- Monitoring to ensure that mitigation measures (PCEMs) are implemented; and/or
- Conducting additional avian studies, surveys, and/or monitoring to record the presence of birds and incidence of avian collisions, and provide data that could be useful to minimize the potential for collisions with the proposed Project, as well as with existing and future power lines in other locations.

Southline, BLM and Western would collaborate with agencies such as the FWS, AGFD, and NMDGF and other cooperating agencies on development of the APP, the goal of which is mitigate the collision risk and loss of productivity for all birds.

5.4.18 Waste Management Plan

The purpose of the Waste Management Plan would be to outline non-hazardous waste handling procedures to be used during the construction, operation, and maintenance phases of the proposed Project and to identify expectations for minimizing waste and recycling processes. Waste addressed in this plan would include all non-hazardous waste resulting from construction and land clearing, as well as material that is recycled, reused, salvaged, or disposed of as garbage.

The Waste Management Plan would attempt to predict the quantities and types of waste that would be generated during the construction, operation, and maintenances phases of the proposed Project, identify

the final destination of that waste, and estimate waste management costs. The Waste Management Plan would consider waste diversion goals and objectives, and would explore recycling and reuse alternatives.

5.4.19 Helicopter Flight Plan/Flight and Safety Plan

The Helicopter Flight and Safety Plan would describe the hours and estimated number of days that a helicopter would operate for construction of the proposed Project, the type and number of helicopters that would be used, and the kind of work to be performed. Additional information presented in this plan would include the location, size, and number of staging areas for helicopter takeoffs and landings, and safety measures to be implemented during helicopter operations. This plan would be reviewed and approved by the FAA prior to the commencement of helicopter operations.

5.4.20 Decommissioning Plan

The Decommissioning Plan would detail how the structures and facilities of the proposed Project would be removed after the useful life of the Project is reached, and how the affected properties would be reasonably restored in accordance with the BLM ROW grant. This plan would be a general outline of how the proposed Project would be decommissioned and how land would be restored to its original condition. Decommissioning procedures described would include the removal of structures, disposal of waste, and identification of what, if anything, may remain on the land upon completion. Restoration would include the stabilization and revegetation of the disturbance area to minimize erosion and return the land to productive use.

5.5 SELECTIVE MITIGATION BY MILEPOST

Files to be included with Final POD (post Final EIS) - not included herein.

Chapter 6

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Appendix A

CONSTRUCTION CONSIDERATIONS

Full text to be included with Final POD (post Final EIS) – text in the following section not fully developed.

APPENDIX A1
FLAGGING, FENCING, AND SIGNAGE PLAN

A1.1 Introduction

This Flagging, Fencing, and Signage Plan describes the methods that will be used in the field to delineate Southline Transmission Line Project (Project) limits of disturbance and protect sensitive environmental and cultural resources during Project construction. These methods are intended to ensure Southline Transmission, LLC (Southline, or the Proponent) personnel, the construction contractor(s), Bureau of Land Management (BLM), Western Area Power Administration (Western), compliance inspection contractor (CIC), and other monitors and visitors to the Project construction sites stay on approved access routes and within approved work areas.

As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate. The measures described in this plan are an integral part of the environmental compliance program for avoiding and minimizing impacts on sensitive resources. The objective of this plan is to provide information on the field markings (i.e., flagging, fencing, and signage) that will be used to identify approved Project travel and work areas, as well as sensitive resource areas where construction or travel is to be excluded.

A1.2 Regulatory Requirements

No Federal, State, or local laws, rules, or regulations specifically address flagging, fencing, and signage protocols for construction Projects. However, some of the Proponent Committed Environmental Measures (PCEMs) identified in the Environmental Impact Statement (EIS) for the Project (and also in table 8 in the POD), hinge on adequate field marking of work areas and/or of sensitive resource areas to avoid or reduce impacts. These PCEMs include flagging or fencing requirements to help protect vegetative cover, water quality, cultural resources, and special-status species and minimize the spread of invasive weeds.

A1.3 Methods

A1.3.1 Demarcating Project Facilities

A1.3.2 Environmental Exclusions

A1.3.3 Signing, Flagging, and Fencing Materials and Methods

Table A1-1. Signing and Flagging Scheme

Feature	Flagging or Sign Colors	Sign Text	What to Do
Project access road			
Temporary work areas (pulling sites, material yards, etc.)			
Public access			
Sensitive environmental areas			

Feature	Flagging or Sign Colors	Sign Text	What to Do
Reclamation project areas			
Wetlands			
Invasive weed cleaning stations			
Noxious weed problem areas			
Proposed structure locations			
Structure offsets			
Substation and communication regeneration station locations			
Outside edge of permitted ROW or center line			
Cadastral survey monument			
Non-authorized access road			

A1.3.2.1 SIGNING

A1.3.2.2 FLAGGING

A1.3.2.3 FENCING

A1.4 Installation, Monitoring, and Maintenance of Fencing, Flagging, and Signage

Figure A1-1. Typical Sign – PROJECT ACCESS ROAD

Figure A1-2. Typical Sign – SENSITIVE RESOURCE AREAS KEEP OUT

Figure A1-3. Typical Sign – Restoration in Progress – No Vehicle Traffic Allowed

Figure A1-4. Typical Sign – NO REFUELING

Figure A1-5. Typical Sign – DO NOT ENTER

Figure A1-6. Typical Sign – WEED CLEANING STATION

APPENDIX A2
GEOTECHNICAL INVESTIGATION

The Plan of Development (POD) for the geotechnical investigation includes detailed information on the geotechnical exploration program, including procedures the Proponent implemented during geotechnical exploration activities, and outlines the stipulations and Proponent Committed Environmental Measures (PCEMs) adopted by the Proponent to minimize potential impacts on resources and to ensure regulatory compliance. As indicated in the POD, stipulations and measures provided herein are applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt these stipulations and measures, where appropriate.

Information to be developed.

APPENDIX A3
PROJECT CONSTRUCTION

This section contains an overview of construction activities associated with the transmission line facilities. As indicated in the Plan of Development (POD), stipulations and measures provided herein are applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt these stipulations and measures, where appropriate.

Map Sets 1 and 2 of the POD will identify the transmission line route and environmental resources located within or adjacent to the transmission line corridor based on preconstruction surveys conducted prior to issuance of the ROW grant. POD Map Set 3 will identify, in more detail, access roads that will be used to access the construction ROW.

A3.1 Construction Schedule

A3.1.1 Preconstruction Activities

A3.1.1.1 SURVEYING AND STAKING

A3.1.1.2 PRECONSTRUCTION RESOURCE SURVEYS

Table A3-1. Preconstruction Resource Surveys

Survey Type and Resources	Plan Reference	Date Completed	Additional Surveys to be completed
Vegetation and Wetlands			
Special-status plants			
Wetland delineation			
Noxious weeds			
Water Resources			
Watercourse crossing inventory			
Springs/wells			
Wildlife Resources			
Bat roosts[4]			
Sonoran desert tortoise[5]			
Raptors and nests			
Migratory bird nests			
Cultural Resources			

[4] There would be surveys of bat roosts within 0.25 mile of the Project ROW in areas that potentially contain caves, karst features, or mines. Occupied bat roosts would be avoided

[5] Preconstruction desert tortoise surveys would be conducted in suitable habitat. A worker education program including information on desert tortoises would be implemented. Any desert tortoises encountered during preconstruction surveys or during construction activities would be handled in accordance with the AGFD *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* (AGFD 2007).

Survey Type and Resources	Plan Reference	Date Completed	Additional Surveys to be completed
Literature search and Class III inventory			
Paleontological Resources			
Paleontological resources			

A3.1.1.3 RIGHT-OF-WAY PREPARATION

A3.1.1.4 PRECONSTRUCTION MEETING

A3.1.1.5 NOTICE TO PROCEED (BLM-ADMINISTERED LANDS ONLY)

A3.1.1.6 SPECIAL-USE AUTHORIZATION[6]

A3.2 Equipment Staging and Construction Yards

A3.3 Access Roads

A3.3.1 Snow Removal

A3.3.2 Agency Access Road Requirements

A3.3.3 Ground Disturbance/Access Levels

Table A3-2. Ground Disturbance/Access Levels

Access Levels	Description	Access Type
Level 1	Details on use of existing roads	
Level 2	Details on improvements to existing roads	
Level 3	Construct new access, flat to rolling terrain (0–8 percent slopes)	
Level 4	Construct new access, rolling terrain (8–5 percent slopes)	
Level 5	Construct new access, steep terrain (greater than 15 percent slopes)	

Table A3-3. Summary of Ground Disturbance and Vegetation Clearing

	Temporary Disturbance (acres)	Permanent Disturbance (acres)	Total Disturbance (acres)	ROW Vegetation Clearing (acres)
Total for Selected Route				

[6] Authorization would be required for other federal lands as well.

A3.4 Transmission Line Construction

A3.4.1 Geotechnical Investigations and Soil Boring

A3.4.2 Site Access and Preparation

A3.4.2.1 AGENCY SITE PREPARATION REQUIREMENTS

A3.4.3 Install Structure Foundations

A3.4.4 Erect Support Structures

A3.4.5 String Conductors, Shield Wire, and Fiber-Optic Ground Wire

A3.4.6 Sagging and Clipping

A3.4.7 Cleanup and Site Reclamation

A3.5 Substation Construction

A3.5.1 Access Roads

A3.5.2 Clearing and Grading

A3.5.3 Foundation Installation

A3.5.4 Oil Containment

A3.5.5 Structure and Equipment Erection/Installation

A3.5.6 Conduit and Control Cable Installation

A3.5.7 Landscaping and Construction Cleanup

Attachment A: Construction Schedule[7]

[7] Gantt Chart–type schedule

APPENDIX A4
SPECIAL CONSTRUCTION TECHNIQUES

This section provides an overview of special construction techniques that may be used on the Project depending on location and construction contractor's determination. As indicated in the Plan of Development (POD), stipulations and measures provided herein are applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt these stipulations and measures, where appropriate.

A4.1 Blasting

A4.1.1 Bat Roost Avoidance

Construction activities that create loud noise (e.g., blasting) within 0.5 mile of the Volcano Mine complex would be limited to Spring (preferably April 1 to May 31) depending on the presence of bats, to protect maternity roosts and potential hibernacula.

To avoid impacting roosting bats at the Ina Road Bridge, blasting activities would be restricted to less than 130 decibels (dB) at the project site. If this dB limit cannot be met then blasting activities would be limited to after sunset when the majority of adult bats would be away from the roost foraging, and/or blasting would not occur in April or May while the bat colony is present.

A4.2 Helicopter Activities

A4.2.1 Typical Helicopter Construction Description

A4.3 Temporary Water Use During Construction

A4.4 Shipping and Handling Guidelines for Sulfur Hexafluoride

A4.5 Literature Cited

APPENDIX A5
CONSTRUCTION WORKFORCE

A5.1 Introduction

As indicated in the Plan of Development (POD), stipulations and measures provided herein are applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt these stipulations and measures, where appropriate.

The proposed Project will be constructed primarily by contract personnel with Southline (Proponent). The Proponent will be responsible for Project administration. The Project will consist of several phases of construction at varying locations along the Project ROW. The construction workforce will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel who will perform the construction tasks. Construction activities will consist of surveys, road construction, foundation installation, structure steel haul, structure assembly, structure erection, wire installation, cleanup, and road rehabilitation.

The construction contractor(s) will hold daily field meetings with their environmental monitors and the compliance inspection contractor (CIC) to review applicable environmental regulations and stipulations as well as potential environmental issues. The estimated number of workers and types of equipment required to construct the proposed transmission line are shown in tables A5-l and A5-2.

Table A5-1. Anticipated Construction Workforce and Equipment, New Build Section

Activity	Equipment		Crew
ROW Survey	1 helicopter 2 all-terrain vehicles (ATVs)	2 pickup trucks	6
Geotechnical Investigations	1 (2-ton) drill truck 1 ATV	1 pickup truck	4
Access Road Construction	2 bulldozers (D-6 or D-8) 2 motor graders	2 pickup trucks 2 water trucks	8
Foundation Installation	3 augers 2 wagon drills 2 flatbed trucks w/ booms 2 (15-ton) hydro cranes 1 batch plant 4 concrete trucks 1 water truck	1 bulldozer (D-6) 1 front-end loader 2 dump trucks 2 (2-ton) trucks 3 pickup trucks 1 carry-all	32
Laydown Yard / Receiving	2 (40-ton) cranes 4 forklifts	2 pickup trucks	8
Structure Hauling	6 flatbed trailers 2 boom trucks	1 pickup truck 2 forklifts	10
Structure Assembly	3 (40-ton) cranes 3 carry-alls	3 (2-ton) trucks 3 pickup trucks	24
Structure Erection	2 (100-ton) cranes 2 boom trucks	2 (2-ton) trucks 2 pickup trucks	20

Table A5-1. Anticipated Construction Workforce and Equipment, New Build Section (Continued)

Activity	Equipment		Crew
Wire Stringing	1 light helicopter 3 drum pullers 3 double-wheeled tensioners 6 wire reel trailers 2 D-8 Cats with sag winches 2 splicing trucks	2 diesel tractors 2 haul trailers 2 (30-ton) cranes 6 boom trucks 4 (2-ton) trucks 6 pickup trucks	40
Road/ROW Restoration	1 bulldozer (D-6 or D-8) 1 front-end loader with bucket 1 tractor with seeding equipment 1 motor grader	1 pickup truck 1 dump truck 1 water truck	8
Clean-up	1 flatbed truck with bucket	2 pickup trucks	6

Table A5-2. Anticipated Construction Workforce and Equipment, Upgrade Section

Activity	Equipment		Crew
ROW Survey	1 helicopter 2 all-terrain vehicles (ATVs)	2 pickup trucks	6
Geotechnical Investigations	1 (2-ton) drill truck 1 ATV	1 pickup truck	4
Access Road Construction	1 bulldozer (D-6 or D-8) 1 motor grader	1 pickup truck 1 water truck	4
Foundation Installation	3 augers 2 wagon drills 2 flatbed trucks w/ booms 2 (15-ton) hydro cranes 1 batch plant 4 concrete trucks 1 water truck	1 bulldozer (D-6) 1 front-end loader 2 dump trucks 2 (2-ton) trucks 3 pickup trucks 1 carry-all	32
Laydown Yard / Receiving	2 (40-ton) cranes 4 forklifts	2 pickup trucks	8
Structure Hauling	6 flatbed trailers 2 boom trucks	1 pickup truck 2 forklifts	10
Structure Erection	2 (100-ton) cranes 2 boom trucks	2 (2-ton) trucks 2 pickup trucks	20
Wire Stringing	1 light helicopter 3 drum pullers 3 double-wheeled tensioners 6 wire reel trailers 2 D-8 Cats with sag winches 2 splicing trucks	2 diesel tractors 2 haul trailers 2 (30-ton) cranes 6 boom trucks 4 (2-ton) trucks 6 pickup trucks	40
Road/ROW Restoration	1 bulldozer (D-6 or D-8) 1 front-end loader with bucket 1 tractor with seeding equipment 1 motor grader	1 pickup truck 1 dump truck 1 water truck	8
Clean-up	1 flatbed truck with bucket	2 pickup trucks	6

A5.2 Construction Equipment and Traffic

A5.3 Environmental and Safety Training

APPENDIX A6
ENVIRONMENTAL COMPLIANCE MANAGEMENT PLAN

A6.1 Introduction

As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate.

The BLM and Western will be responsible for enforcement of the terms and conditions of the BLM ROW grant and other landowner agreements across Federal, State, and private lands during the term of the grant for the Southline Transmission Line Project (Project).The BLM will approve a third-party compliance inspection contractor (CIC) to act on behalf of the BLM on BLM-managed lands. The CIC may also coordinate with Western on those portions of the Project where Western is involved in the Project and oversees relevant portions of the POD.

The CIC will inspect and monitor preconstruction and construction activities, enforce the terms and conditions of the ROW or easement grants, and enforce requirements related to BLM responsibilities under the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA).
In addition, the Project will adhere to any terms and conditions of State and local permits, as well as private landowner agreements.

Southline Transmission, LLC (Southline, or the Proponent), has developed Proponent Committed Environmental Measures (PCEMs) to be incorporated as part of the Project. The goal of these PCEMs is to reduce or avoid potential adverse impacts to sensitive environmental resources (see the Environmental Impact Statement (EIS), and table 8 of the POD) in compliance with the terms and conditions of the ROW grant, landowner agreements, and Federal, State, and local permits. The Project ROW grant, landowner agreements, and permitting requirements are specified in the POD chapter 1 – Introduction and Appendix B – Environmental Protection Framework Plans.

A6.2 Environmental Compliance Management Plan Elements and Authority

This Environmental Compliance Management Plan (ECMP) is the primary guidance document that states how the Project participants will uphold, document, and manage compliance with the ROW on BLM lands and with other ROW or easement authorizations on non-BLM lands for which the BLM and Western have responsibilities. It describes the following essential elements:

- Roles and responsibilities of the participants
- Comprehensive inspection and monitoring program
- Documentation and corrective procedures in the event of noncompliance
- Protocols and procedures for variance requests
- Reporting requirements
- Comprehensive Project-specific environmental compliance training program

Southline's commitment to environmental compliance will be demonstrated by activities prior to, during, and following construction. The ECMP is intended to be a controlled document and may be revised as needed throughout the construction process. As previously stated, Western will adopt the ECMP where appropriate. However; because the Project will cross private, State, and Federal lands under the jurisdiction of several agencies as well as BLM land, the ECMP will be written as a comprehensive document that, where appropriate, can be applicable for all non-BLM permitting entities and landowners, as well.

A6.3 Roles and Responsibilities

This section outlines the roles and responsibilities of Southline, persons, and agencies involved in the Project in executing the ECMP, as well as detailing their reporting relationships (figure A6.l).
If additional participants become involved in the Project, they will also be required to adhere to the protocols, terms, and conditions outlined in this ECMP. Their reporting relationships would be case-specific according to their jurisdiction, expertise, and/or nature of their input but would follow the structure presented in figure A6.1. Each environmental support title depicted under the construction contractor(s) environmental team in Figure A6.1 does not necessarily have to be a separate person/position, for example the environmental trainer may also serve as the reporting coordinator.

This section also briefly discusses the variance request procedure for changes on BLM lands. However, a more detailed discussion of this process is found in Section A6.4.2 – Variance Procedures (Unforeseen Circumstances).

A6.3.1 Project Proponent

As the Proponent and grant holder, Southline is responsible for administration of the BLM ROW. Western is responsible for administering the ROW where Western is involved in the Project. As such, the Proponent is ultimately accountable for adherence to the environmental permit requirements specified in its agreements on BLM-managed lands. The Proponent is also responsible for ensuring that any adverse environmental impacts do not exceed those described in the Final EIS and approved in the POD.

The Proponent and Western are accountable for adherence to the environmental permit requirements where Western is involved. To manage this responsibility, the Proponent will maintain regular and consistent communication with the CIC and the construction contractor(s) to track the success of the implementation of the PCEMs and other compliance efforts prior to, during, and post-construction and will communicate its findings to the BLM and Western. In addition, the Proponent, as the grant holder, is responsible for ensuring that all noncompliance incidents are corrected.

The following describes the roles and responsibilities of Proponent personnel.

A6.3.1.1 PROJECT PROPONET

A6.3.1.2 PROPONENT'S PROJECT MANAGER

Reporting

Variances

A6.3.1.3 PROPONENT'S ENVIRONMENTAL COMPLIANCE MANAGER

Reporting

Variances

A6.3.1.4 PROPONENT'S CONSTRUCTION INSPECTOR

Reporting

A6.3.2 Agency Responsibilities

A6.3.2.1 BLM

Reporting

Variances

A6.3.2.2 WESTERN

Reporting

Variances

A6.3.2.3 COMPLIANCE INSPECTION CONTRACTOR PROJECT MANAGER

Reporting

Variances

A6.3.2.4 ASSISTANT COMPLIANCE INSPECTION CONTRACTOR

A6.3.2.5 COMPLIANCE INSPECTION CONTRACTOR FIELD MONITORS

Reporting

A6.3.3 Construction Contractor(s)

The construction contractor(s) will be contractually bound to comply with all laws, regulations, and other requirements, including the PCEMs and other specific stipulations and methods set forth in the ROW grant, POD, EIS, Record of Decision, and permits (Federal, State, and local) throughout all phases of the Project. Construction personnel are required to attend environmental training prior to work on the Project. The construction contractor(s) will coordinate with the BLM/Western, the Proponent, the CIC, and construction contractor's environmental inspectors to build the Project safely and in compliance with all Project terms and conditions. If a noncompliant incident occurs, the construction contractor(s) will remedy the situation as soon as possible.

A6.3.3.1 PROJECT CONSTRUCTION CONTRACTOR

A6.3.3.2 CONSTRUCTION CONTRACTOR'S PROJECT MANAGER

Reporting

Variances

A6.3.3.3 CONSTRUCTION CONTRACTOR'S SUPERINTENDENT(S)

Reporting

Variances

A6.3.3.4 CONTRACTOR'S CIVIL SURVEY SUPERVISOR

Reports and Variances

A6.3.3.5 CONSTRUCTION CONTRACTOR'S LEAD ENVIRONMENTAL INSPECTOR

Reporting

Variances

A6.3.3.6 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL INSPECTOR

Reporting

A6.3.3.7 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL REPORTING COORDINATOR

Reporting

Variances

A6.3.3.8 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL TRAINING COORDINATOR

A6.3.3.9 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL REPORTING COORDINATOR

Reporting

Variances

A6.3.3.10 CONSTRUCTION CONTRACTOR'S ENVIRONMENTAL CREW FOREMAN

A6.4 Procedures

A6.4.1 Compliance Levels

A6.4.1.1 ACCEPTABLE

A6.4.1.2 PROBLEM AREA

A6.4.1.3 NONCOMPLIANCE

A6.4.1.4 RESPONSE TO NONCOMPLIANT ACTIVITIES

Temporary Suspension

Work Stoppage Order

Grant Suspension or Termination

A6.4.2 Variance Procedures (Unforeseen Circumstances)

A6.4.2.1 LEVEL 1 VARIANCE – VARIANCES ACCOMPLISHED THROUGH FIELD RESOLUTION

Level 1 Variance Approval or Denial

Level 1 Variance Distribution

A6.4.2.2 LEVEL 2 VARIANCE – VARIANCES BEYOND FIELD RESOLUTION, NOT REQUIRING AN AMENDMENT TO THE RIGHT-OF-WAY GRANT OR SPECIAL-USE AUTHORIZATION

Level 2 Variance Approval or Denial

Level 2 Variance Distribution

A6.4.2.3 LEVEL 3 VARIANCE – VARIANCES REQUIRING AN AMENDMENT TO THE RIGHT-OF-WAY GRANT

A6.5 Communications

Effective communication between all parties involved in the Project is vital to maintain environmental compliance. Onsite personnel will remain in contact through the use of two-way radios and cellular telephones, allowing for real-time coordination between parties. Ongoing, effective communication will enable timely resolution of questions, monitoring requirements, and compliance issues prior and during to construction activities. However, oral communication will not substitute for written approvals when written approvals are necessary.

A6.5.1 Primary Inter-Party Communication Channels

A6.5.2 Daily Communications

A6.6 Training

A6.6.1 Preconstruction

A6.6.2 During Construction

A6.7 Reporting and Documentation

Several forms and reports will be completed on a daily or weekly basis during construction. The reports and forms will include:

- Daily Inspection Reports
- Problem Area Report Forms
- Noncompliance Report Forms
- Variance Request Forms
- Weekly Compliance Reports
- Weekly Training Log

A6.8 Project Closeout

A6.8.1 Reclamation and Post Construction

A6.8.2 End of Construction Project Report

A6.8.3 Construction Closeout Meeting

Appendix B

ENVIRONMENTAL PROTECTION / FRAMEWORK PLANS

Full text to be included with Final POD (post Final EIS) — not included herein.

APPENDIX B1
ACCESS ROAD PLAN

Access road planning would be finalized if the proposed Southline Transmission Line Project (the Project) is approved. With the approved route known, the exact location of all access roads would be refined through detailed engineering. Once road locations are known, cultural resource and biological surveys would be conducted and road locations adjusted to avoid sensitive resources discovered during the surveys. No field disturbance would occur before the completion of these surveys and the completion of any necessary mitigation or treatment measures.

All roads would be constructed in accordance with Western Area Power Administration (Western) and Bureau of Land Management (BLM) standards for access roads and specified in the Access Road Plan, to be included as a framework plan in the Plan of Development (POD). As indicated in the POD, framework plans are applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. This framework plan pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

APPENDIX B2
TRAFFIC AND TRANSPORTATION MANAGEMENT PLAN

B2.1 Introduction

This Traffic and Transportation Management Plan addresses regulatory compliance, traffic management practices, levels of right-of-way (ROW) access, and Proponent Committed Environmental Measures (PCEMs) to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the Project. As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B2.2 Purpose

The purpose of this plan is to provide the BLM, Western, and other public agencies; the compliance inspection contractor (CIC); and the construction contractor(s) with a description of the type of access associated with the construction, operation, and maintenance of this Project and make evident the potential impacts that could be created by construction and operation of the Project. The goal of this plan is to ensure impacts from construction of the transmission line and any associated access are kept to a minimum through the use of management practices and PCEMs described throughout this appendix. These practices and measures are intended to mitigate the effects of transportation on environmental resources, roads, traffic, travel, and road safety.

B2.3 Regulatory

A number of agencies have jurisdiction over the transportation-related components of the Project. These include the BLM; New Mexico Department of Transportation; Arizona Department of Transportation; Federal Highway Administration; and local law enforcement and road departments. Encroachment permit applications will need to be filed with appropriate road agencies for those areas where the transmission line crosses public roads (e.g., Interstate 10) prior to construction.

Other permits and approvals not directly related to transportation could affect the construction, use, and/or maintenance of roads in certain areas. Persons responsible for Project transportation activities must be familiar with all relevant sections of Project's POD.

B2.4 Traffic Management Practices

B2.5 Types of Right-of-Way Access

B.2.5.1 Access Type A

Access from adequate private roads. This type of access would be used when there is no existing road adjacent or parallel to the alignment, but where there is a patchwork of existing roads in the area that would be crossed by the proposed Project ROW, and could be used to access the ROW and get close to the structure locations. Grading between the existing roads and each structure location would only be

conducted where necessary and would depend on site conditions. Grading and other improvements may not be necessary, depending on site conditions. Typically, overall disturbance would be limited to a width of 16 feet or less. The purpose of using existing access from private roads would be to minimize overall disturbance.

B.2.5.2 Access Type B

Parallel to maintained public roads. This type of access would be used when the alignment roughly parallels a nearby public road that is either paved or has gravel surfacing. Short spur roads would be graded from the existing roads to each structure location. Except in rare cases, the existing roads would not be upgraded, but any damage to public roads from construction activities would be repaired.
The purpose of access roads parallel to a nearby public road would be to consolidate and minimize overall disturbance.

B.2.5.3 Access Type C

Parallel to existing utility roads. This type of access would be used when the alignment roughly parallels an existing utility that already has an existing access road. Spur roads would be graded from the existing utility roads to each structure location. Generally, the existing utility roads would be improved. Grading between the existing utility roads and each structure location would only be conducted where necessary and would depend on site conditions. Grading and other improvements may not be necessary, depending on site conditions. Typically, overall disturbance would be limited to a width of 16 feet or less.
The purpose of access roads parallel to a utility road would be to consolidate and minimize overall disturbance.

B.2.5.4 Access Type D

New down-ROW primary access. This type of access would only be used when access types A–C are not feasible. It would consist of a 16-foot-wide road (12-foot travel surface plus 2 feet on either side for berms/ditches). As much as possible, new access would be entirely within the ROW. Typically, new down-ROW access would be used if any parallel roads are more than 700 feet from the alignment. This access type would also normally be used for alignments that parallel interstate highways and railroads because the owners of those facilities generally place restrictions on the use of their ROWs; these restrictions do not allow for the addition of spur roads or their related ROW crossings and gates in ROW fences.

B.2.5.5 Access Type E

Spur roads—improved and unimproved access. Spur roads would be used to connect type A, B, and C access roads to the ROW and for temporary access to stringing and splicing sites. Spur roads would be a combination of improved (bladed) and unimproved (two-track) roads, with an average of one new spur road per mile for temporary access and approximately five spur roads per mile in areas where type A, B, and C access roads are used for permanent access to structure locations. Where necessary, these spur roads would be improved, and the roads would be bladed and 10 to 12 feet wide. Otherwise, spur roads might not be improved in areas with flat terrain and within grassland, desertscrub, sand scrub, and sand dune vegetation communities. Vegetation on unimproved roads may be crushed by driving, but cropping or blading vegetation would not be conducted. This would avoid removal of root mass and organics in the soil (no surface soil would be removed). The purpose of unimproved spur roads would be to preserve the maximum amount of native vegetation and minimize overall disturbance.

B2.6 Proponent Committed Environmental Measures

B2.6.1 Transportation PCEMs:

B2.6.2 Other PCEMs:

B2.7 Other Specific Stipulations and Methods

APPENDIX B3
STORMWATER POLLUTION PREVENTION PLAN

B3.1 Introduction

In compliance with criteria in the U.S. Environmental Protection Agency's (EPA's) Clean Water Act, all construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more, must obtain a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges (40 Code of Federal Regulations (CFR) 122 and 123).

NPDES Construction General Permits are issued by the EPA in New Mexico, while Arizona Pollutant Discharge Elimination System (AZPDES) Construction General Permits are issued by the Arizona Department of Environmental Quality (ADEQ). The general permits are issued only after submittal of a Notice of Intent (NOI) for construction activities, and preparation of a Stormwater Pollution Prevention Plan (SWPPP) that describes how erosion and sediment transport will be minimized to adjacent water bodies. Measures to ensure construction activities comply with State and EPA requirements for stormwater management to be incorporated into the SWPPP are outlined in this plan framework.

The construction Plan of Development (POD) will identify the party responsible for developing a Project-specific SWPPP and for obtaining coverage under the appropriate Construction General Permit by filing a NOI and appropriate fee in accordance with the NOI instructions.

B3.2 Purpose

The purpose of a SWPPP for the proposed Project is to identify and implement stormwater pollution prevention measures to reduce the quantity of impacted runoff and to deal with runoff in a manner minimizing environmental impacts during construction, operation, and maintenance of the Project.

A SWPPP is needed to minimize the volume of contaminated runoff, including sediment runoff, and to implement Proponent Committed Environmental Measures (PCEMs) in a manner minimizing environmental impacts. The SWPPP will also spell out design features for environmental protection specific to storing and handling fuel and oil, cement mix, and other materials that may contaminate stormwater. Temporary stabilization methods (silt-fences, straw bales, etc.) are not guaranteed or fail-safe measures without regular maintenance and field inspection throughout construction activities. In addition to conventional methods of erosion control there are numerous new and improved products and the construction contractor(s) is encouraged to review these progressive or improved materials in the development and implementation of a SWPPP. The proper implementation of PCEMs associated with a SWPPP is imperative during all construction activities.

Development and implementation of the SWPPP, and maintenance of the PCEMs and other stipulations presented in the SWPPP will provide the construction contractor(s) with the mechanisms for reducing soil erosion and minimizing pollutants in stormwater during construction. These activities will be conducted in an environmentally sensitive and responsible manner so no discharge of sediment or contaminants may be conveyed directly or indirectly to wetlands, waters of the U.S., or to waters of New Mexico or Arizona.

B3.3 Notification Requirements and Implementation

B3.4 Project Modifications

B3.5 Proponent Committed Environmental Measures

B3.5.1 Other Specific Stipulations and Methods

B3.6 Mitigation Maintenance, Inspection, Repair, and Monitoring

B3.7 Training

B3.8 Post-Construction Stormwater Management

APPENDIX B4
SPILL POLLUTION PREVENTION, CONTROL, AND COUNTERMEASURES PLAN

B4.1 Purpose

Southline Transmission, LLC (Southline), has developed this Spill Prevention, Control, and Countermeasures (SPCC) Plan for the Southline Transmission Line Project (Project). This SPCC Plan is not a complete plan, but rather serves as the framework document for the development of a complete SPCC Plan and will lay the foundation for both the construction and the operation and maintenance phases of the Project. The party responsible for completing the final SPCC Plan will be detailed in the construction Plan of Development (POD).

An SPCC Plan addresses prevention and control of oil, hydraulic fluid, and petroleum fuel spills, primarily spills that could enter navigable waters of the U.S. This SPCC Plan addresses four basic issues:

- design, operation, and maintenance procedures to prevent and control oil spills
- measures designed for the prevention of operational error and equipment failure involving oil, which are the causes of most spills
- control and recovery of oil spills by containment structures to prevent a spill from entering navigable waters
- oil discharge response procedures for project personnel: this encompasses countermeasures (a contingency plan) to contain, clean up, and mitigate the effects of an oil spill at or from the project

This SPCC Plan is required in defined circumstances by the U.S. Environmental Protection Agency (EPA) regulations contained in Title 40, Code of Federal Regulations, Part 112 (40 CFR 112), titled “Oil Pollution Prevention.” This SPCC Plan provides preventive procedural actions associated with spills or releases of oil, including fuel, lubricant, or heat transfer media, during construction refueling activities and during operation and maintenance. This SPCC Plan also presents applicable Proponent Committed Environmental Measures (PCEMs) that were identified in the Environmental Impact Statement (EIS) and are included in table 8 of the POD as methods to minimize the environmental impact.

B4.2 Responsibility of Implementation

The SPCC Rule, administered by the EPA, is a rule that includes requirements for oil spill prevention, preparedness, and response to prevent discharges to navigable waters and adjoining shorelines. Specifically, the rule requires facilities to prepare, amend, and implement SPCC Plans. A facility is subject to SPCC regulations if the total aboveground storage capacity of oil and oil products exceeds 1,320 gallons; or if the underground storage capacity exceeds 42,000 gallons; and if, because of its location, the facility could reasonably be expected to discharge oil into navigable waters of the United States. Containers with a capacity of less than 55 gallons of oil or oil products are exempted from the requirements under the Oil Pollution Prevention regulations.

Southline, its construction contractor(s), and their inspectors shall be responsible for the implementation of the procedural actions, PCEMs, and other specific stipulations and methods of any and all applicable SPCC Plans. The construction contractor(s) will implement the SPCC Plan to ensure compliance with applicable Federal, State, and local regulations applicable to the location of refueling, storage, waste

removal, and other activities involving fuels and petroleum products in coordination with Southline. The final plan(s) shall be reviewed by Southline as appropriate.

A key component of SPCC implementation is training. All oil-handling personnel, including construction contractor employees and subcontractors involved with transporting or handling fueling equipment or maintaining construction equipment, will be required to complete spill training before they commence work on the project. Spill training will also be required for contractor and subcontractor supervisory personnel before beginning work on the project.

Spill training programs will be conducted by the construction contractor and the site safety coordinator and will accomplish the following:

- Provide information concerning pollution control laws, regulations, and rules
- Inform personnel of the proper operation and maintenance of fueling equipment
- Inform personnel of spill prevention and response requirements, including the operation and maintenance of equipment to prevent discharges
- Describe the measures and provisions of the SPCC Plan and discharge procedure protocols
- Assign roles and responsibilities for implementing the SPCC Plan

Measures, responsibilities, and provisions of this SPCC Plan and spill training will be provided through ongoing safety briefings, which will discuss safety and spill prevention and response, including personal responsibility to initiate appropriate procedures.

B4.3 Spill Prevention

B4.4 Petroleum Spills and Emergency Response

B4.4.1 First Response / Assessment and Initiation of Action

B4.4.2 Spill Control and Containment

B4.4.3 Cleanup

B4.4.5 Disposal

B4.4.6 Documentation and Reporting

B4.4.7 Agency Notification/External Reporting

B4.4.7.1 NEW MEXICO REPORTING REQUIREMENTS

B4.4.7.2 ARIZONA REPORTING REQUIREMENTS

B4.4.8 Assessment

B4.5 Proponent Committed Environmental Measures

B4.6 Emergency Contacts

APPENDIX B5
HISTORIC PROPERTIES TREATMENT PLAN

Appendix B5 is a confidential appendix that will contain the Historic Properties Treatment Plan (HPTP) that is being developed for the Project. As identified in the Programmatic Agreement, the HPTP will provide information on the following:

- A brief description of the proposed action
- A list of the properties where data recovery is to be carried out
- A list of properties that will require archaeological monitoring during construction
- An archaeological construction monitoring plan
- Research questions to be addressed
- Methods to be used during fieldwork for data recovery
- A cultural resource unanticipated discovery plan
- Methods to be used during analysis
- Reporting and curation of artifacts
- Schedule for the submission of progress reports
- Recommendations for treatment of cultural resources during operation and maintenance of the Project
- Qualifications of consultants employed to undertake the work
- Training protocols for contractors

Content to be developed.

APPENDIX B6
BLASTING PLAN

B6.1 Introduction

A blasting plan is needed if blasting will be required on the Southline Transmission Line Project (Project) to ensure human health and safety during construction blasting operations. The blasting plan also mitigates the effects of noise and vibration, impacts to flora and fauna, and ensures compliance with myriad rules and regulations regarding the transportation, storage, handling, and use of explosives. This Blasting Plan Framework is not a complete Blasting Plan, but rather serves as the baseline document for the development of a complete Blasting Plan to be developed by the construction and blasting contractor(s).

This Blasting Plan is a framework that outlines methods to mitigate risks and potential impacts associated with blasting procedures that may be required for construction of the Project. Also included in this section is a preliminary outline for the Blasting Plan and Proponent Committed Environmental Measures (PCEMs), as identified in the Environmental Impact Statement (EIS) and table 8 of the Plan of Development (POD). These measures are developed to reduce or avoid potential environmental impacts resulting from Project-related blasting activities. The Blasting Plan is to be prepared by the construction contractor(s) and submitted to Southline Transmission, LLC (Southline, or the Proponent), the Bureau of Land Management (BLM), and Western Area Power Administration (Western), if blasting is required. Blasting on State lands or other relevant jurisdictions may require additional approval. As indicated in the POD, this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B6.2 Purpose

Once completed, the Blasting Plan will provide construction crews, the compliance inspection contractor (CIC), and environmental monitors with Project-specific information concerning blasting procedures, including the safe use and storage of explosives. The objective of the Blasting Plan is to prevent adverse impacts on human health and safety, property, and the environment that could potentially result from the use of explosives during Project construction.

B6.3 Regulatory Compliance and Procedures

The construction and blasting contractor(s) will be responsible for preparing and implementing the Blasting Plan and must comply with all applicable Federal, State, and local laws and regulations that pertain to explosives. No blasting operations will be undertaken until approval and appropriate permits have been obtained from the applicable agencies. Failure to comply with such laws could result in severe consequences.

The construction and blasting contractor(s) will comply with rules and regulations set forth by the U.S. Department of Transportation; Federal Bureau of Alcohol, Tobacco, Firearms and Explosives; Occupational Safety and Health Administration (OSHA);, and all Federal, State, county, and local rules and regulations relating to the transportation, storage, handling, and use of explosives. The construction and blasting contractor(s) will use experienced and qualified blasting personnel that will use current and professionally appropriate blasting methods and implement appropriate safety precautions. Blasting procedures will be closely monitored by the CIC. Any damages that result solely from the blasting

activity will be repaired by the construction and blasting contractor(s), or the owner will otherwise be fairly compensated.

B6.4 Blasting Plan Outline

The Blasting Plan prepared by the construction and blasting contractor(s) shall contain the information necessary to, and shall be presented in a format to meet or exceed the industry standard and meet regulatory approval. Although the Blasting Plan will provide some general specifications and procedures for blasting on the Project, site-specific plans or amendments may be necessary in some circumstances and must first be approved by Southline and any applicable governmental authority that is required. The following is a suggested outline for the Blasting Plan:

- Purpose and Scope of Blasting
- Personnel and Chain of Command, Including:
    - Blast officer and other personnel who will be present
    - Site Safety Officer
- Site, Location, and Date(s) of planned blasting
    - Description of blasting area
    - Description of bedrock and geological problems
    - Description of adjacent utility facilities
- Explosives and blast design:
    - Type, quantity, and detonator device
    - Details of subsurface strata
    - Drilling pattern and spacing
    - Other, as required
- Means of transporting, storing, securing explosives:
- Procedures:
    - Handling explosive charges
    - Setting explosive charges
    - Wiring explosive charges
    - Firing explosive charges
    - Packaging and transportation of explosive materials
- Safety Considerations:
    - General
    - Procedures
    - Traffic control
    - Fire prevention
    - Emergency and first aid
    - Required personal protective equipment (PPE)
    - Minimum standoff distances
    - Clearing and controlling access to blast danger
    - Warning signs and signals

  - Minimum acceptable weather conditions
  - Stray current, static electricity, and lightning
  - Other, as required
- Mitigation measures for:
  - Protection of structures and utilities
  - Flying rock and debris
  - Ground vibration
  - Other, as required
- Procedures for handling misfires or other unusual occurrences
- Environmental Considerations
- Notifications for:
  - Nearby residences and businesses
  - Posted warning signs at Project entry points
  - Coordination with pipeline operators in the vicinity
  - Police, fire, and rescue
- Emergency action plan:
  - Phone numbers for ambulance, fire department, police
  - Location and phone number of nearest medical services facility
- Health and Safety Plan
- Attach a copy of Safety Data Sheet (SDS) for each explosive or other hazardous material expected to be used.
- Attach blast records, safety forms, approvals, and other relevant documents

B6.5 Safety Procedures

B6.5.1 Transportation

B6.5.2 Storage

B6.5.3 Handling

B6.5.4 Use

B6.6 Proponent Committed Environmental Measures

B6.7 Other Specific Stipulations and Methods

APPENDIX B7
PLANT AND WILDLIFE SPECIES CONSERVATION MEASURES PLAN

B7.1 Introduction

The purpose of the Plant and Wildlife Species Conservation Measures Plan for the Southline Transmission Line Project (Project) is to assist the Bureau of Land Management (BLM), Western Area Power Administration (Western), Southline Transmission, LLC (Southline, or the Proponent), the construction contractor(s), compliance inspection contractor (CIC), and other monitors in meeting their obligations to protect biological resources during the planning, design, and implementation of the proposed Project. This plan includes information on (1) regulatory requirements and agency considerations pertaining to biological resources, and (2) specific plant and wildlife species conservation Proponent Committed Environmental Measures (PCEMs) developed to reduce Project-related impacts on biological resources.

This plan provides information on anticipated impacts on plant and wildlife resources associated with the Project and identifies the PCEMs (as presented in the Environmental Impact Statement (EIS) for the Project and also in table 8 in the Plan of Development (POD)), along with stipulations, protocols, and/or techniques required to reduce these impacts. This plan does not identify PCEMs for aquatic biological resources. Protection for water resources, including PCEMs identified in Appendix B13 – Stream, Wetland, Well, and Spring Protection Plan, have met agency requirements to protect aquatic species. The plan is not intended to provide comprehensive, location-specific restrictions within the Project area.

As indicated in the POD, this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B7.2 Regulatory Framework

B7.2.1 Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA) of 1973, the U.S. Fish and Wildlife Service (FWS) has authority over actions that may affect the continued existence of a species federally listed as Threatened or Endangered. Take of federally listed species is prohibited without specific exceptions or permits issued under Sections 7 or 10 of the ESA. Under the ESA, the definition of "take" includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. FWS has further defined harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Federal agencies must consult with the FWS under Section 7 of the ESA on actions they authorize, fund, or carry out to ensure these actions are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

BLM and Western, as the lead Federal agencies in preparation of an EIS for the Project, consulted with FWS on the potential effects of the Project on federally listed species. The FWS concurred on December 30, 2014, that the Project may affect, and is likely to adversely affect, the lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), the Mexican long-nosed bat (*Leptonycteris nivalis*), Pima

pineapple cactus (*Coryphantha scheeri* var. *robustispina*), and southwestern willow flycatcher (*Empidonax traillii extimus*). The Project may affect, but is not likely to adversely affect, the Gila chub (*Gila intermedia*) and its critical habitat; Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*); northern Mexican gartersnake (*Thamnophis eques megalops*) and its proposed critical habitat; and the yellow-billed cuckoo (*Coccyzus americanus*) and its proposed critical habitat. Pursuant to the Federal ESA of 1973, the FWS has authority over actions that may affect the continued existence of a species federally listed as Threatened or Endangered. Take of federally listed species is prohibited without specific exceptions or permits issued under Sections 7 or 10 of the ESA. Under the ESA, the definition of "take" includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. FWS has further defined harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Federal agencies must consult with the FWS under Section 7 of the ESA on actions they authorize, fund, or carry out to ensure these actions are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

B7.2.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668) applies primarily to taking, hunting, and trading activities that involve bald or golden eagles. The act prohibits the taking of any individuals of these two species, as well as any part, nest, or egg. The term "take" as used in the act includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb (16 U.S.C. 668).

B7.2.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703) makes it unlawful to pursue, hunt, take, capture, kill, or possess any migratory bird, part, nest, or egg of such bird listed in wildlife protection treaties among the United States and Great Britain (on behalf of Canada), Mexico, Japan, and the former Union of Soviet Socialist Republics (USSR). This act also contains a clause that prohibits baiting or poisoning of these bird species. A list of species covered by the MBTA can be found in 50 Code of Federal Regulations (CFR) 10.13. The MBTA applies to many bird species, including raptors, and protects them from prohibited activities during construction, operation, and maintenance of the Project.

B7.2.4 Bureau of Land Management – Land Use Plans

The BLM Resource Management Plans provide management guidance and desired population and habitat conditions for wildlife on BLM-administered lands. BLM Field Offices monitor habitat conditions and manage crucial wildlife habitat jointly with the Arizona Game and Fish Department (AGFD) and New Mexico Department of Game and Fish (NMDGF). The BLM manages habitat for wildlife species by assessing the ability of a land area to supply the forage, cover, water, and space requirements of wildlife. Trend studies determine the directional change of a habitat from or toward desired conditions. These habitat and trend studies (BLM Manuals 6630.2, 6630.3, and 6630.4) allow the BLM to adjust management prescriptions through grazing or other public uses to improve habitat.

B7.2.5 Bureau of Land Management – Special Status Species Management Policy

BLM Manual 6840, "Special Status Species Management Policy," authorizes each BLM State Director to designate and protect sensitive species on lands managed by the BLM. In New Mexico, the BLM list of special status species is adopted from the Biota Information System of New Mexico (BISON-M) list of

sensitive wildlife species, and the New Mexico Rare Plant Technical Council's list of New Mexico rare plants. In Arizona, the BLM State Director has issued a list of species designated as BLM Sensitive. As stated in Instruction Memorandum No. AZ-2006-002 (BLM 2005), "BLM Sensitive species are not covered by any other 'safety net' of status designation. Therefore, the Arizona BLM Sensitive Species List does not include species that are already Federally-listed or State-listed."

The BLM affords its designated sensitive species the same level of protection as ESA Candidate Species. BLM Sensitive Species are those for which population viability is a concern, which is warranted by a downward trend in population numbers, density, or habitat conditions that would reduce a species' existing distribution. The BLM is responsible for ensuring that its actions do not further contribute to the need for Sensitive Species to become listed as threatened or endangered.

CORONADO NATIONAL FOREST – MANAGEMENT INDICATOR SPECIES POLICY

Forest Service Manual (FSM) 2670 directs each Regional Forester to designate sensitive species on public lands administered by the U.S. Forest Service (Forest Service). According to the manual, sensitive species are defined "as plant or animal species identified by a Regional Forester for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce an existing distribution of the species."

The FSM 2670 also establishes the following management direction and objectives for Forest Service sensitive species:

- Maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on Forest Service–administered lands.
- Review programs and activities as part of the National Environmental Policy Act of 1969 process, through a biological evaluation, to determine their potential effect on sensitive species.
- Analyze, if impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.

The PCEMs described in this Plant and Wildlife Species Conservation Measures Plan will ensure that the Project is constructed, operated, and maintained in compliance with FSM 2670.

FSM 2620.5 defines Management Indicator Species (MIS) as "plant and animal species, communities or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (Forest Service 1991:6). These regulations require that certain vertebrate and/or invertebrate species present in the area be identified as MIS within the planning area (i.e., Coronado National Forest lands) and that these species be monitored, as "their population changes are believed to indicate the effects of management activities" (36 CFR 219.19(a)(1)). Standard and Guideline No. 1 for Wildlife and Fish within the Coronado National Forest Plan (Forest Service 1986:31-1) directs the Coronado National Forest to "maintain or improve occupied habitat of . . . listed threatened and endangered species, and MIS through mitigation of Forest activities." The Coronado National Forest also maintains a list of sensitive species that are known to occupy Coronado National Forest lands.

B7.2.6 Bureau of Land Management – Executive Order 13112

Executive Order 13112 (Invasive Species) requires Federal agencies prevent the introduction and spread of invasive species and "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species."

B7.2.7 Bureau of Land Management – Executive Order 11990

Executive Order 11990 (Wetlands) requires Federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

B7.2.8 Sections 401, 402, and 404 of the Clean Water Act

Sections 401, 402, and 404 of the Clean Water Act regulate drainage and discharge of dredged or fill materials into waters of the U.S., including wetlands.

B7.2.9 Federal Land Policy Management Act of 1976

In accordance with the Federal Land Policy Management Act, BLM must make land use decisions based on principles of multiple use and sustained yield. As such, a grant of ROW must be limited to its necessary use and must contain terms and conditions that reflect BLM's management responsibilities under the Federal Land Policy Management Act, including minimizing impacts on fish and wildlife habitat.

B7.2.10 Wild Free-Roaming Horses and Burros Act of 1971

Wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West; they contribute to the diversity of life forms within the Nation and enrich the lives of the American people. It is the policy of the Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found as an integral part of the natural system of the public lands.

B7.2.11 New Mexico State Requirement

B7.2.12 Arizona State Requirements

B7.2.13 Pima County Requirements

B7.3 Plant and Wildlife Concerns and Issues

B7.3.1 Plan Priorities and Goals

B7.3.1.1 DISTURBANCE AND DISPLACEMENT

Mitigation Goal

B7.3.1.2 HABITAT LOSS AND FRAGMENTATION

Mitigation Goal

B7.3.1.3 PLANT AND WILDLIFE MORTALITY

Mitigation Goal

B7.4 Biological Resource Proponent Committed Environmental Measures

B7.4.1 Resources of Concern

B7.4.1.1 MIGRATORY BIRDS

Background
Concerns

B7.4.1.2 RAPTORS

Background
Concerns

B7.4.1.3 BIG-GAME HABITAT

Background

Concerns

B7.4.1.4 SPECIAL STATUS WILDLIFE SPECIES

Background

Concerns

B7.4.1.5 SPECIAL STATUS PLANT SPECIES

Background

Concerns

B7.4.2 Plant and Wildlife Proponent Committed Environmental Measures

B7.4.2.1 VEGETATION PCEMS

B7.4.2.2 WILDLIFE PCEMS

B7.4.3 Other Specific Stipulations and Methods

Design and Engineering

Construction, Operation, and Maintenance

B7.4.4 Compensation Plan

APPENDIX B8
EROSION, DUST CONTROL, AND AIR QUALITY PLAN

B8.1 Introduction

This Erosion, Dust Control, and Air Quality Plan addresses regulatory compliance, environmental concerns, and Proponent Committed Environmental Measures (PCEMs) to ensure impacts associated with construction, operation, and maintenance activities on the Southline Transmission Line Project (Project) are minimized as they relate to soil conservation and air quality. As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B8.2 Purpose

This plan provides a detailed summary of the PCEMs identified in the Environmental Impact Statement (EIS) and other specific stipulations and measures to be used by Southline Transmission, LLC (Southline), and the construction contractor(s) to ensure regulatory compliance and protection of the soils and air quality that will be affected by the Project. This plan is a framework of the actions to be implemented during the construction, operation, and maintenance phases of the Project that were developed to address (1) soil erosion from wind and (2) air quality from fugitive dust and emissions from Project-related activities.

This plan first describes the concerns for impacts related to soil erosion and air quality and then presents the PCEMs and other specific measures that will be used to minimize the impacts. Determination of the appropriate control measures to use in a particular area will depend on a variety of factors, including weather conditions, selected construction techniques, site characteristics, extent of area to be disturbed, and other factors. Stormwater erosion is not covered in this plan but is discussed at length in Appendix B3 – Stormwater Pollution Prevention Plan. Proper methods for soil reclamation and revegetation are not covered in this framework plan, but are discussed at length in Appendix B15 – Reclamation, Revegetation, and Monitoring Plan.

B8.3 Regulatory Compliance

Construction, operation, and maintenance activities for the Project are subject to various regulations designed to protect environmental resources and the public from wind erosion, dust, and other possible effects on air quality. The following permits and documents contain requirements for preventing accelerated erosion and minimizing dust and emissions. Some permits appear unrelated to this topic; however, dust suppression and erosion control are conditions of those permits. Southline and the construction contractor(s) can refer to these documents, along with this plan, when assessing which PCEMs and other specific measures are appropriate for a specific area.

Since 1963, the Clean Air Act and subsequent amendments in 1970, 1977, and 1990 have provided the authority and framework for regulation of air emission sources. At a minimum, Southline and the construction contractor(s) will need to adhere to or obtain the following permits as required.

B8.3.1 State – New Mexico

B8.3.2 State – Arizona

B8.3.3 Local

B8.4 Environmental Concerns

B8.4.1 Soil Conservation and Erosion

B8.4.2 Air Quality and Dust Control

B8.5 Proponent Committed Environmental Measures

B8.6 Other Specific Stipulations and Methods

B8.7 Monitoring

APPENDIX B9
HAZARDOUS MATERIALS MANAGEMENT PLAN

B9.1 Introduction

The Hazardous Materials Management Plan (HMMP) for the Southline Transmission Line Project (Project) is intended to reduce the risks associated with the use, storage, handling, transportation, and disposal of hazardous materials (which in this document may include hazardous substances and hazardous wastes regardless of the statutory definitions of those terms). The term "hazardous materials," as presented in this plan, will refer to hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, and materials designated as "hazardous materials" for transportation as defined in 49 Code of Federal Regulations 171.8.

This plan will identify Project-specific Proponent Committed Environmental Measures (PCEMs), as in the Environmental Impact Statement (EIS) and table 8 in the Plan of Development (POD), and other specific stipulations and methods to address spill prevention, response, and cleanup procedures for the Project. This document provides a template for the development of a detailed HMMP to be completed once the construction POD is finalized by Southline Transmission Line (Southline).

As indicated in the POD, the HMMP is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate. The HMMP will clearly identify which legal requirements apply to specific types of hazardous materials and will identify design features of the proposed action for environmental and human protection which, although not necessarily legally required, will be followed to reduce risks associated with hazardous materials. Nothing in this plan or in the final HMMP (once developed) shall be construed as an admission regarding the legal applicability of requirements or practices to any particular class of hazardous material.

B9.2 Purpose

The goal of this plan framework is to (1) minimize the potential for a spill of fuel or other hazardous material, (2) contain any spillage to the smallest possible area, (3) protect areas that are environmentally sensitive, and (4) minimize risks to human health, and (5) provide a template for the development of a detailed HMMP. This plan framework includes the following components:

- Framework for developing the HMMP
- Spill prevention procedures related to the transportation, storage, and disposal of hazardous materials
- Spill control, response, and cleanup methods
- An overview of the notification and documentation procedures to be followed in the event of a spill
- Operation and maintenance considerations
- Sample hazardous materials management forms which may be used as examples.

In general, hazardous materials will be stored in approved containers until they can be properly transported and disposed of at an approved treatment, storage, and disposal facility. Persons responsible for handling or transporting hazardous materials for the Project will be trained in the proper use/management of the materials and will be familiar with all applicable laws, policies, procedures, and the PCEMs applicable to their tasks. It is the responsibility of the construction contractor(s) to maintain file records of proper training/certification for any individual(s) who may potentially handle hazardous materials for the Project. Southline reserves the right to audit any subcontractors to ensure compliance.

B9.3 Regulatory Compliance

Major legislation pertaining to hazardous materials includes the Comprehensive Environmental Response, Compensation, and Liability Act; Resource Conservation and Recovery Act; Clean Air Act; and Clean Water Act.

Numerous other Federal, State, and local regulations also govern the use, storage, transportation, production, and disposal of hazardous materials. Some of the key requirements of these laws are outlined in:

- Occupational Safety and Health Administration (29 CFR 1900-1910 and 1926)
- Clean Water Act (40 CFR 100-149)
- Clean Air Act (40 CFR 50-99)
- Toxic Substances Control Act (TSCA) (40 CFR 700-799)
- Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (40 CFR 300-399)
- Resource Conservation and Recovery Act (40 CFR 239–282)
- Hazardous Materials Transportation Act (49 CFR 100-199)
- State-Specific Regulations

B9.4 Framework for Developing the Hazardous Materials Management Plan

B9.4.1 Certifications, Acknowledgments, and Designation of Coordinator/ Responsible Person

B9.4.2 Facilities Description

B9.4.2.1 SITE MAP

B9.4.2.2 TYPES AND AMOUNTS OF HAZARDOUS MATERIALS

B9.4.3 Hazardous Waste and Materials Management

B9.4.3.1 RESPONSIBILITIES

B9.4.3.2 TRAINING

B9.4.3.3 LABELING AND HAZARD COMMUNICATION

B9.4.3.4 OVERVIEW OF HAZARDOUS MATERIALS AND EXPECTED PROJECT WASTE

B9.4.4 Operating Procedures

B9.4.4.1 REFUELING AND SERVICING

B9.4.4.2 TRANSPORTATION OF HAZARDOUS MATERIALS

B9.4.4.3 STORAGE AND LABELING OF HAZARDOUS MATERIALS

Storage Containers

Incompatible Materials

Ignitable or Reactive Materials

Secondary Containment

Security

Explosives

B9.4.4.4 DISPOSAL

Hazardous Waste

Container Management

Used Oil and Oil Filters

B9.4.5 Spill Contingency Plan

B9.4.5.1 SPILL EMERGENCY CONTACTS

B9.4.5.2 RESPONSE PROCEDURES

B9.4.5.3 EMPLOYEE TRAINING

B9.4.5.4 SPILL CONTINGENCY RESPONSE EQUIPMENT

B9.4.5.5 NOTIFICATION AND DOCUMENTATION

Spill Notification

New Mexico Reporting Requirements

Arizona Reporting Requirements

Spill Documentation

B9.4.6 APPENDICIES TO THE HMMP

B9.4.6.1 APPENDIX A. SITE PLAN

B9.4.6.2 APPENDIX B. EMERGENCY INFORMATION FOR SPILL RESPONSE (POSTED ONSITE)

B9.4.6.3 APPENDIX C. SPILL RESPONSE PROCEDURES (POSTED ONSITE)

B9.4.6.4 APPENDIX D. SAFETY DATA SHEETS

B9.4.6.5 APPENDIX E. EXAMPLE HAZARDOUS WASTE LABELS

B9.4.6.6 APPENDIX F. TYPICAL FUEL, LUBRICANTS, AND HAZARDOUS MATERIALS

B9.5 Proponent Committed Environmental Measures

APPENDIX B10
EMERGENCY PREPAREDNESS AND RESPONSE PLAN

B10.1 Introduction

Despite an organization's best efforts, accidents, acts of nature, and other emergency situations can occur. Effective preparations for emergency and response can reduce injuries, prevent or minimize environmental impacts, protect employees and the community, reduce asset losses, and minimize downtime. An effective emergency preparedness and response program will include provisions for identification of hazards, a chain of command and responsibility, and a strategy for emergency communications.

This Emergency Preparedness and Response Plan is intended to provide methods for prevention of and response to a broad spectrum of emergency situations. This document discusses the chain of command and emergency communications strategy to be used as a guide for an Emergency Preparedness and Response Plan to be completed by Southline Transmission, LLC (Southline), and other responsible parties identified in the construction Plan of Development (POD). As indicated in the POD, this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate.

The final Emergency Preparedness and Response Plan will be approved by the BLM, Western, and other agencies as appropriate. More specific emergency procedures for blasting, hazardous materials, and fire are included in Appendix B6 – Blasting Plan, Appendix B9 – Hazardous Materials Management Plan, and Appendix B12 – Fire Protection Plan.

Emergency response procedures will be implemented for the following potential events, or similar events:

- Downed transmission lines, structures, or equipment failure
- Fires and explosions
- Spills or releases of hazardous materials
- Sudden loss of power
- Natural disasters
- Serious personal injury

B10.2 Purpose

No plan can describe specific procedures and protocols for every potential event. However, having a general plan in place with hazards identification, a chain of command and responsibility, a strategy for emergency communications, and foresight and planning can mitigate for most significant events. This is particularly true and important for the initial response phase of an emergency situation.

The purpose of an Emergency Preparedness and Response Plan is to provide clear procedures and information to enable the Proponent, the construction contractor(s), the compliance inspection contractor (CIC), and the BLM, Western, or other agency Authorized officer or his/her designated representative to prepare for and effectively respond to emergency situations. The primary objective of this plan is to

prevent adverse impacts on human health and safety, property, and the environment that could potentially occur as a result of the construction, operation, and maintenance of the Project.

B10.3 Regulatory Compliance

There are numerous regulatory drivers that call for the preparation of an Emergency Preparedness and Response Plan. Health and safety guidelines related to high-voltage transmission lines are provided by a number of sources, including the National Electric Safety Code, American National Standards Institute, American Medical Association Council on Scientific Affairs, American Conference of Governmental Industrial Hygienists, various State regulations, other organizations, and Western. The Occupational Safety and Health Administration also provides regulations for construction and operational workplace activities.

Additional regulatory drivers include the Clean Water Act (CWA) requirements for Stormwater Pollution Prevention Plans (SWPPPs) and the CWA, Oil Pollution Act requirement for a Spill Prevention, Control, and Countermeasure Plan (SPCC Plan), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, a.k.a. Superfund). The SWPPP (appendix B3) and SPCC Plan (appendix B4) also include response procedures for spills of oil or hazardous materials.

B10.4 Responsibilities

Southline and the construction contractor(s) are responsible for the effective response to any emergency situation or event related to the construction, operation, and maintenance of the Project. To ensure a coordinated and effective response, a chain of command will be developed as part of the Emergency Preparedness and Response Plan and followed in the event of an emergency. In the establishment of a chain of command, considerations to be taken into account include the levels of vertical and horizontal activation and the participation necessary to respond to specific situations are. In other words, does the response need to move further up the chain of command, or does the response need to broaden to include additional divisions or disciplines? Sometimes the response will be both, and higher levels of command may be needed to authorize or oversee additional divisions or disciplines. The following are factors for the establishment of a chain of command:

- Type of event (natural, injury, environmental, electrical supply/outage, external forces)
- Severity, location, and physiographic surroundings
- Multiple, interconnected, or combined events
- Anticipated duration
- Multi-division and/or multi-discipline response required
- External agency coordination
- Authority of various command levels

B10.5 Response Coordination

B10.6 Emergency Communications

B10.6.1 Emergency Contact List

In case of emergency, call 911 first. Additional potential emergency contacts are listed below and should be called as appropriate, depending on the situation (e.g., fire, injury). Further guidance on emergency response, notification, and reporting protocols are included in Appendix B3 – SWPPP, Appendix B4 – SPCC Plan, Appendix B6 – Blasting Plan, Appendix B9 – Hazardous Materials Management Plan, and Appendix B12 – Fire Protection Plan. The Emergency Contact List shall be verified at the beginning of construction and updated throughout the Project by the construction contractor(s) to ensure accurate contact information. Emergency contacts are just that – persons to be contacted to respond to an emergency. Notifications, both internal and to State and Federal agencies, may also be required on a case-by-case basis. When the emergency contact list is posted at a jobsite, it may be tailored to the locale as appropriate.

B10.7 Hazard Identifications and Key Response Criteria

APPENDIX B11
NOXIOUS WEED MANAGEMENT PLAN

B11.1 Background

The Bureau of Land Management (BLM) defines noxious weeds as "a plant that interferes with management objectives for a given area of land at a given point in time." The New Mexico Noxious Weed Act defines noxious weeds as "any weed or plant which the board of county Commissioners acting as the governing body of the district, and with the advice of the county agent, declares to be harmful or to possess noxious characteristics." The Arizona Department of Agriculture (ADA) defines a noxious weed as "any species of plant that is, or is liable to be, detrimental or destructive and difficult to control or eradicate and shall include any species that the director [Department of Agriculture], after investigation and hearing, shall determine to be a noxious weed." Noxious weeds are opportunistic plant species that may aggressively colonize in disturbed areas. Once established in an area, noxious weeds typically out-compete native plants for resources and may permanently degrade the native plant community. In addition, noxious weeds often become monocultures, which may alter the local fire regime by increasing the fine fuel load. Such changes usually exclude reestablishment of the native plant community in disturbed areas, and result in a long-term or permanent change in the local ecology. Infestations of noxious weeds may also have negative economic impacts. Infestations of certain noxious weeds on rangelands may poison livestock, and infestations in agricultural fields may lower crop yields.

The format and content of this Noxious Weed Management Plan is based on the principles and procedures outlined in the BLM Integrated Weed Management Manual 9015 (BLM 1992) and in Section 11.0 of the Western Area Power Administration (Western) (2011) Integrated Vegetation Management Guidance Manual. This plan includes a discussion on (1) the plan purpose, goals, and objectives, (2) the noxious weed inventory, (3) noxious weed management practices, (4) postconstruction monitoring, and (5) the proper use of herbicides within the Project area. As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B11.1.1 Plan Purpose

This purpose of this Noxious Weed Management Plan is to provide preventive and treatment methods to control the potential occurrence of noxious weeds during and following construction-related activities for the Southline Transmission Line Project (Project). It is the responsibility of Southline Transmission, LLC (Southline), and the construction contractor(s), working in coordination with the compliance inspection contractor (CIC) and the BLM and Western or their designated representative, to ensure that noxious weeds are identified and controlled during construction, operation, and maintenance of Project facilities and that all Federal, State, county, and other local noxious weed requirements are satisfied. The BLM and/or Western will review and approve this Noxious Weed Management Plan prior to implementation.

B11.1.2 Goals and Objectives

The goal of this Noxious Weed Management Plan is to implement early detection, containment, and control of noxious weeds during Project construction. Information gathered by the Proponent during preconstruction surveys and provided by the BLM will be used to monitor and control the spread of

noxious weeds during the construction and operation of the Project. An evaluation of the effectiveness of the prescribed control measures will also be implemented during the operational phase of the Project.

B11.2 Regulatory Framework

B11.2.1 Bureau of Land Management Manual 9015

BLM Integrated Weed Management Manual 9015 directs the BLM to manage noxious weeds and undesirable plants on BLM lands by preventing the establishment and spread of new infestations, reducing existing population levels, and managing and controlling existing stands (BLM 1992). Required management for ground-disturbing actions includes determining the risk of spreading noxious weeds associated with the Project and ensuring that contracts contain provisions that hold contractors responsible for the prevention and control of noxious weeds caused by their operations if the activity is determined to be moderate to high risk (i.e., Class A weeds as defined by the BLM).

B11.2.2 New Mexico Noxious Weed Act

B11.2.2.1 STATE LISTED NOXIOUS WEEDS – NEW MEXICO

The State of New Mexico and the U.S. Department of Agriculture (USDA) maintain an official list of weed species designated as noxious for the state. The following is an explanation of the categories established for noxious weeds by the New Mexico Department of Agriculture (NMDA). The State of New Mexico has officially designated 33 weed species as noxious (USDA 2015a). The noxious weed species regulated by the State of New Mexico are shown in table B11-1.

Categories for Noxious Weeds in New Mexico

Table B11-1. Noxious Weed Species of Potential Concern – New Mexico

Scientific Name	Common Name	State Category	Known to Occur in the Project Area

B11.2.3 Arizona Noxious Weed Act

B11.2.3.1 STATE LISTED NOXIOUS WEEDS – ARIZONA

The State of Arizona and the USDA maintain an official list of weed species designated noxious for the state. The following is an explanation of the categories established for noxious weeds by the ADA.

The State of Arizona has officially designated 58 weed species as noxious (USDA 2015b). The noxious weed species regulated by the State of Arizona are shown in table B11-2.

Categories for Noxious Weeds in Arizona

Table B11-2. Noxious Weed Species of Potential Concern - Arizona

Scientific Name	Common Name	State Category	Known to Occur in the Project Area

B11.3 Noxious Weed Inventory

Baseline/background information on noxious weeds

B11.4 Noxious Weed Management

B11.4.1 Identification of Problem Areas and Education

B11.4.1.1 WEED MANAGEMENT PERSONNEL REQUIREMENTS

B11.4.2 Project Specific Stipulations and Methods

B11.4.3 Additional Preventative Measures

B11.4.3.1 NOXIOUS WEED CONTROL METHODS

Mechanical Control

Manual Control

Chemical Control

B11.4.3.2 SPECIES-SPECIFIC NOXIOUS WEED CONTROL METHODS

Management Recommendations

Chemical Control

B11.4.3.3 RECLAMATION ACTIONS

B11.5 Monitoring

B11.5.1 Reclamation Monitoring

B11.5.2 Ongoing Monitoring

B11.6 Pesticide Application, Handling, Spills, and Cleanup

B11.6.1 Pesticide Application and Handling

B11.6.2 Pesticide Spills and Cleanup

B11.6.3 Worker Safety and Spill Reporting

B11.7 Literature Cited

B11.8 Attachments

Attachment B11-1 – Noxious Weed Risk Assessment Worksheet
Attachment B11-2 – Herbicides Approved For Use on Public Lands

APPENDIX B12
FIRE PROTECTION PLAN

B12.1 Introduction

This plan details measures that will be implemented to (1) reduce the risk of starting a fire and (2) suppress a fire in the event one does occur within the construction area during the Southline Transmission Line Project (Project) construction. The precautions and procedures identified in this plan are also applicable for operation and maintenance activities. However, responsibilities for management of all fires and fire prevention measures are predominantly assumed by the Bureau of Land Management (BLM), Western Area Power Administration (Western), other Agency Fire Management Officers (FMOs), and the operation and maintenance crews of Southline Transmission, LLC (Southline). As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western is involved in the Project, they may adopt this plan, where appropriate.

B12.1.1 Purpose

The risk of fire danger during construction of a transmission line is related largely to the use of vehicles and other motorized equipment operating off roadways, the handling and use of explosive materials and flammable liquids, and welding. The purpose of this plan is to outline responsibilities, notification procedures, fire prevention measures and precautions, fire suppression equipment, initial response procedures, and post-fire rehabilitation strategies related to the Project. The goal is to minimize the risk of Project-related fires and, in case of fire, provide for immediate suppression within the construction area. Other plans containing information related to fire protection include: Appendix B6 – Blasting Plan, Appendix B9 – Hazardous Materials Management Plan, and Appendix B10 – Emergency Preparedness and Response Plan.

B12.1.2 Regulatory Compliance

The Project will be subject to State, County, and federally enforced laws, ordinances, rules, and regulations that pertain to fire prevention and suppression activities. Key regulatory agencies include the BLM and other agency and local fire protection agencies in Arizona and New Mexico.

B12.2 Responsibilities

B12.2.1 Bureau of Land Management

The BLM FMO or other Agency FMO(s) will oversee all fire control activities within their prospective administrative units. The FMOs will discuss fire protection stipulations at the notice-to-proceed meeting, which will be attended by the BLM and other Agency authorized officers or his/her designated representative; the compliance inspection contractor (CIC); the construction contractor(s); the environmental inspectors; and the Proponent.

B12.2.1.1 CONSTRUCTION CONTRACTOR(S)

It will be the responsibility of the construction contractor(s) to notify Southline, the BLM and/or Western when a Project-related fire occurs within or adjacent to the construction area. The construction

contractor(s) will be responsible for any fire started, in or out of the Project area, by its employees or operations during construction. The construction contractor(s) will be responsible for fire suppression and rehabilitation. The construction contractor(s) will take safe and immediate action to prevent and suppress fires on and adjacent to the Project area that are a result of contractor activities. The construction contractor(s) will use its workers and equipment on the Project for preventing the spread of fires started by contractor activities unless the fire exceeds immediate control, at which time all construction contractor employees will exit the area to predetermined locations safe from wildfire.

All Federal, State, and county laws, ordinances, rules, and regulations that pertain to prevention, pre-suppression, and suppression of fires will be strictly adhered to by the construction contractor(s). All personnel will be advised of their responsibilities under the applicable fire laws and regulations.

Construction Crew

Designated Fire Marshall

B12.2.1.2 COMPLIANCE INSPECTION CONTRACTOR

B12.2.1.3 NOTIFICATION

Table B12-1. Fire Notification Numbers

Contact Person	Phone Number
Bureau of Land Management	To be determined
BLM Authorized Officer or Designated Representative	To be determined
Western Designated Representative	To be determined
U.S. Forest Service Authorized Officer or Designated Representative	To be determined
Bureau of Indian Affairs Authorized Officer or Designated Representative	To be determined
DOD Authorized Officer or Designated Representative	To be determined
Bureau of Reclamation Authorized Officer or Designated Representative	To be determined
New Mexico	To be determined
Arizona Interagency Fire Center	To be determined
911 – Emergency	Dial 911

B12.3 Proponent Committed Environmental Measures

B12.4 Other Specific Stipulations and Methods

B12.4.1 Activity-Related Precautions

B12.4.1.1 FIRE DANGER RATINGS

B12.4.1.2 RED FLAG WARNINGS

In addition to observation of the Fire Danger Rating scales, the National Weather Service red flag warnings for low humidity and high winds will be observed. The Fire Precaution Levels in table B12-3

will be adhered to. The red flag warnings are posted on the National Weather Service's Western Region Fire Weather website at http://www.wrh.noaa.gov/firewx/main.php.

Table B12-2. Fire Precaution Levels

Fire Danger Rating	No Red Flag	Red Flag
Low	Normal fire precautions	Consider additional measures and resources
Moderate	Normal fire precautions	Consider additional measures and resources
High	One engine* is require for blasting	One engine* is required for blasting, welding, cutting, and grinding AND operations will shut down from noon until 8 p.m.
Very High	One engine* is required for blasting, welding, cutting, and grinding.	Two engines* required for blasting, welding, cutting, and grinding AND operations will shut down from 10 a.m. until 8 p.m. Power saws will be shut down from 10 a.m. until 8 p.m.
Extreme	Two engines required for blasting, welding, cutting, and grinding AND operations will shut down from 10a.m. until 8 p.m. Power saws will be shut down from 10 a.m. until 8 p.m.	Unless authorized by the land jurisdictional agency, ALL OPERATIONS SHUT DOWN EXCEPT on mineral soil involving watering or equipment maintenance.

B12.4.2 Burning (Not Allowed)

B12.4.3 Blasting

B12.4.4 Welding, Cutting, Grinding, or Drilling

B12.4.5 Spark Arrestors

B12.4.6 Smoking

B12.4.7 Warning Devices

B12.4.8 Parking and Vehicle Storage Areas

B12.4.9 Signage

B12.4.10 Power Saws

B12.4.11 Equipment Refueling

B12.4.12 Access

B12.5 Minimum Fire Prevention and Suppression Equipment Required

B12.6 In Case of Fire – Initial Response and Emergency Contacts

B12.7 Post-Fire Rehabilitation Strategies

APPENDIX B13
STREAM, WETLAND, WELL, AND SPRING PROTECTION PLAN

B13.1 Introduction

The purpose of this Stream, Wetland, Well, and Spring Protection Plan is to provide measures to protect these resources from potential impacts during construction, operation, and maintenance activities for the Southline Transmission Line Project (Project). This plan incorporates Proponent Committed Environmental Measures (PCEMs) identified in the Environmental Impact Statement and also in table 8 in the Plan of Development (POD). As indicated in the POD, this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate. The goals of this plan are to:

- Control Project-related erosion and sedimentation into streams and wetlands and minimize disturbance and erosion of streambeds and banks.
- Protect springs and wells in the Project area from impacts due to blasting and hazardous materials contamination.

B13.2 Regulatory Overview

The construction, operation, and maintenance phases of the Project are subject to various regulations designed to protect environmental resources and the public. Regulations relevant to water resources are outlined below.

B13.2.1 Federal

General water quality is protected under the federal Clean Water Act (CWA) and a permit may be required if a project will result in the alteration of or discharges into jurisdictional watercourses (waters of the U.S. (WUS)) and wetlands. The U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) regulate the placement of fill into WUS under Section 404 of the CWA. WUS include lakes, rivers, streams and their tributaries, and wetlands. The Project will result in the alteration of or discharge into jurisdictional WUS. To qualify under Section 404 Nationwide Permit (NWP) 12 for Utility Line Activities, the Project will need to meet the criteria for and fall within the thresholds of this NWP. As part of meeting the conditions of NWP 12, wetland delineations will need to be prepared and a Preliminary Jurisdictional Determination obtained from the USACE for the Project. The Preliminary Jurisdictional Determination will establish where WUS may be located that may be affected by the Project. An NWP 12 is typically issued after a 30- to 45-day review of the Preliminary Jurisdictional and Wetland Delineation Report, unless the USACE requests a field review, which will extend the review period. From the date of issuance, the NWP 12 is valid for 12 months.

Requirements related to stormwater pollution under Section 402 of the CWA are handled in New Mexico by the EPA. Requirements under Section 402 are detailed in Appendix B3 – Stormwater Pollution Prevention Plan.

B13.2.2 State

B13.3 Overview of Streams, Wetlands, Wells, and Springs

B13.3.1 Streams and Drainages

Potentially jurisdictional WUS crossed by the Project will be delineated during preconstruction stream and wetland surveys and provided to the USACE to obtain a Preliminary Jurisdictional Determination. The locations of streams and drainages will be shown in the POD.

Most streams and drainages crossed by the Project are ephemeral washes that typically do not flow except in response to precipitation events. However, there are several streams identified as potentially requiring special consideration due to intermittent or perennial flow. These include the Mimbres River, the San Pedro River, and Cienega Creek, two of which are existing crossings in the Upgrade Section.B13.3.2 Wetlands

Wetland delineations that follow the USACE Wetland Delineation Manual (1987) and Arid West Regional Supplement (2008) will be conducted prior to construction. The USACE Wetland Delineation Manual provides technical guidelines and methods for a three-parameter approach to determine the location and boundaries of potentially jurisdictional wetlands. This approach requires an area support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a wetland. Surveyors will gather wetland determination information on data forms in the field and map wetland boundaries using geographical positioning system technology. Wetlands that meet all three parameters will be presented to the USACE for a Preliminary Jurisdictional Determination. The locations of wetlands will be shown in the POD.

B13.3.2 Wells and Springs

B13.4 Proponent Committed Environmental Measures

B13.5 Other Specific Stipulations and Methods for Streams and Wetlands

B13.5.1 Stream Crossing Methods

B13.5.1.1 VEHICULAR STREAM CROSSINGS

B13.5.1.2 WETLAND CROSSING METHODS

B13.5.2 Spill Prevention

B13.5.3 Erosion and Sedimentation

B13.5.4 Reclamation and Revegetation of Steam Scrossings

B13.5.5 Storage of Soil or Organic Debris near Streams

B13.5.6 Stream Obstruction and Flash Flood Hazard

B13.5.7 Protection of Wells and Springs

B13.6 Literature Cited

APPENDIX B14
SOIL MANAGEMENT PLAN

A Soil Management Plan would define procedures for managing soils that are excavated during construction, along with plans for their storage and later reuse. This plan is often an appendix to a Stormwater Pollution Prevention Plan (SWPPP). In addition to clean soil excavation, the plan would outline procedures for segregation of potentially contaminated soils, sampling and analysis of those soils, and disposal options if that becomes necessary. It also would define how topsoil would be segregated and stored, how stockpiles would be managed and protected, and used in site restoration. Use of topsoil for restoration activities would be described in Appendix B15 – Reclamation, Vegetation, and Monitoring Plan. Erosion and sediment controls for excavated soil would also be discussed. As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate.

Content to be developed.

APPENDIX B15
RECLAMATION, REVEGETATION, AND MONITORING FRAMEWORK PLAN

B15.1 Introduction

This Reclamation, Revegetation, and Monitoring Framework Plan has been developed based on the principles and procedures established by the Bureau of Land Management (BLM) and Western Area Power Administration (Western). As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the Bureau of Land Management (BLM) as enforceable stipulations and measures of the BLM right-of-way (ROW) grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate.

Requirements for reclamation, revegetation, and monitoring on private and State lands will be negotiated between Western, Southline Transmission, LLC (Southline), and the States of Arizona and New Mexico as well as affected landowners. The intent of this plan is to provide a framework for reclamation treatments to be applied to the Project on identification of construction-related disturbance, prevent unnecessary degradation of the environment during construction, rehabilitate temporary use areas, and reclaim disturbed areas such that these areas are ecologically functional and visually compatible with the surrounding environment to the greatest extent practicable.

B15.2 Regulatory Requirements and Authorities

Authority for the reclamation practices defined in this plan is provided under the following regulations, land use plans, initiatives, and general guidelines.

B15.2.1 Guide Documents

B15.2.1.1 BLM TERMS AND CONDITIONS OF RIGHT-OF-WAY GRANTS AND TEMPORARY USE PERMITS, 43 CFR 2881.2

"The authorized officer shall impose stipulations which shall include, but not be limited to requirements for reclamation, revegetation, and curtailment of erosion of the surface of the land [and] requirements designed to control or prevent damage to the environment (including damage to fish and wildlife habitat)."

B15.2.1.2 FEDERAL LAND POLICY AND MANAGEMENT ACT, SECTION 101 (A)(8)

Requires "public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition."

B15.2.1.3 ENDANGERED SPECIES ACT OF 1973, AS AMENDED, SECTION 7(A)(2)

Requires that federal agencies ensure any authorized action "will not result in the adverse modification" of critical habitat.

B15.3 Purpose

The purpose of this plan is to describe and recommend construction and reclamation treatment actions that will meet BLM and other agency goals and objectives under the applicable land use plans, guidelines, and initiatives described above for land health standards to recover habitat for sensitive plant species, and to provide protocols and/or requirements for implementing and monitoring required reclamation. Important actions in mitigating the effects associated with the Project include (1) minimizing to the greatest degree practicable, the effects associated with right-of-way (ROW) preparation and the construction of facilities, and (2) stabilizing temporarily disturbed construction areas to an acceptable condition to speed up natural recovery. The procedures outlined in this plan will assist in restoring plant communities to near-preconstruction conditions and associated wildlife habitat and range, preventing substantial increases in noxious weeds in the project area, minimizing Project-related soil erosion, and reducing visual impacts of sensitive areas caused by construction activities. To achieve these goals, this plan outlines actions to be applied during the preconstruction and post-construction phases of the Project.

B15.3.1 Responsible Parties

Southline will have the overall responsibility of directing and monitoring the reclamation efforts for the Project on BLM-managed lands in accordance with the stipulations in the Plan of Development (POD) and this plan. The ROW agreement holder (Western or Southline as appropriate) will have the responsibility of directing and monitoring reclamation efforts for the Project on State and private lands and may use the POD as appropriate. Southline and/or its construction contractor(s) may retain the services of a subcontractor (subject to the approval of the BLM, Western, and other agencies) who specializes in reclamation to implement the protocols identified in this plan during and following construction. It is anticipated that postconstruction reclamation monitoring would occur concurrent with the practices outlined in Appendix B11 – Noxious Weed Management Plan (as appropriate).

B15.4 Overview of Existing Environments

B15.4.1 Semidesert Grassland

B15.4.2 Chihuahuan Desertscrub

B15.4.3 Arizona Upland Subdivision of Sonoran Desertscrub

B15.4.4 Lower Colorado River Subdivision of Sonoran Desertscrub

B15.5 Reclamation Plan Methodology

B15.5.1 Identification of Reclamation Zones

B15.5.2 Identification of Reclamation Levels

B15.5.2.1 TYPES OF CONSTRUCTION ACTIVITIES AND FACILITY FEATURES

B15.5.2.2 DISTURBANCE DURATION

B15.5.2.3 DISTURBANCE TYPE

B15.5.2.4 RECLAMATION LEVELS

Reclamation Level 1 (RL1) – Minimal Level of Disturbance, Minimal Actions (Permanent)

Reclamation Level 2 (RL2) – Low Level of Disturbance, Few Actions (Temporary)

Reclamation Level 3 (RL3) – Moderate Level of Disturbance, Several Actions (Temporary)

Reclamation Level 4 (RL4) – Moderate/High Level of Disturbance, Few Actions (Permanent)

Reclamation Level 5 (RL5) – High Level of Disturbance, Maximum Actions (Temporary)

Table B15-2. Construction Component – Reclamation Levels

Construction Component	Disturbance Level	Disturbance Duration		Reclamation Level
		Permanent	Temporary	

B15.6 Reclamation Plan

B15.6.1 Right-of-Way Preparation and Preconstruction Actions

B15.6.1.1 WEED PLAN IMPLEMENTATION

B15.6.1.2 MONITORING TRANSECT SELECTION

B15.6.1.3 SELECTIVE CLEARING/FEATHERING (WIRE ZONE-BORDER ZONE TECHNIQUE)

Table B15-4. Reclamation Action Identification Table

Reclamation Level	Zone 1					Zone 2					Zone 3					Zone 4				
	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5	RL1	RL2	RL3	RL4	RL5
Preconstruction Actions																				
Weed plan implementation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Selective clearing/ feathering			X	X	X												X	X	X	X
Topsoil segregation					X					X					X					X
Windrow vertical mulch			X	X	X			X	X	X								X	X	X
Post-construction Actions																				
Earthworks		X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X
Topsoil replacement					X					X					X					X
Seeding		X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X
Alternative seeding		X	X	X	X		X	X	X	X		X	X	X			X	X	X	
Supplemental planting																		X		X
Vertical mulch replacement			X		X			X		X								X		X
Permeon™ (or approved equal)			X	X	X			X	X	X			X	X	X			X	X	X
Supplemental mulch				X					X				X	X	X			X	X	X
Off-highway vehicle deterrent		X	X		X		X	X		X		X	X		X		X	X		X
Signage		X	X		X		X	X		X		X	X		X			X		X
Monitoring		X	X	X	X		X	X	X	X		X	X	X	X		X	X	X	X

B15.6.1.4 TOPSOIL SEGREGATION

B15.6.1.5 WINDROW VERTICAL MULCH

B15.6.2 Post-Construction Actions

B15.6.2.1 EARTHWORKS

B15.6.2.2 TOPSOIL REPLACEMENT

B15.6.2.3 SEEDING

B15.6.2.4 ALTERNATIVE SEEDING

B15.6.2.5 SUPPLEMENTAL PLANTING

B15.6.2.6 VERTICAL MULCH/SLASH

B15.6.2.7 SUPPLEMENTAL MULCH

B15.6.2.8 OFF-HIGHWAY VEHICLE DETERRENTS

B15.6.2.9 SIGNAGE

B15.6.2.10 RECLAMATION MONITORING

B15.6.3 Modifications and Field Changes

B15.7 Reclamation Success Standards, Monitoring, and Maintenance

B15.7.1 Reclamation Goals and Success Standards

B15.7.2 Monitoring Practices (Methodology)

B15.7.2.1 ROUTE MONITORING

Table B15. Reclamation Monitoring Requirements

B15.7.2.2 SITE MONITORING

B15.7.2.3 MONITORING REQUIREMENTS

B15.7.3 Data Collection

B15.7.3.1 QUALITATIVE (DESCRIPTIVE) INFORMATION

B15.7.3.2 QUANTITATIVE (NUMERICAL) INFORMATION

B15.7.4 Adaptive Management and Site Release

B15.8 Literature Cited

B15.9 Attachment

Attachment B15-1: BLM Example Seed Mixes

APPENDIX B16
HEALTH AND SAFETY PLAN

A Health and Safety Plan (HASP) is not typically required by Federal law; however, section 18 of the Occupational Safety and Health Act of 1970 encourages States to develop and operate their own safety and health programs in the workplace. In New Mexico, the Occupational Health and Safety Bureau, part of the New Mexico Environment Department (NMED), has the responsibility of enforcing Occupational Health and Safety Regulations. In Arizona, the Arizona Division of Occupational Safety and Health is responsible for enforcement and voluntary compliance.

The purpose of a HASP would be to ensure the safety of the proposed Project employees, construction personnel, and the public. The HASP would be tailored specifically for the proposed Project, and would include a description of hazards that may be encountered during the life of the proposed Project. The HASP would detail employee safety training procedures that would be used, structural and non-structural safety controls that would be put in place, personal protective equipment that would be required, emergency response procedures, protocols for Project-specific procedures such as confined space entry, and applicable standards, practices, and procedures specified by the Occupational Safe and Health Administration (OSHA) (29 CFR 1910).

Content to be developed.

APPENDIX B17
AVIAN PROTECTION PLAN

An Avian Protection Plan (APP) would be a Project-tailored plan designed to reduce avian electrocution and collision mortality that result from avian interactions with electric utility facilities. The overall goal of an APP is to reduce avian mortality. The 2005 Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife (FWS) APP Guidelines (APLIC 2005) provide a framework, along with principles and examples of APPs.

The APP would be designed as a living document to be continually evaluated and refined over the life of the proposed Project. The elements of the APP would include training, permit compliance, construction design and siting standards, nest management, a reporting system, risk assessment for evaluating the risks posed to migratory birds. The plan would also identify areas and issues of concern, mortality reduction measures, and avian enhancement options.

Examples of avian protection measures that *could* be included in the APP are:

- Marking wires (bird diverters) and/or using special structure design to increase visibility to birds;
- Applying special structural design to decrease the heights of ground wires and conductors;
- Monitoring to ensure that Proponent Committed Environmental Measures (PCEMs) are implemented; and/or
- Conducting additional avian studies, surveys, and/or monitoring to record the presence of birds and incidence of avian collisions, and provide data that could be useful to minimize the potential for collisions with the proposed Project, as well as with existing and future power lines in other locations.

Southline Transmission, LLC (Southline), Bureau of Land Management (BLM), and Western Area Power Administration (Western) would collaborate with agencies such as the FWS, Arizona Game and Fish Department, and New Mexico Department of Game and Fish, and other cooperating agencies on development of the APP, the goal of which is mitigate the collision risk and loss of productivity for all birds.

Content to be developed.

APPENDIX B18
WASTE MANAGEMENT PLAN

B18.1 Waste Management Goals

B18.2 Responsibilities

B18.3 Waste Prevention, Packaging, and Recycling

B18.4 Communication and Education

B18.5 Expected Project Waste, Disposal, and Handling

Table B18-1.

Material	Quantity	Disposal Method	Handling Procedure

B18.6 Material Disposition/Waste Disposal Companies

B18.6.1 Wastes – Location of Disposal, Timing of Pickup

B18.6.2 Recycling – Location of Disposal, Timing of Pickup

B18.7 Housekeeping

B18.8 Documentation

APPENDIX B19
HELICOPTER FLIGHT PLAN/FLIGHT AND SAFETY PLAN

The Helicopter Flight and Safety Plan would describe the hours and estimated number of days that a helicopter would operate for construction of the proposed Project, the type and number of helicopters that would be used, and the kind of work to be performed. Additional information presented in this plan would include the location, size, and number of staging areas for helicopter takeoffs and landings, and safety measures to be implemented during helicopter operations. This plan would be reviewed and approved by the Federal Aviation Administration (FAA) prior to the commencement of helicopter operations.

Content to be developed.

APPENDIX B20
DECOMMISSIONING PLAN

The Decommissioning Plan would detail how the structures and facilities of the proposed Project would be removed after the useful life of the Project is reached, and how the affected properties would be reasonably restored in accordance with the Bureau of Land Management (BLM) right-of-way (ROW) grant. This plan would be a general outline of how the proposed Project would be decommissioned and how land would be restored to its original condition. Decommissioning procedures described would include the removal of structures, disposal of waste, and identification of what, if anything, may remain on the land upon completion. Restoration would include the stabilization and revegetation of the disturbance area to minimize erosion and return the land to productive use. As indicated in the Plan of Development (POD), this plan is applicable on Federal lands administered by the BLM as enforceable stipulations and measures of the BLM ROW grant. It pertains not only to the construction of the Project, but also to the operation and maintenance phase of the Project. Where Western Area Power Administration (Western) is involved in the Project, they may adopt this plan, where appropriate.

Content to be developed.

Appendix C

TRANSMISSION CONSTRUCTION AND VEGETATION MANAGEMENT STANDARDS

Content to be developed.

APPENDIX C1
TRANSMISSION CONSTRUCTION STANDARDS

Content to be developed.

APPENDIX C2
INTEGRATED VEGETATION MANAGEMENT STANDARDS

C2.1 Introduction

Southline Transmission, LLC (Southline or the Proponent), will manage vegetation within their rights-of-way (ROWs) and in access and service roads to minimize system reliability issues, to address safety issues, and to facilitate operation and maintenance activities. The vegetation management plan complies with the National Electric Safety Code, American National Standards Institute (ANSI) A300 Part 7: American Operations Integrated Vegetation Management (Bureau of Land Management (BLM) Integrated Vegetation Management Handbook – H 1740-02. March 25, 2008), Western Area Power Administration's (Western's) Integrated Vegetation Management Guidance Manual, and Electric Utility Rights-of-Way and the International Society of Arboriculture (ISA) Best Management Practices. The plan is based on the North American Electric Reliability Corporation (NERC) Reliability Standard FAC-003-1. If Western has an approved vegetation management plan for the area, that plan would govern vegetation management on State and private lands.

C2.2 Objectives

Objectives of Integrated Vegetation Management (IVM) on utility ROWs are to establish sustainable plant communities that are compatible with the electric facilities. The intent is to provide stable, low-growing plant ecotypes that reduce fire risk and maintain safe access to the line and associated facilities in order to ensure safe and reliable operation of the transmission line. Objectives include:

- Meeting requirements of the NERC Reliability Standards
- Prevent operation hazards (i.e., flashovers, trees growing into contact with conductors, danger trees)
- Provide access for maintenance and repair
- Protect facilities from fire
- Control spread of noxious weeds
- Protect public and worker safety
- Protect environmental quality
- Establish stable, low-growing plant communities on transmission line ROWs
- Adhere to principles of IVM

C2.3 Regulations

Because the regulatory environment is constantly changing, coordination with the regulatory agencies is essential to ensure compliance. Noxious weed regulation often falls to the county level, and therefore contact with the county regulatory agency should be made to check on additional or more stringent requirements.

C2.3.1 NERC Standards

On July 20, 2006, the Federal Energy Regulatory Commission (FERC) issued an order certifying NERC as the Electric Reliability Organization (ERO) for the United States. NERC substantially revised and strengthened its reliability standards and established a program to monitor and enforce compliance with their standards. The standards include Standard FAC-003-1-Transmission Vegetation Management Program, which requires that a transmission owner prepare and keep current a formal transmission vegetation management program that addresses the following: schedules and types of inspections; line clearances; qualifications and training of vegetation management personnel; Proponent Committed Environmental Measures (PCEMs) where line clearances cannot be attained; a process for immediate communication of vegetation conditions that present an imminent threat; annual planning for vegetation management work; and quarterly reporting of sustained transmission outages caused by vegetation. This standard (as well as those discussed below) applies to all transmission lines operated at 200 kilovolts and above and to any lower-voltage lines designated by the operator as critical to the reliability of the electric system in the region.

C2.3.2 Federal Requirements and Policies

- The National Environmental Policy Act (NEPA)
- The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- Users of restricted use (RU) pesticides should particularly note the following regulations:
    - Federal Land Management Agency Herbicide Restrictions
- The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):
- The Superfund Amendments and Reauthorization Act of 1986 (SARA Title III), also known as the Emergency Planning and Community Right-To-Know Act (EPCRA):
- The Federal Occupational Safety and Health Administration (OSHA):
- The U.S. Department of Transportation (DOT)
- The Federal Noxious Weed Act of 1974 (part of the Plant Protection Act of 2000) (7 CFR Part 360)
- Federal Land Management Agency Noxious Weeds and Federal Noxious Weed Lists
- The Endangered Species Act (50 CFR)
- Presidential Memorandum Dated April 26, 1994 for the Heads of Executive Departments and Agencies and Guidance for This Memorandum From the Office of the Federal Environmental Executive (August 10, 1995; 60 *Federal Register* 40837)
- Clean Water Act (40 CFR, Chapter I, Subchapter D)

C2.3.3 State Pesticide Regulations and Requirements

C2.3.4 State Weed Control Regulations and Requirements

C2.3.5 State Fire Hazard Reduction Regulations

C2.3.6 ANSI Standards and Other Pruning Guidance

C2.4 Methods

C2.4.1 Situations Requiring Vegetation Control

C2.4.1.1 WHAT METHODS ARE AVAILABLE?

C2.4.1.2 CONSIDERATIONS IN SELECTING THE BEST METHOD

Sections C2.4.2, C2.4.3, and C2.4.4 below provide overviews of the cultural, biological, and physical/mechanical options.

Table C-1. Factors which Influence Decisions About which Specific Vegetation Control Method to Use

Safety
Line voltage (which determines conductor clearances; see Section 10.0)
Proximity to restricted or sensitive environmental areas (adjacent land use)
Treatment objective
Type and density of vegetation – target and non-target species
Expected growth rates
Size of treatment area
Anticipated costs and equipment limitations
Effectiveness of possible treatments
Landowner or land management agency
Contractual rights
Accessibility
Climate/meteorological conditions at time of treatment (e.g., rainfall)
Herbicide use regulations
Site conditions – soils, slope, drainage
Presence of sensitive species or sensitive cultural resources

Table C-2. Vegetation Control Methods: Advantages and Disadvantages

Method	Advantages	Disadvantages	Where use is most appropriate
Cultural			
1. Develop and maintain stable, low-growing vegetation cover	Long-term effectiveness Required for physical or chemical treatment decreases with time Environmental benefits, e.g., wildlife habitat	None	All ROWs
2. Prescribed fire	Creates conditions for low-growing cover Removes excessive biomass (pile burning)	Any fire hazards must be controlled Limited areas appropriate for safe use	Low-growing vegetation with no hazard to overhead lines Slash piles
Biological			
1. Introduce natural insect predators	Targets specific noxious plants Perpetual, inexpensive	Intense monitoring efforts Availability of insects Long-term control option	Specific noxious weeds that can be controlled with specific insects, e.g., musk thistle
2. Animal grazing	Effective control Cost-effective Provides nitrogen	Timely grazing management is needed Also affects valuable vegetation Soil compaction Degrades riparian areas Soil erosion on steep slopes	Where agreement exists with landowner who raises livestock – existing "rangeland"
Physical/Mechanical			
1. Manual clearing with chain saw, machete, axe, etc.	Very selective Low soil impact Minimal disturbance of riparian and other sensitive areas	Low production rates High cost; high labor requirement If done without herbicide application, plants may resprout quickly Safety concerns for workers - falls, cuts, exposure to poisonous plants, snakes, etc. Exposure to vapors, dust	In sensitive areas In areas with low to moderate stem density Where limited clearing is the only approved option
2. Mowing with "bush hog" mower; mowing grass/weeds with mower	High production rates Low cost	Not selective - removes non-target plants If done, without herbicide application, plants may resprout quickly Slope, topographic restrictions Some soil disturbance and compaction Creates slash High labor requirement for mowing	Nonsensitive visual/environmental areas High stem density of small, noncompatible brush Areas with restrictions on herbicide use Vegetation will not resprout rapidly Yard/grass areas at substations and other facilities
3. Blading/Scarification	Low cost Effective	High erosion potential due to soil disturbance Not selective High visual impact Creates slash	As "last resort" where cannot gain access due to density of brush (e.g., along access routes to reach danger trees) Non-sensitive visual/ environmental areas only

Table C-2. Vegetation Control Methods: Advantages and Disadvantages (Continued)

Method	Advantages	Disadvantages	Where use is most appropriate
4. Use of geotextile barriers	Low cost Effective, especially when placed during initial construction/landscaping	May not eliminate unwanted vegetation that remains beneath barrier (roots) Need to use during initial construction/landscaping Not always stable on slopes	Landscaped areas Level ground New construction
Chemical			
1. Nonselective Herbicides			
1A. Spray	No moisture needed to activate Relatively low cost	Spills harder to contain/clean Need to be mixed Higher drift hazard	For any non-selective situation – where "bare ground control" is needed; for certain noxious weeds if applied selectively
1B. Granules	No need for mixing Drift hazard low Simple application equipment	Often more expensive than liquid May need moisture to activate	Around substations, yards, wood poles; possibly spot-treatment of certain noxious weeds
1C. Bio-barriers	Combine effectiveness of geotextile barrier with herbicide Time-release control	Must install during initial construction to be cost effective	Initial substation/yard construction
2. Selective Herbicides			
2A. Stump treatment (spray or capsule injection)	Very selective Limited or no drift to non-target vegetation Capsule injection- no chemical mixing; exposure limited	Timing critical - must apply immediately after cutting to be effective Early spring treatments not as effective as later season Capsule injection may require training and is labor intensive	Initial clearing Maintenance clearing when trees are too tall for foliage spray Near areas sensitive to drift, runoff
2B. Selective basal bark treatment	Selective Limited drift to non-target vegetation No brownout if applied during dormant season	Need to use oil-base formulation for best penetration	Maintenance clearing if brush too tall for foliage spray or need more selectivity
2C. Selective (low-vol.) foliar application	Less costly than others because less labor intensive, no oil use	Higher potential for drift onto non-target vegetation and workers Not as effective during hot weather More potential for runoff "Brownout" causes visual impact	Maintenance treatment when brush is 12–15 feet high and mostly tall-growing species. Not near areas sensitive to drift or "brownout."
2D. Growth inhibitors (grass)	Less costly than mowing because less labor intensive Lengthens maintenance cycles	Potential for drift onto non-target vegetation	Maintenance treatment where it is not practical to mow, but ground cover is desired

Table C-2. Vegetation Control Methods: Advantages and Disadvantages (Continued)

Method	Advantages	Disadvantages	Where use is most appropriate
2E. Tree growth regulators	Control branch growth without need for frequent pruning/trimming Long-term maintenance cycles More aesthetic than directional pruning, hard pruning More cost effective than frequent trimming	Will require training or contracting for application May be less effective on smaller-diameter trees on certain species Requires some time before see results	In sensitive areas (especially visual sensitivity) Where directional pruning/trimming is not desirable but full removal is not permitted and cannot be negotiated with land management agency or landowner
All Herbicides:	Prevent resprouting of woody vegetation - lengthen maintenance cycles; reduce costs; promote stable low-growing cover; lower life-cycle cost	Environmental and safety concerns - drift to non-target organisms, water contamination, proper application	

C2.4.2 Cultural Methods

C2.4.2.1 ESTABLISHMENT OF STABLE, LOW-GROWING PLANT SPECIES

C2.4.2.2 PRESCRIBED FIRE

C2.4.3 Biological Control Methods

C2.4.3.1 ANIMAL GRAZING

C2.4.4 Physical/Mechanical Methods

C2.4.4.1 PHYSICAL METHODS

C2.4.4.2 MECHANICAL METHODS

C2.4.5 Chemical Control Methods

C2.5 Noxious Weed Management

C2.6 Revegetation/Reclamation

C2.7 Attachments

Attachment A: Standard FAC-003-1 — Transmission Vegetation Management Program

Attachment B: Western Area Power Administration Order 430.1A Right-of-Way Management Guidance for Vegetation, Encroachments, and Access Routes

Attachment C: Western Area Power Administration Integrated Vegetation Management Guidance Manual

C2.8 Literature Cited

Appendix D

LAND (LEGAL) DESCRIPTION OF PROPOSED ROUTE ACROSS FEDERAL LANDS

Content to be developed.