BLM

United States Department of the Interior
Bureau of Land Management
Las Cruces District Office
1800 Marquess St.
Las Cruces, NM 88005

Environmental Assessment for
Amrad to Artesia Transmission Line Access Roads Permitting
In portions of
Eddy, Chaves, and Otero counties

NEPA Number
DOI-BLM-NM-L000-2014-0034-EA

/s/ Anthony Hom, Realty Specialist	7/19/16
Signature and Title of Project Lead	Date

/s/ Jennifer Montoya, Planning & Environmental Coordinator	7/19/16
Signature and Title of Reviewer	Date

NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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LIST OF ACRONYMS

ACEC	Area of Critical Environmental Concern
AIRFA	American Indian Religious Freedom Act of 1978
APE	Area of Potential Effect
Applicant or EPE	El Paso Electric Company
BCC	Bird Species of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BLMS	Bureau of Land Management Sensitive Species
BMP	Best Management Practices
BOR	Bureau of Reclamation
CFR	Code of Federal Regulations
DOD	Department of Defense
DPS	Distinct Population Segment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPE	El Paso Electric
EPG	Environmental Planning Group, LLC
ESA	Endangered Species Act of 1973
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy Act of 1976
GNF	Gila National Forest
HMP	Habitat Management Plan
HPTP	Historic Properties Treatment Plan
KOP	Key Observation Points
kV	Kilovolt
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NEP	Non-essential Experimental Population
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NMBGMR	New Mexico Bureau of Geology and Mineral Resources
NMDGF	New Mexico Department of Game and Fish
NMMNHS	New Mexico Museum of Natural History and Science
NMSLO	New Mexico State Land Office
NMT	New Mexico Threatened
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTP	Notice-to-Proceed
OHV	Off-Highway Vehicle
OSHA	Occupational Safety and Health Administration
PFYC	Potential Fossil Yield Classification
POD	Plan of Development

Project	Arizona Interconnection Project Access Roads Permitting
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
ROW	Right-of-way
SHPO	State Historic Preservation Officer
SMA	Special Management Area
SSURGO	Soil Survey Geographic Database
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRM	Visual Resource Management
WSA	Wilderness Study Area
WEG	Wind Erodibility Group

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1 INTRODUCTION

The El Paso Electric Company (EPE) is applying for an amendment to Right-of-Way (ROW) Grant NMNM 50852 to the Bureau of Land Management (BLM) – Las Cruces District Office and Carlsbad Field Office, Bureau of Reclamation (BOR), and the Department of Defense (DOD), Fort Bliss. The amendment would allow EPE to enhance access to existing roads along a 345-kilovolt (kV) transmission line from a substation located near the Anti-missile Radar site on White Sands Missile Range (substation hereon referred to as Amrad) to Artesia, New Mexico (Project), Figure 1-1. The project will also allow for the safe operation and maintenance of the existing 345kV transmission line structures.

Under the current grant conditions, each time maintenance need arises, EPE consults with BLM, Fort Bliss, and BOR. EPE submits a request to the appropriate agency and provides a specific plan of action. The Federal agency then circulates the proposed action for review by resource specialists who identify potentially affected resources. Requests are most frequently for improvement of access conditions, including vegetation clearing and grading, to allow the necessary vehicles safe access to the right-of-way and structures to conduct requisite maintenance. Depending on the intensity of a proposed action, EPE is generally required to provide specific localized information for biological, cultural, or other sensitive resources in advance of any ground disturbing activity. The extent of access improvement or ground disturbance is based on site-specific field conditions and the type of equipment necessary to conduct a particular activity.

To evaluate each maintenance access request individually is cost and time prohibitive. EPE has short windows of opportunity to conduct this work, and the necessary environmental review process could delay needed maintenance activities. This method of review is inefficient from a time and cost perspective for both EPE and the federal agencies. Permitting permanent access routes for the Amrad to Artesia transmission line would provide agency and EPE staff the necessary planning information regarding known environmental resource constraints, and would allow EPE more timely access to conduct necessary maintenance to comply with regulatory standards and ensure the safe and reliable delivery of service. It is for these reasons that EPE is requesting this right-of-way amendment.

In addition to the right-of-way for access roads, EPE seeks the right to clear a 100-foot by 100-foot work area (to be wholly located within the 100-foot right-of-way) centered on each structure needing repair or replacement. In areas where structures are located on slopes of greater than 8 percent, work areas may need to be expanded to 150-foot by 150-foot to accommodate maintenance equipment. Table A 1, Appendix A, lists those structures which would require 150-foot by 150-foot work areas. Work areas would necessarily coincide with areas previously disturbed during original construction. Vegetation would be cleared and grading would occur, if deemed necessary based on operational constraints, to create a safe, level and stable ground surface from which to conduct facility maintenance. Clearing and leveling of work areas would be intermittent (when maintenance is conducted on a particular structure) and permitted through the duration of the right-of-way grant. Structure work areas would be stabilized and rehabilitated upon completion of a maintenance activity at a given structure.

1.1 Applicant's Objective

By permitting permanent access, EPE's objective is to minimize the time and cost, for both the company and regulatory agencies, associated with individual access requests. The permitting of permanent access routes and work locations at each structure includes full environmental analysis in advance of access needs, allowing for better avoidance and minimization of adverse impact to resources while not delaying critical maintenance activities. This project will minimize the inefficiencies associated with the process of evaluating and permitting access requests on a case-by-case basis. The proposed Project will reduce the potential for unforeseen resource impacts caused during emergency situations. EPE intends to only improve access routes and work areas as operations and maintenance activities warrant. In some cases, these may be emergency situations that do not allow for advance consultation. The proposed Project will assure EPE and the federal land management agencies that potential impacts have been analyzed and addressed in advance of both routine and emergency maintenance.

1.2 Emergency Structure Replacement

In November and December 2013, 105 transmission structures of the Amrad to Artesia 345kV transmission line were destroyed by ice storms (Figure 1-1). These structures are located in mountainous terrain along approximately 17 miles of the transmission line.

The damage resulted in shattered wooden structures, porcelain shards from broken insulators, and spans of transmission wire strewn across the ground and suspended from damaged structures. Due to the potential safety hazards posed by the damaged structures, the BLM Carlsbad Field Office conducted an expedited environmental assessment (EA) analyzing the effects of upgrading access roads and conducting removal and replacement of transmission structures along the damaged portion of the transmission line (between structures 365 and 473). Lands for this portion of transmission line and access roads are managed by the BLM or are privately-owned and located in Chaves County, New Mexico. In order to replace the damaged structures, approximately 27.5 miles of access roads were permitted and improved. Removal of the downed line was completed on August 15, 2014. Reconstruction of the 17-mile segment was completed April 15, 2015, with the line back in service by May 1, 2015.

Effects of this emergency construction were documented in the Carlsbad Field Office's National Environmental Policy Act (NEPA) document DOI-BLM-NM-P020-2014-432-EA (NM50852A) and are not included as part of this Proposed Action; however, they are included in the cumulative impact analysis.

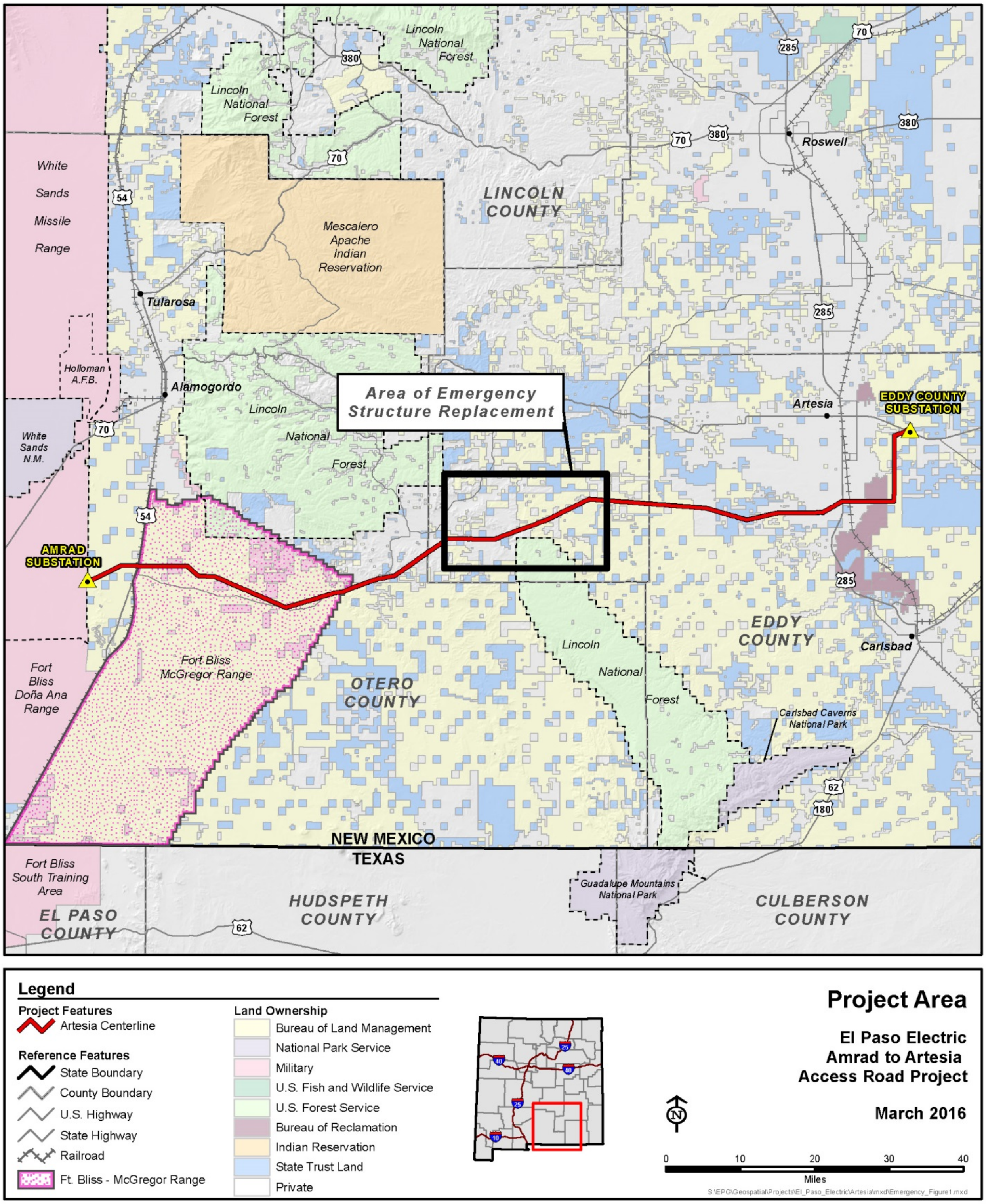

Figure 1-1. Project Area Overview

1.3 Purpose and Need

The purpose of the Proposed Action is to better and more efficiently maintain poles, electrical lines, and other structures necessary for continued, reliable transmission system operation. The BLM's purpose is to respond to the Applicant's request for an amended right-of-way grant (NMNM 50852). The need for BLM's Proposed Action arises from the Federal Land Policy and Management Act of 1976 (FLPMA), which establishes a multiple-use mandate for management of federal lands, including energy generation and transmission facilities, as outlined in Title V of the FLPMA. The BLM's action in considering the Applicant's right-of-way application is provided under the authority of the Secretary of the Interior (BLM) to "grant, issue, or renew rights-of-way…for generation, transmission, and distribution of electric energy" (43 Code of Federal Regulations [CFR] 2800).

Pursuant to 43 CFR 2801.2, it is BLM's objective to grant rights-of-way and to control their use on public lands in a manner that: (a) protects the natural resources associated with public lands and adjacent lands, whether private or administered by a government entity; (b) prevents unnecessary or undue degradation to public lands; (c) promotes the use of rights-of-way in common, considering engineering and technological compatibility, national security, and land use plans; and (d) coordinates, to the fullest extent possible, all BLM actions under the regulations, in part with state and local governments, interested individuals, and appropriate quasi-public entities. The purpose and need is used to formulate a reasonable range of alternatives to be considered in this EA.

1.4 Decisions to Be Made

The BLM would decide whether to approve an amendment of ROW grant serial number NMNM 50852 for the purpose of authorizing the construction, operation, and maintenance of the proposed permanent access roads, clearing of structure work areas, and termination of access roads ancillary to an existing electric transmission line on public land as described in the Proposed Action.

As part of the decision, the BLM would also determine whether to allow the use of work areas around 726 existing structures within the ROW. These areas would facilitate future line maintenance.

Likewise, Fort Bliss must decide whether to allow the Project through the military controlled land. Analysis in this EA will be evaluated in accordance with 32 CFR Part 651 – Environmental Analysis of Army Actions.

The BOR will determine whether to allow the Project on lands in the eastern portion of the study area in Eddy County, New Mexico. If the analysis demonstrates no significant impacts, BOR would concur with BLM's issuance of a Finding of No Significant Impact.

The proposed BLM ROW amendment would add access roads 50 feet wide by 104.7 miles long, containing approximately 40.4 acres on BLM land. Although the ROW would be 50 feet wide, the authorized ancillary road surface width would not exceed 14 feet, which is approximately the original construction width.

All existing terms (including ROW expiration date), conditions, and stipulations would remain in effect; new site-specific and general stipulations would also apply.

1.5 Plan Conformance

The proposed project crosses land managed by BLM, BOR, DOD, and New Mexico State Land Office (NMSLO), and land that is privately-owned and located in Otero, Chaves, and Eddy counties in New Mexico. The Proposed Action conforms to the 1988 Carlsbad Resource Management Plan (RMP), as amended by the 1997 Carlsbad Approved RMP; the 1986 White Sands RMP, as amended by the McGregor Range RMP Amendment; and relevant federal, state, and local statutes, regulations, and plans.

"In general, public lands are available for utility and transportation facility development; however, applicants will be encouraged to locate new facilities within the designated rights-of-way corridors." (BLM 1988)

"BLM grants utility and transportation rights-of-way (ROWs) leases, and permits to individuals, businesses, and governmental entities for the use of public land." (BLM 1986)

1.5.1 Applicable Laws and Executive Orders

Shown below is a partial list of federal laws and executive orders pertaining to Project-specific planning and environmental analysis on federal land.

- NEPA of 1969, as amended
- FLPMA of 1976 (43 CFR 2800)
- National Historic Preservation Act of 1966 (NHPA), as amended
- Environmental Effects of Army Actions (32 CFR 651)
- Multiple Use – Sustained Yield Act of 1960
- Clean Air Act of 1970, as amended
- Endangered Species Act of 1973 (ESA)
- Forest and Rangeland Renewable Resources Planning Act of 1974
- Clean Water Act of 1977
- American Indian Religious Freedom Act of 1978 (AIRFA)
- Archaeological Resource Protection Act of 1980
- Executive Order 11593 (cultural resources)
- Executive Order 12898 (environmental justice)
- Executive Order 12962 (aquatic systems and recreational fisheries)
- Executive Order 13112 (invasive species)
- Executive Order 13186 (Migratory Bird Treaty Act [MBTA])

1.6 Scoping and Issues

The Council on Environmental Quality defines scoping as "an early and open process for determining the scope of issues to be addressed," related to a Proposed Action (40 CFR 1501.7). Scoping for this EA consisted of both internal and external scoping. The internal scoping process was used to identify intra- and inter-agency issues regarding potentially affected resources. The external scoping process was used to invite public participation to help identify issues and obtain public comment at various stages of the environmental analysis process.

1.6.1 Internal Scoping

An initial NEPA meeting was held in January 2014, and included agency staff from the BLM Las Cruces District Office and Carlsbad Field Office, DOD representatives from Fort Bliss and White Sands Missile Range, U.S. Fish and Wildlife Service (USFWS) Carlsbad Office, EPE, and third-party contractors tasked with the preparation of the EA. A separate NEPA meeting was held in February 2014 at Fort Bliss and included representatives from the same agencies. This meeting further clarified the Project description as it specifically related to McGregor Range.

1.6.2 External Scoping

A 30-day scoping period was initiated on June 7, 2014, and ended on July 7, 2014. Mailing lists of landowners within the study area were compiled from contact lists provided by the BLM Las Cruces District Office. A scoping packet, which included the scoping letter, map of the proposed Project, and a self-addressed postage-paid comment form, was direct mailed to private land owners, local and county governments, and New Mexico State agencies that included the NMSLO and New Mexico Department of Game and Fish (NMDGF). Additionally, paid display advertisements were placed in local newspapers throughout the Project study area a minimum of 15 days prior to the scoping period.

1.6.3 Resource Issues Identified

Comments from scoping were evaluated to identify potential issues. During the external scoping process and over the course of the Project, eight comment letters and voicemails were received. Comments included requests to interconnect with the transmission line or use the poles for attaching fiber optic cable, requests for clarification on construction methods and the NEPA process, and acknowledgement of scoping letter receipt.

A scoping summary of public comments and the disposition of raised issues were prepared and are included in the Project record.

1.7 Tribal Consultation

This Project is an undertaking subject to review under Section 106 of the NHPA and its implementing regulations (36 CFR Part 800). In accordance with 36 CFR § 800.2(a)(2), BLM serves as the lead agency for the purposes of Section 106 review. Tribes will be invited to comment on the Proposed Action in accordance with Section 106 of the NHPA, NEPA, and AIRFA to ensure that any concerns about the proposed Project are fully considered.

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2 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

EPE proposes to amend its current right-of-way authorization so that the Amrad to Artesia transmission line can be managed more effectively and efficiently.

1. EPE proposes to improve existing access conditions to allow permanent access to Project facilities to accommodate transmission line maintenance vehicles and equipment.

2. EPE proposes to clear previously disturbed work areas around each existing transmission structure when required to facilitate structure maintenance or replacement.

3. EPE also proposes to add access routes outside of the current ROW to its authorization.

2.1.1 Permanent Access to Project Facilities

EPE proposes to use the original construction roads, to the greatest extent practicable, as the footprint for permanent access routes to maintain existing infrastructure along the Project's 345kV transmission line. The original construction roads exist throughout the Project area in various conditions of accessibility, and can generally be categorized as either visually evident improved roads, typical primitive or 2-track roads, or not evident roads. The location of the proposed permanent access routes are: (1) within the 100-foot transmission line right-of-way already encumbered by the transmission line, or (2) outside of the right-of-way, using routes previously identified and used to access the original construction work areas. Access routes would require a travel way sufficient to allow for safe vehicular access for line trucks, cranes, pick-up trucks, bulldozers, backhoes, and all-terrain vehicles. EPE would be allowed to maintain clear access routes to support the routine patrol and maintenance of the transmission line facilities.

Approximately 182 miles of project-specific access roads would be used for transmission line operation and maintenance activities. Approximately 109 miles of the 182 miles of project-specific access roads are located within the existing transmission corridor ROW. The remaining 73 miles of proposed access outside of the transmission ROW are roads previously identified and constructed as access for the original transmission line construction, which EPE currently uses and has been using for patrol and maintenance of the line since it was constructed. However, EPE does not have a permanent ROW for these roads.

Table 2-1 illustrates the jurisdictional breakdown and approximate mileage of all project-specific access roads, Table 2-2 includes the approximate mileage of only those access roads that are within the existing 100-foot transmission line right-of-way, and Table 2-3 includes the approximate mileage of those access roads that are outside of the transmission line right-of-way.

Table 2-1. Land Ownership/Jurisdiction by County – Total Miles of Project Access Roads						
County	**BLM***	**DOD**	**NMSLO**	**BOR**	**Private**	**Total**
Otero	53.1	3.9	1.3	0	11.6	69.9
Chaves	23.3	0	1.3	0	19.2	43.8
Eddy	28.3	0	12.1	5.3	22.6	68.3
Total	104.7	3.9	14.7	5.3	53.4	182
***** 345kV transmission line was originally permitted under right-of-way number NM50852						

Table 2-2. Land Ownership/Jurisdiction by County – Miles of Project Access Roads within Existing Transmission Line Right-of-Way						
County	**BLM**	**DOD**	**NMSLO**	**BOR**	**Private**	**Total**
Otero	33.8	2.7	0.8	0	3.8	41.1
Chaves	12*	0	1	0	11.3	24.3
Eddy	18.5	0	6.4	2.6	15.8	43.3
Total	64.3	2.7	8.2	2.6	30.9	108.7
***** Approximately 6 miles of BLM right-of-way was granted to EPE on June 6, 2014, for emergency structure replacement (NM50852A)						

Table 2-3. Land Ownership/Jurisdiction by County – Miles of Project Access Roads Outside of Existing Transmission Line Right-of-Way						
County	**BLM****	**DOD****	**NMSLO**	**BOR****	**Private**	**Total**
Otero	19.3	1.2	0	0.5	7.8	28.8
Chaves	11.3*	0	0.3	0	8	19.6
Eddy	9.8	0	5.7	2.7	6.8	25
Total	40.4	1.2	6	3.2	22.6	73.4
***** Approximately 8.6 miles of BLM right-of-way was granted to EPE on June 6, 2014, for emergency structure replacement (NM50852A) **EPE is requesting to include these roads into its ROW.						

EPE currently holds rights to the majority of state and private lands for use in maintaining and repairing their transmission facilities. EPE is requesting an amended right-of-way grant to include those portions of the project access roads located outside of the existing 100-foot-wide Amrad to Artesia transmission line right-of-way on federal land. This request includes a width of 50 feet (25 feet on either side of the road centerline). Any additional state or private lands necessary would be obtained as a right-of-way grant, easement, or fee purchase.

Maintenance of the transmission line and structures for which the roads are needed would be performed as the conditions require, but would typically occur in the spring and fall. The access roads' origination and destination points start at the tie-in point at the Eddy County Substation near Artesia, New Mexico, and terminate at the Amrad Substation tie-in point approximately 12 miles northwest of Orogrande, New Mexico. Approximately 144 miles of existing project access roads will need improvement in order to access structure locations (Figure 2-1, Figure 2-2,

Figure 2-3). The approximate mileage and jurisdictional breakdown of those roads needing improvement are illustrated in Table 2-4.

Table 2-4. Land Ownership/Jurisdiction by County – Miles Crossed by Project Access Roads Requiring Improvement

County	BLM	DOD	NMSLO	BOR	Private	Total
Otero	53.1	3.9	1.3	0	11.6	68.9
Chaves	8.2*	0	1.3	0	6.3*	15.8*
Eddy	25.7	0	10.2	4.2	19.1	59.2
Total	86	3.9	12.8	4.2	37	143.9

* This mileage does not include approximately 27.5 miles of total access roads (14.6 miles on BLM and 12.9 miles on private land) previously granted and improved for emergency structure replacement (NM50852A)

2.1.2 Work Areas at Transmission Structures

As part of routine line maintenance and the Proposed Action, EPE seeks the right to clear a 100-foot by 100-foot work area approximately centered at each structure, contained entirely within the transmission corridor right-of-way. In areas where structures are located on slopes of greater than 8 percent, work areas may need to be expanded to 150-foot by 150-foot to accommodate maintenance equipment (Table A 1, Appendix A). Work areas would necessarily coincide with areas previously disturbed during original construction. Vegetation would be cleared and grading would occur, if deemed necessary based on operational constraints, to create a safe, level, and stable ground surface from which to conduct facility maintenance. Clearing and leveling of work areas would be intermittent (when maintenance is conducted on a particular structure) and permitted through the duration of the right-of-way grant. Structure work areas would be stabilized upon completion of a maintenance activity at a given structure using practices which may include installation of staked wattles on contour at an interval sufficient to prevent erosion and promote revegetation. Slopes would be re-contoured to near original conditions or a maximum of 1:1 cut slopes, as prescribed in *The Gold Book* (DOI and USDA 2007). Topsoil shall be stockpiled during excavation and reused as cover on disturbed areas to facilitate regrowth of vegetation. Reseeding may also be used as a stabilization measure, as prescribed in the Plan of Development (POD).

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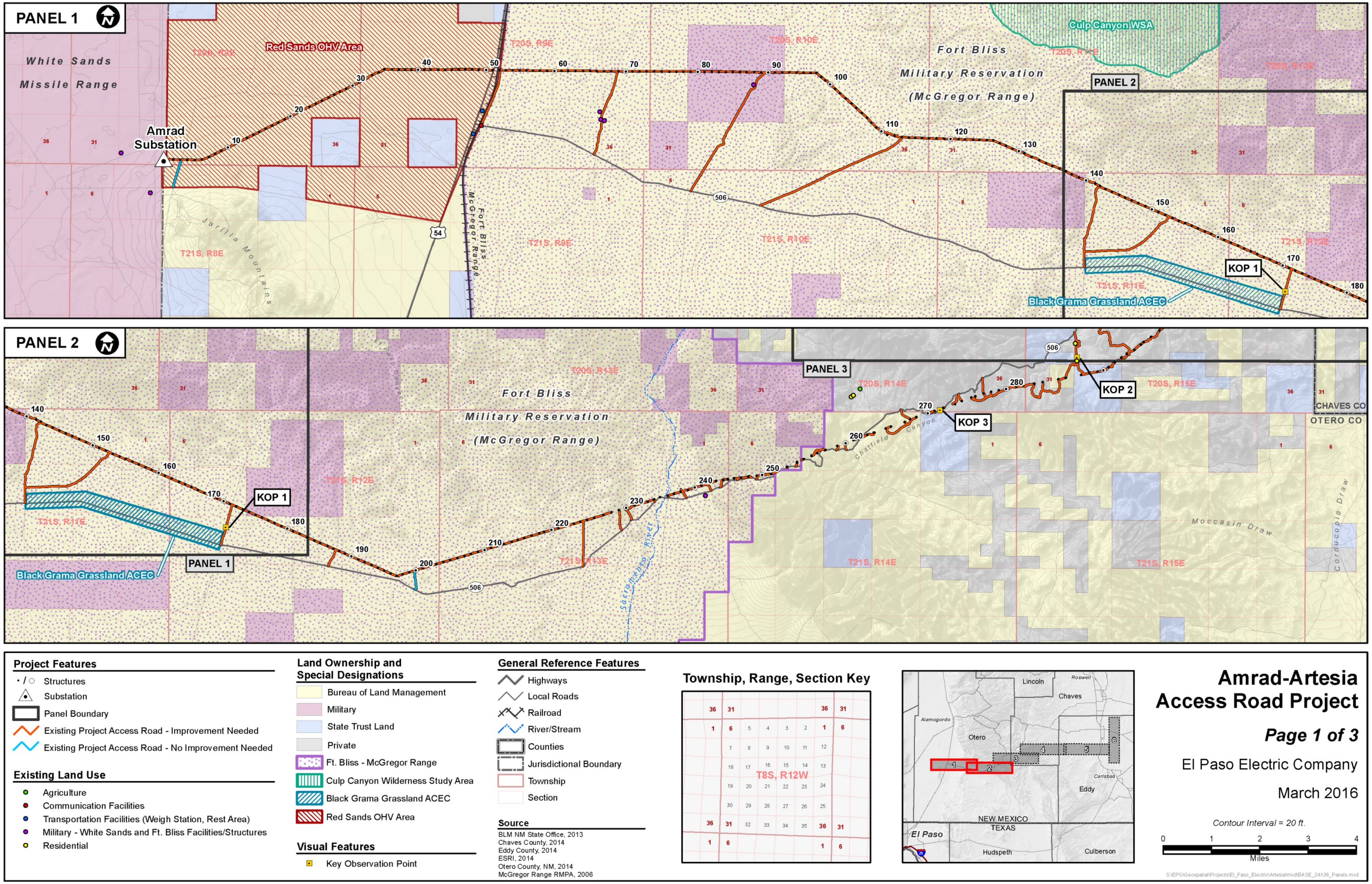

Figure 2-1. Existing Project Features and Proposed Improvements

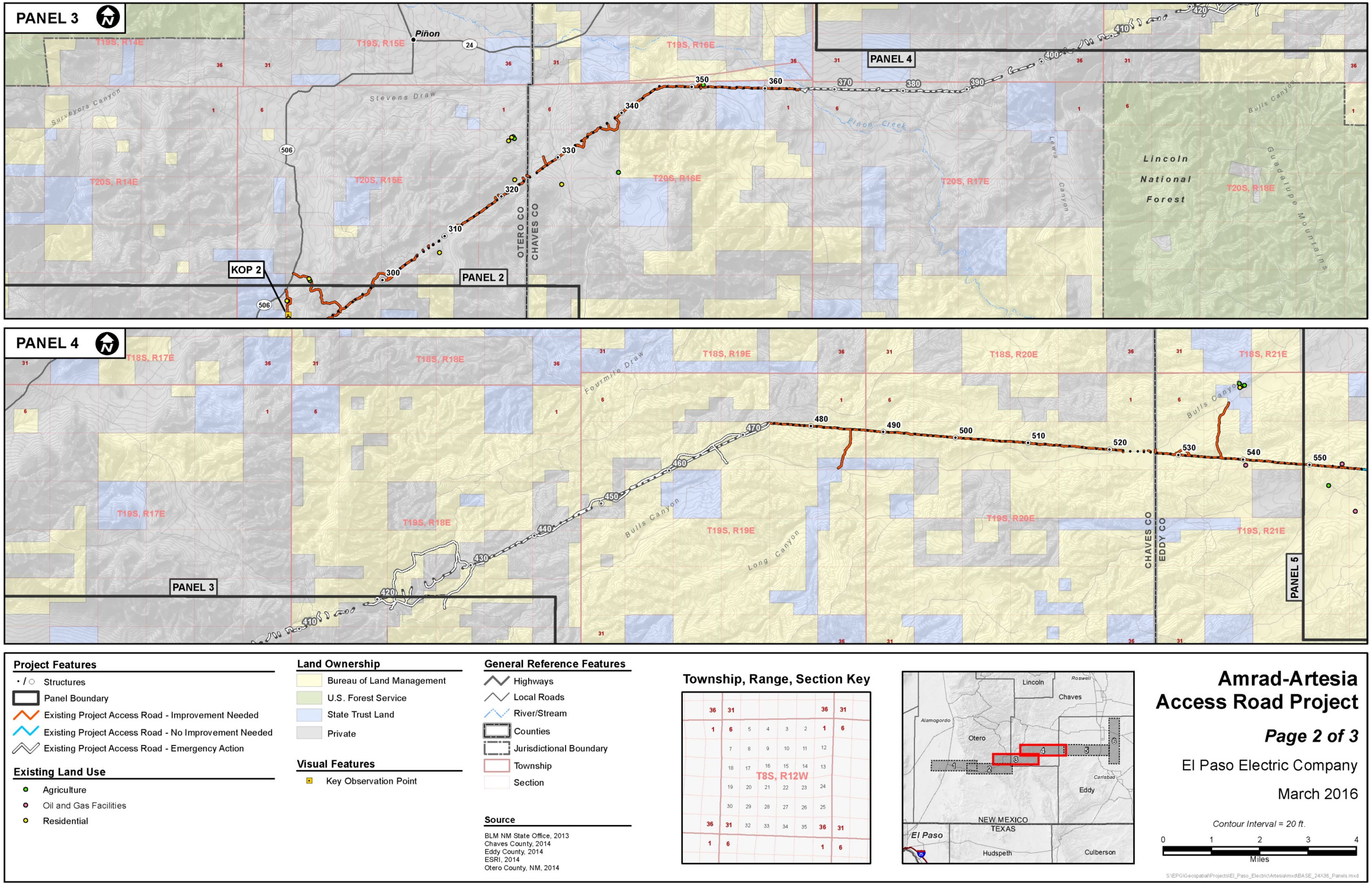

Figure 2-2. Existing Project Features and Proposed Improvements

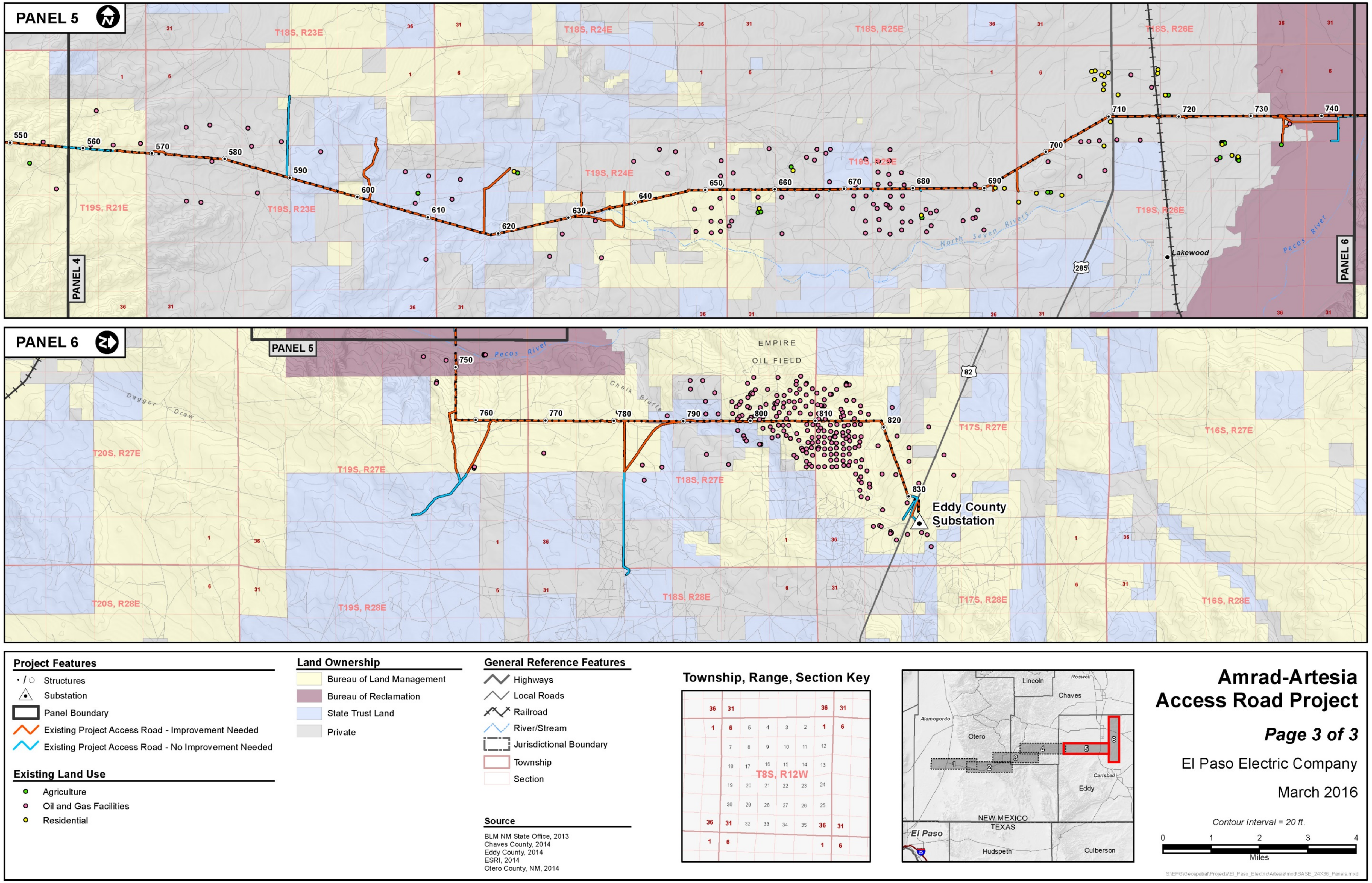

Figure 2-3. Existing Project Features and Proposed Improvements

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2.2 Expected Operations and Maintenance Activities on Project Facilities

EPE conducts standard maintenance, operation, and emergency activities on its transmission lines. Standard maintenance and operations activities will consist of the following:

- Routine patrols in the spring and fall
- Pole replacement
- Structure and equipment repairs
- Testing of facilities for proper function and structural integrity
- Hardware and conductor replacement
- Vegetation removal for access and vertical clearance (ground level and branch trimming at varying heights)

Emergency activities typically involve repair and replacement of equipment damaged by weather, vandalism, or fire.

2.3 Emergency Structure Replacement

In November and December 2013, 105 transmission structures of the Amrad to Artesia 345kV transmission line were destroyed by ice storms (Figure 1-1). These structures are located in mountainous terrain along approximately 17 miles of the transmission line.

The damage resulted in shattered wooden structures, porcelain shards from broken insulators, and spans of transmission wire strewn across the ground and suspended from damaged structures. Due to the potential safety hazards posed by the damaged structures, the BLM Carlsbad Field Office conducted an expedited EA analyzing the effects of upgrading access roads and conducting removal and replacement of transmission structures along the damaged portion of the transmission line (between structures 365 and 473). Lands for this portion of transmission line and access roads are managed by the BLM or are privately-owned and located in Chaves County, New Mexico. In order to replace the damaged structures, approximately 27.5 miles of access roads were permitted and improved. Removal of the downed line was completed on August 15, 2014. Reconstruction of the 17-mile segment was completed April 15, 2015, with the line back in service by May 1, 2015.

Effects of this emergency construction were documented in the Carlsbad Field Office's NEPA document DOI-BLM-NM-P020-2014-432-EA (NM50852A) and are not included as part of this Proposed Action; however, they are included in the cumulative impact analysis.

2.4 Access Road Design Features

EPE seeks to improve (i.e., clear vegetation, remove obstacles, smooth, blade, level, berm, install drainage, etc.) existing and former Amrad to Artesia construction access roads, and work areas to allow EPE's vehicles access to Amrad to Artesia transmission facilities for maintenance and operational activities.

EPE would clear or improve roads "to a standard no higher than necessary to accommodate the intended use," as prescribed in *The Gold Book* (DOI and USDA 2007). Project needs can be served by "resource" (BLM classification) road standards, and in cases where short spur roads dead-end at structure locations, primitive or non-constructed roads satisfy the permanent access requirements. Maintaining the minimum standard roads minimizes environmental impacts and discourages unnecessary access to critical infrastructure.

Access improvements would typically be made using a D-6 or D-8 bulldozer and backhoe, and would be conducted where terrain or vegetation restricts operational vehicle access. Disposal of any vegetation removed would be as recommended by BLM and/or landowner and may be placed downslope of installed water bars or other drainage features to dissipate water flow and reduce erosion potential. Road travel surfaces would be no more than 14 feet wide (the original construction width of Amrad access roads). Drainage ditches on both sides of the travel surface may be constructed where terrain and drainage conditions along existing road paths necessitate. Water bars would be installed in those areas where it is deemed necessary to protect the road from erosion and divert runoff water in a natural manner. Culverts, bridges, or retaining walls are not anticipated and surfacing of access roads is not proposed as part of the Project. Because the Project includes existing or previously used access routes, the need for sand and gravel supplies from public land or other sources is not anticipated.

In steep terrain, where access roads parallel a contour, total disturbance may exceed 18 feet due to cut-and-fill requirements (Figure 2-4). In these areas, cut slopes would not exceed ratios prescribed in *The Gold Book* (DOI and USDA 2007). However, many of the original construction roads are perpendicular to the side slopes in steeper terrain. In order to minimize new disturbance and road footprint, EPE proposes to maintain the existing pathway and 14-foot maximum width of these roads, thereby reducing the need for cut and fill and new ground disturbance. Water bars would be installed on these spur roads at intervals dependent on the slope of the road segment and site-specific conditions including substrate and existing drainage features.

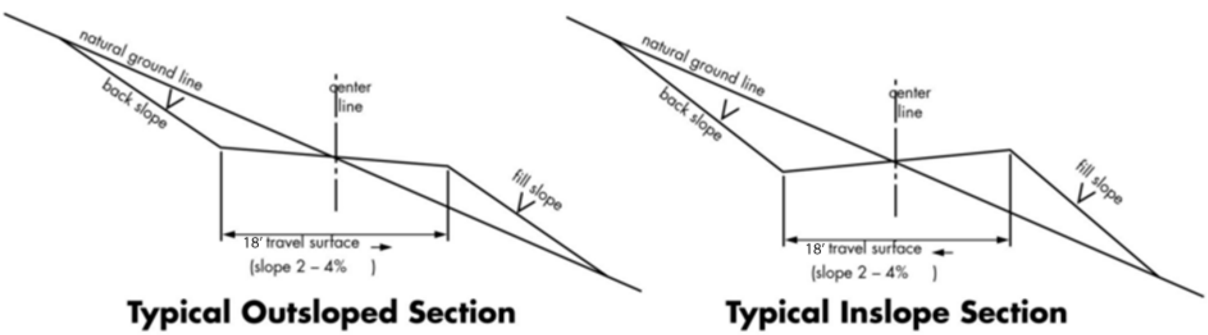

Figure 2-4. Typical Roadway Cut and Fill Conditions

2.5 Work Area Design Features

Maintenance activities, which include structure replacement, would require a 100-foot by 100-foot cleared area around the base of each structure to safely operate equipment, specifically cranes and boom trucks. In areas where structures are located on slopes of greater than 8 percent, work areas may need to be expanded to 150-foot by 150-foot (Table A 1, Appendix A). The length of the structure cross-arm is 56 feet from insulator to insulator. The proposed clearing allows a 22-foot buffer beyond the length of the cross-arm to work the line. Cranes and boom trucks must be at an angle to properly operate and safely access the structures and appurtenant hardware. Manufacturers' specifications for cranes, boom trucks, and bucket trucks require the vehicles to be situated on level, stable surfaces to avoid tipping or other operating hazards. Furthermore, EPE line crews typically perform maintenance while the line is energized, when access angle to the line from outside the width of the cross-arm or conductor span is especially critical.

The extent of vegetation clearing and grading within each work area would be dependent upon the type of maintenance being conducted. In the case of full or partial structure replacement, the entire work area would likely be cleared of all above ground vegetation material; EPE will only remove necessary vegetation and will attempt to use a clearing method that will leave the root crown intact when practical. In the case of less intensive maintenance needs, such as hardware replacement, only one side of a structure may need to be accessed. In these instances, a work area would only be cleared on the needed side of the structure, reducing the impacted area. In areas of steeper terrain, sloped surfaces may be leveled using cut and fill to allow the safe operation of equipment. Cut slopes would not exceed ratios prescribed in *The Gold Book* (DOI and USDA 2007). Though these structure work areas would be considered for permanent use, structure work area improvements would occur only during maintenance activities. Structure work areas would be stabilized and Best Management Practices (BMPs) would be implemented as directed by the authorized officer to minimize erosion and reduce the spread of noxious weeds. BMPs are listed in Appendix A and include installation of staked wattles on contour at an interval sufficient to prevent erosion and promote revegetation.

Existing structures are H-frame wooden structures. Structure replacement would include removing existing wooden poles and associated hardware, and replacing them with self-weathering Corten steel poles (where feasible), or a wood structure when only one pole requires replacement. Self-weathering steel poles are similar in color and appearance to the existing wood poles. Storm anchor removal would consist of cutting the anchor rod at approximately one foot below ground level, refilling the hole, and disposing of the above-ground anchor rod and associated guy wire at an offsite location.

Beyond the base of the structures, North American Electric Reliability Corporation standards require minimum vegetation clearance along the overhead conductor. To meet these standards, EPE reviews vegetation encroachment into the line and selectively harvests trees where clearance violations exist or are imminent. EPE would continue this practice of tree removal to maintain clearance standards along the width of the transmission line right-of-way. EPE will contact and coordinate with government agencies to clear any violations found outside the width of the right-of-way. Removal activities will be conducted via access roads approved as part of the Project. Stumps will be left in place with no root crown disturbance and felled trees will be disposed of or left in place.

2.6 Staffing and Safety

Existing paved and unpaved highways and roads would be used for the initial transportation of materials and equipment to locations where they would be needed along the access roads and transmission line right-of-way.

Access road improvements and clearing of work areas around structures will be scheduled for those structures that require replacement or repair and will begin as soon as practicable upon issuance of the Notice to Proceed (NTP).

The typical number of workers and type of equipment expected to be used to clear the proposed access roads and replace structures are provided in Table 2-5.

Table 2-5. Personnel and Equipment for Typical Maintenance Activity

Activity	Number of People	Quantity and Type of Equipment	
Survey Crew	2 to 4	2	Pickup trucks
Road and Structure Work Area Improvements	4 to 6	1	Bulldozer (D-6 or D-8 Cat, or equivalent)
		1	Backhoe
		2	Pickup trucks
Transmission Line/Structure Maintenance*	8 to 10	1	Crane
		1	Boom truck
		2	Pickup trucks
		2	Bucket trucks
Routine Line Inspection	4	4	ATV
		2	Pickup trucks
		2	Trailers
Structure Replacement/Changeout (de-energized)*	6	1	Crane
		1	Boom truck
		2	Bucket trucks
		1	Backhoe
		1	Digger truck
Structure Replacement/Changeout (Energized)*	8	2	Crane
		1	Boom truck
		2	Bucket trucks
		1	Backhoe
		1	Digger truck
*Multiple crews may be working simultaneously at different locations along the Project.			

2.6.1 Safety Requirements

All construction, operation, and maintenance activities will comply with Occupational Safety and Health Administration (OSHA) regulations. Health and safety practices will be as mandated in EPE's Safety Manual, including compliance with OSHA Standard 1910.269 pertaining to electric transmission and distribution as described in EPE's Special Instructions for Transmission Distribution Meter Test Section and Substation Departments (EPE 2012). Notification procedures for emergencies would be as described in EPE's Environmental Health and Safety Incident Management Plan (EPE 2013).

2.6.2 Industrial Wastes and Toxic Substances

Structure work areas and access roads would be kept in an orderly condition throughout the Project. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, would be removed and transported to a disposal facility authorized to accept such materials. In remote areas, trash and refuse could be contained temporarily until such time as it could be hauled to an approved site. No open burning of construction trash would occur. Contaminants such as oils, hydraulic fluids, antifreeze, and fuels would not be dumped on the ground.

No hazardous material would be produced, transplanted, or stored on or within the right-of-way. Petroleum products, such as gasoline, diesel fuel, and lubricants, would be present onsite during access road improvements, establishment of work areas, and facility maintenance. These products would be used to fuel and lubricate vehicles and equipment, but would be contained within fuel trucks or in approved containers. Vehicle fueling and maintenance activities would not occur in any environmentally sensitive areas. When not in use, such materials would be stored properly to prevent drainage or accidents.

Construction and maintenance activities would comply with applicable federal, state, and local regulations regarding the use of hazardous substances. Spills, should they occur, would be immediately addressed in accordance with EPE's Emergency Spill Response Procedures (EPE 2013).

2.7 Right-of-Way Considerations

Once an NTP has been issued by BLM, BOR, and DOD, EPE would improve access roads needed to replace identified structures of concern. Preconstruction actions (if any) would be identified by the BLM prior to the issuance of an NTP. Mitigation measures and BMPs would be carried out by EPE as prescribed in the POD.

Access and work area improvements would occur throughout the duration of the right-of-way grant. Restrictions and BMPs would be followed during road improvements and continued access for facility maintenance. Routine inspections and maintenance activities would generally occur in spring and fall, outside of peak load periods, while emergency maintenance and access would occur at any time, in response to unpredictable events such as weather, fire, or vandalism. Access and work area improvements would occur throughout the duration of the right-of-way grants. Restrictions and mitigation measures would be followed during road improvements and continued access for facility maintenance.

2.8 Termination and Restoration

The access road rights-of-way amendment would be granted for the remainder of the existing authorization, which is until April 13, 2023. Prior to expiration, EPE has the option to file for renewal of the existing authorized right-of-way.

One year prior to termination of the right-of-way, the holder shall contact the appointed BLM Authorized Officer to arrange a joint inspection of the right-of-way. This inspection will be held in order to agree to an acceptable termination and rehabilitation plan. The BLM Authorized Officer must approve the plan in writing prior to commencement of any termination activities.

Restoration and termination procedures will attempt to restore and reclaim the landscape as near to original conditions as possible. The termination and restoration plan will be reviewed and approved by the BLM Authorized Officer and will include the following information:

- which access roads are to be removed, restored, and/or rehabilitated
- how disturbed areas will be restored where access roads are removed
- the time of year access roads will be removed, restored, and/or rehabilitated
- stabilization and reclamation techniques to be used during restoration

2.9 No Action Alternative

Under the No Action alternative, the right-of-way application would not be approved. Maintenance activities on the existing 345kV transmission line would continue to be done under the existing conditions, requiring specific and individual access requests when issues arise. The No Action alternative would affect EPE's ability to reliably provide electrical service to the west Texas and south central New Mexico regions and economy. While the No Action alternative would not change existing conditions or result in any additional environmental impacts, it would not meet the purpose and need, and may result in unforeseen environmental impacts due to the nature of emergency access to the right-of-way.

3 AFFECTED ENVIRONMENT

Chapter 3 describes the environment and resources that have the potential to be affected by the Proposed Action and alternatives, as well as the current condition of each resource and the relevant characteristics that may be subject to impacts from the Project. Environmental resource baseline information is presented to allow the comparison of potential impacts that could result from the Proposed Action and the No Action alternative.

Table 3-1 summarizes the resources reviewed for this project. Resources not present within the project study area, as well as those present and not affected, are not discussed in detail. Those resources that are present and potentially affected are discussed in further detail below.

Table 3-1. Project Resource Review

Resources Considered	Not Present	Present and Not Affected	Present and Potentially Affected
Air Quality*			✓
Areas of Critical Environmental Concern*		✓	
Caves and Karst			✓
Climate Change		✓	
Cultural and Historic*			✓
Environmental Justice*/Socioeconomics		✓	
Fire and Fuels			✓
Floodplains*			✓
Forests and Woodlands			✓
Geology and Minerals	✓		
Invasive and Non-native Species*			✓
Inventoried Roadless Area	✓		
Lands and Realty			✓
Livestock Grazing			✓
Migratory Birds*			✓
Native American Religious Concerns*			✓

Table 3-1. Project Resource Review			
Resources Considered	**Not Present**	**Present and Not Affected**	**Present and Potentially Affected**
Paleontology			✓
Recreation			✓
Prime or Unique Farmland*	✓		
Soils/Watershed			✓
Threatened and Endangered Species*			✓
Vegetation			✓
Visual Resources			✓
Wastes, Hazardous or Solid*			✓
Water Resources			✓
Wetland or Riparian Zones*			✓
Wild and Scenic Rivers*	✓		
Wilderness*	✓		
Wildlife			✓
*Consideration required by law or executive order.			

Unless otherwise noted in the resource sections below, the study area includes resources within a 2-mile-wide study corridor of proposed Project components. The affected study area includes lands administered by BLM, BOR, DOD, NMSLO, and privately-owned land.

3.1 Geology

Geologic hazards include earthquakes, Quaternary faults, and subsidence. The study area for geologic hazards includes a 1-mile buffer around the Project area. Most earthquakes in New Mexico are in close proximity to, and associated with, the Rio Grande rift (Connell 2004, Mack 2004). Only one earthquake has been reported from the Project area (U.S. Geological Survey [USGS], Pursley et al. 2013, Sanford et al. 2002, and Sanford et al. 2006). The epicenter for this earthquake was north of structure 564 and measured 3.6 on the Richter scale at a depth of 5 kilometers.

Quaternary faults are the most recent and are still considered to be active. There are five Quaternary faults within the Project study area (USGS Quaternary database, 2014). These faults are located near structures 788, 414, 396, 102, and 98.

Subsidence is a gradual setting or sudden sinking of the Earth's surface owing to subsurface movement of earth materials. The principal causes are aquifer-system compaction, drainage of organic soils, underground mining, hydrocompaction, natural compaction, sinkholes, and thawing permafrost (National Research Council 1991, Galloway et al. 1999). There are no GIS data for subsidence in New Mexico.

3.1.1 Mineral Resources

An inventory of federal mineral resources was reviewed for the Project area to identify locatable, leasable, and salable mineral resources present in the Project area. Locatable resources are typically metallic mineral deposits, such as copper and gold. Leasable resources include energy resources, such as geothermal, petroleum, natural gas, and coal. Salable resources include sand and gravel. Information for the inventory was obtained primarily from the LR2000 database maintained online by the BLM and U.S. Forest Service, the Mineral Resources Data System maintained by the USGS, State of New Mexico Mining and Minerals Division, and the New Mexico Bureau of Geology and Minerals. Additional information was obtained by surveying aerial photos of the Project area.

After reviewing the above sources and databases, four mines were found within the study area. Three of these are surface sand and gravel pits. Two of these mines are located close to Artesia, a third mine is located near structure 530, and a fourth is located south of structures 139 and 140.

Leasable resources include fluid resources, such as oil and gas deposits, as well as geothermal resources. There are numerous oil and gas leases, with numerous oil and gas pads, on federal, state, and private lands within one mile of the center line and access roads. The majority of these are located in the eastern portion of the Project area. These leases lie within the Permian basin, which in New Mexico includes Lea, Eddy, Chaves, and Roosevelt counties.

3.1.2 Soil Resources

This section describes soil conditions within the Amrad to Artesia Project area. Soil data were obtained from the United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO), and the National Cooperative Soil Survey. Soil data were also derived from the following soil surveys: Eddy, Chaves, and Otero counties (NRCS Online Soil Survey Manuscripts).

Soil map units were assessed for their susceptibility to both water and wind erosion and for designated Prime or Unique Farmlands. Susceptibility to water erosion was assessed based on the K_w values assigned to the soil units by the NRCS. Generally, soils that have been assigned higher K_w values are more susceptible to water erosion. K_w values less than 0.20 correspond to a low susceptibility, K_w values greater than or equal to 0.20 but less than 0.40 correspond to a moderate susceptibility, and K_w values greater than or equal to 0.40 correspond to a high susceptibility. Susceptibility to wind erosion was assessed based on Wind Erodibility Groups (WEG) to which the individual soil units have been assigned. Soils that are largely pure sand or silt with little to no binding agents, such as clay or organic material, are most susceptible to wind erosion, whereas rock outcrops or areas covered in a rock armature, or desert pavement, are not as susceptible to wind erosion. Soils with a WEG of 1 or 2 have a high susceptibility; WEG of 3, 4, or 4L have a moderate susceptibility; WEG 5, 6, or 7 have a slight susceptibility; and WEG 8 are not susceptible. Soils may be designated by the NRCS as capable of supporting Prime or Unique farmlands under a variety of conditions based on a number of characteristics. No soils in the Project area are classified as Prime or Unique farmlands.

A total of 106 soil map units are present within the Amrad to Artesia Project and are included in Appendix A. Soils with high wind and/or water erosion are presented in Table 3-2.

Table 3-2. Soils Crossed by the Project with High Wind or Water Erosion

Soil Type	WEG	K_w
Arno-Harkey complex, saline, 0 to 1 percent slopes	4L	0.55
Cottonwood-Reeves loams, overflow, 0 to 3 percent slopes	4L	0.55
Dev-Pima complex, 0 to 3 percent slopes	4L	0.49
Largo loam, 1 to 5 percent slopes	4L	0.55
Largo silt loam, overflow, 0 to 1 percent slopes	4L	0.55
Largo-Stony Land complex, 0 to 25 percent slopes	4L	0.55
Pima silt loam, 0 to 1 percent slopes	4L	0.49
Reagan loam, 0 to 1 percent slopes	7	0.49
Philder-Armesa association, undulating	3	0.55
Pintura-Dona Ana, o to 5 percent slopes	2	0.2
Pintura-Tome-Dona Ana complex, 0 to 5 percent slopes	4L	0.55
Reakor-Tome-Tencee association, gently sloping	4L	0.55
Tome Silt loam, 0 to 5 percent slopes	4L	0.55
Ancho-Penasco association	4L	0.43
Bigetty-Pecos association	4L	0.43
Cuevoland-Ancho association	4L	0.43
Gabaldon-Dev association	4L	0.43
Penasco-Ancho association	4L	0.43
Penasco-Gabaldon association	4L	0.43
Reakor-Tencee Association	4L	0.43
Reyab silt loam, 0 to 1 percent slopes	4L	0.64
Crossen-Tinney complex, 0 to 1 percent slopes	4L	0.43
Tinney loam, 1 to 3 percent slopes	4L	0.43
Reyab silt loam, 1 to 3 percent slopes	4L	0.64

Table 3-2. Soils Crossed by the Project with High Wind or Water Erosion		
Copia-Patriot complex, 2 to 5 percent slopes	1	0.28
Reyab loam, 1 to 5 percent slopes	4L	0.64
Malargo silt loam, 1 to 3 percent slopes	4L	0.64
Bissett-Rock outcrop,35-65 percent slopes	6	0.43
Salado loam, 1 to 3 percent slopes	4L	0.55
Pendero fine sand, 2 to 5 percent slopes	1	0.15
Armesa-Salado complex, 1 to 3 percent slopes	3	0.49
Oryx loam, 1 to 5 percent slopes	4L	0.64
Oryx-Reyab complex, 1 to 3 percent slopes	4L	0.64
Double silt loam, 2 to 5 percent slopes	4L	0.64
Copia loamy fine sand, 5 to 15 percent slopes	2	0.05
Stealth loamy fine sand, 2 to 5 percent slopes	2	0.37
Aguena fine sand, 5 to 15 percent slopes	1	0.37
Aguena fine sand, 15 to 35 percent slopes	1	0.05
Cale silt loam, 2 to 5 percent slopes	4L	0.64

3.1.3 Caves and Karst

The proposed project is located in gypsum karst terrain, a landform that is characterized by underground drainage through solutionally enlarged conduits. Gypsum karst terrain may contain sinkholes, sinking streams, caves, and springs. Sinkholes leading to underground drainages and voids are common. These karst features, as well as occasional fissures and discontinuities in the bedrock, provide the primary sources for rapid recharge of the groundwater aquifers of the region.

BLM categorizes all areas within the Carlsbad Field Office as having either low, medium, high, or critical cave potential based on geology, occurrence of known caves, density of karst features, and potential impacts to fresh water aquifers. The project occurs within Medium and High karst zones. The portions of the project located in townships 18 and 19 south, range 27 east, New Mexico Principal Meridian, New Mexico, contains numerous known karst features, some of which are within 50 feet of the proposed project. Specific locations are at pole numbers 767 and 778, and between pole numbers 769 and 770, 773 and 774, and776 and 777. Other caves or karst features may also exist.

A High karst zone is defined as an area in known soluble rock types and contains a high frequency of significant caves and karst features such as sinkholes, bedrock fractures that provide rapid recharge of karst aquifers, and springs that provide riparian habitat. A Medium karst zone is in known soluble rock types but may have a shallow insoluble overburden. These areas may contain isolated karst features such as caves and sinkholes. Groundwater recharge may not be wholly dependent on karst features, but the karst features still provide the most rapid aquifer recharge in response to surface runoff.

Sinkholes and cave entrances collect water and can accumulate rich organic materials and soils. This, in conjunction with the stable microclimate near cave entrances, supports a greater diversity and density of plant life, which provides habitat for a greater diversity and density of wildlife such as raptors, rodents, mammals, and reptiles.

The interior of the caves support a large variety of troglobitic, or cave environment-dependent species. The troglobitic species have adapted specifically to the cave environment due to constant temperatures, constant high humidity, and total darkness. Some of the caves in the area may contain bat colonies.

Due to these factors, this action is subject to mitigation measures designed to adequately protect known and potential cave/karst resources.

3.1.4 Paleontological Resources

Paleontological potential levels were assigned to each geological unit using the Potential Fossil Yield Classification (PFYC) system that was adopted by BLM in October 2007 for assessing paleontological potential on federal land. The PFYC system is a five-tiered system that BLM uses to classify geological units based on the relative abundance of vertebrate fossils or scientifically significant invertebrate and plant fossils and their potential to be adversely impacted, with a higher class number indicating a higher potential. This classification system is applied to the geological formation, member, or other distinguishable map unit, preferably at the most detailed mappable level. This approach was followed in recognition of the direct relationship that exists between paleontological resources and the geological units within which fossils are entombed. The PFYC classifications along the proposed Project are shown in Figure 3-1.

- PFYC 5 – Very High Potential, monitoring required
- PFYC 4 – High Potential, monitoring required
- PFYC 3 – Moderate or Unknown Potential, monitoring may be required
- PFYC 2 – Low Potential, no monitoring required
- PFYC 1 – Very Low Potential, no monitoring required

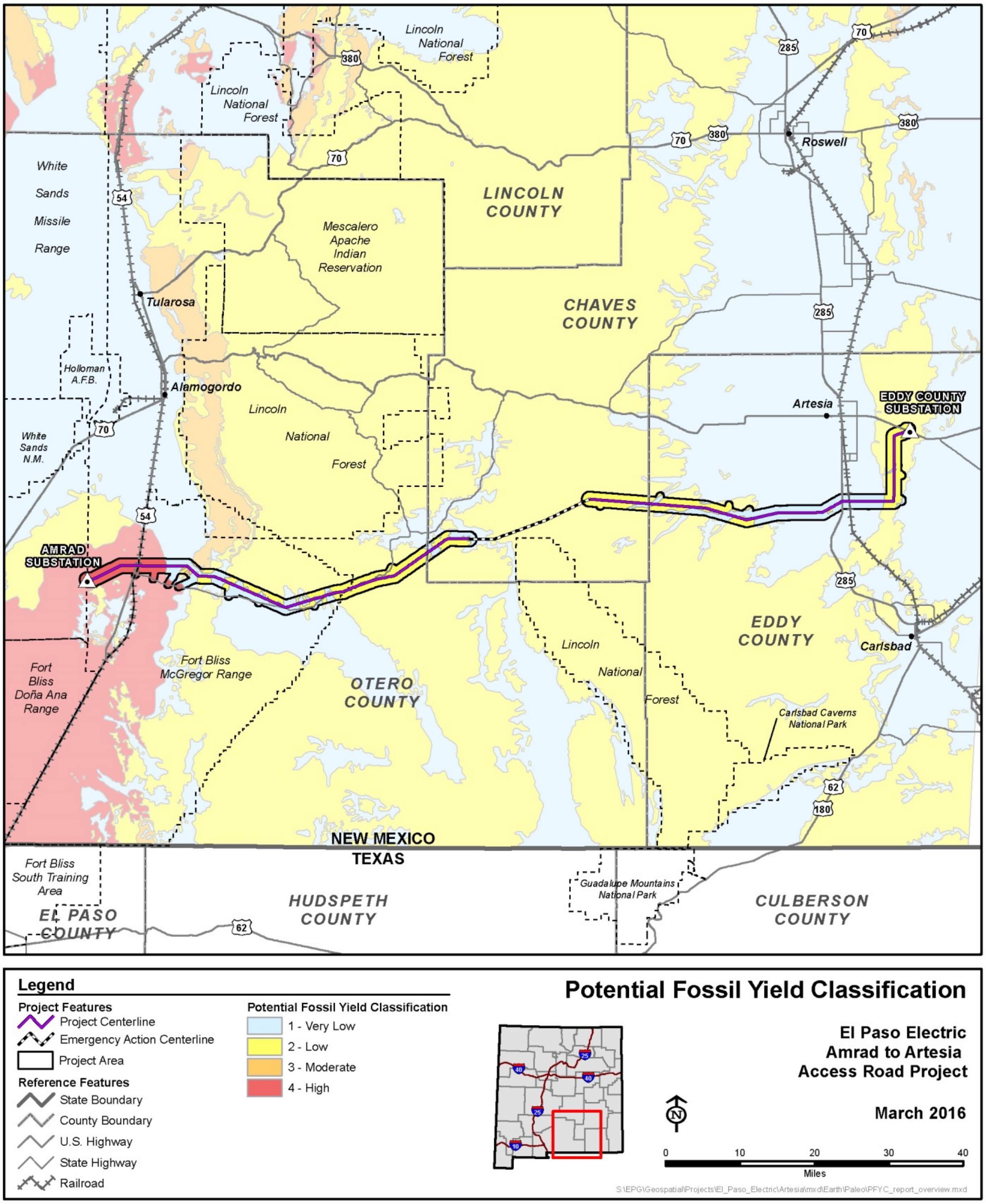

Figure 3-1 Potential Fossil Yield Classification

The Project area for paleontological resources includes a 2-mile wide corridor centered on Project facilities. The Project crosses 11 geological units ranging from the most recent Quaternary to the Permian (Scholle 2003). Table 3-3 shows these units beginning with the most recent.

Table 3-3. Geological Units and Their Associated Paleontological Sensitivity

Map Unit	Age	Geological Name	Rock Type	PFYC	Paleontological Sensitivity	Survey/Monitoring
Quaternary Sediments						
Qp	Quaternary	Quaternary Piedmont	Unconsolidated sand, silt, and gravel	1	Very Low	No
Qa	Quaternary	Quaternary Alluvium	Clay, silt, sand, gravel, or other unconsolidated material	1	Very Low	No
Qoa	Quaternary	Older alluvial deposits of upland plains	Sandstone and conglomerate	1	Very Low	No
Tertiary-Quaternary Sedimentary Rocks						
QTs	Pliocene to Quaternary	Santa Fe Group	Conglomerate, sand, sandstone, and clay	4	High	Yes
Paleozoic Units						
Pal	Permian	Abo Formation	Sandstone and shale	3 (4 or 5 locally)	Moderate to very high	Yes
Ph	Permian	Hueco Formation	Limestone and shale	2	Low	No
Psl	Permian	Salado Formation	Evaporites and sandstone	2	Low	No
Py	Permian	Yesa Formation	Sandstone, limestone, shale, siltstone, and gypsum	2	Low	No
Pat	Permian	Artesia Group	Fine-grained mixed clastics, dolomite, and evaporates	2	Low	No
Pgq	Permian	Grayburg and Queen Formations	Dolomite, sandstone, bentonite, shale, sandstone, limestone	2	Low	No
Psa	Permian	San Andres Formation	Limestone, sandstone, gypsum/evaporates, redbeds	2	Low	No

No previously reported fossil localities are reported from within the Project area; however, fossils that are within close proximity to the Project have been reported from several formations. Quaternary units (Qp, Qa, and Qoa) have a low PFYC, but several fossils have been recorded in the Gatuna Formation, which is part of the Qoa on the state geologic map (Scholle 2003). These fossils include horse, bison, camel, and mammoth, and were found along the ancestral Pecos River near Roswell (New Mexico Museum of Natural History & Science [NMMNHS] database, Powers and Holt 1993). Similarly, there are known fossil sites from the Santa Fe Group within the Mesilla Basin and the Las Cruces area. These include tortoise, glyptodont, tapir, mammoth, gomphothere, horse, llama, camel, sloth, rabbit, cat, and deer (Tedford 1981, Lucas et al. 1999, Lucas et al. 2000, and Morgan and Lucas 2003). Although rare, the Abo Formation has produced some vertebrate fossils and tracksites (ichnofossils) (Lucas et al. 2009a, 2009b). The Hueco Formation has a PFYC of 2, but vertebrate tracks are known to occur from this unit, most notably in the Robledo Mountains (Schult 1995).

A paleontological resources assessment was performed for the Project on those geologic units having a PFYC of 3 and 4. The survey revealed that the QTs within the study area is rarely exposed, being mostly covered by thick sand and silty sand. There were no fossils discovered during the survey. The Abo and Hueco formations, although within the study area, are not overlain by any project components.

3.2 Water Resources

An inventory of water resources was conducted to identify perennial and intermittent streams, water bodies, wetlands, and wells for the Project. All water resources within one mile of the centerline or access roads were inventoried. Information and data for the water resources inventory was obtained from the National Hydrography Dataset of the USGS, National Wetlands Inventory of the USFWS, and the New Mexico Office of State Engineer (well database).

The project is located within four HU 8 watersheds (sub-basin): Upper Pecos-Black, Upper Pecos–Long Arroyo, Salt Basin, and Tularosa Valley. West of the Guadalupe Mountains, the Project is located in the Tularosa Valley and Salt Basin HUs. Portions of the Project on the eastern flank of the Guadalupe Mountains are within the Upper Pecos-Black HU, and drain east to the Pecos River, a tributary of the Rio Grande. The northernmost portion of the Project area, near the Eddy County Substation, crosses a part of the Upper Pecos–Long Arroyo HU.

3.2.1 Perennial, Intermittent, and Ephemeral Streams

The USGS National Hydrogaphy Dataset provides these definitions for streams. The term perennial (FC code 46006) is used to describe a water body that typically contains water throughout the year except for infrequent periods of severe drought. The term intermittent (FC code 46003) refers to a body of water that contains water only part of the year, but more than just after rainstorms and at snowmelt. The term ephemeral (FC code 46007) describes a water body that contains water only in direct response to precipitation (synonymous with arroyo, gully, wash, and coulee).

There are 6 perennial streams, 83 ephemeral streams, and 635 intermittent streams in the 2-mile wide study area. The study area also includes 104 irrigation canal/ditches. The Project access roads cross 125 intermittent streams.

3.2.2 Wetlands and Wells

Thirty-one wetlands were identified in the 2-mile wide study area. Most of these are cattle tanks, but are classified as wetlands because of the types of plant and animal communities living in the soil and on its surface (Environmental Protection Agency [EPA] 2013). Nine appear to be wetlands associated with present drainage patterns within the study area; however, these nine wetlands are not in close proximity to Project facilities or access roads.

There are 61 water wells scattered throughout the study area. A majority of these are located within the study area between structures 598 and 736, and have water depths ranging between 50 and 300 feet below ground surface.

An inventory of 100-year floodplains was conducted using data from the Federal Emergency Management Agency (FEMA) (FEMA 2013), and data from the New Mexico Department of Homeland Security and Emergency Management (NMFLOOD). The Project crosses 16 areas that are considered floodplains, most of which are associated with streams and washes. The two largest floodplains are associated with the Pecos River and the Brantley Wildlife Management Area.

3.3 Biological Resources

A reconnaissance-level survey of the entire Project area was conducted by Environmental Planning Group, LLC (EPG) biologists on behalf of EPE. The survey was intended to provide an overview of existing conditions in the Project area, including vegetation present and any potential habitat for special-status species. Additional intensive surveys in the Project area were conducted to support the NEPA analysis and Section 7 consultation for the Project. A winter survey of the emergency action area was conducted shortly after failure of the transmission line (Britt and Reynaud 2014), and a focused, thorough survey in select areas throughout the Project area was conducted by EPG during the flowering season for the endangered Kuenzler's Hedgehog Cactus prior to the project-wide reconnaissance survey. The results of all of these surveys were used to support the following discussion of the existing environment and potential impacts of the Project.

The Project area is located in the interior-draining Tularosa Basin and Salt Basin west of the Guadalupe Mountains, and the Pecos River valley east of the Guadalupe Mountains; all are located within the Rio Grande Rift and Southern High Plains physiographic provinces (New Mexico Bureau of Geology and Mineral Resources [NMBGMR] 2014). The Rio Grande Rift province separates the Colorado Plateau from interior North America and is composed of four large basins. The High Plains province is a sub-region of the Great Plains characterized by flat terrain and interspersed playas. Elevation ranges from approximately 3,400 to 6,500 feet.

The Project area crosses six vegetation associations, as described by Dick-Peddie (1993): Plains Mesa Sandscrub, Chihuahuan Desertscrub, Desert Grassland, Juniper Savanna, Coniferous and Mixed Woodland, and Developed areas. Plains Mesa Sandscrub, a shrub-dominated community occupying deep, sandy soils, is where the Project is located within the Tularosa Basin. Chihuahuan Desertscrub is an arid "high" desert (high-elevation desert) dominated by creosote bush (*Larrea tridentata*). The majority of the Project area is within the Desert Grassland ecotone, an area characterized by grassy landscapes broken up by trees, shrubs, and cacti commonly associated with the Chihuahuan Desert.

The Otero Mesa, a part of the Salt Basin, contains a large, relatively intact area of Desert Grassland. Portions of these native grasslands on Otero Mesa within the McGregor Range are designated as the Black Grama Grassland Area of Critical Environmental Concern (ACEC). This ACEC is not crossed by the Project area, but two existing Project access roads are adjacent to one unit of the ACEC. The Project area also crosses Desert Grassland on the eastern slope of the Guadalupe Mountains, in the Pecos River valley. Annual precipitation for this biome falls predominantly in the warm season (April-September).

Juniper Savanna is an ecotone between piñon-juniper woodlands and grasslands, which results in widely scattered low-growing trees, often junipers, surrounded by a grassland matrix. The Coniferous and Mixed Woodland biome in the Project area is dominated by piñon pines (*Pinus* spp.) and several species of juniper (*Juniperus* spp.). Developed areas include farmland and other human development, primarily near the Pecos River.

Riparian habitat within the Project area consists primarily of xeric washes with ephemeral streams, although the westernmost section of the Project area is adjacent to the Pecos River. The Pecos River in this location is within the full-pool elevation of Brantley Reservoir, but was previously within the former McMillan Reservoir. High levels of silt deposition in McMillan Reservoir required the construction of the newer Brantley Reservoir downstream to maintain flood control capabilities, and the Pecos River now flows through a manmade channel constructed through the silt deposits. As a result of this relatively recent series of physical habitat modifications, no native riparian woodland remains along the Pecos River in the Project area, and an early-successional, invasive-dominated vegetation community is present.

3.3.1 Vegetation

Plant species within the Project area are representative of the six vegetation associations listed above. Common species observed during field surveys include: Parry's agave (*Agave Parryi*), banana yucca (*Yucca baccata*), littleleaf sumac (*Rhus microphylla*), broom snakeweed (*Gutierrezia sarothrae*), Fremont's mahonia (*Mahonia fremontii*), oneseed juniper (*Juniperus monosperma*), honey mesquite (*Prosopis glandulosa*), several hedgehog (*Echinocereus* spp.) and pricklypear (*Opuntia* spp.) cactus species, two-needle piñon pine (*Pinus edulis*), and creosote bush. Numerous other species were observed, although less common. A complete list of plant species observed is available in an appendix to the Biological Assessment prepared for the Project (EPG 2015).

3.3.2 Weeds

Three noxious weeds listed by the New Mexico Department of Agriculture observed within the Project area during field surveys conducted by EPG are field bindweed (Class C Noxious Weed), saltcedar (Class C Noxious Weed), and spiny cocklebur (Noxious Weed Watchlist). Three non-native, invasive species observed within the Project area are Prickly Russian thistle, spreading fanpetals, and common mullein (EPG 2015). African rue (Class B Noxious Weed), Russian olive (Class C Noxious Weed), and maltese star-thistle (Class B Noxious Weed) are known to be present near the Project area (BLM 2014). Any further disturbance may encourage the expansion of existing noxious weed and invasive plant infestations, and the colonization of others.

3.3.3 Wildlife

Wildlife species in the Project area are representative of the Chihuahuan Desert, semidesert grasslands, and shortgrass prairie. Although the Project area does not include areas with unique species assemblages or areas with many rare or endemic wildlife species, portions of the Project area are within regionally significant blocks of habitat that preserve examples of conditions that were once more widespread. Small mammal diversity in the region is particularly high (Jorgensen 1996).

A portion of the Project area west of the Guadalupe Mountains crosses the northern edge of Otero Mesa, which contains one of the largest, most intact examples of semidesert grassland remaining in the Southwest (Coalition for Otero Mesa 2008). The Otero Mesa supports populations of black-tailed prairie dogs (*Cynomys ludovicianus*) and pronghorn (*Antilocapra americana*), provides wintering habitat for ferruginous hawks (*Buteo regalis*), and contains habitat for aplomado falcons. Additional grassland habitat is present along portions of the Project area east of the Guadalupe Mountains.

The Pecos River is the largest regional source of permanent water east of the Rio Grande, and supports numerous migratory birds as a part of the Central Flyway, as well as native and non-native aquatic species. However, the Pecos River in the Project area is channelized and is within an area that occasionally floods as a part of the flood control provided by Brantley Reservoir. The periodic inundation maintains riparian vegetation in this area in a disturbed state, and the floodplain is dominated by invasive tree species. Although this area is significantly altered from historic conditions, it would still provide valuable habitat for birds and other wildlife and was until recently managed by NMDGF as Brantley Wildlife Management Area.

<u>Special-status Species and Migratory Birds</u>

Evaluated special-status species include ESA-listed, proposed, and candidate species reported by the USFWS Information, Planning, and Conservation database (USFWS 2014a); species listed as sensitive by BLM in New Mexico; species listed as threatened or endangered by the State of New Mexico; and USFWS Bird Species of Conservation Concern (BCC).

Plants

Three special-status plants, of various vegetation associations, may inhabit the Project area (Table A 4, Appendix A). Tharp’s blue star and Scheer’s pincushion cactus are associated with limestone-derived soils in Chihuahuan Desertscrub (NMRPTC 2005).

The Kuenzler’s hedgehog cactus, listed as endangered under the ESA, inhabits limestone-derived soils in piñon-juniper woodlands between approximately 5,250 and 6,570 feet in elevation (NMRPTC 2005). The Project area is within the overall known range, although the distribution of the species is patchy. Two surveys of identified potential habitat within the Project area were conducted, one in winter and one in the flowering season (Britt and Reynaud 2014, EPG 2014). Both surveys intensively examined habitat with the highest potential for the species to occur within the Project area, but no Kuenzler’s hedgehog cactus were found. In addition, Fort Bliss biologists have surveyed a substantial portion of the McGregor Range but only detected the unlisted subspecies (*E. f. fendleri*).

Mammals

Four special-status mammals may occur within the Project area (Table A 4, Appendix A).

Three BLM Sensitive (BLMS) bat species may be present in the Project area: Allen's big-eared bat, Pale Townsend's big-eared bat, and the spotted bat. The spotted bat is also state-listed as threatened in New Mexico. These species utilize desertscrub, grassland, and piñon-juniper woodland habitats in varying seasons throughout the year (Arizona Game and Fish Department [AZGFD]:2011, 2003a, 2003b, 2001a). Roost sites include cliffs, rock outcroppings, crevices, caves, mines, abandoned buildings, exfoliating tree bark, and snags. Foraging habitats include the space above open water, above vegetation canopies, and open landscapes. These bat species primarily prey on flying insects, although they will glean insects from either vegetation or the ground. Suitable foraging habitat is widespread throughout the Project area. The Project crosses the Guadalupe Mountains, a fossilized reef containing extensive limestone and gypsum formations that can contain caves and other roost sites. Manmade roost sites, such as old buildings, are also present near the Project area.

The black-tailed prairie dog is a BLMS small mammal that may reside within the Project area. Black-tailed prairie dogs occur in short-grass prairies or other well grazed grasslands at low elevations. As herbivores, they primarily consume green forbs and roots (AZGFD 2004, Reid 2006).

Birds

Nearly all native birds that may occur in the Project area, with the exception of several species of quail and their relatives, are protected under the MBTA. The MBTA protects more than 1,000 bird species native to the United States by making it illegal to harm, possess, or sell any protected bird or their eggs. Provisions are given for regulated hunting and limited other activities, such as research and conservation. Executive Order 13186 (2001) directed all federal land management agencies to develop a Memorandum of Understanding (MOU) with the USFWS to establish policies for the conservation of migratory bird habitat, including during the NEPA process. BLM and USFWS signed an MOU in 2010.

Thirty-three special-status bird species may occur within the Project area (Table A 4, Appendix A). Seventeen special-status species are associated with arid grasslands and desert scrublands within the Project area (Table A 4, Appendix A). Four special-status birds are associated with piñon-juniper mixed woodlands within the Project area (Table A 2, Appendix A). Nine special-status birds are associated with riparian and/or open-water habitats within the Project area (Table A 4, Appendix A). Three other special-status birds, all raptors, are associated with multiple habitats in the Project area.

The Bald Eagle (BCC, Bald and Golden Eagle Protection Act [BGEPA], BLMS, and New Mexico Threatened [NMT]) inhabits areas adjacent to water and roosts in clumps of mature, deciduous trees in riparian areas protected from human disturbance. They forage in various habitats, and may be found within the Project area in winter, primarily near the Pecos River. The golden eagle (BGEPA and BCC) and American peregrine falcon (BCC, and NMT) nests and roosts in mountain cliffs and canyons. They hunt in open expanses surrounding their nests. While hunting, both birds may be found within the Project area. However, their preferred nesting habitat is not present in the Project area.

The northern aplomado falcon, an endangered species under the ESA that was reintroduced into New Mexico as a Non-essential Experimental Population (NEP) (USFWS 2006), is predominantly associated with semidesert grasslands in the southwestern United States, although they also occur in open plains including grassland, savannah, and desertscrub. Occupied habitat typically includes scattered trees and shrubs used for perching and nesting (USFWS 2014b). Diet includes primarily birds, but insects are commonly taken, and bats, rodents, lizards, and frogs are also consumed (Ehrlich *et. al* 1988; Keddy-Hector 2000; Terres 1980).

No current pairs of northern aplomado falcons are known to be present near the Project area (USFWS 2014b). However, suitable grassland habitat for the northern aplomado falcon is present in patches along the Project area on Otero Mesa, and in grasslands crossed by the eastern portion of the Project area. The existing RMP for the McGregor Range identified that preparation of a Grassland Habitat Management Plan (HMP) would take place under the selected alternative. This HMP would include measures for the conservation of northern aplomado falcons, if Otero Mesa is proposed as a future reintroduction site. Thus, the species may occur in or near the Project area in the future as recovery in New Mexico progresses.

The least tern is an endangered species under the ESA, and the interior least tern is listed as a Distinct Population Segment (DPS). Least tern (Interior DPS) nesting habitat consists of sand bars on rivers and salt fields adjacent to rivers (Lott *et al*. 2013, USFWS 2013). The species winters along the Gulf Coast and migrates in small groups along or near shores of river systems between the two habitats. They are primarily opportunistic piscivores, feeding on small fish. Anecdotal sightings place the least tern in the Pecos River at Brantley Reservoir near the Project area (eBird 2015). Although no historical records document the least tern inhabiting natural river segments of the Rio Grande and Pecos River in New Mexico and Texas, reservoir construction likely provided an opportunity for range expansion (USFWS 2013).

Reptiles

A special-status reptile species that may occur within the Project area is the mottled rock rattlesnake. The mottled rock rattlesnake is state-listed as threatened in New Mexico, and inhabits rocky canyons and hillsides of the Guadalupe Mountains (Degenhardt *et al*. 1996). It preys on lizards, snakes, frogs, and small rodents (Stebbins 2003).

Fish

Seven special-status fish species are recorded from the Pecos River, the only perennial stream near the Project area (Table A 4, Appendix A): the Rio Grande chub (BLMS), speckled chub (BLMS), greenthroat darter (BLMS, and NMT), suckermouth minnow (BLMS and NMT), Rio Grande shiner (BLMS), Pecos bluntnose shiner (T and NME), and Mexican tetra (BLMS and NMT). Although these species may have all been historically present in the Pecos River, the physical modifications of the river system in the Project area caused by the creation of Lake

McMillan, its sedimentation, creation of Brantley Reservoir, and channelization of the Pecos River through the former lakebed of Lake McMillan have resulted in the loss of many of the native fish formerly present.

The Pecos bluntnose shiner is ESA-listed as threatened, and critical habitat is designated outside of the Project area. This fish species inhabits reaches of the Pecos River with perennial flow, shifting sand-beds, and erosive banks (USFWS 2010). They are carnivorous drift foragers that prey on terrestrial insects, aquatic invertebrates, larval fish, and in some cases, plant seeds (USFWS 2010).

3.4 Wildland Fire and Fuels

Wildland fire management on public land is typically planned to address the safety of the public and firefighters while attempting to meet resource management objectives for desired vegetation structure and condition, fuel loading, watershed protection, and protection of threatened and endangered species habitat. These objectives may be best met through fire suppression, prescribed fires, or management of natural or unplanned ignitions for resource benefit. Management of resources to address wildland fires may also include fuels thinning projects or other vegetation treatments.

Fire management is typically the responsibility of federal land management agencies on their respective lands. The New Mexico State Forestry Division is responsible for fire management on state trust land, and county or local fire departments are responsible for fire management on private land in their jurisdiction. Fire management on some other lands, including unincorporated private land or at jurisdictional boundaries, may be conducted under cooperative agreements.

The following federal and local fire management plans were reviewed:

- Resource Management Plan Amendment (RMPA) for Fire and Fuels on Public Land in New Mexico and Texas (BLM 2004)
- Las Cruces District Office: Fire Management Plan (BLM 2010)
- Carlsbad Field Office: Fire Management Plan (BLM 2010)
- Community Wildfire Protection Plan (Otero County Fire 2013)
- Chaves County Community Wildfire Protection Plan (Chaves County Fire 2014)
- Eddy County Community Wildfire Protection Plan (Eddy County Fire 2008)

The RMPA for Fire and Fuels Management establishes objectives for fire and fuels management, delineates fire management units and fire management categories, identifies broad vegetation treatments, identifies general restrictions on fire management practices, and determines the criteria for changing fire management units (BLM 2004).

On the western end of the Project in Otero County, vegetation is generally shortgrass prairie, irrigated cropland, riparian (native plains cottonwood/willow, along with the non-desirables tamarisk, Russian olive, Siberian elm (Otero County Fire 2013). Southwestern Chaves County, through which the Project corridor passes, is rural, surrounded by shortgrass prairie grassland, agricultural land, and ranchland. The majority of the population lives in the municipal areas of Roswell, Dexter, Hagerman, and Lake Arthur, with scattered ranches and homes along the Pecos

River valley and in the Sacramento Mountains along the Rio Penasco north of the Project area (Chaves County Fire 2014).

The eastern portion of the Project area is within Eddy County, which is characterized by small rural communities surrounded by agricultural lands and grasslands. Piñon-juniper woodlands and the Guadalupe Mountains surround the community of Queen in the southwest corner of the county. The vegetation of Eddy County is predominantly grasslands and shrublands (Eddy County Fire 2008). Wildland vegetation fuels within the Project area include grass, leaves, twigs, ground litter, weeds, shrubs, and trees.

The vegetation fuels vary from grasslands and shrublands at lower elevations to piñon-juniper woodlands at higher elevations. Short- to mid-height grasses, along with sotol, agave, ocotillo, catclaw, and juniper, occur in the western part of the county. West of the Pecos River, and north of the Black River, the vegetation is short- and mid-height grasses. The flood plains of the Pecos River support salt-tolerant plants, which include alkali sacaton, inland saltgrass, salt cedar, salt sedge, and seepweed (Eddy County Fire 2008).

Widespread fire suppression during much of the 20th century, in combination with other factors such as heavy livestock grazing and long-term drought, has contributed to landscape-scale changes in vegetation structure. Grasslands may become invaded by shrubs or juniper trees in the absence of fire. Fires may have historically been small and low-intensity, but the high accumulated fuel loads can allow fires to become much larger and burn at higher intensities.

Current fire and vegetation management objectives recognize benefits that may be gained by returning a natural fire regime to the landscape, although human safety and other conflicts are not resolvable in many locations. BLM’s fire management planning includes Fire Management Units that identify a desired fire regime as well as any conflicts with fire management for resource benefit.

3.5 Lands and Realty

Lands within the study area are managed according to the following RMPs and land use plans:

DOD:

- Fort Bliss Texas and New Mexico Mission and Master Plan Supplemental Programmatic EIS (2007)
- Fort Bliss Integrated Natural Resource Management Plan (2001)
- McGregor Range RMP Amendment (2006)

BLM:

- White Sands Resource Area RMP (1986)
- As amended by McGregor Range RMP Amendment (1990)
  - Applicable to BLM land within Otero County
- Carlsbad Resource Management Plan (1988), as amended (1997)
  - Applicable to BLM land within Chaves and Eddy counties

BOR:

- Brantley and Avalon Reservoirs RMP (2003)

New Mexico Department of Game and Fish (NMDGF)

- Lower Pecos River Waterfowl and Wildlife Areas Management Plan for the Brantley Project Mitigation Lands (2005-2010)

County: Otero, Chaves, and Eddy counties have comprehensive land use plans, though New Mexico does not have any state laws requiring comprehensive land use plans.

- Otero County Comprehensive Plan (2005)
- Otero County RMP (2011)
- Chaves County Comprehensive Plan (2004)
- Eddy County Comprehensive Plan (2008)

The Amrad to Artesia transmission line ROW crosses numerous other ROWs. These ROWs are listed in Table A 2, Appendix A.

The majority of the study area can either be categorized as rural residential (or widely dispersed rural residences) or vacant undeveloped (no residences). All residential areas within the study area are low density (0-2 dwelling units per acre). Small clusters of rural residences occur along rural roads along the transmission line corridor. Access roads of the Project border irrigated agricultural lands only on the western terrace of the Pecos River along Forrest Lee Road.

3.5.1 Livestock Grazing

The majority of the land within the study area is federal or state land that is primarily open rangeland used for livestock grazing through grazing leases. Grazing leases are given for specific areas of land called allotments, which contain various range improvements throughout the study corridor, including range roads, stock tanks (earthen and metal), and corrals. For the most part, these allotments are adjacent to ranches, pastures and/or range improvements on private land and/or other public allotments (federal or state).

Forty allotments within the Las Cruces District and the Carlsbad Field Office are intersected by the project improvement activities (BLM 2014j). Generally, these allotments are adjacent to ranches, pastures, and/or range improvements on private land and/or other public allotments (federal or state).

Ranch headquarters and infrastructure are mostly concentrated along major drainages within the Sacramento Mountains. No known restrictions are associated with these ranch properties.

3.5.2 Transportation

<u>Major Features</u>

The study area encompasses a mix of federal, state, county, and private roadways. Highways under the jurisdiction of New Mexico Department of Transportation include US highways 54, 285 (aka Seven Rivers Highway), 82 (aka Lovington Highway), and New Mexico State Highway 506 (aka Owen Prather Highway/Cornucopia Canyon Road). Of these, US 54, 285, and 82 are paved roadways, varying in width between 100 feet and 200 feet, connecting the cities of El Paso, Alamogordo, Artesia, Carlsbad, and Lovington. NM 506 provides access to the McGregor Range and ranch residences within the Sacramento Mountains. None of these routes carry National Scenic Byway and/or Backcountry Byway status.

Two railroads are intersected by the study corridor. A main line of the Union Pacific Railroad parallels US 54 and intersects the study corridor immediately east of this roadway. A main line of the BNSF railroad (formerly marked as Atchison, Topeka, and Santa Fe) roughly parallels US 285 and intersects the project several miles west of the Pecos River.

3.5.3 Utilities

Numerous distribution lines of Central Valley Electric, ranging in capacity from 0.48kV to 14.4kV, and communication lines of Penasco Valley Telephone Cooperative, are found throughout the study corridor.

Various transmission lines tie in to both the Eddy and Amrad substations on the eastern and western terminus points of the Project. The Amrad to Artesia 345kV Transmission Line is located in one of two designated right-of-way corridors in the McGregor Range RMP Amendment (1990).

One permitted wind test site, leased to Guadalupe Mountains Wind LLC, lies within the eastern slopes of the Sacramento Mountains south of Piñon, NM, and is described by the Department of Defense as consisting of 110 485-foot wind turbines (DOD 2013).

3.5.4 Fort Bliss-McGregor Range

Much of the western portion of the study corridor between US 54 and the Sacramento Mountains is co-managed by BLM and DOD as the McGregor Range. According to the McGregor Range RMP, BLM and U.S. Army Fort Bliss manage the McGregor Range jointly under an MOU established in 1990. In response to the U.S. Army's environmental responsibilities, Fort Bliss has developed several guidance documents, including the McGregor Range Land Withdrawal Renewal Legislative EIS (1999), Fort Bliss Texas and New Mexico Mission and Master Plan Supplemental Programmatic EIS (2007), and Integrated Natural Resource Management Plan (2001) (BLM 2006). Resource management prescriptions are similar to surrounding areas within the White Sands Resource Management Area, with the exception of restricted public access and permitted operational use by the US Army.

The Army's use of the McGregor Range is mostly for periodic ground training exercises. In order to reduce conflict between the public and the Army, public use of the McGregor Range is only allowed under an Access Permit (BLM 2006).

3.5.5 Areas of Critical Environmental Concern

ACECs are designated by BLM where special management attention is needed to protect human life and safety from natural hazards or to protect and prevent irreparable damage to important historical, cultural, and scenic values; fish and wildlife resources; or other natural systems or processes (BLM 2006).

The Black Grama Grassland ACEC is located within the Project area on either side of New Mexico State Highway 506. Two Project access roads are located immediately adjacent to the ACEC. The ACEC prohibits livestock grazing and off-highway vehicle (OHV) use, and is managed according to a cooperative agreement between BLM, Fort Bliss, and New Mexico State University. The purpose of the ACEC is the protection of black grama grassland in an undisturbed state for research and public interest (BLM 2006).

Other Special Designation Areas

The McGregor RMPA that delineates this area calls for a Grassland HMP to be developed in order to guide the successful restoration of these grasslands (BLM 2006). The Amrad-Artesia Transmission Line and access roads cross areas that would be addressed under the Grassland HMP.

The Brantley Wildlife Management Area is located astride the Pecos River 7 miles north of Carlsbad and 23 miles south of Artesia. The area consists of approximately 23,400 acres within the Brantley Reservoir site and includes the original McMillan Reservoir Area. The Brantley Wildlife Management Area excludes approximately 2,500 acres within the recreation area managed by the New Mexico State Parks and approximately 1,400 acres within the dam site and project operations area. The Management Plan provides for the enhancing or maintaining suitable habitat for upland, waterfowl, furbearer, big game, and non-game species while also providing quality recreational experiences consistent with maintaining the environment (USDOIBR 2006).

3.6 Recreation

The lands crossed by and in close proximity to the Project area offer a wide variety of recreational opportunities in diverse natural settings, including the rivers, mountain ranges, lakes, sand dunes, and forests. Public recreational opportunities located in south-central New Mexico occur on land managed by BLM, BOR, DOD, NMSLO, and individual counties and cities. Recreation activities within the Planning Area include hiking, sightseeing, fishing, boating, scenic driving, wildlife viewing, hunting, horseback riding, mountain biking, caving, picnicking, camping, and OHV use.

The Red Sands OHV Area is a popular 10-mile by 10-mile recreation area on the west side of U.S. Highway 54 between Alamogordo and Orogrande. The project area passes through the southern portion of this area. Specific numbers of weekly users are not available; however, Red Sands is heavily used on weekends (BLM 2013).

3.7 Visual Resources

This section addresses the potential visual impacts of the proposed project on the characteristic landscape and conformance with agency management objectives identified in the appropriate Resource Management Plan.

3.7.1 Agency Landscape Management Objectives

Visual Resource Management (VRM) data was provided by the Las Cruces District and Carlsbad Field Office, and VRM classifications were used within the visual resource study to demonstrate conformance with regards to the White Sands Resource Area RMP (BLM 1986) and the Carlsbad RMP (1988), as amended (1997), respectively. Approximately one third of the project is located on the McGregor Range (DOD) in the western portion of the project, but visual resources are managed under the McGregor Range amendment (BLM 2006) to the White Sands RMP.

3.7.2 Project Scenery and Setting

The Project is located within the Sacramento and Pecos Valley subdivisions of the Basin and Range and Great Plains physiographic provinces, respectively (Fenneman 1931). The Basin and Range Province is characterized by its isolated, roughly parallel mountain ranges separated by closed (i.e., undrained) desert basins with the Sacramento subdivision characterized by steep sloped hills with long eastward slopes that are dissected and drain internally to basins or bolsons. The Great Plains province is characterized by open horizontal plains, prairie grasses, and slightly dissected canyons. The Pecos Valley section consists chiefly of the Pecos River system but is generally more dissected along the western boundary where it abuts the Sacramento section of the Basin and Range province. Major ecosystems in the Project area include short-grass prairie, Chihuahuan semidesert grassland, mixed-desert thorn scrublands, and piñon-juniper woodland hills, foothills, and mountains (Brown 1982). Near the Amrad Substation tie-in at the western terminus of the project, vegetation is primarily creosote, tar bush, desert grasses, and succulents, such as agave and yucca. At higher elevations, piñon-juniper woodlands dominate the landscape. Within the Amrad to Artesia study area, Class B scenery is associated with these higher elevation areas where piñon-juniper woodland and savanna grasslands are dominant. Generally, Class C scenery is associated with the lower elevations within the west end of the study area (flat valleys that are dominated by creosote and desert grasses) and the flat plains of the eastern end of the study area.

The Project area within Otero and Chaves counties (approximately the middle one third of the Project) are generally natural in appearance except where the landscape setting has been modified by the existing transmission ROW (including access roads), dispersed rural residences, and the following paved and unpaved roads: SR 54, SR 506, major county roads, such as E001 and E038, as well as minor lesser-traveled county roads. The 17-mile Emergency Structure Replacement is located in mountainous terrain in this section. The landscape in this section has been modified due to the recently upgraded access roads and construction related to structure replacement. The eastern one third of proposed project located within Eddy County is within a landscape setting that is generally modified due to oil and gas drilling structures and pipelines and associated access roads, existing transmission lines, and various paved and unpaved roads, including US Route 285 and 82, and major Eddy County Roads, such as 21, 34, 44, and 227.

3.7.3 Agency Management Objectives

BLM-managed land crossed by the proposed access roads is classified as VRM Class III or Class IV. The VRM Class III objective is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The VRM Class IV objective is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of view attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

3.8 Cultural Resources

The term "cultural resource" refers to prehistoric and historic archaeological sites, buildings, districts, structures, locations, or objects considered important to a culture or community for scientific, traditional, religious, or other reasons. Cultural resources deemed significant for their contribution to broad patterns of history, prehistory, architecture, engineering, or culture are eligible for listing on the National Register of Historic Places (NRHP) and afforded certain protections under the NHPA of 1966, as amended (16 U.S.C. 470 et seq.). Because the Project is a federal undertaking, it is subject to compliance with Section 106 of the NHPA. BLM was designated as the lead federal agency for the purposes of Section 106 (36 CFR Part 800, as amended August 5, 2004), which requires federal agencies to consider the effects of their undertakings on historic properties. In addition, Section 106 and the AIRFA of 1978 also specify that Native American concerns be taken into consideration, including sacred or important locations that can be considered as traditional cultural properties.

Properties eligible for listing on the NRHP possess characteristics that are significant under one or more of the following evaluation criteria (36 CFR 60.4):

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

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

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

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

In addition to demonstrating significance in one or more of the categories listed above, a property must demonstrate integrity. The historic property must be a "preservable entity" that demonstrates the qualities that make it significant; integrity is most often judged on location, setting, design, materials, workmanship, feeling, and association. In general, properties less than 50 years of age, unless of exceptional importance, are not eligible for listing on the NRHP.

As defined in Section 106, the Area of Potential Effect (APE) refers to the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties," 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 Part 800, as amended August 5, 2004). As determined by the BLM designated agency official for Section 106, the APE consists of the 100-foot-wide transmission line right-of-way and the disturbance limit of all access roads, work areas, and any other facilities for this project.

There have been several field surveys conducted to identify historic properties within the APE, including preconstruction field surveys conducted in the early 1980s (Wilson 1984), field survey for US Border Patrol drag roads (Hart 1994), field survey of access roads in the 2000s (Simpson 2005), and most recently, field survey by EPG archaeologists of the entire APE (Swanson and Rayle 2015).

There are a total of 44 potential historic properties, consisting of 41 sites determined by the BLM and New Mexico State Historic Preservation Office (SHPO) to be eligible for listing on the NRHP, and three sites whose NRHP eligibility status is undetermined pending subsurface testing. An additional 39 sites were recorded in the APE, but were determined by the BLM with SHPO concurrence to be ineligible for listing on the NRHP.

Thirty-six of the historic properties in the APE are Native American sites with features and/or artifacts with evidence for prehistoric short- and long-term camps, quarries, and hunting activities. The remaining eight historic properties date to the 20th century, including three homesteads, two railroads, one highway, one oil/gas exploration site, and one pipeline.

Tribal consultation to consider Native American concerns may identify sacred or important locations considered as traditional cultural properties.

3.9 Air Quality and Climate

3.9.1 Air Quality

Air quality in the Project area is generally good to excellent. The existing air quality condition is a result of the relatively low population density and lack of pollution sources in the area. Air pollution in the local area is typically a result of airborne particulate matter (i.e., dust). All land involved with the Project is designated as Class II, pursuant to the provisions of the federal Prevention of Significant Deterioration program, codified at 40 CFR 51.166 and 40 CFR 52.21, along with corresponding New Mexico regulation, codified at NMAC 20.2.74.

Most areas of New Mexico have been designated as attainment or unclassifiable with respect to the National Ambient Air Quality Standards. Unclassifiable means that the area lacks sufficient air quality monitoring data to determine whether the ambient standards have been attained. From a regulatory standpoint, unclassifiable areas are treated as attainment areas.

The closest and only PM-10 non-attainment area currently in the State of New Mexico as determined by the EPA is an area along Interstate 10, from the town of Anthony in Doña Ana County to the Texas state line (EPA 2014b), southwest of the study area approximately 50 miles from the western terminus of the project. The Project area is in a rural area without any major point or area sources of air pollutants. Thus, air pollutant concentrations in the study area are likely to be in attainment with the levels established by the EPA.

3.9.2 Climate

New Mexico has a mild, arid, or semiarid continental climate characterized by light precipitation totals, abundant sunshine, low relative humidity, and a relatively large annual and diurnal temperature range. Its climate is varied due to the state's diverse topographic features, including high plateaus, mountain ranges, canyons, valleys, and normally dry arroyos. The principal sources of moisture for the scant rains and snows that fall on the state are the Pacific Ocean, 500 miles to the west, and the Gulf of Mexico, 500 miles to the southeast. The highest mountains have climate characteristics common to the Rocky Mountains (WRCC 2011).

During the summer, daytime temperatures often exceed 100 degrees Fahrenheit at elevations below 5,000 feet, while the average monthly maximum temperatures during July (the warmest month) range from slightly above 90 degrees Fahrenheit at the lower elevations to the upper 70s at higher elevations. The warmest days often occur in June, before the thunderstorm season sets in. During July and August, afternoon convective storms tend to decrease solar insolation, lowering temperatures before they reach their potential daily high. A preponderance of clear skies and low relative humidity permits rapid cooling after sundown (WRCC 2011).

January is the coldest month, with average daytime temperatures that range from the mid-50s in the southern and central valleys to the mid-30s at higher elevations. Temperatures below freezing are common in all sections of the state during the winter. The freeze-free season ranges from more than 200 days in the southern valleys to less than 80 days in the northern mountains (WRCC 2011).

Average annual precipitation ranges from less than 10 inches over much of the southern desert and the Rio Grande and San Juan valleys to more than 20 inches at higher elevations, and varies widely from year to year. Summer rains fall almost entirely during brief, often intense thunderstorms.

3.9.3 Climate Change

The EPA agrees with scientific research that human activity is indeed changing the composition of the Earth's atmosphere as greenhouse gases including carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and hydrofluorocarbons are on the rise (Gila National Forest 2013). Pertinent to the study area, the "Southwestern Region Climate Change-Trends and Forest Planning" states that the Southwestern regional climate over the next several decades will experience:

- A decrease in overall moisture
- An overall rise in air temperature
- Increased wildfire occurrence
- An increase in the intensity of storms, resulting in more severe flooding

As the Southwest is the hottest and driest region in the U.S., water availability will continue to remain a vital concern in relation to climate change, and its subsequent effects on the natural as well as human environment (Gila National Forest 2013).

3.10 Lands with Wilderness Characteristics

The project area includes five areas on the Las Cruces District that were considered in BLM's Initial Wilderness Inventory. One was evaluated further in the Intensive Inventory.

Tres Hermanos, NM-030-103 - The Summary Wilderness Review – New Mexico Situation Summaries (April 1979) documented the Tres Hermanos at 75,780 acres. This roadless unit was evaluated in the Initial Inventory: "The creosote-tarbush flats of the Tres Hermanos Roadless Area are to the west of the White Sands Proving Grounds. The naturalness of the area is impacted by range improvements, [off-road vehicle] use, and a placer mine. Outstanding opportunities for solitude or primitive and unconfined recreation are lacking." Based on this finding, the area was not included in the Intensive Inventory.

Creosote Flats, NM-030-151 - The Summary Wilderness Review – New Mexico Situation Summaries (April 1979) documented the Creosote Flats unit at 23,200 acres. This roadless unit was evaluated in the Initial Inventory: "This area is located in the northwest section of the McGregor Military Reservation. The Nike Ajax Safety Limits covers a large portion of this unit. This use removes the naturalness of the area." Based on this finding, the area was not included in the Intensive Inventory.

Pipeline Canyon, NM-030-153 - The Summary Wilderness Review – New Mexico Situation Summaries (April 1979) documented the Pipeline Canyon unit at 23,200 acres. This roadless unit was evaluated in the Initial Inventory: "Pipeline Canyon is located in the northern section of the McGregor Military Reservation. It is also in the Nike Hercules Hawk Warhead and Nike Ajax Safety Limits. This use precludes outstanding opportunities for solitude or primitive types of recreation and removes naturalness." Based on this finding, the area was not included in the Intensive Inventory.

El Paso Draw, NM-030-154 - The Summary Wilderness Review – New Mexico Situation Summaries (April 1979) documented the El Paso Draw unit at 7,360 acres. This roadless unit was evaluated in the Initial Inventory: "El Paso Draw is located in the northern section of the McGregor Military Reservation. The Nike Ajax Safety Limit covers the area. This use limits naturalness in the area." Based on this finding, the area was not included in the Intensive Inventory.

Cress/West Garden, NM-030-155 - The Summary Wilderness Review – New Mexico Situation Summaries (April 1979) documented the Cress/West Garden unit at 11,760 acres. This roadless unit was evaluated in the Initial Inventory: "The area is located in the northeast corner of the McGregor Military Reservation. Part of the Nike Ajax Safety Limit covers the southern section of this area. The northern section is unaffected by military use and appears natural. This portion of the area is over 5,000 acres and should be studied intensively."

Based on this finding, the area was included in the Intensive Inventory. The Intensive Inventory (as reported in the New Mexico Wilderness Study Area Decisions (November 1980)) adjusted the estimated size to 13,260 acres. The Intensive Inventory found that the numerous range developments cumulatively affected the apparent naturalness of the unit through the abundant evidence of man's existence. Outstanding opportunities for solitude were lacking because of the lack of topographic and vegetative screening. Recreation opportunities in the area do not have an outstanding diversity or an outstanding quality in one opportunity. BLM did not conduct further study of the Cress/West Garden unit.

All five units are currently managed for multiple uses. The wilderness characteristics inventory for the Tres Hermanos unit (NM-030-103) will be updated for the TriCounty RMP Supplemental Environmental Impact Statement (EIS). If the unit is found to be of appropriate size (at least 5,000 acres) and to have wilderness characteristics, a range of management alternatives would be considered in the EIS and a decision would be made in the RMP as to how the area would be managed.

The wilderness characteristics inventories for the remaining four units on the McGregor Range will be updated in the future. If any of the units are found to be of appropriate size (at least 5,000 acres) and to have wilderness characteristics, a range of management alternatives would be considered in an environmental document and a decision would be made in an RMP-level document as to how each area would be managed.

4 ENVIRONMENTAL EFFECTS

4.1 Introduction

This chapter describes the effects or impacts, including the potential cumulative effects, on the affected environment that potentially could result from the Project as described in Chapter 2. Specifically considered are permanent improvements to existing access roads to and along the existing Amrad to Artesia 345kV transmission line as well as the clearance of previously disturbed work areas around each existing transmission structure.

Baseline information regarding the existing condition of the environment, as described in Chapter 3, was used to measure and identify potential impacts resulting from the Project. The EA considered BMPs, where appropriate, before arriving at the impacts described in this chapter.

An impact, or effect, is a modification to the environment brought about by an outside action. Impacts vary in degree from no change, or only slightly discernible change, to a full modification or elimination of the environmental condition. Impacts can be beneficial (positive) or adverse (negative), and short-term, long-term, or permanent. According to the BLM NEPA Handbook section 6.8.1.1, "…effects analysis predicts the degree to which the resource would be affected upon implementation of an action. Effects can be ecological, aesthetic, historic, cultural, economic, social, or health. Effects may also include those resulting from actions that may have both beneficial and detrimental effects" (BLM 2008).

Short-term or temporary impacts are typically associated with maintenance activities, where the environment generally would revert to preconstruction conditions at or within a few years of the end of construction activities. For the Project, short-term or temporary impacts are those that would occur from the time that ground-disturbing activities begin through site stabilization, when vegetation has been re-established in maintenance work areas. Long-term or permanent impacts are those that would occur through the life of the Project or beyond. The life of the Project is estimated to be through the remainder of the existing permit, April 2023. However, it is likely that EPE would file for renewal of the existing authorized right-of-way permit.

An action can have direct or indirect effects, and can contribute to cumulative effects. Direct effects occur at the same time and place that an action is being performed. Indirect effects occur later in time or farther from the initial action, but are still reasonably foreseeable. Cumulative effects result from a proposed action's incremental impacts, when these impacts are added to those of other past, present, and reasonably foreseeable future actions, regardless of the agency or person who undertakes them (federal or nonfederal).

4.1.1 Impact Assessment Methodology

The impact assessment is based on the Project's effects to resources within the study corridors for each of the resources (see Section 3.1). Based on the Project description and baseline resource data as described in Chapter 3, each resource specialist identified the types and amounts of impacts that could occur. Some resources are more conducive to quantification than others. The potential sensitivity of each resource as affected by the Project was evaluated against the relative intensity of Project-related activities. Project-related activities were evaluated based on existing access conditions and terrain features (i.e., slope characteristics). Specific areas where project components cross were identified where slope and existing access conditions would potentially require greater amounts of ground disturbance. These areas were then compared to resource specific information to assess potential affects. Where resources are difficult to quantify, analyses were based on best available information and professional judgment.

A slope model was used to generally categorize slope conditions across the Project. Using a 30m digital elevation model, slope was analyzed into three categories (0-8 percent, 8-15 percent and greater than 15 percent). Existing access conditions were categorized into the following three classifications:

Class A – Visually Evident Roads: Explicitly defined travel surface that is unencumbered by vegetation, boulders, or erosion;

Class B – Moderately Evident and Typical 2-Track Roads: Moderately evident travel surface with signs of rutting, mild erosion, and occurrence of some boulders and vegetation; and

Class C – Not Evident/Reclaimed/Visually Eroded: Little evidence of travel surface that is encumbered by vegetation, boulders, or erosion.

Although improvement and maintenance activities would likely occur as necessary over the life of the Project, the assessment identified the likely impacts that could result from full implementation of the Project (i.e., if all improvements and maintenance activities were completed).

The assessment of impacts included an evaluation of the potential amount of ground disturbance that could occur based on the design and typical specifications of the proposed improvements, construction techniques and equipment used, and extent and duration of the construction.

Potential impacts primarily would result from the following construction activities:

- Improving existing roads for access where needed
- Preparing maintenance work areas around existing structures

Table 4-1 summarizes the potential permanent ground disturbance associated with access road improvements. Table 4-2 summarizes the potential temporary ground disturbance associated with maintenance work areas. Permanent ground disturbance would include additional improvements to existing access roads, and the construction of short segments of new access roads. Temporary ground disturbance would include the 100-foot by 100-foot and 150-foot by 150-foot work areas around the structures. Though these structure work areas would be considered for permanent use, structure work area improvements would occur only during maintenance activities, and the work areas would be stabilized after work was completed.

Table 4-1. Permanent Ground Disturbance Summary Table							
Project Components	**Length (miles)**	**Land Ownership (miles crossed)**					**Permanent Ground Disturbance (acres)**
		BLM	**DOD**	**BOR**	**State**	**Private**	
Existing Access Roads							
Inside Existing Transmission Line ROW	95.6	58.6	2.7	2.6	8.2	23.7	105.8
Outside Existing Transmission Line ROW	48.1	27.4	1.2	1.6	4.5	13.3	31.3
Total	**143.7**	**86**	**3.9**	**4.2**	**12.7**	**37**	**137.1**
Note: Totals may not sum, due to rounding.							

Table 4-2. Temporary Ground Disturbance Summary Table					
Project Components	**Temporary Ground Disturbance by Land Ownership (Acres)**				
	BLM	**DOD**	**BOR**	**State**	**Private**
Transmission Structure Maintenance Use Area					
Transmission Structures[1]	130.7	4.6	4.4	17.7	68.1
Total	**225.5**				
[1] A total of 726 structures require work areas. This excludes the 109 structures replaced as part of the emergency structure replacement (NM50852A). Note: Totals may not sum, due to rounding.					

4.1.2 Cumulative Impacts

For the cumulative effects analysis, the impacts of the Proposed Action, when added to other past, present, and reasonably foreseeable future actions, were considered within the study corridors. Implementation of the No Action alternative, along with past, present, and reasonably foreseeable actions, would have no environmental consequences or cumulative impacts on the resources in the study area. Depending on the resource, activities considered in this analysis may vary.

Table 4-3 displays a general list of past and present activities within the vicinity of the Project. Table 4-4 displays a general list of reasonably foreseeable activities within the vicinity of the Project.

Table 4-3. List of Past and Present Actions within the Vicinity of the Project	
Project Name or Action	**Type of Activity**
Residential Development	Ongoing development of homes and other buildings on private land
Grazing	Ongoing permitting and management of livestock grazing
Dispersed Recreation	Dispersed recreation (i.e., camping, hiking, hunting)
OHV use	General OHV activity
Fire and Fuels Management	Natural and prescribed fires; hazardous fuels reduction
Military Training	Limited troop and equipment maneuvers, air-defense training, and air-to-ground training for multiple-branch active and reserve military units and allied forces
Oil and Gas Exploration and Extraction	Installation and maintenance of wells and pipelines

Table 4-4. List of Reasonably Foreseeable Future Actions within the Vicinity of the Project	
Project Name or Action	**Type of Activity**
Residential Development	Development of homes and other buildings on private land
Grazing	Permitting and management of livestock grazing
Dispersed Recreation	Dispersed recreation (i.e., camping, hiking, hunting)
Range roads	Use and maintenance of BLM roads
OHV use	General OHV activity
Fire and Fuels Management	Natural and prescribed fires; hazardous fuels reduction
Military Training	Limited troop and equipment maneuvers, air-defense training, and air-to-ground training for multiple-branch active and reserve military units and allied forces
Guadalupe Mountains Wind	Installation and maintenance of 110 485-foot wind turbines
Oil and Gas Exploration and Extraction	Installation and maintenance of wells and pipelines

4.2 Geology

4.2.1 Proposed Action

Mineral Resources

The Project area includes numerous oil and gas leases and four mines inside the study area. Short-term impacts to existing lease and mine operations could occur during transmission maintenance activities if construction vehicles and/or equipment were on the same roads as those used by lease holders. These impacts would be short-term and are expected to be low.

Soil Resources

Erosion is the natural process by which water or wind removes soil from its natural location. Access road improvement and clearing of vegetation at structure work areas could adversely affect soil resources by increasing the exposure of soil that is susceptible to water or wind erosion at the land surface. This could result in a degradation of the land surface, reduced long-term soil productivity through loss of topsoil material, and nonpoint pollution as eroded soil material is washed into nearby streams or water bodies. Nonpoint-source control BMPs, such as installation of staked wattles and water bars, would reduce the potential for nonpoint pollution.

Soil resources would be directly affected by ground-disturbing activities associated with access road improvements and structure work areas. These activities will likely crush or clear vegetative cover, compact soils, possibly result in rutting, and could indirectly increase local soil susceptibility to water or wind erosion. These activities could potentially affect soil resources by exposing or compacting surface horizons, thereby increasing the likelihood that soil could be removed by erosion from the Project area. BMPs, such as leaving vegetation in place in areas where no construction is required, maintaining original contour as much as possible, minimizing disturbance to vegetation and stream banks, and improving roads at right angles to streams and washes, will effectively minimize impacts to soils and reduce soil erosion.

Of the 106 soil units in the project area, 56 soil units are expected to be affected by the proposed Project activities. Of these, 17 soil units are considered to have high susceptibility to either wind or water erosion. These soil units are crossed by approximately 34 miles of access roads, which may require improvement. Approximately 35 acres of disturbance related to tower replacement would also occur within the 17 soil units with high susceptibility to wind and water erosion. Table 4-5 includes the soil units with high susceptibility to wind and water erosion, the structure numbers around which these soils are located, and the miles of access road that cross each unit.

Table 4-5. Soil Units with High Erodibility Factor within the Amrad to Artesia Study Area					
Map Unit Name	**Order**	**Kw**	**WEG**	**Soils Located between Structure Numbers**	**Miles of Access Roads within Soil Units**
Reyab silty loam 0 to 1 and 1 to 3 percent slopes	Ustic Haplo cambids	0.64	4L	69-70, 71-74, 76-96	6.3
Reyab loam 1 to 5 percent slopes	Ustic Haplo cambids	0.64	4L	175-176, 190-191, 193-194, 223-225, 231-232	2.5
Oryx loam 1 to 5 percent slopes	Ustic Torrifluvents	0.64	4L	171-172, 199, 213-216, 247, 253	2.4
Oryx-Reyab complex	Ustic Torrifluvents	0.64	4L	211-213, 222-223	0.5
Double silty loam 2 to 5 percent slopes	Ustic Haplo cambids	0.64	4L	147-148, 151, 153, 162-171	3.6
Arno-Harkey complex, saline, 0 to 1 percent slopes	Typic Torrifluvents	0.55	4L	736-748	2.7
Largo silty loam, overflow, 0 to 1 percent slopes	Typic Torriorthents	0.55	4L	530-533, 544-545, 547-549, 551-565, 573-579	4.2
Salado loam, 1 to 3 percent	Ustic Haplocalcids	0.55	4L	226	0.05
Dev-Pima complex, 0 to 3 percent slopes	-	0.49	4L	529, 596-597, 607-609, 616, 631-637	2.7
Pima silty loam, 0 to 1 percent slopes	Typic Torrifluvents	0.49	4L	534, 566, 569, 647, 703-705	1.1
Jerag-Armesa complex, 2 to 5 percent slopes	Ustalfic Petrocalcids	0.49	3	142-145	1.8
Cuevoland-Ancho association	Aridic Calciustolls	0.43	4L	326-632	1.3
Reakor-Tencee association	Typic Haplocalcids	0.43	4L	351-362, 367, 373-374, 376-383, 385-387	2

Table 4-5. Soil Units with High Erodibility Factor within the Amrad to Artesia Study Area					
Map Unit Name	**Order**	**Kw**	**WEG**	**Soils Located between Structure Numbers**	**Miles of Access Roads within Soil Units**
Bissett-Rock outcrop complex, 35 to 65 percent slopes	Ustic Haplocalcids	0.43	6	141	0.3
Copia-Patriot complex, 2 to 5 percent slopes	Typic Torripsamments	0.28	1	53-69	2.6
Pintura-Dona Ana complex, 0 to 5 percent slopes	Typic torripsamments	0.2	2	18-22, 26-50	3.6
Copia loamy fine sand, 5 to 15 percent slopes	Typic torripsamments	0.05	2	74-75	0.5
Data derived from NRCS, SSURGO, and soil surveys of Chaves, Eddy, and Otero counties.					

Caves and Karst

A possibility exists for slow subsidence or sudden collapse of a sinkhole, cave passage, or void during road construction operations, with associated risks to operators and equipment, and potential for increased negative environmental impact. These subsidence processes can be triggered or enhanced by intense vibrations from construction or rerouting or focusing of surface drainages.

Roads and road drainage turnouts can direct or funnel runoff water into cave entrances or sinkholes. Contaminants from spills and general road runoff (such as oil and other petroleum products, salt water, and other debris) can be transported directly into the cave systems causing negative effects on the cave environment and ecosystem. Because cave ecosystems are extremely fragile and easily disturbed, the negative effects to the cave's biological components may include disruption of some of its species. Because karst terrains and cave systems are directly and integrally linked to groundwater recharge, contaminants spilled on roads in these areas may lead directly to groundwater contamination.

Buildup of toxic or combustible fumes in caves and cave entrances from spills on roadways may harm wildlife and cave visitors and, in extreme cases, lead to asphyxiation or rapid ignition in the rare event that the fumes are ignited by visitors.

All spills or leaks should be reported to BLM immediately for their immediate and proper treatment. EPE's Emergency Spill Response Procedures would mitigate any spills, should they occur. BMPs such as installation of staked wattles and water bars would reduce the potential of runoff.

4.2.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to minerals, soils, and caves and karst under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review.

4.2.3 Cumulative Impacts

<u>Soil Resources</u>

Impacts to soils are generally localized and do not result in regional cumulative effects. Soil conditions vary significantly over short distances, effectively limiting the geographic range of the impacts to soil resources. Therefore, the impacts of the Proposed Action to soil resources would be localized within the Project area. Ground-disturbing activities associated with the Project could increase erosion and reduce soil productivity. These impacts would be incremental, as the project includes upgrades to existing access roads and existing structure sites. The upgrade of access roads could add to the cumulative effects if the improved condition of these roads were to attract other user groups, such as recreational users. Any new ground disturbing activities on federal lands would be subject to the same BMPs as the Project.

4.3 Paleontological Resources

This section discusses effects on paleontological resources that may occur with the implementation of the Proposed Action.

4.3.1 Proposed Action

The Proposed Action may impact paleontological resources present in the proposed Project area. The paleontological inventory described above demonstrates that two geological units present within the Project study corridors may contain paleontological resources. The Upper Santa Fe Group, which has a PFYC of 4, and the Abo Formation, which has a PFYC of 3, are present along the west end of the Project. The primary impact issue for paleontological resources is the loss of scientifically significant fossils and their contextual data. Two types of impacts could potentially affect paleontological resources:

- Direct impacts resulting from ground disturbance during construction
- Indirect impacts due to changes in public accessibility or erosion

It is possible that ground disturbance, such as grading and cutting of existing access roads, or construction of new access roads could encounter important paleontological resources. Fossils could be subject to damage or destruction by erosion that is accelerated by ground disturbance. Improved access and increased visibility can result in unauthorized collection or vandalism. However, not all impacts of construction are adverse to paleontology. Excavation can and often does reveal significant fossils that would otherwise remain buried and unavailable for scientific study. In this manner, ground disturbance can result in beneficial impacts. Such fossils can be collected properly and catalogued into the collection of a museum repository so that they can be available for scientific study.

4.3.2 No Action Alternative Impacts

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to paleontological resources under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review.

4.3.3 Cumulative Impacts

The area of cumulative analysis for paleontological resources includes the geological units associated with the Proposed Action. The sensitivity of the geological units ranges from low to high. Other projects within the study area could add to the cumulative effects to paleontological resources. Any construction or ground-disturbing activities associated with other projects, such as transmission lines, pipelines, or new roads, could have incremental effects on paleontological resources.

4.4 Water Resources

4.4.1 Proposed Action

Ground-disturbing activities associated with the Proposed Action could impact water resources within the Project study corridors. Two types of impacts could potentially affect water resources:

- Direct impacts resulting from loss of vegetation associated with riparian areas or the accidental spillage of fuel or other hazardous substance into a water resource
- Indirect impacts resulting from increased sedimentation due to loss of vegetation or changes to existing drainage and erosional patterns

Impacts to watersheds could include any of the below described impacts for each water resource. Additionally, ground disturbing activities could alter existing drainage patterns. An accidental spill of petroleum products or other hazardous material could contaminate surface water or groundwater in a watershed.

A total of 125 intermittent streams are crossed by Project access roads. While the historical channel of the Pecos River, which is now entirely diverted into a man-made channel, is spanned by the transmission lines, there are no construction or maintenance activities as part of the Proposed Action that occur within the Pecos River.

Direct impacts to these streams would be in areas where the vegetation would be cleared, and where existing roads would be improved. These impacts to water resources are estimated to be low, and implementation of BMPs, such as site stabilization and installation of water bars, would reduce erosion potential and would minimize adverse effects to water resources within the Project area. All petroleum products and other hazardous materials would be stored within the ROW, and if a spill were to occur, it would be addressed in accordance with EPE's Emergency Spill Response Procedures. No bridges or culverts are planned for the Proposed Action, and all drainage features crossed by the Project are ephemeral. All crossings would cause less than 0.5 of an acre of disturbance in potentially jurisdictional waters of the U.S. and would be covered under the Nationwide Permit 12 (Utility Line Activities). The 61 water wells in the study area would be avoided.

Impacts to floodplains can occur when channels for floodwaters are obstructed or changed, increasing downstream flows or upstream flooding; or when vegetation is removed and soils are compacted enough to lessen the ability for floodplain to store excess water. The largest floodplains crossed by the Project access roads are associated with the Brantley Wildlife Area and the Pecos River. Upgrades proposed for project access roads are only enough to allow infrequent travel by inspection crews and maintenance activities, when required, and are not expected to change flows in floodplains, or affect the ability of the floodplains to store excess water.

A number of identified wetlands occur in close proximity to the ROW or access roads. These can be found near structures 248, 249, 273, on Dorothy Road near structure 287, 297, 304, 307, between 310 and 311, 317, 322, 351, and on the access road near 420, 440, 515, and 659. In all cases, these appear to be cattle tanks. However, avoidance of these small wetland areas would eliminate any impact.

4.4.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to water resources under the No Action alternative would be similar to the Proposed Action, but may take place without the same level of environmental review.

4.4.3 Cumulative Impacts

The Project could contribute to the cumulative effects for those activities requiring ground disturbance. Ground-disturbing activities could potentially increase the sedimentation to streams within the Project area, thereby adding to the cumulative effects to water resources. The Project will include improvement of existing access roads that have not been improved, stabilized, or have been reclaimed, thus increasing chances of erosion in those areas and/or altering the current runoff and drainage conditions. With implementation of BMPs, such as installation of staked wattles and water bars, leaving vegetation in place as much as possible, maintaining natural contours to the extent possible, and improving roads at right angles to streams, the contribution of cumulative effects to water resources from the Proposed Action would be low.

4.5 Biological Resources

4.5.1 Proposed Action

Potential impacts to biological resources from the Project may include (1) disturbance to wildlife and their habitat during construction and maintenance; (2) loss of individual animals; (3) temporary loss of vegetation at transmission structure work areas; (4) permanent loss of vegetation where access roads are improved; and (5) introduction of non-native invasive plant species.

Potential Effects to Vegetation

Clearing of vegetation for roads or work areas would occur, although temporary disturbance would be stabilized. Soil disturbance from construction and inadvertent transport of seeds increases the susceptibility of an area to invasion of noxious weeds and other invasive plants. Non-native plant species may out-compete native plants for resources such as water and soil nutrients, and in some cases can increase fire frequency in vegetation communities not adapted to fire, such as Chihuahuan Desertscrub. The risk of introduction of invasive plants would be minimized through BMPs and cleaning construction equipment and vehicles before entering and leaving the Project area, and through the use of approved native weed-free seed mixes used for reclamation.

Dust deposition resulting from construction, and increased Project-related or recreational road use following construction, may negatively impact plants within the Project area. Dust particles landing on leaves or photosynthetic stems and bark reduce photosynthetic activity, and therefore reduce plant growth and survival (Sharifi et al. 1997).

Potential Effects to Weeds

Ground disturbance can facilitate the invasion and establishment of weeds, and weed seeds may be transported to new locations in vehicles or in mud and soils that adhere to vehicles and other equipment. However, BMP 2 provides for the cleaning of all vehicles and equipment that can transport weed seeds to ensure that no new infestations are established. BMPs 4, 5, and 6 will minimize new ground disturbance that can facilitate weed invasion, and BMP 10 provides for the treatment of any weed infestations that may spread as a result of the Project.

Potential Effects to Wildlife

Impacts of the Project should be minimal as the majority of activities will involve improvement of existing roads. Clearing of vegetation for access and other construction areas could have both direct and indirect effects on wildlife and plant species that depend on habitats in the Project area. Direct impacts on special-status wildlife species, including migratory birds, resulting from improvement of existing roads, include increased noise and human activity during construction and downstream effects of erosion and chemical contamination of water. Indirect impacts to wildlife special-status species due to increased road access would include illegal hunting of these species.

Clearing of vegetation for roads or work areas removes habitat for species and could reduce the capacity of these areas to function as cover from predator species, thereby increasing mortality. Ground disturbance from construction and inadvertent transport of seeds increases the susceptibility of an area to invasion of noxious weeds and other invasive plants, which could alter habitat quality for plant and wildlife species in the Project area.

Noise and emissions from construction can lead to avoidance of work areas by wildlife species for several hundred meters from construction sites (Fahrig and Retwinski 2009). Some species will alter activity patterns in relation to the disturbance, such as reductions in the density of breeding bird territories near activities generating high levels of noise or other disturbance (Reijnen et al. 1995). Since work will be temporary and the roads are not heavily traveled, noise-related impacts should be minimal.

All proposed drainage crossings would occur over ephemeral streams. The only perennial waterway near the Project area, the Pecos River, is spanned by the transmission line and not crossed by any Project access road. Any activity at ephemeral stream crossings could result in degradation of water quality through erosion and contamination of the waterway from chemical spills and fluids leaking from vehicles. Erosion and chemical contamination can have downstream effects far outside of the Project boundary; downstream effects of heavy metals in soil have been detected as far as four miles downstream from stream crossings (Forman and Alexander 1998). The type of vehicle crossing a stream affects the quantity of downstream sedimentation, with heavier vehicles being likely to cause proportionally greater sedimentation (Taylor et al. 1999; Lane and Sheridan 2002). Quantities of rainfall and runoff during a given time period also impact the quantity of downstream sedimentation and chemical transport.

Indirect effects from low-use roads may occur, independent of Project related traffic. Increased hunter and OHV access via road improvements and clearing of work areas may cause disturbances not directly related to the Project (Thiel 1985; McLellan and Shackleton 1988).

Several Project BMPs would reduce or eliminate direct and indirect effects of the Project on special-status plants and wildlife species. BMP 1 requires the development of a detailed POD prior to construction that would address biological considerations, including noxious weed management. Under BMP 4, wherever possible, vegetation would be left in place and original land contours would be maintained to avoid damage to roots and allow for vegetation regrowth. BMP 15 requires that surveys for special-status plants and wildlife species would occur in areas of known occurrences or suitable habitat. Timing and extent of the surveys would be determined on a species-by-species basis, coordinated with agency wildlife biologists, and completed prior to construction. Monitoring of construction activities may be required in some areas to ensure that effects to these species are avoided during construction. Other avoidance measures may be required for certain species as determined necessary by agency wildlife biologists.

Potential Effects to Special-status Species and Migratory Birds

No impacts to special-status plants are anticipated to result from the Project. No special-status plant species evaluated in Table A 4 (Appendix A) were observed during surveys of the Project area, and ground disturbance associated with the Project would take place in locations previously disturbed during the original construction of the transmission line.

Impacts of the Project should be minimal as the majority of activities will involve improvement of existing roads. Clearing of vegetation for access and other construction areas could have both direct and indirect effects on wildlife and plant species that depend on habitats in the Project area. Direct impacts on special-status wildlife species, including migratory birds, resulting from improvement of existing roads include increased noise and human activity during construction and downstream effects of erosion and chemical contamination of water. Indirect impacts to wildlife special-status species due to increased road access would include illegal hunting of these species.

4.5.2 No Action Alternative

Potential Effects to Vegetation

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to vegetation under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review.

Potential Effects to Weeds

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, the risk of facilitating the spread of weeds under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review.

Potential Effects to Wildlife

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to wildlife under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review. The No Action alternative, for example, may result in maintenance activities taking place during sensitive seasons for special-status wildlife or protected migratory birds.

Potential Effects to Special-status Species and Migratory Birds

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to wildlife under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review. The No Action alternative, for example, may result in emergency maintenance activities taking place during sensitive seasons for special-status wildlife or protected migratory birds.

4.5.3 Cumulative Impacts

The Project would contribute to many of the past, present, and reasonably foreseeable actions identified in Section 4.1.2 for those activities that require ground disturbance or human activities. The Project represents the reopening of existing roads that require maintenance or have been reclaimed. A portion of this Project would represent an incremental loss of vegetation and increase in disturbance associated with access road improvements and transmission structure maintenance, while the remainder of the roads is identified as planned travel routes in BLM

Travel Management Plans. The cumulative increase in the total road density may increase the level of disturbance associated with recreational activities, which may cause additional disturbance to sensitive wildlife species.

4.6 Wildland Fire

4.6.1 Proposed Action

The Project may affect fire management by increasing the risk of unplanned wildfires in the Project area. Many human activities carry some risk of fire ignition. The use of heavy equipment can cause sparks during ground-clearing activities, exhaust from small engines may also cause sparks, and contact between dry vegetation and vehicle exhaust systems can ignite fires. Unplanned ignitions can result in potentially large fires that may affect vegetation structure, soil erosion, air quality, and the safety of human life and property.
To minimize or prevent the risk of the accidental ignition or spread of fires, the following standard procedures would be in place during all Project activities:

- All engines would be required to have an approved spark arrestor
- All vehicles would carry a fire extinguisher
- Welding and similar activities would require the use of a spotter, equipped with water and tools to quickly extinguish any ignitions
- All contractors would receive training in basic fire suppression to attempt to prevent the spread of any accidental ignitions beyond the work area

Additionally, the applicant will perform annual inspections and liDAR data collection for clearance between vegetation and power lines in an ongoing effort to maintain vegetation within the right-of-way to reduce fire hazard.

4.6.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. Maintenance may be delayed for agency approval and the potential for fire from vegetation clearance or faulty structures could increase.

4.6.3 Cumulative Impacts

Nearly all ongoing and future activities in the Project area have the potential to cause unplanned fire ignitions, and the Project may contribute incrementally to that risk. As an example, the Luna County Community Wildfire Protection Plan (Luna County 2010) reported that approximately 75 percent of fires between 1980 and 2010 were human-caused, from the following activities: campfires, children playing, debris burning, equipment use, fireworks and incendiaries, hot ashes, power lines, railroads, smoking, and unknown or miscellaneous causes. In addition to directly increasing the level of human activity and fire risk, the Project may also increase access into some areas, contributing to an increase in recreational and other activities that may cause fire ignitions.

4.7 Lands and Realty

4.7.1 Proposed Action

Existing Land Use

Under the Proposed Action, minimal impacts to existing land uses are anticipated.

The proposed road improvements are on existing or previously used construction roads and transmission structure work areas are at existing structure locations. Because these areas are currently, or were previously used for structure access and construction, the proposed project would cause minimal changes to existing land use. Access to residences, industrial/office facilities, agriculture operations, livestock grazing operations, utilities, and existing and available timber stands and mining sites may be temporarily interrupted during improvements to existing roads and transmission structure work areas, but will be short-term and limited to localized construction activities. Increased accessibility to existing land uses may also result from implementation of the Proposed Action.

Avoidance Areas

No road improvements or construction activities are proposed within the avoidance area associated with the Black Grama Grassland ACEC.

4.7.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis.

4.7.3 Cumulative Impacts

Cumulative impacts to land use could occur through changes in the designation and development of land resources and access to the land. Improvements to existing access could result in an increase in visitation of the areas within and in the vicinity of the study area. Over time, continued visitation in this area will contribute to greater use of the land within the Project area.

4.8 Special Designations

4.8.1 Proposed Action

Special Management Areas (SMAs)

The Brantley Wildlife Management Area is located astride the Pecos River 7 miles north of Carlsbad and 23 miles south of Artesia, approximately 2.7 miles of which (structure numbers 733 through 751) is crossed by Project activities.

Areas of Critical Environmental Concern

A portion of the Project study corridor passes through the Black Grama Grassland ACEC. However, no road improvements are proposed within the ACEC, therefore minimal impacts to the ACEC are anticipated.

Other Special Designation Areas

Grassland restoration areas on the eastern half of the McGregor Range are traversed by the study corridor. The McGregor Resource Management Plan Amendment that delineates this area calls for a Grassland Habitat Management Plan.

The proposed Project activities cross the southern portion of the Red Sands Motorized OHV Trail Area (approximately 7.25 miles) from US Hwy 54 to the western terminus of the project. Temporary interruption of certain sections of trails could be expected as the Project improvements progress.

4.8.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to lands and realty under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review.

4.8.3 Cumulative Impacts

Cumulative impacts to SMAs could occur through changes in their accessibility. The Proposed Action could improve access to SMAs, which could foster additional use of these resources. Over time, improved access to SMAs could contribute to greater use of the land within the project area. SMAs within the project area are managed largely for their recreational and scenic values. It is expected that the implementation of the Proposed Action, along with other past, present, and reasonably foreseeable future projects, could result in alterations to the scenic landscape, but cumulative impacts to SMAs are expected to be minimal.

4.9 Recreation

4.9.1 Proposed Action

Access to developed and dispersed recreation opportunities may be temporarily interrupted during improvements to existing roads and transmission structure work areas, but will be short term and limited to localized construction activities. In addition, increased accessibility to developed and dispersed recreation opportunities may result from road improvements related to the Proposed Action.

4.9.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to recreation under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review.

4.9.3 Cumulative Impacts

Cumulative impacts to recreation could occur through changes in accessibility to recreation opportunities. The Proposed Action could improve access to recreation opportunities, which could foster additional use of these resources.

4.10 Visual Resources

4.10.1 Proposed Action

The primary purpose of the impact assessment is to evaluate and characterize the level of visual modification, or visual contrast, to the landscape that would result from the Proposed Action. Visual contrast is defined as the degree of perceived change that occurs in the landscape due to modifications necessary for the Proposed Action. Visual contrast for the Proposed Action would primarily result from the improvement of access roads and work areas around towers that require replacement and/or maintenance. These contrasts are typically a result of the removal of vegetation for the tower work areas (which results in line and color contrast) and improving roads (which results in color contrast and in some cases form contrast). The assessment for visual contrast is performed by comparing visual elements (form, line, color, and texture) of the existing landscape with the visual elements associated with the implementation of the Proposed Action. Existing vegetation conditions within the Project area were evaluated in conjunction with EPE's Proposed Action to improve access roads. It is important to note that the existing structures and modifications to vegetation within the rights-of-way and Project area have locally altered the character of the landscape and are currently visible to viewing locations and identified Key Observation Points (KOPs).

Contrast as a result of the original construction actions (i.e., access roads and vegetation clearing) within the Project study area is evident; however, regrowth of vegetation over time has reduced visual contrast since original construction and/or maintenance of the facilities. Regrowth of vegetation varies along the right-of-way; however, the existing transmission line structures generally dominate the setting. Visual contrast as a result of the Proposed Action would be strongest on steep to rolling topography occupied by dense woodland vegetation and weakest on flat, sparsely vegetated topography. However, in areas of steep terrain where the Project crosses washes and/or depressions, Project facilities may span many of these features at such a height that vegetation would not interfere with safe and reliable transmission line operation, thus not requiring removal.

<u>Scenery</u>

Impacts on scenery would range from low to low-moderate for Class C and B landscapes, respectively. Specifically, line and color contrast would be weak where access roads would be improved on flat to rolling terrain occupied by creosote-bursage grassland and shortgrass prairie as the vegetation removal and access road upgrades would generally blend in with existing landscape. Improvements to access roads and/or work areas in steep to moderate terrain occupied by juniper woodland would result in moderate contrast due to the landform contrast in color and line and vegetation removal being more visible. Construction impacts would be minimized through only improving those sections of access roads which require it.

<u>Viewing Locations and KOPs</u>

<u>Residential Viewers</u>

In general, the Proposed Action would be visible from residences throughout the Project Area. Visual Contrast is anticipated to be low for the majority of residential viewers as they are not in close proximity to the project and/or are viewing the project in flat to moderate terrain in the context of existing facilities. Moderate contrast due to vegetation removal is anticipated for residences in close proximity to the Project and in moderate to steep terrain where vegetation has partially regrown over the original access road. However, the proposed access road upgrades would be viewed in the context of the existing 345kV line structures as well as remnants of the original access roads within a utility corridor, resulting in weak overall contrast (see KOP 2).

<u>Travel Route Viewers</u>

Low to moderate visual contrast in line and color would be visible for moderate concern level travel routes, including SR 54, where vegetation clearing would be evident. Impacts are anticipated to be low for moderate concern level viewers associated with SR 54 because viewers would be approaching the Project from a perpendicular angle and the access road as viewed on flat terrain would be perceived as a thin line, screened by vegetation. Furthermore, the viewing duration would be short due to the high rate of speed.

Other moderate concern level roads such as county roads have lower rates of speed and, in the middle section of the study area, allow viewers to see the project in steeper topography. County Road 506 (as represented by KOP 3) roughly parallels the proposed project in flat to hilly terrain; however, the access roads generally follow the contours and would typically be screened from travel route viewers due to the topography. Line and color contrast resulting from vegetation clearing around the tower pads/laydown areas would be more evident in these areas; however, overland travel would reduce contrast. Furthermore, the access roads would be seen in the context of the existing utility line corridor further reducing impacts.

Low contrast is anticipated for travel route viewers in the eastern section of the project due to flat terrain and dense grassland vegetation coverage where vegetation removal would not be visible. Travelers along US Route 285 would pass the Project at a perpendicular angle and would see the Project for a short duration in the context of existing transmission lines and industrial development associated with oil wells, resulting in low impacts.

<u>Recreation Viewers</u>

Low impacts are anticipated for moderate concern level recreation viewers associated with the Red Sands OHV recreation area due to flat terrain where line and color contrast associated with vegetation removal would not be evident. In addition, any soil exposed by grading would be similar in color to the existing red sandy soils further reducing contrast. Impacts are anticipated to be low for moderate concern level viewers traveling the access road to Culp Canyon Wilderness Study Area (WSA).

Agency Visual Management Classifications

Conformance with BLM VRM Class III and IV objectives is anticipated as the Proposed Action would update existing access roads within an existing utility line corridor, thus introducing weak to moderate-weak visual contrast. Access roads to be improved in the western third of the project are on flat to rolling terrain, are generally existing roads within the existing transmission line corridor, and would be seen in the context of the existing structures. Access roads in the eastern third of the Project are similarly on flat terrain, but within a grassland environment (with lower contrast due to vegetation removal), and would be seen in the context of the existing transmission line structures as well as the existing industrial landscape. Access roads in the middle third of the Project are located on steeper terrain; however, landform and vegetation modifications introduce moderate-weak contrast as the upgraded access roads are generally within the utility corridor and typically follow the existing contours.

4.10.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. Contrast resulting from this maintenance would be similar to those of the proposed action (see above).

4.10.3 Cumulative Impacts

Cumulative impacts to visual resources could occur over time through increased access created by the improved access roads. The increased accessibility could result in greater disturbance from OHV and other types of recreation. Additional electrical lines, required by further growth and development in nearby communities, would require new structures and access, resulting in the introduction of strong vertical lines and geometric forms, similar to the existing ROW. The Proposed Action, including past, present, and reasonably foreseeable future projects, could contribute to the cumulative visual impacts that are occurring in the area.

4.11 Cultural Resources

The anticipated impacts to cultural resources would result from a loss of integrity for prehistoric and historic sites. Four types of impacts that could adversely affect historic properties during and after construction of the proposed Project include:

- Direct and permanent ground disturbance
- Direct and permanent visual and auditory intrusions
- Indirect and temporary visual intrusions
- Indirect and permanent disturbances due to changes in public accessibility and visual intrusions

4.11.1 Proposed Action

The Proposed Action will have adverse effects to 25 historic properties, including 22 prehistoric sites that have features and/or artifacts, 2 historic homesteads, and 1 historic oil/gas exploration site. Adverse effects to these sites will be mitigated through the implementation of a Historic Properties Treatment Plan (HPTP) that will be prepared by BLM for the project in compliance with Section 106 of the NHPA. There are 16 historic properties within the APE that can be avoided by project activities. The HPTP will specify testing for the 3 sites whose eligibility status is undetermined. After testing, BLM will make a determination of their NRHP eligibility in consultation with SHPO. If any is determined to be a historic property, it will be avoided if reasonably feasible. If it cannot be avoided, then it will be subject to mitigation measures that will be detailed in the HPTP.

If Tribal consultation to consider Native American concerns identifies sacred or important locations considered as traditional cultural properties, they will be avoided if reasonably feasible. If they cannot be avoided, they would be subject to mitigation measures that will be detailed in the HPTP.

4.11.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis. As a result, impacts to cultural resources under the No Action alternative would be similar to the Proposed Action but may take place without the same level of environmental review.

4.11.3 Cumulative Impacts

Cumulative impacts to cultural resources could occur through the development of reasonably foreseeable future projects, such as mineral exploration, energy development including renewable resources and oil and gas exploration, and the resulting increased access to the land. Improvements to existing access could result in increased vehicular traffic across cultural sites, perhaps damaging artifacts or features that could yield information about the past.

4.12 Air Quality and Climate

4.12.1 Proposed Action

Air Quality

Emissions of air pollutants would occur during access road improvement activities and clearance of work areas around transmission structures related to the emergency repair activities. Emissions from emergency repair activities would be confined to daytime hours and would occur only during construction periods. Emissions would be transient as structure repair requires, so emissions would not occur in one area for a long duration, thereby limiting their impact.

During the operations phase, emissions would be limited primarily to vehicular use for routine inspection and maintenance. Pollutants would be emitted in much smaller amounts on an annual basis; therefore, the majority of emissions and impacts would be associated with emergency repair activities.

Climate Change

An increase of greenhouse gas emissions would exacerbate the effects of climate change; however, the increase of PM-10 emissions during improvement activities, operation, and maintenance phases of this project would be temporary and are not expected to impact climatic conditions in the study area. It is further expected that there would be no significant contribution to climate change in this region as a result of Project activities.

4.12.2 No Action Alternative

Under the No Action alternative, the Project would not take place and would not cause the potential effects described under the Proposed Action. However, needed maintenance on the existing, permitted transmission line would continue to be required, and would take place as authorized on a case-by-case basis.

4.12.3 Cumulative Impacts

Air Quality

The Project could contribute incremental air quality and climate impacts to past, present, and reasonably foreseeable future actions; however, these cumulative effects would be minimal.

Operational impacts to air quality during construction could occur but would be negligible. Therefore, in combination with current conditions and local activities there are minimal incremental impacts expected presently or in the foreseeable future due to Project activities. Potential increases of PM-10 emissions during improvement activities and maintenance phases of the Project would be temporary and are not expected to pose a threat to the climatic conditions of the surrounding region.

Increased population in the region would result in increased levels of visitors to the study area, including OHV and recreation use. Such increased use would result in elevated levels of fugitive dust, as well as vehicle emissions in concentrated-use areas. Grazing would decrease vegetative cover.

Vegetation management, including prescribed burns, would result in the loss of vegetation and would continue to make soils more susceptible to disturbance, which could result in fugitive dust. Additional electrical facilities required by growth and development in the study area would generate fugitive dust during construction. It is expected that there would be no significant contribution to climate change in this region as a result of Project activities.

5 INDIVIDUALS, ORGANIZATIONS, TRIBES, OR AGENCIES CONSULTED

5.1 Agency Coordination

Monthly Project conference calls were initiated in November 2013, and included agency staff from the BLM Las Cruces District Office, BLM Carlsbad Field Office, BOR, the DOD, EPE, and third-party contractors tasked with the preparation of the EA. Representatives from EPE provided clarification of electrical transmission and Project description-related questions. These meetings were used to update agency staff on the progress of the Project and to assist in the identification of resource-specific issues.

5.2 Stakeholder and Public Involvement

The public had the opportunity to contact the Las Cruces District Office and provide input on this Project, which was listed on the New Mexico BLM Website NEPA Log. Available online at: http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html.

Additionally, a 30-day scoping period was initiated on March 4, 2014, and ended on April 15, 2014. Mailing lists of landowners within the study area were compiled from contact lists provided by the BLM Las Cruces District Office and BLM Carlsbad Field Office. A scoping packet, which included the scoping letter, map of the proposed Project, and a self-addressed postage-paid comment form, were direct-mailed to private landowners, local and county governments, and New Mexico State Agencies that included the NMSLO and NMDGF.

5.3 Tribal Consultation

In December 2015, the BLM contacted tribes to notify them of the Project and initiate formal consultation. At the time of this EA, one response was received from the Ysleta del Sur Pueblo stating that they have no opposition to the Project, but requesting to be notified if any human remains or artifacts were unearthed during the project that are determined to fall under Native American Graves Protection and Repatriation Act guidelines.

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Appendix A

Best Management Practices

BMPs typically address specific environmental policies, planning guidelines, or regulatory requirements. They are intended to reduce or eliminate effects of the Proposed Action, whether or not the effects are significant in nature. BMPs are applied, where applicable, to the Project as a whole, and are listed below. In addition to these BMPs, the BLM ROW grant would include additional standard stipulations, which would further reduce effects.

1. Prior to construction, a detailed POD will be developed to further describe Project features and procedures that have been outlined in this EA. The POD will address construction and operation considerations, biological considerations (including noxious weed management and migratory birds), cultural resources, paleontological considerations, hazardous materials management, and reclamation considerations, as analyzed in this EA.

2. All construction vehicles and equipment will be cleaned using compressed water before proceeding to new locations when moving from weed-contaminated areas to other areas along the transmission line right-of-way to reduce the spread of noxious weeds.

3. All vehicle movement outside the right-of-way would be restricted to designated access, contractor acquired access, or public roads.

4. The boundary of construction activities would be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate activity limits.

5. In construction areas where grading is not required, vegetation would be left in place wherever possible, and original contour would be maintained to avoid excessive root damage and allow for regrowth.

6. Wherever possible, vegetation clearing would include above ground cutting methods that leave the root crown intact. Cleared vegetation may be placed downslope of installed water bars or other drainage features in the immediate vicinity to dissipate water flow and reduce erosion.

7. Upon completion of a maintenance activity at a given structure, the disturbed work area will be stabilized using practices such as installation of staked wattles on contour at an interval sufficient to prevent erosion and promote revegetation. Slopes would be recontoured to a maximum of 1:1 cut slopes in normal soils, as prescribed in *The Gold Book* (DOI and USDA 2007). Topsoil shall be stockpiled during excavation and reused as cover on disturbed areas to facilitate regrowth of vegetation. Reseeding may also be used as a stabilization measure, as prescribed in the POD.

8. Drainage ditches on both sides of the travel surface may be constructed where terrain and drainage conditions along existing road paths necessitate. Water bars and/or diversions would be installed in those areas where it is deemed necessary to protect the road from erosion and divert runoff water in a natural manner. Water bars, drainage ditches, and/or water diversions would be constructed in a manner that would not significantly alter

natural in-channel and/or overland water flow and/or cause undue erosion and damage to the surrounding terrain.

9. Construction holes left open overnight would be appropriately fenced or covered to prevent damage to wildlife or livestock.

10. Watering facilities (e.g., tanks, developed springs, water lines, wells, etc.) would be repaired or replaced if they were damaged or destroyed by construction activities. Temporary watering facilities would be provided for wildlife and livestock until permanent repair or replacement is complete.

11. Prior to construction, all supervisory construction personnel would be instructed on the protection of cultural and ecological resources. To assist in this effort, a resource specialist would address: (a) federal and state laws regarding antiquities and plants and wildlife, including collection and removal; (b) the importance of these resources and the purpose and necessity of protecting them.

12. Roads would be improved as near as possible at right angles to the streams and washes. All construction and operations activities will be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks.

13. All requirements of those entities having jurisdiction over air quality matters would be adhered to, any necessary dust control plans would be developed, and permits for construction activities would be obtained. Open burning of construction trash would not be allowed unless permitted by appropriate authorities. Dust control plans would be prepared prior to any improvement or construction related activities where required. However, at this time, no improvements to access routes or maintenance use areas are of a magnitude expected to require permits.

14. Fences, cattle guards, and gates would be repaired or replaced to their original, pre-disturbed condition, as required by the landowner or the BLM Authorized Officer if they were damaged or destroyed by construction activities. New temporary and/or permanent gates would be installed only with the permission of the landowner or BLM. All gates would be left in the condition found (open or closed) during construction and operation activities.

15. During operation of the transmission lines, the right-of-way would be maintained free of non-biodegradable debris. Slash would be left in place or disposed of in accordance with requirements of the land owner or management agency.

16. In consultation with appropriate land-management agencies, specific mitigation measures for paleontological resources would be developed and implemented to mitigate any identified adverse impacts. These measures may include: preparation of a paleontological resource management plan; paleontological surveys; personnel education; monitoring ground disturbance for fossils; curation of fossils; and deposition of fossils in a paleontological repository.

17. If, during construction, scientifically significant fossils are unearthed, ground-disturbing activities must cease, the Authorized Officer (appointed by BLM) must be contacted immediately, and appropriate measures must be implemented and completed to preserve the scientific information yielded by these fossils. Construction activities may proceed only when permitted by the Authorized Officer. Construction activities may proceed only when the paleontological monitors have removed or otherwise mitigated impacts on the discovery(ies) and authorized further construction.

18. The measures to mitigate impacts on scientifically significant fossils unearthed during ground-disturbing activities must be conducted by a professional paleontologist under permit from BLM (e.g., BLM H-8270-1, IM 2009-011, and IM 2008-009). These measures are subject to review and approval by BLM, as appropriate.

19. Any large vertebrate fossils discovered during construction would be jacketed and collected. Sediments yielding remains of aquatic or terrestrial vertebrates would be screened in the field to determine the potential for the collection of significant fossils and the efficacy of more-detailed sampling, as well as the recovery of microvertebrates. Sediments yielding invertebrate remains would be screened in the field and sampled only in those cases where significant data are likely to be found. Fossil animal trackways, if not avoided, would be either collected or replicated. All paleontological resources collected would be prepared by qualified, permitted paleontologists, sufficient for identification, and curated in a designated federal repository such as the New Mexico Museum of Natural History and Science.

20. Preconstruction surveys for species listed under the ESA or specified by the appropriate land management agency as sensitive or of concern would be conducted as required in areas of known occurrence or suitable habitat. Timing and extent of the surveys would be determined by species and coordinated with agency wildlife biologists. Monitoring of Project-related activities may be required in some areas to ensure that effects to these species are avoided. If Bald Eagle or Golden Eagle nests are identified during preconstruction surveys, seasonal restrictions within a specified buffer would be implemented in coordination with the USFWS and/or species survey protocols, as appropriate, and comply with the Bald and Golden Eagle Protection Act (BGEPA). 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. Brush clearing of the project area would be conducted as much as possible between September 1st and February 15th, outside of the bird nesting season.

21. Electrical facility design would be in accordance with “Suggested Practices for Raptor Protection on Power Lines” (Avian Power Line Interaction Committee 2012).

22. Weed control measures will be taken on disturbed areas within the limits of the site. The Authorized Officer and/or local authorities/landowners will be consulted for acceptable weed control methods, which include following EPA, BLM, and Army requirements and policies.

23. Disposal of any vegetation removed would be as recommended by BLM and/or landowner and may be placed downslope of installed water bars or other drainage features to dissipate water flow and reduce erosion potential.

Table A 1. Structures Requiring 150x150-foot Work Areas

Structure Number					
123	255	289	323	357	501
139	256	290	324	358	502
140	257	291	325	359	503
141	258	292	326	360	504
142	259	293	327	361	505
186	260	294	328	362	506
212	261	295	329	363	507
218	262	296	330	364	508
220	263	297	331	474	509
221	264	298	332	475	510
227	265	299	333	476	511
228	266	300	334	477	512
229	267	301	335	478	513
230	268	302	336	480	514
235	269	303	337	481	515
236	270	304	338	482	516
237	271	305	339	483	517
238	272	306	340	484	518
239	273	307	341	485	519
240	274	308	342	486	520
241	275	309	343	487	530
242	276	310	344	488	533
243	277	311	345	489	539
244	278	312	346	490	540
245	279	313	347	491	543
246	280	314	348	492	546
247	281	315	349	493	547
248	282	316	350	494	548
249	283	317	351	495	575
250	284	318	352	496	595
251	285	319	353	497	609
252	286	320	354	498	610
253	287	321	355	499	619
254	288	322	356	500	759

Table A 2. Soil Units within the Amrad to Artesia Project Area				
Map Unit Name	**Taxonomic Class**	**Kw**	**WEG**	**Prime Farmland**
Anthony sandy loam, 0 to 1% slopes	Typic Torrifluvents	0.24	3	
Arno-Harkey complex, saline, 0 to 1% slopes	Typic Torrifluvents	0.55	4L	No
Arno silty clay loam, 0 to 1% slopes	Halic Haploterrerts	0.32	4L	No
Atoka loam, 0 to 1 and 1 to 3% slopes	Typic Petrocalcids	0.37	4L	No
Cottonwood-Reeves loams, overflow, 0 to 3% slopes	Lithic Ustorthents	0.55	4L	No
Dev-Pima complex, 0 to3% slopes		0.49	4L	No
Ector stony loam, 0 to 9% slopes	Lithic Petrocalcic Calciustolls	0.1	8	No
Ector extremely rocky loam, 9 to 25% slopes	Lithic Petrocalcic Calciustolls	0.05	8	No
Ector-Reagan association, 0 to 9% slopes	Lithic Petrocalcic Calciustolls	0.37	7	No
Gypsum land-Cottonwood complex, 0 to 3% slopes		0.32	4L	No
Gypsum land-Reeves complex, 0 to 3% slopes		0.37	4L	No
Harkey very fine sandy loam, 0 to 1% slopes	Typic Torrifluvents	0.24	3	No
Karro Loam, 0 to 1 and 1 to 3% slopes	Ustic Haplocalcids	0.32	4L	No
Kimbrough-Stegall loams, 0 to 3% slopes	Petrocalcic Paleustolls	0.37	4L	No
Largo loam, 1 to 5% slopes	Typic Torriorthents	0.55	4L	No
Largo silt loam, overflow, 0 to 1% slopes	Typic Torriorthents	0.55	4L	No
Largo-Stony land complex, o t0 25% slopes	Typic Torriorthents	0.55	4L	No
Mobeetie fine sandy loam, 1 to 5% slopes	Aridic Haplustepts	0.24	3	No
Pajarito-Dune land complex, o to 3% slopes	Typic Haplocambids	0.24	3	No
Pima silt loam, 0 to 1% slopes	Typic Torrifluvents	0.49	4L	Used as farmland with irrigation
Potter-Simona complex, 5 to 25% slopes		0.15	4	No
Pima clay loam, gray variant, 0 to 1% slopes	Typic Torrifluvents	0.24	3	Used as farmland with irrigation
Reagan loam, 0 to 3% slopes	Ustic Haplocalcids	0.37	7	Used as farmland with irrigation
Reagan loam, o to 1% slopes	Ustic Haplocalcids	0.49	7	Used as farmland with irrigation
Reagan-Upton association, 0 to 9% slopes	Ustic Haplocalcids	0.37	7	Used as farmland with irrigation
Reagan loam, saline, 0 to 1% slopes	Ustic Haplocalcids	0.37	7	Used as farmland with irrigation
Reeves-Gypsum land complex, 0 to 3% slopes	Ustic Calcigypids	0.37	4	No
Reeves loam, 0 to 3% slopes	Ustic Calcigypids	0.37	4L	No
Reeves-Reagan loams, 0 to 3% slopes	Ustic Calcigypids	0.37	4L	No
Simona sandy loam, 0 to 3% slopes	Typic Petrocalcids	0.28	3	No

Table A 2. Soil Units within the Amrad to Artesia Project Area				
Map Unit Name	**Taxonomic Class**	**Kw**	**WEG**	**Prime Farmland**
Simona gravelly fine sandy loam, 0 to 3% slopes	Typic Petrocalcids	0.28	3	No
Tonuco loamy sand, 0 to 3% slopes	Typic Petrocalcids	0.2	2	No
Upton gravelly loam, 0 to 9% slopes	Calcic Petrocalcids	0.15	8	No
Upton soils, 0 to 1% slopes	Calcic Petrocalcids	0.15	8	No
Upton-Reagan complex, 0 to 9% slopes	Calcic Petrocalcids	0.37	7	No
Bluepoint-Onite-Wink association, nearly level	Typic Torripsamments	0.24	2	No
Deama gravelly loam, 5 to 30% slopes	Lithic Haplustepts	0.2	5	No
Deama-Rock outcrop complex, 20 to 50% slopes	Lithic Haplustepts	0.1	6	No
Dona Ana-Berino association, gently sloping	Typic Calciargids	0.32	3	No
Ector-Rock outcrop complex, 20 to 50% slopes	Lithic Calciustolls	0.37	8	No
Espy-Shanta variant association, gently sloping	Petrocalcic Calciustolls	0.24	4L	No
Montecito loam, 0 to 10% slopes	Aridic Haplustalfs	0.37	5	No
Nickel-Tencee association, strongly sloping	Typic Haplocalcids	0.2	4L	No
Pena-Cale-Kerrick association, nearly level	Aridic Calciustolls	0.37	4L	No
Philder-Armesa association, undulating	Calcic Petrocalcids	0.55	3	No
Pintura-Dona Ana complex, 0 to 5% slopes	Typic Torripsamments	0.2	2	No
Pintura-Tome-Dona Ana complex, 0 to 5% slopes	Typic Torripsamments	0.55	4L	No
Reakor-Tome-Tencee association, gently sloping	Typic Haplocalcids	0.55	4L	Used as farmland with irrigation
Rock outcrop-Lozier complex, 20 to 65% slopes	Ustic Haplocalcids	0.05	8	No
Tome silt loam, 0 to 5% slopes	Typic Torriorthents	0.55	4L	No
Tortugas cobbly loam, 5 to 30% slopes	Lithic Haplustolls	0.15	8	No
Ancho-Penasco association	Torriorthentic Haplustolls	0.43	4L	Used as farmland with irrigation
Bigetty-Pecos association	Cumulic Haplustolls	0.43	4L	Used as farmland with irrigation
Cuevoland-Ancho association	Aridic Calciustolls	0.43	4L	No
Deama-Rock outcrop complex	Lithic Calciustolls	0.2	0.49	No
Deama-Remunda association	Lithic Calciustolls	0.2	5	No
Ector-Rock outcrop complex, 0 to 9% slopes	Lithic Calciustolls	0.28	3	No
Ector-Rock outcrop complex, 9 to 30% slopes	Lithic Calciustolls	0.1	8	No
Gabaldon-Dev association	Cumulic Haplustolls	0.43	4L	No
Lozier-Tencee complex	Ustic Haplocalcids	0.2	5	No
Pecos silty clay loam, nonsaline, 0 to 3% slopes	Vertic Torrifluvents	0.32	4L	No
Pecos-Dev association	Vertic Torrifluvents	0.28	3	No
Penasco-Ancho association	Petrocalcic Calciustolls	0.43	4L	No

Table A 2. Soil Units within the Amrad to Artesia Project Area				
Map Unit Name	**Taxonomic Class**	**Kw**	**WEG**	**Prime Farmland**
Penasco-Gabaldon association	Petrocalcic Calciustolls	0.43	4L	No
Reakor loam, 0 to 3% slopes	Typic Haplocalcids	0.28	3	Used as farmland with irrigation
Reakor-Pecos association	Typic Haplocalcids	0.24	3	Used as farmland with irrigation
Reakor-Tencee association	Typic Haplocalcids	0.43	4L	Used as farmland with irrigation
Remunda-Penasco association	Aridic Argiustolls	0.2	5	No
Tencee cobbly loam, 5 to 30% slopes	Calcic Petrocalcids	0.2	5	No
Tencee-Upton complex	Calcic Petrocalcids	0.28	3	No
Upton-Atoka association	Calcic Petrocalcids	0.28	3	No
Cavalry loamy fine sand, 1 to 3% slopes	Typic Calciargids	0.24	3	No
Infantry-Sonic complex, 3 to 10% slopes	Calcic Petrocalcids	0.24	6	No
Allamore very gravelly loam, 10 to 35% slopes	Lithic Ustic Haplocalcids	0.15	6	No
Reyab silt loam, 0 to 3% slopes	Ustic Haplocambids	0.64	4L	No
Mcnew sandy loam, 1 to 3% slopes	Typic Calciargids	0.17	3	No
Mariola fine sandy loam, 1 to 3% slopes	Ustalfic Petrocalcids	0.43	3	No
Sonic very gravelly fine sandy loam, 1 to 15% slopes	Ustifluventic Haplocambids	0.24	6	No
Crossen-Tinney complex, 1 to 3% slopes	Calcic Petrocalcids	0.43	4L	No
Tinney loam, 1 to 3% slopes	Ustic Calciargids	0.43	4L	No
Crossen gravelly fine sandy loam, 2 to 5% slopes	Calcic Petrocalcids	0.43	5	No
Bankston extremely channery loam, 8 to 35% slopes	Ustic Haplocalcids	0.37	8	No
Copia-Patriot complex, 2 to 5% slopes	Typic Torripsamments	0.28	1	No
Reyab loam, 0 to 5% slopes	Ustic Haplocambids	0.64	4L	No
Malargo silt loam, 1 to 3% slopes	Ustic Haplogypsids	0.64	4L	No
Bissett-Rock outcrop complex, 5 to 15% slopes	Ustic Haplocalcids	0.15	6	No
Bissett-Rock outcrop complex, 15 to 35% slopes	Ustic Haplocalcids	0.1	6	No
Bissett-Rock outcrop complex, 35 to 65% slopes	Ustic Haplocalcids	0.43	6	No
Altuda-Rock outcrop complex, 5 to 15% slopes	Lithic Calciustolls	0.05	6	No
Altuda-Rock outcrop complex, 15 to 65% slopes	Lithic Calciustolls	0.15	6	No
Salado loam, 1 to 35% slopes	Ustic Haplocalcids	0.55	4L	No
Pendero fine sand, 2 to 5% slopes	Typic Haplargids	0.15	1	No
Philder-Jerag complex, 2 to 5% slopes	Calcic Petrocalcids	0.15	3	No
Jerag very fine sandy loam, 1 to 5% slopes	Ustalfic Petrocalcids	0.32	3	No
Armesa-Salado complex, 1 to 3% slopes	Ustic Haplocalcids	0.49	3	No
Jerag-Armesa complex, 2 to 5% slopes	Ustalfic Petrocalcids	0.49	3	No

Table A 2. Soil Units within the Amrad to Artesia Project Area				
Map Unit Name	**Taxonomic Class**	**Kw**	**WEG**	**Prime Farmland**
Oryx loam, 1 to 5% slopes	Ustic Torrifluvents	0.64	4L	No
Oryx-Reyab complex, 1 to 3% slopes	Ustic Torrifluvents	0.64	4L	No
Double silt loam, 2 to 5% slopes	Ustic Haplocambids	0.64	4L	No
Copia loamy fine sand, 5 to 15% slopes	Typic Torripsamments	0.05	2	No
Stealth loamy fine sand, 2 to 5% slopes	Ustic Calciargids	0.37	2	No
Aguena fine sand, 5 to 15% slopes	Ustic Torripsamments	0.1	1	No
Aguena fine sand, 15 to 35% slopes	Ustic Torripsamments	0.05	1	No
Deama-Rcok outcrop complex, 5 to 65% slopes	Lithic Calciustolls	0.15	6	No
Deama-Penalto-Rock outcrop complex, 5 to 65% slopes	Lithic Calciustolls	0.15	6	No
Cale silt loam, 2 to 5% slopes	Aridic Argiustolls	0.64	4L	No

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Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
New Mexico Principal Meridian, New Mexico T. 17 S., R. 27 E.				
NMLC 0031898	Authorized	ROW Granted-Issued	NM Pipeline	288100 ROW-O&G Pipelines
NMLC 0063935	Authorized	ROW Granted-Issued	Navajo Refining Co	288100 ROW-O&G Pipeline
NMNM 000018	Authorized	ROW Granted-Issued	Navajo Refining Co	288100 ROW-O&G Pipeline
NMNM 001089	Authorized	ROW Granted-Issued	Central Valley Electric	285002 ROW-Power Tran Line
NMNM 014625	Authorized	ROW Granted-Issued	NM State HWY Dept.	282101 Fed Aid HWY (Sec 107) HWY 82
NMNM 018553	Authorized	ROW Granted-Issued	NM State HWY Dept.	282101 Fed Aid HWY (Sec 107) HWY 82
NMNM 018664	Authorized	ROW Granted-Issued	Central Valley Electric	285002 ROW-Power Tran Line
NMNM 028205	Authorized	ROW Renewed	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 032100	Authorized	ROW Renewed	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 034780	Authorized	ROW Renewed	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 034894	Authorized	Auth Amended/Modified	Penasco Valley Tel Coop	286203 ROW-Tel & Teleg, FLPMA
NMNM 035464	Authorized	ROW Granted-Issued	Penasco Valley Tel Coop	286203 ROW-Tel & Teleg, FLPMA
NMNM 039799	Authorized	ROW Renewed	DCP Midstream LP	288100 ROW-ROADS
NMNM 053710	Authorized	ROW Granted-Issued	Eddy County	281001 ROW-ROADS
NMNM 060137	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
NMNM 073058	Authorized	ROW Granted-Issued	Southwestern Pub SVC	285003 ROW-Power Tran-FLPMA
NMNM 077768	Authorized	Auth Amended/Modified	SPS	285003 ROW-Power Tran-FLPMA
NMNM 089660	Authorized	ROW Granted-Issued	US West Comm	286203 ROW-Tel & Teleg, FLPMA
NMNM 089717	Authorized	ROW Granted-Issued	COG Oil & Gas LP	281001 ROW-ROADS
NMNM 089722	Authorized	ROW Granted-Issued	BP America Production CO	281001 ROW-ROADS
NMNM 090192	Authorized	ROW Granted-Issued	Hanson Energy CO	281001 ROW-ROADS
NMNM 095431	Authorized	ROW Granted-Issued	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 097380	Authorized	Auth Amended/Modified	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 097976	Authorized	ROW Granted-Issued	OXY USA WTP LP	288100 ROW-O&G Pipeline
NMNM 098280	Authorized	ROW Granted-Issued	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 098314	Authorized	ROW Granted-Issued	OXY USA WTP LP	288100 ROW-O&G Pipeline
NMNM 098579	Authorized	ROW Granted-Issued	Penasco Valley Tel Coop	286203 ROW-Tel & Teleg, FLPMA
NMNM 098583	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 099513	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 099584	Authorized	ROW Granted-Issued	Lime Rock Resources A LP	287001 ROW-Water Facility
NMNM 100652	Authorized	ROW Granted-Issued	Navajo Refining CO	288100 ROW-O&G Pipeline

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
NMNM 100668	Authorized	ROW Granted-Issued	Duke Energy Field Services LP	288100 ROW-O&G Pipeline
NMNM 100699	Authorized	ROW Granted-Issued	Duke Energy Field Services LP	288100 ROW-O&G Pipeline
NMNM 101413	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 101475	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 102252	Authorized	Auth Amended/Modified	Navajo Refining CO	287001 ROW-Water Facility
NMNM 102754	Authorized	Auth Amended/Modified	Duke Energy Field Services LP	288100 ROW-O&G Pipeline
NMNM 102804	Authorized	ROW Granted-Issued	Navajo Refining CO	288100 ROW-O&G Pipeline
NMNM 103353	Authorized	ROW Granted-Issued	Agave Energy CO	288100 ROW-O&G Pipeline
NMNM 103357	Authorized	ROW Granted-Issued	Duke Energy Field Services LP	288100 ROW-O&G Pipeline
NMNM 103364	Authorized	ROW Granted-Issued	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 103407	Authorized	ROW Granted-Issued	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 104053	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 105050	Authorized	ROW Granted-Issued	LRE Operating LLC	287001 ROW-Water Facility
NMNM 105078	Authorized	ROW Granted-Issued	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 105622	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
NMNM 106025	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 106037	Authorized	Auth Amended/Modified	Agave Energy CO	288100 ROW-O&G Pipeline
NMNM 106089	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 106101	Authorized	ROW Granted-Issued	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 106822	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 106823	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 107960	Authorized	ROW Granted-Issued	Navajo Refining CO	288100 ROW-O&G Pipeline
NMNM 108360	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 109110	Authorized	ROW Granted-Issued	SPS	285003 ROW-Power Tran-FLPMA
NMNM 109852	Authorized	ROW Granted-Issued	COG Operating LLC	281001 ROW-ROADS
NMNM 110736	Authorized	Auth Amended/Modified	DCP Midstream LP	288100 ROW-O&G Pipeline
NMNM 114221	Pending	APLN RECD	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 123624	Authorized	ROW Granted-Issued	CVE	285003 ROW-Power Tran-FLPMA
NMNM 124122	Authorized	ROW Granted-Issued	CVE	285003 ROW-Power Tran-FLPMA
NMNM 124485	Authorized	ROW Granted-Issued	Southwestern PUB SVC	285003 ROW-Power Tran-FLPMA
NMNM 124559	Authorized	ROW Granted-Issued	Southwestern PUB SVC	285002 ROW-Power Tran-line

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
NMNM 124559 01	Authorized	ROW Granted-Issued	SPS	285003 ROW-Power Tran-FLPMA
NMNM 124917	Authorized	ROW Granted-Issued	Holly Energy Partners	287001 ROW-Water Facility
NMNM 124917	Authorized	ROW Granted-Issued	Holly Energy Partners	287001 ROW-Water Facility
NMNM 125101	Pending	APLN RECD	SPS	285003 ROW-Power Tran-FLPMA
NMNM 127111	Authorized	ROW Granted-Issued	Central Valley Electric	285003 ROW-Power Tran-FLPMA
NMNM 127150	Authorized	ROW Granted-Issued	CVE	285003 ROW-Power Tran-FLPMA
NMNM 127171	Authorized	ROW Granted-Issued	CVE	285003 ROW-Power Tran-FLPMA
NMNM 127706	Authorized	ROW Granted-Issued	CVE	285003 ROW-Power Tran-FLPMA
NMNM 129012	Authorized	ROW Granted-Issued	Lime Rock Resources II-A LP	287001 ROW-Water Facility
NMNM 129139	Authorized	ROW Granted-Issued	COG Operating LLC	287001 ROW-Water Facility
NMNM 129312	Authorized	ROW Granted-Issued	CVE	285003 ROW-Power Tran-FLPMA
NMNM 129521	Authorized	ROW Granted-Issued	Lime Rock Resources A LP	288100 ROW-O&G Pipelines
NMNM 129996	Authorized	ROW Granted-Issued	LRE Operating LLC	281001 ROW-ROADS
NMNM 130563	Authorized	ROW Granted-Issued	OXY USA INC	285003 ROW-Power Tran-FLPMA
NMNM 131034	Authorized	ROW Granted-Issued	Lime Rock Resources A LP	281001 ROW-ROADS
NMNM 131820	Pending	APLN RECD	OXY USA WTP LP	288100 ROW-O&G Pipelines

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
NMNM 131919	Authorized	ROW Granted-Issued	CVE	285003 ROW-Power Tran-FLPMA
NMNM 132002	Pending	APLN RECD	Lime Rock Resources A LP	288100 ROW-O&G Pipelines
NMNM 132332	Authorized	ROW Granted-Issued	Lime Rock Resources II-A LP	281001 ROW-ROADS
NMNM 132661	Authorized	ROW Granted-Issued	CVE	285003 ROW-Power Tran-FLPMA
NMNM 132964	Pending	APLN RECD	Lime Rock Resources A LP	281001 ROW-ROADS
NMNM 133883	Pending	APLN RECD	Lime Rock Resources II-A LP	288100 ROW-O&G Pipelines
NMNM 134013	Pending	APLN RECD	CVE Coop INC	285003 ROW-Power Tran-FLPMA
NMNM 134060	Pending	APLN RECD	CVE	285003 ROW-Power Tran-FLPMA
NMNM 0003089	Authorized	ROW Granted-Issued	Central Valley Electric	285002 ROW-Power Tran-line
NMNM 0050454	Authorized	ROW Renewed	Central Valley Electric	285002 ROW-Power Tran-line
NMNM 0107927	Authorized	ROW Granted-Issued	New Mexico Gas CO	288100 ROW-O&G Pipelines
New Mexico Principal Meridian, New Mexico T. 18 S., R. 27 E.				
NMLC 0031948	Authorized	ROW Granted-Issued	Illinois Pipeline CO	288100 ROW-O&G Pipelines
NMNM 023653	Authorized	ROW Renewed	DCP Midstream LP	288100 ROW-O&G Pipelines
NMNM 037078	Authorized	ROW Renewed	Agave Energy CO	288100 ROW-O&G Pipelines
NMNM 038796	Authorized	ROW Renewed	Agave Energy CO	288100 ROW-O&G Pipelines

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
NMNM 069408	Authorized	ROW Granted-Issued	DCP Midstream LP	288100 ROW-O&G Pipelines
NMNM 085133	Authorized	ROW Granted-Issued	Mewbourne Oil Co	288100 ROW-O&G Pipelines
NMNM 085283	Authorized	ROW Granted-Issued	Mewbourne Oil Co	281001 ROW-ROADS
NMNM 085372	Authorized	Effective Date 04/02/01 Action Code 868	Centurion Pipeline LP	288100 ROW-O&G Pipelines
NMNM 089693	Authorized	Auth Amended/Modified	Yates Petro Corp	281001 ROW-ROADS
NMNM 089717	Authorized	ROW Granted-Issued	COG Oil & Gas LP	281001 ROW-Roads
NMNM 090393	Authorized	Auth Amended/Modified	Yates Petro Corp	287001 ROW-Water Facility
NMNM 107943	Authorized	ROW Granted-Issued	COG Oil & Gas LP	287001 ROW-Water Facility
NMNM 111333	Authorized	ROW Granted-Issued	Yates Petro Corp	287001 ROW-Water Facility
NMNM 131082	Authorized	ROW Granted-Issued	COG Operating LP	287001 ROW-Water Facility
NMNM 131769	Authorized	ROW Granted-Issued	Alfadale INC	287001 ROW-Water Facility
New Mexico Principal Meridian, New Mexico T. 19 S., R. 20 E.				
NMNM 055537	Authorized	Auth Amended/Modified	Penasco Valley Tel Coop	286203 ROW-TEL & TELEG,FLPMA
NMNM 100941	Authorized	ROW Granted-Issued	Penasco Valley Tel Coop	286207 ROW-Tel & Teleg FED FAC
NMNM 0068029	Authorized	Auth Amended/Modified	HEP Refining LLC	288100 ROW-O&G Pipelines

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
New Mexico Principal Meridian, New Mexico T. 19 S., R. 21 E.				
NMNM 040845	Authorized	ROW Renewed	DCP Midstream LP	288100 ROW-O&G Pipelines
NMNM 100941	Authorized	ROW Granted-Issued	Penasco Valley Tel Coop	286207 ROW-Tel & Teleg FED FAC
NMNM 105638	Authorized	ROW Granted-Issued	Agave Production Co	288100 ROW-O&G Pipelines
NMNM 116800	Authorized	ROW Granted-Issued	DCP Midstream LP	288100 ROW-O&G Pipelines
NMNM 116801	Authorized	ROW Granted-Issued	Parallel Petroleum Corp	281001 ROW-ROADS
NMNM 118243	Authorized	ROW Granted-Issued	Yates Petro Corp	281001 ROW-ROADS
NMNM 0068029	Authorized	Auth Amended/Modified	HEP Refining LLC	288100 ROW-O&G Pipelines
New Mexico Principal Meridian, New Mexico T. 19 S., R. 23 E.				
NMNM 118067	Authorized	ROW Granted-Issued	Agave Energy Co	288100 ROW-O&G Pipelines
New Mexico Principal Meridian, New Mexico T. 19 S., R. 24 E.				
NMNM 008373	Authorized	ROW Granted-Issued	Agave Energy Co	288100 ROW-O&G Pipelines
NMNM 018678	Authorized	ROW Granted-Issued	Central Valley Electric	285002 ROW-Power Tran Line
NMNM 045475	Authorized	ROW Renewed	Agave Energy Co	288100 ROW-O&G Pipelines
NMNM 055537	Authorized	Auth Amended/Modified	Penasco Valley Tel Coop	286203 ROW-TEL & TELEG,FLPMA
NMNM 070575	Authorized	Auth Amended/Modified	Yates Petro Corp	281001 ROW-ROADS
NMNM 082343	Authorized	ROW Granted-Issued	Yates Petro Corp	287001 ROW-Water Facility
NMNM 085554	Authorized	ROW Granted-Issued	Yates Petro Corp	281001 ROW-ROADS

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
NMNM 087468	Authorized	ROW Granted-Issued	Agave Energy CO, Yates Petro Corp	287001 ROW-Water Facility
NMNM 098626	Authorized	ROW Granted-Issued	Penasco Valley Tel Coop	286203 ROW-TEL & TELEG,FLPMA
New Mexico Principal Meridian, New Mexico T. 19 S., R. 27 E.				
NMNM 029290	Authorized	ROW Renewed	Enterprise Field Services LLC	288100 ROW-O&G Pipelines
NMNM 029292	Authorized	ROW Renewed	Enterprise Field Services LLC	288100 ROW-O&G Pipelines
NMNM 030745B	Authorized	ROW Renewed	Frontier Field Services LLC	288100 ROW-O&G Pipelines
NMNM 045486	Authorized	ROW Granted-Issued	Agave Energy Co	288100 ROW-O&G Pipelines
NMNM 063243	Authorized	ROW Granted-Issued	Yates Petro Corp	288100 ROW-O&G Pipelines
NMNM 085165	Authorized	Auth Amended/Modified	GMP Gas Corp	288100 ROW-O&G Pipelines
NMNM 089693	Authorized	Auth Amended/Modified	Yates Petro Corp	281001 ROW-ROADS
NMNM 112805	Authorized	ROW Granted-Issued	EOG Resources INC	288100 ROW-O&G Pipelines
NMNM 112846	Authorized	ROW Granted-Issued	EOG Resources INC	288100 ROW-O&G Pipelines
NMNM 114219	Authorized	ROW Granted-Issued	V F Petro INC	281001 ROW-ROADS
NMNM 125441	Authorized	ROW Granted-Issued	OXY USA WTP LP	288100 ROW-O&G Pipelines
NMNM 131106	Authorized	ROW Granted-Issued	Alfadale INC	287001 ROW-Water Facility
New Mexico Principal Meridian, New Mexico T. 20 S., R. 9 E.				
NMLC 0018563	Authorized	Auth Amended/Modified	QWEST Corp NM-P29.35	286203 ROW-TEL & TELEG,FLPMA

Table A 3. Rights-of-Way Crossing the Amrad to Artesia Right-of-Way				
Serial Number	**Disposition**	**Action**	**Holder**	**Type**
NMLC 0054947	Authorized	ROW Granted-Issued	NM ST HWY Dept HWY 54	282105 FED AID HIGHWAY(SEC 17)
NMNM 058293	Authorized	ROW Granted-Issued	Otero County Electric Coop	285003 ROW-POWER TRAN-FLPMA
NMNM 090666	Authorized	ROW Granted-Issued	DOJ Border Patrol	289007 ROW-OTHER FEDERAL FAC
NMNM 126837	Authorized	Lease Issued	US Customs & Border Protection	286001 ROW-Radio & TV Sites
NMNM 132211	Pending	APLN RECD	DHS US Customs & Border Patrol	289007 ROW-OTHER FEDERAL FAC
NMNM 0048706	Authorized	ROW Granted-Issued	NM ST HWY Dept HWY 54	282105 FED AID HIGHWAY(SEC 17)
NMNM 0052493	Authorized	ROW Granted-Issued	QWEST Corp	286202 ROW-TELEPHONE-TELEGRAPH 43USC961
NMNM 0056923	Authorized	ROW Granted-Issued	NM ST HWY Dept HWY 54	282103 FED AID HIGHWAY(SEC 317)
New Mexico Principal Meridian, New Mexico T. 21 S., R. 13 E.				
NMNM 091681	Authorized	ROW Granted-Issued	Otero County	281001 ROW-ROADS
New Mexico Principal Meridian, New Mexico T. 21 S., R. 14 E.				
NMNM 052111	Authorized	ROW Granted-Issued	Penasco Valley Tel Coop	286203 ROW-TEL & TELEG,FLPMA

Table A 4. Special-status Species That Were Evaluated for Potential Occurrence within the Study Area and Project Area of Influence

BCC: Bird Species of Conservation Concern **BGEPA:** Bald and Golden Eagle Protection Act **BLMS:** Bureau of Land Management Sensitive Species **C:** Candidate for ESA listing **E:** Endangered (ESA)	**NEP:** Nonessential Experimental Population **NME:** New Mexico Endangered **NMT:** New Mexico Threatened **T:** Threatened (ESA)

Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Mammals				
Allen's Big-eared Bat *Idionycteris phyllotis*	BLMS	NA	Montane forest and riparian woodlands. Roosts in cliffs, rock outcroppings, and boulder piles. Forages by gleaning soft-bodied insects from surfaces or pursing them in flight.	Yes
Pale Townsend's Big-eared Bat *Corynorhinus townsendii*	BLMS	NA	Occurs in desertscrub up into montane coniferous forest. Day roosts in caves or mine tunnels, night roosts in buildings. Forages by gleaning insects from vegetation surfaces or pursing them in flight.	Yes
Arizona Myotis *Myotis occultus*	BLMS	NA	Ponderosa pine or riparian woodland habitats. Roosts in snags, tree cavities, and crevices in close proximity to water.	No suitable habitat within the Project area.
Spotted Bat *Euderma maculatum*	BLMS; NMT	NA	Desertscrub, riparian woodlands, and conifer forests. Roosts in crevices in cliffs. Forages in flight near the ground.	Yes
Sacramento Mountains Gray-footed Chipmunk *Tamias canipes sacramentoensis*	BLMS	NA	High-elevation piñon-juniper to spruce-fir communities. Endemic to the Sierra Blanca and Sacramento Mountains.	Project area is outside of known distribution.
Penasco Least Chipmunk *Tamias minimus atristriatus*	C; BLMS; NME	NA	High-elevation rocky areas in coniferous forests. May be extirpated from the Sacramento Mountains.	Project area is outside of known distribution.
Black-tailed Prairie Dog *Cynomys ludovicianus*	BLMS	NA	Low-elevations in level or gently sloping grasslands. Strong preference for short-grass prairies or well grazed grasslands.	Yes
Guadalupe Pocket Gopher *Thomomys bottae guadalupensis*	BLMS	NA	Moderate to high-elevation rocky soils; often in association with *Agave lechuguilla*. Confined to the Guadalupe Mountains, closer to the peaks.	Project area is outside of known distribution.
New Mexico Meadow Jumping Mouse *Zapus hudsonius luteus*	E; NME	NA	High-elevation wetlands and marsh vegetation along portions of the Rio Grande.	Project area is outside of known distribution.

Table A 4. Special-status Species That Were Evaluated for Potential Occurrence within the Study Area and Project Area of Influence

BCC: Bird Species of Conservation Concern
BGEPA: Bald and Golden Eagle Protection Act
BLMS: Bureau of Land Management Sensitive Species
C: Candidate for ESA listing
E: Endangered (ESA)
NEP: Nonessential Experimental Population
NME: New Mexico Endangered
NMT: New Mexico Threatened
T: Threatened (ESA)

Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Pecos River Muskrat *Ondatra zibethicus ripensis*	BLMS	NA	Marshes along the Pecos River and drainages.	No suitable habitat within the Project area.
Least Shrew *Cryptotis parva*	NMT	NA	Mesic, heavily grassed areas and marshes. Present in New Mexico only in three protected wetland complexes.	Project area is outside of known distribution.
Birds				
Lark Bunting *Calamospiza melanocorys*	BCC	NA	Grasslands and shrub-steppe.	Yes
Painted Bunting *Passerina ciris*	BLMS; BCC	NA	Partly open landscapes with scattered brush and trees.	Yes
Varied Bunting *Passerina versicolor*	BCC; NMT	NA	Arid thorny brush and thickets, dry washes, and desertscrub.	Yes
Lesser Prairie-Chicken *Tympanuchus pallidicinctus*	T	NA	Prefers shortgrass prairie in eastern New Mexico and northern Texas.	Extirpated from Project area.
Neotropic Cormorant *Phalacrocorax brasilianus*	NMT	NA	Occurs in a variety of aquatic habitats that provide deep water for diving and structure for perches.	Yes
Yellow-billed Cuckoo, Western DPS *Coccyzus americanus*	T	Proposed, outside Project area	Nests in large blocks of mature riparian woodland. Pecos River is outside the range of the Western DPS.	Project area is outside of known distribution.
Long-billed Curlew *Numenius americanus*	BCC	NA	Short-grass and mixed-grass prairies and wetlands. May migrate through Project area.	Yes
Bald Eagle *Haliaeetus leucocephalus*	BCC; BGEPA; BLMS; NMT	NA	Common in winter along water courses and reservoirs. Traditional roost sites are often clumps of mature, deciduous trees in riparian areas protected from human disturbance.	Yes
Golden Eagle *Aquila chrysaetos*	BCC; BGEPA	NA	Mountain cliffs and canyons, but hunts in open grassland or chaparral habitat.	Yes

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Northern Aplomado Falcon *Falco femoralis septentrionalis*	E (NEP); NME	NA	Chihuahuan desert grasslands with yuccas, mesquites, and existing raptor nests. The Project is within the NEP boundary.	Yes
American Peregrine Falcon *Falco peregrinus anatum*	BCC; NMT	NA	Mountain and canyon habitats. While migrating, partial to leading lines such as mountain ranges and lake edges.	Yes
Black Rosy-Finch *Leucosticte atrata*	BCC	NA	Breeds and forages in montane areas above timberline.	Project area is outside of known distribution.
Brown-capped Rosy Finch *Leucosticte australis*	BCC	NA	Breeds and forages in montane areas above timberline.	Project area is outside of known distribution.
Gilded Flicker *Colaptes chrysoides*	BCC	NA	Cactus forests of southwest deserts.	Project area is outside of known distribution.
Lawrence's Goldfinch *Spinus lawrencei*	BCC	NA	Open woodlands near chaparral.	Project area is outside of known distribution.
Northern Goshawk *Accipiter gentilis*	BLMS	NA	Conifer-dominated mixed woodlands.	Yes
Ferruginous Hawk *Buteo regalis*	BLMS; BCC	NA	Occurs in broad expanses of prairie grassland.	Yes
Common Black Hawk *Buteogallus anthracinus*	BCC; NMT	NA	Mature gallery forests located near permanent streams, dominated by cottonwood and sycamore.	Project area is outside of known distribution.
Swainson's Hawk *Buteo swainsoni*	BCC	NA	Open stands of grass-dominated vegetation, sparse shrubs, and small open woodlands.	Yes
Pinyon Jay *Gymnorhinus cyanocephalus*	BLMS; BCC	NA	Piñon-juniper woodlands to mixed conifer forests.	Yes
Yellow-eyed Junco *Junco phaeonotus*	NMT	NA	Coniferous woodlands.	Project area is outside of known distribution.
Flammulated Owl *Psiloscops flammeolus*	BCC	NA	Mature to old ponderosa pine or dry, montane, conifer woodlands with dense understory.	No suitable habitat within the Project area.

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Mexican Spotted Owl *Strix occidentalis lucida*	T	Yes, outside Project area	Old growth conifer forest and steep, narrow canyons with caves or ledges.	Project area is outside of known distribution.
Burrowing Owl *Athene cunicularia*	BCC; BLMS	NA	Dry, open short grass habitats.	Yes
Elf Owl *Micrathene whitneyi*	BCC	NA	Desert scrub, wooded riparian canyons, and mixed conifer woodlands with an oak understory.	Project area is outside of known distribution.
Short-eared Owl *Asio flammeus*	BCC	NA	Higher elevation marshes, grasslands, and tundra.	Project area is outside of known distribution.
Olive-sided Flycatcher *Contopus cooperi*	BCC	NA	Montane coniferous forests. May use riparian woodlands during migration.	No suitable habitat within the Project area.
Southwestern Willow Flycatcher *Empidonax traillii extimus*	E; NME	Yes, outside Project area	Dense riparian habitat of willow, salt cedar, and box elder. No recorded nesting on the Pecos River.	Project area is outside of known distribution.
Common Ground-dove *Columbina passerina*	NME	NA	Occurs in wide variety of low-elevation habitats, including mesquite flats, river-bottom woodlands, and washes in desertscrub.	Project area is outside of known distribution.
Piping Plover *Charadrius melodus*	T; NMT	Yes, outside Project area	Nests on sandbars and beaches of major rivers and lakes. Occasionally recorded in New Mexico outside Project area.	Project area is outside of known distribution.
Mountain Plover *Charadrius montanus*	BCC	NA	Large, flat grasslands with sparse, short vegetation.	Project area is outside of known distribution.
Snowy Plover *Charadrius nivosus*	BCC	NA	Barren or sparsely vegetated ground, usually alkaline lakes, reservoirs or ponds.	Yes
Solitary Sandpiper *Tringa solitaria*	BCC	NA	Migration habitat consists of ponds, woodland streams, and marshes.	Yes
Upland Sandpiper *Bartramia longicauda*	BCC	NA	Migration habitat consists of cultivated fields and shrubby grasslands.	Yes
Sprague's Pipit *Anthus spragueii*	BCC	NA	Native prairie.	Yes

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Calliope Hummingbird *Selasphorus calliope*	BCC	NA	High elevation desert washes.	Project area is outside of known distribution.
Broad-billed Hummingbird *Cynanthus latirostris*	NMT	NA	Riparian zones of arid canyons.	Project area is outside of known distribution.
Lucifer Hummingbird *Calothorax lucifer*	BCC; NMT	NA	Desert scrub dominated canyons, rocky slopes, and dry washes.	Project area is outside of known distribution.
Rufous Hummingbird *Selasphorus rufus*	BCC	NA	Montane meadows and high elevation disturbed areas.	No suitable habitat within the Project area.
White-eared Hummingbird *Hylocharis leucotis*	NMT	NA	Moist, montane forests and canyons.	Project area is outside of known distribution.
White-faced Ibis *Plegadis chihi*	BLMS	NA	Freshwater marshes.	Yes
Thick-billed Kingbird *Tyrannus crassirostris*	NME	NA	Riparian canyons with cottonwood and sycamore.	Project area is outside of known distribution.
Chestnut-collared Longspur *Calcarius ornatus*	BLMS; BCC	NA	Open grasslands, occasionally desert scrub.	Yes
McCown's Longspur *Rhynchophanes mccownii*	BCC	NA	Sparsely vegetated open habitats.	Yes
Loggerhead Shrike *Lanius ludovicianus*	BCC; BLMS	NA	Generally in open country with short vegetation and few trees.	Yes
Baird's Sparrow *Ammodramus bairdii*	BCC; BLMS; NMT	NA	Expansive grasslands with extensive litter and ground cover.	Yes
Black-chinned Sparrow *Spizella atrogularis*	BCC	NA	Arid chaparral on rugged, rocky slopes, up to approximately 8,860 feet in elevation	Project area is outside of known distribution.
Botteri's Sparrow *Peucaea botterii*	BCC	NA	Semi-desert grasslands.	Project area is outside of known distribution.

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Common Name *Latin Name*	Status	Designated Critical Habitat	Habitat and Notes	Occurrence Near the Project Area
Brewer's Sparrow *Spizella breweri*	BCC	NA	Desertscrub or sagebrush shrublands.	Yes
Cassin's Sparrow *Peucaea cassinii*	BCC	NA	Arid grasslands from sea level to approximately 7,060 feet in elevation.	Yes
Grasshopper Sparrow *Ammodramus savannarum perpallidus*	BLMS	NA	Open grasslands and prairies with patchy, bare ground.	Yes
Arizona Grasshopper Sparrow *Ammodramus savannarum ammolegus*	BCC; NME	NA	Open grasslands and prairies with patchy, bare ground.	Project area is outside of known distribution.
Harris's Sparrow *Zonotrichia querula*	BCC	NA	Deciduous forests along streams and rivers. Forages in agricultural fields nearby.	No suitable habitat within the Project area.
Black Swift *Cypseloides niger*	BCC	NA	Forested and open montane habitats on ledges or in shallow caves.	No suitable habitat within the Project area.
Bendire's Thrasher *Toxostoma bendirei*	BCC; BLMS	NA	Sparse desertscrub and open woodland with scattered shrubs.	Yes
Elegant Trogon *Trogon elegans*	BCC; NME	NA	Lowland foothill and mountain habitats.	Project area is outside of known distribution.
Northern Beardless Tyrannulet *Camptostoma imberbe*	BCC; NME	NA	Low-elevation riparian zones.	Project area is outside of known distribution.
Bell's Vireo *Vireo bellii*	BCC; BLMS; NMT	NA	Dense, lowland-shrub and riparian thickets.	Yes
Gray Vireo *Vireo vicinior*	BCC; NMT	NA	Associated with piñon-juniper, piñon savannah, and oak habitats.	Yes
Grace's Warbler *Setophaga graciae*	BCC	NA	Prefers park-like stands of mature tall pines.	No suitable habitat within the Project area.
Lucy's Warbler *Oreothlypis luciae*	BCC	NA	Desert riparian habitats.	Project area is outside of known distribution.

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Olive Warbler *Peucedramus taeniatus*	BCC	NA	High elevation pine and pine-oak forests.	Project area is outside of known distribution.
Red-faced Warbler *Cardellina rubrifrons*	BCC	NA	Moderate-to-high-elevation conifer forests and riparian woodlands.	Project area is outside of known distribution.
Virginia's Warbler *Oreothlypis virginiae*	BCC	NA	Piñon-juniper woodlands.	Yes
Yellow Warbler *Setophaga petechia*	BCC	NA	Riparian thickets along streams and swampy areas.	Yes
Lewis's Woodpecker *Melanerpes lewis*	BCC	NA	Open canopy riparian and montane forests.	Project area is outside of known distribution.
Red-headed Woodpecker *Melanerpes erythrocephalus*	BCC	NA	Deciduous woodlands and adjacent open areas. Require large-diameter snags for nesting.	Project area is outside of known distribution.
Bewick's Wren *Thryomanes bewickii*	BCC	NA	Scrub and thickets in open riparian woodland and chaparral.	Yes
Lesser Yellowlegs *Tringa flavipes*	BCC	NA	Frequents ponds, lakes, and river shores.	Yes, little suitable habitat within the Project area.
Black Tern *Chlidonias niger*	BLMS	NA	Freshwater marshes.	No suitable habitat within the Project area.
Least Tern, Interior Population *Sterna antillarum*	E; NME	No	Nests on sandbars and beaches of rivers and lakes. Nests at Brantley Reservoir on the Pecos River.	Yes
Brown Pelican *Pelecanus occidentalis*	NME	NA	Primarily coastal but occasional visitors during all seasons to large lakes or major rivers.	Project area is outside of known distribution.
Reptiles				
Western River Cooter *Pseudemys gorzugi*	BLMS; NMT	NA	Deep pools in rivers. Confined to the Pecos River drainage below Brantley Dam.	Project area is outside of known distribution.

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Western Ribbonsnake *Thamnophis proximus*	NME	NA	Shrublands adjacent to rivers or lakes.	Project area is outside of known distribution.
Gray-banded Kingsnake *Lampropeltis alterna*	NME	NA	Chihuahuan Desert mountain slopes in rocky limestone soils from approximately 1,460 to 5,850 feet in elevation.	Project area is outside of known distribution.
Mottled Rock Rattlesnake *Crotalus lepidus lepidus*	NMT	NA	Rocky canyons or hillsides. Endemic to the Guadalupe Mountains.	Yes
Plainbelly Water Snake *Nerodia erythrogaster*	NME	NA	Permanent, shallow, flowing water with rocky retreats. Present in the Black and Delaware rivers in the lower Pecos River drainage.	Project area is outside of known distribution.
Dunes Sagebrush Lizard *Sceloporus arenicolus*	BLMS; NME	NA	Shinnery oak-sand dunes.	Project area is outside of known distribution.
Amphibians				
Sacramento Mountain Salamander *Aneides hardii*	BLMS	NA	Mixed conifer forests from approximately 7,860-11,700 feet in elevation. Endemic to the Sierra Blanca, Capitan, and Sacramento Mountains.	Project area is outside of known distribution.
Fish				
Headwater Catfish *Ictalurus lupus*	BLMS	NA	Clear waters with a moderate gradient in the Pecos River drainage.	No suitable habitat within the Project area.
Rio Grande Chub *Gila pandora*	BLMS	NA	Pools of creeks and small rivers.	Yes
Speckled Chub *Macrhybopsis aestivalis*	BLMS	NA	Low-gradient channel streams.	Yes
Greenthroat Darter *Etheostoma lepidum*	BLMS; NMT	NA	Small stream and spring habitats with dense vegetation, and clean gravel and cobble substrates.	Yes
Pecos Gambusia *Gambusia nobilis*	E; NME	No	Springs and gypsum sinkholes on the Bitter Lake National Wildlife Refuge and Blue Spring.	Project area is outside of known distribution.

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Common Name *Latin Name*	Status	Designated Critical Habitat	Habitat and Notes	Occurrence Near the Project Area
Bigscale Logperch *Percina macrolepida*	BLMS; NMT	NA	Fast flowing, moderately deep water with large cobble substrata.	No suitable habitat within the Project area.
Suckermouth Minnow *Phenacobius mirabilis*	BLMS; NMT	NA	Clear water riffles in small to moderate sized streams.	Yes
Rio Grande Shiner *Notropis jemezanus*	BLMS	NA	Sandy, rocky runs and pools.	Yes
Pecos Bluntnose Shiner *Notropis simus pecosensis*	T; NME	Yes, outside Project area	Mesohabitats within wide, shallow sand bed river reaches.	Yes
Smallmouth Buffalo *Ictiobus bubalus*	BLMS	NA	Large pools of higher-order rivers.	No suitable habitat within the Project area.
Pecos Pupfish *Cyprinodon pecosensis*	BLMS; NMT	NA	Saline springs and gypsum sinkholes.	No suitable habitat within the Project area
White Sands Pupfish *Cyprinodon Tularosa*	NMT	NA	Clear, shallow alkaline pools and streams. Endemic to Malpais Spring, Lost River, and Mound Spring.	Project area is outside of known distribution.
Gray Redhorse *Moxostoma congestum*	BLMS; NME	NA	Deep, slow-moving water in the Pecos River below Brantley Dam and in the Black River.	Project area is outside of known distribution.
Blue Sucker *Cycleptus elongates*	BLMS; NME	NA	Moderately fast flowing rivers and deep pools. Confined to the Pecos River downstream of Brantley Dam and the lower reaches of Black River.	Project area is outside of known distribution.
Mexican Tetra *Astyanax mexicanus*	BLMS; NMT	NA	Low-velocity pools in small streams and springs.	Yes
Rio Grande Cutthroat Trout *Oncorhynchus clarkia virginalis*	BLMS	NA	Clear, cool water streams and lakes.	Project area is outside of known distribution.
Invertebrates				
Koster's Springsnail *Juturnia kosteri*	E; NME	Yes, outside Project area.	Slow-velocity flow on soft substrates such as organic debris and mud. Endemic to Bitter Lake National Wildlife Refuge.	Project area is outside of known distribution.

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Common Name ***Latin Name***	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Pecos Springsnail *Pyrgulopsis pecosensis*	BLMS	NA	Mud and pebble substrate along the edges of springs. Endemic to Blue Spring and Caste Spring, tributaries to the Black River.	Project area is outside of known distribution.
Roswell Springsnail *Pyrgulopsis roswelensis*	E; NME	Yes, outside Project area.	Rapid currents on limestone rubble in springs. Only found in Bitter Lake National Wildlife Refuge.	Project area is outside of known distribution.
Pecos Assiminea Snail *Assiminea pecos*	E; NME	Yes, outside Project area.	Marsh habitats along springs and their outflows, in Bitter Lake National Wildlife Refuge.	Project area is outside of known distribution.
Ovate Vertigo Snail *Vertigo ovata*	NMT	NA	Marshes on organic litter or damp soil. Only found in Blue Spring and Alamosa Creek.	Project area is outside of known distribution.
Woodland snail *Ashmunella amblya cornudasensis*	BLMS	NA	Leaf litter among accumulations of igneous-rock talus in the Cornudas Mountains Complex.	Project area is outside of known distribution.
Texas Hornshell *Popenaias popeii*	C; BLMS; NME	NA	Large streams. Only found in the Black River.	Project area is outside of known distribution.
Noel's Amphipod *Gammarus desperatus*	E; BLMS; NME	Yes, outside of Project area	Spring systems in Bitter Lake National Wildlife Refuge.	Project area is outside of known distribution.
Sublette's Fairy Shrimp *Phallocryptis sublettei*	BLMS	NA	Alkali playas of Crow Flat in southern New Mexico.	Project area is outside of known distribution.
Plants				
Tharp's Blue Star *Amsonia tharpii*	BLMS; NME	NA	Chihuahuan desert scrub on limestone and gypsum hills between 3,100 and 3,500 feet in elevation.	Yes
Chapline's Columbine *Aquilegia chaplinei*	BLMS	NA	Montane scrub or riparian canyons in limestone seeps and springs between 4,600 and 5,500 feet in elevation.	No suitable habitat within the Project area.
Sacramento Prickly Poppy *Argemone pinnatisecta*	E; NME	No	Loose gravelly soils in disturbed areas or along canyon bottoms between approximately 4,200 and 7,100 feet in elevation. Endemic to 10 canyons on the western Sacramento Mountains.	Project area is outside of known distribution.

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Gypsum milkvetch *Astragalus gypsodes*	BLMS	NA	Chihuahuan desert scrub; located in gypseous soils between approximately 3,500 and 4,000 feet in elevation. Endemic to Yeso Hills.	Project area is outside of known distribution.
Sacramento Mountains Thistle *Cirsium vinaceum*	T; NME	No	Mesic soils along streams between approximately 7,500 and 9,500 feet in elevation. Endemic to Sacramento Mountains.	Project area is outside of known distribution.
Wright's Marsh Thistle *Cirsium wrightii*	C; NME	NA	Wet, alkaline soils in spring seeps and marshy edges of streams and ponds	Project area is outside of known distribution.
Scheer's Pincushion Cactus *Coryphantha robustispina scheeri*	NME	NA	Level areas in grasslands and Chihuahuan desert scrub on gravelly or silty soils from approximately 3,300-3,600 feet in elevation.	Yes
Guadalupe Mescal Bean *Dermatophyllum guadalupense*	BLMS	NA	Sandstone outcrops in Chihuahuan desert scrub and juniper savanna between approximately 5,250 and 6,650 feet in elevation. Endemic to Brokeoff Mountains and Upper Dog Canyon.	Project area is outside of known distribution.
Kuenzler's Hedgehog Cactus *Echinocereus fendleri* var. *kuenzleri*	E; NME	No	Piñon-juniper woodland on limestone-derived soils, in cracks of limestone bedrock benches or low-gradient slopes between approximately 5,250 and 6,570 feet in elevation.	Yes
Gypsum Wild Buckwheat *Eriogonum gypsophilum*	T; NME	Yes, outside of Project area	Restricted to soils with high gypsum content. Critical habitat is designated west of Brantley Lake.	Project area is outside of known distribution.
Lee's Pincushion Cactus *Escobaria sneedii* var. *leei*	T; NME	No	Chihuahuan desert scrub; located in limestone cracks between approximately 4,000 and 5,000 feet in elevation. Endemic to Southern Guadalupe Mountains.	Project area is outside of known distribution.
Villard Pincushion Cactus *Escobaria villardii*	BLMS; NME	NA	Chihuahuan desert scrub in loamy soils on broad limestone benches, between 4,500 and 6,500 feet in elevation. Endemic to west slope of the Sacramento and Franklin Mountains.	Project area is outside of known distribution.
Todsen's Pennyroyal *Hedeoma todsenii*	E; NME	NA	Piñon-juniper woodlands in gypseous-limestone soils from approximately 6,200-7,400 feet in elevation.	Project area is outside of known distribution.

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Pecos Sunflower *Helianthus paradoxus*	T; NME	Yes, outside Project area	Margins of saline wetlands in New Mexico and Texas, including Bitter Lake National Wildlife Refuge.	Project area is outside of current distribution.
Spiked Crested Coralroot *Hexalectris arizonica*	NME	NA	Heavy leaf litter in oak, pine, or juniper woodlands.	Project area is outside of known distribution.
Glass Mountain Crested Coralroot *Hexalectris nitida*	NME	NA	Oak leaf litter in deep canyons at approximately 4,300 feet in elevation.	Project area is outside of known distribution.
Gypsum Scalebroom *Lepidospartum burgessii*	BLMS; NME	NA	Gypsum dunes with Chihuahuan desert scrub and arid grasslands between approximately 3,500 and 3,700 feet in elevation. Endemic to the alkali lakes west of the Guadalupe Mountains.	Project area is outside of known distribution.
Allred's Flax *Linum allredii*	BLMS	NA	Chihuahuan desert scrub on gypsum hillsides at approximately 3,900 feet in elevation. Endemic to the Yeso Hills.	Project area is outside of known distribution.
Guadalupe Stickleaf *Mentzelia humilis* var. *guadalupensis*	BLMS	NA	Open gypsum outcrops of the Yeso Formation with limestone cobble between approximately 4,400 and 5,080 feet in elevation. Endemic to the western slopes of the Guadalupe Mountains.	Project area is outside of known distribution.
Alamo Beardtongue *Penstemon alamosensis*	BLMS	NA	Limestone, sheltered, rocky areas from 4,300-5,300 feet in elevation.	Project area is outside of known distribution.
Scarlet Penstemon *Penstemon cardinalis cardinalis*	BLMS	NA	Piñon-juniper woodlands to lower coniferous forests between approximately 7,000 and 9,000 feet in elevation in canyon bottoms and rocky slopes.	Project area is outside of known distribution.
Guadalupe Penstemon *Penstemon cardinalis regalis*	BLMS	NA	Montane scrub to mixed conifer forests on limestone slopes and canyon bottoms between approximately 4,500 and 6,000 feet in elevation.	Project area is outside of known distribution.

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Common Name *Latin Name*	**Status**	**Designated Critical Habitat**	**Habitat and Notes**	**Occurrence Near the Project Area**
Gray Sibara *Sibara grisea*	BLMS	NA	Crevices and at the bases of limestone cliffs in interior chaparral and piñon-juniper woodland communities between approximately 4,500 and 6,000 feet in elevation.	No suitable habitat within the Project area.
Guadalupe Jewelflower *Streptanthus sparsiflorus*	BLMS	NA	Limestone canyon bottoms and montane scrub between approximately 5,000 and 7,000 feet in elevation.	Project area is outside of known distribution.

Appendix B

AMRAD-ARTESIA PROJECT ACCESS ROADS AND TRANSMISSION LINES ARE LOCATED IN THE FOLLOWING BLM ADMINISTRATED LANDS.

New Mexico Principal Meridian, New Mexico
T. 20 S., R. 8 E.,
- sec. 25, NE1/4NE1/4, S1/2NE1/4, SE1/4NW1/4, N1/2SW1/4, SW1/4SW1/4, and NW1/4SE1/4;
- sec. 26, NE1/4SE1/4 and S1/2SE1/4;
- sec. 33, S1/2SW1/4 and S1/2SE1/4;
- sec. 34, S1/2NE1/4, N1/2SW1/4, SW1/4SW1/4, and NW1/4SE1/4;
- sec. 35, NW1/4NE1/4, N1/2NW1/4, and SW1/4NW1/4.

T. 21 S., R. 8 E.,
- sec. 4, lots 3, 6, 11, and 12.

T. 20 S., R. 9 E.,
- sec. 19, SE1/4SW1/4 and S1/2SE1/4;
- sec. 20, S1/2SW1/4 and S1/2SE1/4;
- sec. 21, S1/2SW1/4 and S1/2SE1/4;
- sec. 22, S1/2SW1/4 and S1/2SE1/4;
- sec. 23, S1/2SW1/4 and S1/2SE1/4;
- sec. 24, S1/2SW1/4 and S1/2SE1/4;
- sec. 25, NE1/4NW1/4, S1/2NW1/4, and W1/2SW1/4;
- sec. 28, E1/2NE1/4, N1/2SE1/4, and SW1/4SE1/4;
- sec. 30, lots 1 and 2, and NE1/4NW1/4;
- sec. 33, NW1/4NE1/4;
- sec. 35, E1/2NE1/4 and NE1/4SE1/4;
- sec. 36, NW1/4NW1/4.

T. 20 S., R. 10 E.,
- sec. 19, lot 4 and S1/2SE1/4;
- sec. 22, S1/2SW1/4 and SW1/4SE1/4;
- sec. 26, W1/2NW1/4, SE1/4NW1/4, NE1/4SW1/4, W1/2SE1/4, and SE1/4SE1/4;
- sec. 27, N1/2NE1/4 and SE1/4NE1/4;
- sec. 32, NE1/4NE1/4, S1/2NE1/4, E1/2SW1/4, and W1/2SE1/4;
- sec. 35, NE1/4NE1/4, S1/2SW1/4, N1/2SE1/4, and SW1/4SE1/4;
- sec. 36, S1/2NE1/4, NW1/4, and NW1/4SW1/4.

T. 21 S., R. 10 E.,
- sec. 3, lots 1 and 2, lots 5 thru 7, and lot 12;
- sec. 4, lots 9 and 10, NE1/4SW1/4, and NW1/4SE1/4;
- sec. 5, lots 4 and 5;
- sec. 6, lots 10 and 11.

T. 20 S., R. 11 E.,
- sec. 31, lot 2, S1/2NE1/4, and SE1/4NW1/4;
- sec. 32, SW1/4NE1/4, S1/2NW1/4, and N1/2SE1/4;
- sec. 33, N1/2SW1/4, SE1/4SW1/4, and S1/2SE1/4.

T. 21 S., R. 11 E.,
  sec. 1, S1/2SW1/4;
  sec. 2, lot 12, N1/2SW1/4, SE1/4SW1/4, and SE1/4;
  sec. 3, lots 4 thru 7, lots 9 thru 12, and W1/2SW1/4;
  sec. 10, S1/2NE1/4, W1/2NW1/4, SE1/4NW1/4, and W1/2SW1/4;
  sec. 11, NW1/4NE1/4 and NW1/4;
  sec. 12, N1/2NE1/4, SE1/4NE1/4, and NE1/4NW1/4.
T. 21 S., R. 12 E.,
  sec. 7, lots 1 and 2, and S1/2NE1/4;
  sec. 8, SW1/4NW1/4, N1/2SW1/4, W1/2SE1/4, and SE1/4SE1/4;
  sec. 13, SE1/4SE1/4;
  sec. 14, W1/2SW1/4, SE1/4SW1/4, and SW1/4SE1/4;
  sec. 15, S1/2NW1/4, NE1/4SW1/4, and SE1/4;
  sec. 16, N1/2NE1/4, SE1/4NE1/4, and N1/2NW1/4;
  sec. 17, W1/2NE1/4, NE1/4SW1/4, and NW1/4SE1/4;
  sec. 22, NW1/4NE1/4;
  sec. 23, N1/2NE1/4;
  sec. 24, N1/2NE1/4, SW1/4NE1/4, N1/2NW1/4, and SE1/4NW1/4.
T. 21 S., R. 13 E.,
  sec. 10, S1/2SW1/4, NE1/4SE1/4, and S1/2SE1/4;
  sec. 11, SE1/4NE1/4, N1/2SW1/4, SW1/4SW1/4, and N1/2SE1/4;
  sec. 12, NE1/4, S1/2NW1/4, and NW1/4SW1/4;
  sec. 14, NW1/4NW1/4;
  sec. 15, N1/2NE1/4, SE1/4NE1/4, W1/2NW1/4, and W1/2SW1/4;
  sec. 16, N1/2NE1/4, SE1/4NE1/4, NE1/4NW1/4, S1/2NW1/4, and E1/2SE1/4;
  sec. 17, S1/2NE1/4, N1/2SW1/4, and NW1/4SE1/4;
  sec. 18, lot 4, SE1/4SW1/4, N1/2SE1/4, and SW1/4SE1/4;
  sec. 21, NE1/4NE1/4;
  sec. 22, NW1/4NW1/4.
T. 21 S., R. 14 E.,
  sec. 3, lots 1 and 2, lots 5 thru 8, and lot 12;
  sec. 4, lots 8 thru 12, and N1/2SW1/4;
  sec. 5, S1/2SW1/4, N1/2SE1/4, and SW1/4SE1/4;
  sec. 7, lot 1, N1/2NE1/4, and NE1/4NW1/4;
  sec. 8, NW1/4NW1/4.
T. 20 S., R. 15 E.,
  sec. 31, NE1/4NE1/4 and S1/2NE1/4.
T. 19 1/2 S., R. 16 E.,
  sec. 34, lot 3.
T. 19 S., R. 18 E.,
  sec. 13, NE1/4SE1/4;
  sec. 22, SW1/4SE1/4;
  sec. 23, N1/2SW1/4;
  sec. 28, NE1/4NW1/4 and S1/2NW1/4;
  sec. 29, S1/2NE1/4;
  sec. 30, lot 4, SE1/4SW1/4, NE1/4SE1/4, and S1/2SE1/4.

T. 19 S., R. 19 E.,
sec. 8, SE1/4SE1/4;
sec. 9, SE1/4NE1/4, NE1/4SW1/4, S1/2SW1/4, and N1/2SE1/4;
sec. 10, N1/2NE1/4, SW1/4NE1/4, NE1/4NW1/4, and S1/2NW1/4;
sec. 11, N1/2NE1/4 and N1/2NW1/4;
sec. 12, N1/2NE1/4, SW1/4NE1/4, N1/2NW1/4, and NW1/4SE1/4;
sec. 17, N1/2NE1/4, NE1/4NW1/4, and S1/2NW1/4;
sec. 18, NE1/4SW1/4 and NW1/4SE1/4.

T. 19 S., R. 20 E.,
sec. 7, lot 1, N1/2NE1/4, SE1/4NE1/4, and NE1/4NW1/4;
sec. 8, S1/2NE1/4 and S1/2NW1/4;
sec. 9, S1/2NE1/4 and S1/2NW1/4;
sec. 10, S1/2NE1/4 and S1/2NW1/4;
sec. 11, SW1/4NW1/4, N1/2SW1/4, and N1/2SE1/4;
sec. 12, N1/2SW1/4 and N1/2SE1/4.

T. 19 S., R. 21 E.,
sec. 5, E1/2SW1/4;
sec. 7, lot 3, NE1/4SW1/4, and N1/2SE1/4;
sec. 8, E1/2NW1/4, SW1/4, and S1/2SE1/4;
sec. 9, S1/2SW1/4 and S1/2SE1/4;
sec. 10, S1/2SW1/4 and S1/2SE1/4;
sec. 11, S1/2SW1/4;
sec. 13, N1/2NE1/4 and N1/2NW1/4;
sec. 14, N1/2NE1/4 and N1/2NW1/4.

T. 19 S., R. 23 E.,
sec. 9, NE1/4NE1/4;
sec. 14, SW1/4SW1/4;
sec. 23, N1/2NW1/4.

T. 19 S., R. 24 E.,
sec. 21, NW1/4SW1/4;
sec. 22, NE1/4NE1/4, S1/2NE1/4, and N1/2SE1/4;
sec. 23, N1/2NE1/4, N1/2NW1/4, and SW1/4NW1/4;
sec. 24, NW1/4NW1/4.

T. 17 S., R. 27 E.,
sec.23, S1/2SE1/4;
sec. 24, SW1/4SW1/4;
sec. 25, NW1/4NW1/4;
sec. 26, N1/2NW1/4, SW1/4NW1/4, and N1/2NE1/4;
sec. 27, S1/2NE1/4, SE1/4NW1/4, and N1/2SW1/4;
sec. 28, E1/2SE1/4;
sec. 33, E1/2NE1/4 and E1/2SE1/4.

T. 18 S., R. 27 E.,
- sec. 4, lots 5, 12, 13, and 20;
- sec. 9, E1/2NE1/4 and E1/2SE1/4;
- sec. 21, E1/2SE1/4;
- sec. 22, S1/2NW1/4, NE1/4SW1/4, S1/2SW1/4, NW1/4SE1/4, and S1/2SE1/4;
- sec. 27, NE1/4NE1/4 and N1/2NW1/4;
- sec. 28, E1/2NE1/4 and E1/2SE1/4;
- sec. 33, E1/2NE1/4 and E1/2SE1/4.

T. 19 S., R. 27 E.,
- sec. 3, S1/2SW1/4 and SW1/4SE1/4;
- sec. 4, lot 1, SE1/4NE1/4 and E1/2SE1/4;
- sec. 9, NE1/4NE1/4, S1/2NE1/4, S1/2NW1/4, and NE1/4SE1/4;
- sec. 10, N1/2NE1/4, SE1/4NE1/4, NE1/4NW1/4, N1/2SW1/4, and N1/2SE1/4.