BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF SOUTHWESTERN PUBLIC SERVICE COMPANY'S APPLICATION REQUESTING: (1) ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AUTHORIZING CONSTRUCTION AND OPERATION OF THE EDDY COUNTY TO KIOWA 345-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES; (2) APPROVAL OF THE LOCATION OF THE 345-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES; (3) DETERMINATION OF RIGHT-OF-WAY WIDTH FOR THE TRANSMISSION LINE; AND (4) AUTHORIZATION TO ACCRUE AN ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION FOR THE TRANSMISSION LINE AND ASSOCIATED FACILITIES,	)	**CASE NO. 19-00157-UT**
SOUTHWESTERN PUBLIC SERVICE COMPANY,	)	
APPLICANT.	)	

DIRECT TESTIMONY

of

DAVID J. BROWN

on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY

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VERIFICATION 58

GLOSSARY AND LIST OF ACRYONYMS

Acroynm/Defined Term	Meaning
2019 EAs	EAs prepared for amendments to Eddy County Substation and Kiowa Substation ROW grants
ASR	Antenna Structure Registration
BA	Biological Assessment
BLM	United States Bureau of Land Management
BLM Team	BLM's Interdisciplinary Team
CFO	BLM's Carlsbad Field Office
Commission or NMPRC	New Mexico Public Regulation Commission
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	electromagnetic fields
EMNRD	New Mexico Energy, Minerals, and Natural Resources Department
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of no significant impact
Hobbs to China Draw Project	Hobbs to China Draw 345-kV transmission line route and associated Kiowa Substation located in Eddy and Lea Counties, New Mexico approved in Case No. 16-00126-UT

Acroynm/Defined Term	Meaning
KOP	Key Observation Point
kV	Kilovolt
NEPA	National Environmental Policy Act
NMSLO	New Mexico State Land Office
NPAH	National Historic Preservation Act
POD	NEPA Plan of Development for the Hobbs to China Draw Project
Proposed Project or Project	Eddy County to Kiowa 345-kV transmission line and expansion of Eddy County Substation and Kiowa Substation
PUA	NMSA 1978, Sections 62-3-1 et seq.
RMP	Resource Management Plan
ROW	Right-of-way
Rule 592	17.9.592 NMAC
SHPO	State Historic Preservation Officer
SPS	Southwestern Public Service Company, a New Mexico corporation
SWCA	SWCA, Inc. d.b.a. SWCA Environmental Consultants, Inc.
TCP	Traditional Cultural Properties
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Acroynm/Defined Term	**Meaning**
VRM	Visual Resource Management

LIST OF ATTACHMENTS

Attachment	**Description**
DJB-1(CD)	Environmental Assessments for Proposed Project (*provided on CD*) 1. Environmental Assessment DOI-BLM-NM-PO20-2016-0089-EA: Hobbs to China Draw 345-kV Transmission Line Project, Lea and Eddy Counties, New Mexico, dated January 6, 2016; 2. Environmental Assessment DOI-BLM-NM-P020-2019-0734-EA: Eddy County Substation Expansion Project Eddy County, New Mexico, dated March 2019; and 3. Environmental Assessment DOI-BLM-NM-P020-2019-0654-EA: Kiowa Substation Expansion Project, Eddy County, New Mexico, dated March 2019
DJB-2	Overview Map showing location of the route of the Proposed Project across federal, state and private lands
DJB-3(CD)	Plan of Development and Technical Studies (*provided on CD*) 1. NEPA Plan of Development for Hobbs to China Draw 345 kV Transmission Line Project, dated December 2015; 2. Biological Assessment for SPS's Hobbs to China Draw 345-kV Transmission Line Project in Eddy and Lea Counties, New Mexico, dated September 2015; 3. Wetland Delineation Report for SPS's Hobbs to China Draw 345-kV Transmission Line Project in Eddy and Lea Counties, New Mexico, October 2015; and

Attachment	**Description**
	4. SWCA Technical Memorandum - Hobbs to China Draw 345-kV Transmission Line Noise Impact Assessment
DJB-4	Aerial Maps showing constraints due to location of existing oil and gas wells
DJB-5	FONSI and Decision Record for Proposed Project (2016)
DJB-6	FONSI and Decision Record for amendment to Eddy County Substation (2019)
DJB-7	FONSI and Decision Record for amendment to Kiowa Substation (2019)
DJB-8	Bibliography of Cited Materials

Case No. 19-_____-UT
Direct Testimony
of
David J. Brown

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is David J. Brown. My business address is 257 East 200 South, Suite 200, Salt Lake City, Utah 84111.

Q. On whose behalf are you testifying in this proceeding?

A. I am filing testimony on behalf of Southwestern Public Service Company, a New Mexico corporation ("SPS") and wholly-owned electric utility subsidiary of Xcel Energy Inc.

Q. By whom are you employed and in what position?

A. I am employed by SWCA, Inc. d.b.a. SWCA Environmental Consultants, Inc. ("SWCA") and serve as the Vice President of our Great Basin and Northwest operations. I am also one of the company's senior transmission line specialists and previously served as SWCA's Corporate Electric Transmission Business Lead. For this project, I served as the Project Manager and led SWCA's team of more than 20 planners and scientists who supported SPS in the project's federal permitting process.

Q. Please briefly describe SWCA.

A. SWCA is an interdisciplinary environmental consulting firm with more than 950 employees across the United States. We have had an established presence in New

Mexico for nearly 30 years. Our Albuquerque office currently has a staff of over 50 full-time planning, natural resource, and cultural resource professionals.

SWCA has been involved in numerous electric transmission line permitting projects throughout the United States, including the Southline Transmission Project, a high-voltage transmission line spanning more than 360 miles and sponsored by Hunt Power. The line originates at the Afton Substation near Las Cruces, New Mexico, and terminates at the Saguaro Substation northwest of Tucson, Arizona. SWCA has also been preparing an Environmental Impact Statement ("EIS") for the United States Bureau of Land Management ("BLM") Taos Field Office for a high-voltage transmission line in northern New Mexico. I am currently serving as the project manager supporting Rocky Mountain Power's pre-construction and implementation phase of the Aeolus to Jim Bridger 500 kilovolt ("kV") project in Wyoming.

Q. Please describe your educational background.

A. I have a Bachelor of Arts in Architecture from the University of California at Berkeley and a Master of Landscape Architecture from Utah State University's Department of Landscape Architecture and Environmental Planning. As part of my graduate work, I acquired a broad understanding of natural systems, including

riparian ecology, wetland science, geomorphology, botany, soils, and wildlife ecology. In addition, I have completed professional training on the National Environmental Policy Act ("NEPA"), Section 106 of the National Historic Preservation Act ("NPAH"), environmental compliance, and project management.

Q. Please describe your professional experience.

A. My primary planning experience as a professional has been related to the development, permitting, and construction of extra-high voltage transmission lines with a particular emphasis on projects undergoing the NEPA permitting process, which typically requires the development of interdisciplinary Environmental Assessments ("EA") and/or EISs. Over my 16-year career, I have been involved in approximately 65 different projects undergoing the NEPA process, the majority of which were led by the BLM as the lead federal agency. In addition to my work on more than 20 electric transmission line projects going through the NEPA process, I have also worked on EAs and EISs for oil and gas field developments, pipelines, land use plan updates and revisions, mining projects, and renewable generation projects. My participation has included discrete tasks such as initial public and agency scoping, drafting detailed project descriptions, alternatives development, resource analyses, mitigation design and

implementation, and preparation of associated technical project documents such as plans of development, which are intended to describe how the construction of a given project will comply with environmental protection measures and regulations. I have also been closely involved with other federal and state regulatory compliance processes, such as Section 404 of the Clean Water Act, Section 106 of the NHPA, and Section 7 of the Endangered Species Act ("ESA") and state-level permits, such as Certificates of Public Convenience and Necessity.

Q. Have you testified before the New Mexico Public Regulation Commission ("Commission" or "NMPRC") or any other regulatory authorities?

A. I testified before the Commission in Case No. 16-00126-UT[1] regarding SPS's application for location approval of the Hobbs to China Draw 345-kV transmission line route and associated Kiowa Substation located in Eddy and Lea Counties, New Mexico ("Hobbs to China Draw Project"). I have also testified before the Public Utility Commission of Texas in Docket No. 43878 on behalf of Sandbrock Investments, Inc. regarding SWCA's review of the Environmental

[1] *In the Matter of Southwestern Public Service Company's Application Requesting: (1) Issuance of a Certificate of Public Convenience and Necessity Authorizing Construction and Operation of a 345 kV Transmission Line and Associated Facilities in Eddy and Lea Counties, New Mexico; (2) Approval of the Location of the 345 kV Transmission Line;(3) Determination of Right of Way Width and (4) Authorization to Accrue an Allowance for Funds Used During Construction for the Transmission Line and Associated Facilities,* Case No. 16-00126-UT, Final Order Adopting Recommended Decision (Nov. 30, 2016).

Report and Alternative Route Analysis prepared for a proposed 138-kV transmission line in Collin and Denton Counties, Texas. Additionally, I have been involved in the preparation and evaluation of more than 20 EAs or EISs submitted to the BLM and state agencies in support of high-voltage transmission facility projects.

II. ASSIGNMENT AND SUMMARY OF TESTIMONY

Q. What is the purpose of your testimony in this case?

A. My testimony discusses SWCA's assessment of the potential environmental impacts associated with SPS's proposed location of the 345-kV transmission line route and substation facilities that will connect SPS's Eddy County Substation to its Kiowa Substation ("Proposed Project" or "Project"). SWCA prepared an initial EA in 2016 inclusive of the Proposed Project as required by the BLM in accordance with NEPA guidelines in relation to SPS's applications for BLM right-of-way ("ROW") grants across federal lands. Subsequently, SPS needed to expand the footprints of the Eddy County and Kiowa Substations on federally-managed lands which required the preparation of two additional EAs focused only on these expansion areas ("2019 EAs").[2] In so doing, the initial EA and 2019 EAs provide an appropriate analytical process for the environmental evaluation required in Section 62-9-3 of the New Mexico Public Utility Act (NMSA 1978, Sections 62-3-1 et seq. – "PUA") and comply with 17.9.592(C) and (H) NMAC ("Rule 592"). I acted as Project Manager for SWCA's preparation of the initial

[2] I will refer to the initial EA and the 2019 EAs collectively as the "EAs" throughout my testimony.

EA and technical advisor for the 2019 EAs that were used to support the BLM's issuance of the initial and amended ROW grants on federally-managed lands and established the location of the Proposed Project facilities on all federal, state, and private lands. Copies of the EAs, in electronic format, are attached to my testimony as Attachment DJB-1(CD).

Q. Please briefly outline your responsibilities as Project Manager for the initial EA prepared by SWCA.

A. As Project Manager, I was responsible for all aspects of SWCA's performance and the completion of the initial EA, prepared on behalf of the BLM in relation to SPS's applications for ROW grants across federal lands that involved the construction, operation, and maintenance of (1) four 345-kV transmission line segments: (a) segments J-20, J-21, and J-22 which interconnect the Hobbs Generating Station, the Kiowa Substation, the North Loving Substation, and the China Draw Substation, respectively (also referred to as the "Hobbs to China Draw 345-kV transmission line"); and (b) the proposed transmission line segment connecting the Eddy County Substation to the Kiowa Substation (also referred to

as the "Eddy County to Kiowa 345-kV transmission line"); (2) the new Kiowa Substation; and (3) an expansion of SPS's Eddy County Substation.[3]

In the EA evaluation process, I oversaw the collection of all resource data, preparation of technical reports, and preparation of the initial EA to comply with the BLM's obligations under NEPA, Section 404 of the Clean Water Act, and Section 7 of the ESA, and SPS's obligations under Section 62-9-3 of the PUA and Rule 592. I also assisted in the routing and siting of the transmission projects as they pertain to environmental constraints and preparation of the NEPA Plan of Development for the Hobbs to China Draw Project ("POD"), among other tasks. Finally, I was responsible for managing the project budget, schedule, and SWCA staff who were designated to lead specific aspects of the EA.

Q. Please summarize your testimony.

A. Based on my involvement in the EAs and technical reports prepared to evaluate site-specific resources and potential environmental impacts of the Proposed Project, I have concluded that the location of the Project will not unduly impair any important environmental values in accordance with the requirements of

[3] In Case No. 16-00126-UT, the Commission considered the EA in its assessment of the potential environmental impacts associated with segments J-20, J-21, and J-22 and the Kiowa Substation in granting location approval for these facilities. SPS's application in Case No. 16-00126-UT did not request any approvals for the proposed Eddy County to Kiowa 345-kV transmission line segment or the expansion of the Eddy County Substation addressed in the initial EA.

Sections 62-9-3(F) and 62-9-3(M) of the PUA and Rule 592.10(H). In providing this analysis and reaching this conclusion, my testimony describes and explains:

(1) the basis for establishing the initial location of the proposed 345-kV Eddy County to Kiowa transmission line route;

(2) the process SPS and BLM conducted to finalize the location of the Proposed Project;

(3) the EAs that SWCA prepared for SPS's applications to the BLM requesting ROW grants and ROW grant amendments for the Proposed Project, which includes a discussion of:

(i) the resources evaluated by the EAs in relation to the location of the Proposed Project;

(ii) the EAs' determination of the potential environmental impacts associated with each resource; and

(iii) the process to modify the location of the proposed transmission line route and substations to resolve or minimize environmental impacts identified in the EAs;

(4) based on the environmental assessment in the EAs, the BLM found the Proposed Project will have no significant impact on the quality of the human environment, and as a result of the BLM's determinations regarding environmental impacts:

(i) the BLM issued ROW grants on federal lands for the Project and amendments to the ROW grants for each substation; and

(ii) the New Mexico State Land Office ("NMSLO") issued a ROW permit on state lands for the Project and the requested amendment for a limited portion of the Proposed Project's route on state lands is pending approval; and

(5) my evaluation of the EAs and supporting technical documents prepared for the BLM regarding potential impacts to the important environmental values identified in Section 62-9-3(M) and Rule 592.10(H).

Q. Please describe the requirements for Commission location approval under the PUA and Rule 592.

A. Section 62-9-3 of the PUA governs location approval for transmission lines and associated substation facilities that are 230-kV and greater. Section 62-9-3(F) provides that the Commission shall approve an application for the location of transmission lines and associated facilities unless it finds that the location will unduly impair important environmental values. In determining whether a proposed project will unduly impair important environmental values, the Commission may consider various factors that are identified in Section 62-9-3(M).

Rule 592.10 implements Section 62-9-3 and establishes application and other requirements for utilities requesting location approval of a proposed transmission line with voltages at or above 230-kV. In material part, subsections (C), (D), (E), and (H) of Rule 592.10 provide as follows: (1) if required under NEPA, preparation and submission of an EA or EIS assessing the environmental impacts of the proposed transmission line, but if an EA or EIS is not required

under NEPA, then preparation and submission of a report, comparable to an EIS, in the format prescribed in 40 C.F.R. Section 1502.10 (*see* Rule 592.10(C)-(E)); and (2) the testimony prepared to demonstrate that the proposed transmission line route will not unduly impair important environmental values (*see* Rule 592.10(H)).

Q. Were Attachments DJB-1(CD), DJB-2, DJB-3(CD), and DJB-8 prepared by you or under your supervision?

A. Yes.

Q. Are Attachments DJB-4 through DJB-7 true and correct copies of the documents that they purport to be?

A. Yes.

Q. Have you included a bibliography of the reference materials and literature cited in your direct testimony?

A. Yes. Please refer to Attachment DJB-8 for a list of materials cited in my direct testimony.

III. DESCRIPTION OF THE LOCATION OF THE PROPOSED PROJECT AND BLM ROW GRANT PROCESS

A. Proposed Project and its Location

Q. Please describe the Proposed Project's location and project facilities.

A. SPS proposes to locate, construct, operate, and maintain an approximately 34-mile long 345-kV transmission line and associated substation facilities in Eddy County, New Mexico. The Project will connect SPS's Eddy County Substation, located approximately 9.5 miles east of Artesia, New Mexico, to the Kiowa Substation, located approximately 19 miles northeast of Carlsbad, New Mexico. The transmission line route will have a 150-foot wide ROW and will cross federal lands managed by the BLM (approximately 19 miles), state lands overseen by the NMSLO (approximately 9 miles), and privately-owned lands (approximately 6 miles).

The location of the Proposed Project's facilities is based on: (1) the BLM's ROW grants for the 345-kV transmission line route on federal lands, as well as the grants for the Kiowa and Eddy County Substations also on federal lands; (2) the NMSLO ROW permit for portions of the Proposed Project's 345-kV transmission line route on state lands, and (3) easements obtained for privately-owned lands that will be crossed by the 345-kV transmission line route.

The legal descriptions of the location of the proposed transmission line route and associated substation facilities on federal, state, and private lands are listed in Chapter 1 of each EA (Attachment DJB-1(CD)), and are also provided in the ROW grants issued by the BLM, the ROW permit issued by the NMSLO, and the two private easements obtained for the Proposed Project.[4]

Q. Have maps been prepared that depict the location of the proposed Eddy County to Kiowa Transmission line route and substation facilities?

A. Yes. A map showing the general location of the Proposed Project's transmission line route and substation facilities is provided as Attachment DJB-2. Additionally, the POD, which has been approved by the BLM, includes a series of maps that specifically depict the Proposed Project's transmission line route from the Eddy County Substation to the Kiowa Substation (*see* Attachment DJB-3(CD) (POD) Appendix A).[5]

[4] Copies of the BLM ROW grants, NMSLO ROW Permit, and private easements obtained by SPS are provided in Attachments NPF-4 through NPF-9, Attachment NPF-5A, and Attachment NPF-6A to the Direct Testimony of Nisha P. Fleischman.

[5] The POD maps identify the Public Lands Survey System (Township and Range) sections and the ownership of the lands crossed by the transmission line route and the substations. The POD governs construction and related activities for the transmission line segments and associated substations for both the Hobbs to China Draw Project and the Eddy County to Kiowa Project. The POD is also provided as Attachment NPF-3 to Ms. Fleischman's testimony, and for convenience, she provides the maps separately as Attachment NPF-10.

Ms. Fleischman's testimony thoroughly describes the location of the Eddy County to Kiowa transmission line route and associated substation facilities, as well as includes additional maps showing the location of the Proposed Project in relation to other transmission lines located in Eddy and Lea Counties.[6]

B. Process for Establishing the Location of the Proposed Project

Q. Please explain the process for establishing the location of the proposed Eddy County to Kiowa transmission line route and associated substation facilities.

A. As Ms. Fleischman's testimony explains, SPS first determined the end-points for the proposed transmission line route and conducted a desktop analysis to identify sensitive areas to avoid and developed corridors within the project vicinity that could be used to route the project. SPS further identified land uses to determine where the route should be located in relation to existing structures – primarily to address locations of oil well pads, pumps, and other production facilities. SPS also proposed routing the transmission line segments parallel to existing compatible ROW and property lines where reasonable and practical.[7]

[6] *See* Ms. Fleischman testimony at 19-21 and Attachment NPF-2.

[7] *Id.* at 7-8.

In this initial review process, SPS also identified the ownership of the lands crossed by the Proposed Project (*i.e.*, federal, state, and private lands).[8] Because the Project's 345-kV transmission line route and substations were to be located on federal and state lands, SPS filed applications with the BLM and NMSLO requesting ROW grants/permits that would authorize SPS to locate, construct, operate and maintain the proposed 345-kV transmission line and associated substation facilities. The determination of the final location of the Proposed Project facilities was established through a collaborative process involving SPS, BLM and the NMSLO, and other public and private stakeholders, which is memorialized in the ROW grants and permits issued by the BLM and the NMSLO, and also the private easements granted for these facilities.

Q. What were SPS's and the BLM's respective roles in establishing the transmission line route evaluated in the EA?

A. In the early stages for determining the location of the Proposed Project, SPS and BLM representatives met several times to identify resource issues and potential routing options for the Eddy County to Kiowa transmission line. In particular, SPS sited the initial route to meet the BLM's existing and future land use

[8] *See* Ms. Fleischman's testimony starting at 7.

planning considerations. This included avoiding existing facilities, namely numerous oil and gas well pads in the northern portion of the route (*see* Attachment DJB-4) and siting the transmission line route to parallel existing linear features (i.e., roads and existing ROWs) as much as reasonably possible. As part of this collaborative process, SPS consulted with the BLM to avoid sensitive resources to the maximum extent practicable, such as documented karst formations in the southern half of the alignment on BLM-managed lands.[9]

Q. What was the next step in the BLM ROW grant process?

A. SPS consulted with the NMSLO, other public entities, and private parties that owned or had an interest in lands located near the proposed transmission line route. After these consultations, further discussions were held among SPS, the BLM Carlsbad Field Office ("CFO") management team, select SWCA resource specialists, and me to consider proposed modifications to the route to minimize potential land use conflicts with other BLM lessees.

In early March 2015, a description of the Proposed Project and its location was posted on the BLM's website and published in the *Carlsbad Current-Argus*

[9] *See* Attachment DJB-1(CD)(Initial EA) at 50 of 140.

and the *Hobbs News-Sun* local newspapers. This action initiated a 30-day public scoping period, which resulted in no comments being received from the public.

Q. What is the basis for the BLM's evaluation for issuance of the ROW grants for the Proposed Project?

A. Under the BLM's NEPA Handbook H-1790-1 (BLM2008b), the BLM's decision whether or not to issue a ROW grant(s) to SPS is a federal decision and therefore requires the preparation of a NEPA analysis to evaluate the environmental impacts of that decision on federal lands. For SPS's ROW applications, the BLM determined that an EA would be the appropriate level of NEPA analysis to base its decisions. In this regard, the EAs provide the necessary environmental impacts associated with the location, construction, operation, and maintenance of the Proposed Project. The scope of the EAs, as well as the EA study process are discussed in Section IV below.

Q. Has the location of the Proposed Project changed since the BLM issued ROW grants in 2016?

A. Yes. As explained in Ms. Fleischman's testimony, minor changes to the transmission line route are required because of a new well pad being constructed

within the previously approved NMSLO easement.[10] In addition, SPS determined that amendments to the BLM's ROW grants for the Eddy County and Kiowa Substations were necessary to address substation drainage issues and to better accommodate the ingress/egress of the 345-kV transmission line.[11] SPS submitted applications to the BLM for an additional 7.2 acres of permanent ROW at the Eddy County Substation and an additional 6.3 acres of permanent ROW at the Kiowa Substation to accommodate these changes, all of which would occur exclusively on BLM-managed lands. In response to these applications, the BLM determined that each ROW amendment would require preparation of an EA. As a result, SPS arranged for SWCA to prepare the 2019 EAs which were submitted to the BLM in March 2019 and were the basis of the BLM's approval of the Eddy County and Kiowa Substation ROW grant amendments on May 29, 2019. The 2019 EAs are provided in Attachment DJB-1(CD).

Q. Can you please describe the requested ROW grant amendments?

A. SPS applied to the BLM for amendments to the ROW grants for the Eddy County and Kiowa Substations to add additional acreage at each site to address construction and substation design issues that have arisen since the issuance of the

[10] *See* Ms. Fleischman testimony at 11-12, and 18.

[11] *See* Ms. Fleischman testimony at 10-11, and 17-18.

BLM substation ROW grants. The requested amendments do not impact the BLM's ROW grant for the 150-foot wide ROW for the Eddy County to Kiowa 345-kV transmission line route on federal lands.

SPS also requested an amendment to NMSLO ROW Permit to move a small portion of the transmission line route located on state land to accommodate an oil and gas lessee that had built an oil well pad in the 150-foot wide ROW permit area. This amendment is presently being processed by the NMSLO.

IV. ENVIRONMENTAL ASSESSMENTS OF THE PROPOSED PROJECT

A. Scope and Purpose of the EAs

Q. Please explain the scope of the environmental evaluation prepared by SWCA for the BLM's ROW grant process.

A. SPS's applications to the BLM for ROW grants on federal lands included requests for 150-foot wide ROWs for the 345-kV Eddy County to Kiowa transmission line segment and three other 345-kV transmission line segments (J-20, J-21, and J-22) for the Hobbs to China Draw Project, and separate ROWs for the associated substation facilities.[12] Under NEPA regulations, the transmission line segments and substation facilities are considered "connected actions," and therefore, the BLM determined that the environmental impacts associated with all of the ROW grant applications should be evaluated under one NEPA document (i.e., the initial EA).

SWCA prepared the EAs under the direction of the BLM CFO, the primary land manager for the federal lands traversed by the transmission line segments and upon which the substations are situated. The EAs analyzed the potential site-specific impacts associated with the Proposed Project and the other

[12] Location approval of the Hobbs to China Draw Project (345-kV transmission line segments J-20, J-21, and J-22 and Kiowa Substation) was granted by the Commission in Case No. 16-00127-UT and were constructed and became operational in May 2018.

three transmission line segments and substations, identified mitigation measures to potentially reduce or eliminate those impacts, and provided detailed environmental analyses that informed the BLM's eventual decision to issue ROW grants to SPS.

The EAs allowed the BLM to evaluate and act on SPS's applications for the ROW grants authorizing the use of and access across, BLM-managed lands for the 345-kV transmission lines and the associated substation facilities. The need for the BLM's action is established by the Federal Land Policy and Management Act ("FLPMA") and is to respond to SPS's ROW applications by evaluating the intended use of federal lands for the construction and operation of the transmission line projects.[13] The BLM's mandate for multiple uses of public lands under FLPMA includes development of energy transmission in a manner that conserves the multitude of other resources found on public lands.

Q. Do the EAs serve any other purpose in relation to the BLM's review of SPS's ROW grant applications?

A. Yes. Another purpose of the EAs is to confirm that the Proposed Project meets the BLM's land use plan for the CFO. The 1988 Carlsbad Resource Management Plan ("RMP") (BLM 1988) recognizes that utility corridors are an appropriate use

[13] *See* Attachment DJB-1(CD)(Initial EA) at 21 of 140 (Section 1.2).

of federal lands and encourages applicants to locate new facilities within designated ROW corridors. The BLM's 2008 RMP, as amended, reads:

> New projects of the type described above [utility corridors for major projects such as interstate electric transmission lines; pipelines; and communications lines for interstate use] that propose to cross the Planning Area would be evaluated based on the impacts to lesser prairie-chicken and sand dune lizard habitats and other resources to meet the overall objectives of this plan. These projects would not be located in ROW avoidance areas if other routes can meet the purposes of the project. (BLM 2008a:2-13)

As noted in the EAs, the Proposed Project is not located in a ROW avoidance area and complies with the recommended mitigation measures described in amendments to the Carlsbad RMP. Therefore, the EAs confirm that the Proposed Project is in conformance with the Carlsbad RMP, as amended.[14]

B. EA Study Process

Q. Please briefly describe the BLM's EA study process.

A. During the early stage of the EA study process in November 2014, the BLM's interdisciplinary team of resource specialists ("BLM Team") conducted internal scoping of the Proposed Project, and identified several resource issues to carry forward for detailed analysis in the EA. While all resources were considered during the scoping process, it was determined by the BLM Team that some

[14] *See* Attachment DJB-1(CD)(Initial EA) at 23 of 140 (Section 1.4).

resources would not be analyzed in the EA because they were either not present in the project area or were not likely to be affected by the Proposed Project to a degree that warranted detailed analysis. For each resource carried forward for review, SWCA prepared cause-and-effect worksheets for their counterparts at the BLM. These worksheets are used to better understand the BLM Team's concerns and to identify impact indicators, data needs, and the appropriate analytical approach to assess impacts according to the BLM's NEPA Handbook (BLM 2008b).

Q. How was the Project's transmission line route evaluated?

A. The initial EA evaluated the potential effects of the Project on the environment in accordance with the Council on Environmental Quality's guidance and BLM NEPA Handbook H-1790-1 (BLM 2008b). In accordance with these guidelines, the BLM's Team first went through an internal agency review of, and public scoping process for, the Project to determine and identify resources and resource uses that could be affected by the Proposed Project. The BLM Team solicited public comment to ensure that no significant resources or issues were overlooked.

The initial EA's analysis was limited to those resources that could be affected to a degree that would warrant detailed analysis (40 CFR 1502.15) (BLM 2008b:96), as determined by the BLM Team. Table 1.7 in the initial EA lists each

resource and the issue(s) that was addressed in the resource analyses.[15] Each resource section of the EA included analyses of the affected environment, which is described as the existing condition and trend of issue-related elements of the human environment that would be affected by implementing the Project. Each resource section then analyzed the direct, indirect, and cumulative impacts of the Project, as well as any mitigation measures and/or residual impacts that would result from the construction and operation of the Project.[16]

Q. Please describe the field investigations that were part of the EA process.

A. SWCA performed cultural, biological, and wetland resource desktop assessments and field surveys for each transmission line segment, as well as the location of the substation facilities, laydown yards, pull pickets, and access roads, in accordance with all applicable federal and state protocols.[17]

[15] *See* Attachment DJB-1(CD)(Initial EA) at 25 of 140 (Section 1.6).

[16] *See* Attachment DJB-1(CD)(Initial EA) beginning at 52 of 140 (Section 3).

[17] Prior to initiating the field surveys, U.S. Geological Survey ("USGS") topographic maps were reviewed to determine the location, elevation, soil types, and potential habitat types within the proposed project area. Wetland and drainage data were also evaluated using National Hydrography Datasets (USGS 2013) and National Wetland Inventory maps (U.S. Fish and Wildlife Service [USFWS] 2015a), as well as geographic information system data. SWCA biologists reviewed the USFWS (2015b) Information for Planning and Conservation system, the New Mexico Department of Game and Fish Biota Information System of New Mexico (Bison-M 2015), the New Mexico Rare Plants website (New Mexico Rare Plant Technical Counsel 1999), and the New Mexico Energy, Minerals, and Natural Resources Department ("EMNRD") state endangered plant species list (EMNRD 2015) prior to the biological survey. The BLM CFO list of sensitive species was also consulted.

In this regard, SWCA conducted a thorough Biological Assessment ("BA") of the proposed disturbance areas over several sessions from October 2014 to August 2015 to evaluate, among other things, the potential for special status species to occur and to identify habitat communities regulated by the USFWS under Section 7 of the ESA, jurisdictional drainages or sensitive aquatic habitats regulated by the U.S. Army Corps of Engineers under the Clean Water Act of 1972, and active and inactive migratory bird nests protected by the Migratory Bird Treaty Act of 1918.

The BA included a pedestrian survey within a 500-foot wide corridor following the centerline of the proposed transmission line segment, substation locations, laydown yards, pull pockets, and access roads to assess general vegetation and habitat suitability for USFWS, BLM, and State of New Mexico protected native plants and special status species. Presence of active and inactive bird nests and burrows were also recorded. The survey included an assessment of wetlands, surface waters, and other potential waters. Biological and other sensitive resources that were identified include isolated occurrences of special status species and associated habitat, playas, migratory bird nesting areas, cave and karst features, and potentially jurisdictional water features. The survey

results for the initial EA were included in the BA (SWCA 2015a) and wetland report (SWCA 2015b).[18] These technical studies are attached as part of Attachment DJB-3(CD).

For the 2019 EAs, SWCA conducted desktop assessments and field surveys following the methods described above. A biological assessment was not required by the BLM for the 2019 EAs because of the absence of any sensitive or special status species or habitat provided sufficient rationale for the BLM to determine its decision would not affect listed or proposed species.

SWCA also conducted an intensive Class III cultural resources inventory review in accordance with the *Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2005) and *Standards for Survey Site Evaluation and Reporting for the CFO* (BLM 2012). Site file searches and a 100-percent pedestrian survey for the substations and a 500-foot-wide corridor for each transmission line route were conducted by qualified archaeologists.[19] These findings were documented in a series of cultural resources inventory reports (Sisneros et al. 2015a, 2015b, 2015c,

[18] *See generally* Attachment DJB-1(CD)(Initial EA) at 50 of 140, and 84-92 of 140 (Section 3.6.3) and Attachment DJB-3(CD).

[19] *See* Attachment DJB-1(CD)(Initial EA) at 92-93 of 140 (Section 3.7.1).

2015d) to aid the BLM in complying with Section 106 of the NHPA. Except for a small area in the Kiowa Substation amendment area, these surveys also covered the substation ROW amendment areas. A field survey was conducted in 2019 for the small portion of area not covered by the previous effort and no new cultural sites were discovered.

Q. Please describe the modifications to the Project's transmission line route that the BLM required as a result of the EA study process.

A. In the "route refinement" process for the Project, the BLM required adjustments to the proposed transmission line route to avoid eligible cultural resources, where feasible.[20] The route was also modified to minimize potential impacts to karst features identified during field surveys although these features were located outside the proposed route's ROW. The BLM required a route that paralleled the Burton Flats Road for the southern portion of the alignment to minimize potential impacts to karst resources. Several other minor adjustments to the initial route and/or design were also made to minimize conflicts with oil and gas developers and private landowners. With the exception of cultural resources, the initial route

[20] *See* Attachment DJB-1(CD)(Initial EA) at 51 of 140 (Section 2.3)(i.e., the BLM may require modifications to the location of the project or impose other design features to avoid or minimize environmental impacts identified in the EA study process).

for the Proposed Project did not present many resource conflicts as reflected in the EAs, biological assessment, or wetland report and as such required few modifications.

C. BLM Findings Based on the EAs and Issuance of ROW Grants

Q. Did the BLM issue any findings or decision regarding the potential impacts of the Proposed Project based on the EAs?

A. Yes. On January 27, 2016, the BLM published its finding of no significant impact ("FONSI") and Decision Record approving both the Proposed Project and the Hobbs to China Draw Project.[21] Copies of the FONSI and Decision Record are provided in Attachment DJB-5.

On May 24, 2019 and May 17, 2019, the BLM published its FONSIs and Decision Records approving the ROW grant amendments for the Eddy County and Kiowa Substations, respectively. Copies of the FONSIs and Decision

[21] The FONSI and Decision Record address all four ROW grant applications submitted by SPS in August 2014 requesting approval of: (1) the Eddy County to Kiowa 345-kV transmission line segment; (2) the three segments that comprise the Hobbs to China Draw 345-kV transmission line (J-20, J-21, and J-22); (3) the Kiowa Substation; and (4) the expansion of the Eddy County Substation. In Case No. 16-00126-UT, the Commission approved SPS's request for location approval of the Hobbs to China Draw 345-kV transmission line (segments J-20, J-21, and J-22 and the Kiowa Substation and found that the transmission facilities would not unduly impair any important environmental values. Construction on the Hobbs to China Draw Project was completed in 2018.

Records for the amendments to the Eddy County Substation and the Kiowa Substation are provided as Attachments DJB-6 and DJB-7, respectively.

Q. Please summarize the BLM's findings regarding the Project's potential impacts on the human environment.

A. In accordance with the requirements of NEPA and the NHPA, the BLM determined that the Proposed Project will not significantly impact the human environment based on the environmental analyses in the EAs. The modified route for the Project minimizes land use conflicts with other entities operating or developing projects in the area. While some resources will be affected by the Proposed Project, mitigation measures have been implemented. For example, there will be some unavoidable impacts to cultural resource sites that are eligible for the National Register of Historic Places, and these impacts will be mitigated by site testing and monitoring prior to and during construction.

Further, the BLM found that the transmission line and substation areas will not have any significant impacts, individually or cumulatively, on the quality of the human environment.[22] In making its determination, the BLM considered both the beneficial and adverse impacts of the Project, as well as efforts taken by

[22] *See* Attachments DJB-5, DJB-6, and DJB-7 at 1.

SPS to avoid or minimize environmental harm.[23] The BLM also found that the routing of the transmission line achieves a balance of resource protection and beneficial uses of the human environment envisioned by NEPA.[24]

In the Decision Records, the BLM concluded that the proposed ROWs for the transmission line and substation areas sufficiently meet the purpose and need for the action and conform to the Carlsbad RMP, as amended.[25] The Decision Records acknowledge that alternatives were considered to accomplish the purpose and the need for the transmission line project, and determined that the proposed transmission line route and substation areas would meet BLM's purpose and need while minimizing environmental impacts and resource conflicts, as well as meeting other objectives of the Carlsbad RMP, as amended.[26]

Q. When did the BLM issue the ROW grants for the Proposed Project facilities?

A. Following the expiration of the 30-day appeal period for the FONSI and Decision Record in relation to the initial EA, where no comments were received by the public or any federal or state agency, on March 2, 2016, the BLM issued: (1) a

[23] *See Id.*

[24] *See* Attachment DJB-5 at 1.

[25] *See* Attachment DJB-5 at 2 (Section I), and Attachments DJB-6 and DJB-7 at 1 (Section I).

[26] *See* Attachment DJB-5 at 2 (Section III)(Alternatives were not applicable for the 2019 substation amendments).

150-foot-wide ROW grant across federal lands for the 345-kV Eddy County to Kiowa transmission line route; (2) a ROW grant to construct the Kiowa Substation; and (3) a ROW grant amendment for expansion of SPS's Eddy County Substation.[27] In addition, on May 29, 2019, the BLM issued to SPS the ROW grant amendments for the Eddy County and Kiowa Substations.[28]

Q. Will further environmental studies be needed in view of the BLM's issuance of the ROW grants for the Proposed Project?

A. No further environmental studies for the proposed transmission line route will be needed except if the results of cultural resources site testing, as required by the Archaeological Treatment Plan (Whitehead), indicate that some eligible cultural resources would be adversely affected by the Proposed Project. This however would not affect the BLM's approval of the Project's transmission line route. An extensive data recovery, testing, and treatment plan is in place, which has been agreed to by the BLM, State Historic Preservation Officer ("SHPO"), New Mexico Cultural Properties Review Committee, and NMSLO. Fieldwork for this

[27] Copies of the BLM ROW grants for the Proposed Project are provided as Attachments NPF-4, NPF-5, and NPF-6 to the Ms. Fleischman's testimony.

[28] Copies of the 2019 ROW grant amendments are provided as Attachments NPF-5A and NPF-6A to Ms. Fleischman's testimony.

mitigation effort will be completed prior to the BLM issuing SPS a notice-to-proceed with construction.[29]

[29] *See* Attachment DJB-1(CD)(Initial EA) at 96-97 of 140 (Section 3.7.3).

V. EVALUATION OF POTENTIAL IMPACTS OF THE PROPOSED PROJECT ON IMPORTANT ENVIRONMENTAL VALUES IN ACCORDANCE WITH LOCATION APPROVAL REQUIREMENTS OF SECTION 62-9-3 OF THE PUA AND RULE 592

Q. Please describe your evaluation of the Proposed Project's potential impacts on important environmental values in accordance with location approval requirements of Sections 62-9-3(F) and (M) and Rule 592.10(H).

A. For SPS's NMPRC location approval filing, I evaluated the potential impacts of the Project's transmission line route and associated substation facilities on important environmental values based on the environmental assessment in the EAs that are described in Section IV. As explained above, the initial EA evaluated the potential environmental impacts of the Eddy County to Kiowa transmission line and associated substations, laydown yards, pull pockets, and access roads, and the 2019 EAs evaluated the impacts for the additional acreage needed for further expansion at the Eddy County and Kiowa Substations. Collectively, these EAs provided the basis for the BLM's ROW grants that establish the location of the Project facilities.

Q. Did the EAs prepared for the Proposed Project consider the factors for important environmental values included in Section 62-9-3(M) of the PUA and Rule 592.10(H)?

A. Yes. The resources examined in the EAs correspond to the factors identified for important environmental values in the statute and Rule 592. For purposes of the Commission's review of SPS's request for location approval of the Project facilities under Section 62-9-3(F) and (M) and Rule 592.10(H), the EAs evaluated a range of specific resources and existing environmental conditions in the Project area that include: air resources, cave and karst resources, soil resources, water resources, upland vegetation (including noxious weeds), wildlife and special status species, cultural resources, visual resources, special designations and recreation areas, livestock grazing, and public health and safety.[30]

As discussed in Section IV, while the EA study process considered all environmental impacts of the Project, there were some resources that were not analyzed because they were determined by the BLM Team as either not present in the Project area or not likely to be affected by the Project to a degree that

[30] S*ee e.g.*, Attachment DJB-1(CD), Sections 3.1 through 3.11 and Table 1.7 in the Initial EA and Tables 1.3 in the 2019 EAs that list each resource and the issue(s) that was addressed in the EAs' resource analyses.

warranted detailed analysis under NEPA. For the remaining resources described above, the EAs included: (1) a description of the affected environment; (2) a discussion of the direct, indirect, and cumulative impacts associated with the construction and operation of the Proposed Project; and (3) a determination whether the identified impacts are significant, and thus require any remedial measures to minimize or eliminate the impact.

Q. Are there any factors identified in Section 62-9-3(M) and Rule 592.10(H) that were not analyzed in the initial EA? If so, please explain why they were not considered.

A. Yes. During the initial EA scoping process, the BLM Team identified resource issues that were considered but were not analyzed because the team determined the Project would not have any potential environmental impacts on those resources. Section 1.61 of the initial EA identifies the four resource issues that were eliminated from the EA assessment – Paleontological Resources, Minerals, Native American Religious Concerns, and Socioeconomic and Environmental Justice.[31]

[31] *See* Attachment DJB-1(CD)(Initial EA) at 25-26 of 140 (Section 1.6.1).

Following a review of literature, geologic maps, and aerial photographs, the BLM Team determined that the Project would not impact paleontological resources because there were few geological units present with the potential to contain fossils in the vicinity of the location of the Proposed Project.[32]

The BLM Team also determined that a detailed analysis of the Proposed Project on minerals was not necessary because the proposed transmission line was routed to avoid oil and gas production facilities and potash mine tailings and salt tailings. The Proposed Project was also reviewed for proximity to active caliche pits, and no caliche pits were located within 1,000 feet of the Proposed Project route.[33]

Additionally, the BLM Team determined that the Proposed Project would not impact any Native American religious sites or traditional cultural properties ("TCP"), prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies or rituals. Identification efforts for Native American religious concerns included a review of existing published and unpublished literature, the site-specific Class III survey reports prepared for the Proposed Action (Sisneros et al. 2015a, 2015b, 2015c),

[32] *See* Attachment DJB-1(CD)(Initial EA) at 25-26 of 140 (Section 1.6.1).

[33] *Id.* at 26 of 140.

and the BLM's cultural resources program regarding the presence of TCPs identified through ongoing BLM tribal consultation efforts. Based on this review, the BLM determined that the Proposed Project would not impact any known TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996) or EO 13007 and consequently no further study of Native American Religious Concerns was needed.[34]

Finally, regarding potential impacts to socioeconomic and environmental justice resources, the BLM Team determined that the Proposed Project is expected to have positive short-term employment and demographic impacts.[35] The work would be temporary in nature and no permanent jobs would be created. The number of jobs created and the temporary status of those jobs, compared to the high overall employment rate in the BLM CFO planning area, did not warrant detailed analysis of socioeconomics in the EA, as only marginal and minimal, short-term, impacts to employment and demographics would be expected. The

[34] Attachment DJB-1(CD)(Initial EA) at 26 of 140.

[35] SPS estimated that approximately 180 workers total would be employed during construction. These workers would primarily be employed by SPS contractors.

BLM also determined that the Project would not disproportionally impact environmental justice populations as no majority environmental justice population (as defined by EO 12898) was identified in the region. Therefore, no further analysis was required for socioeconomic and environmental justice resources.[36]

In the following portions of my testimony, I will explain the EAs' determinations regarding potential environmental impacts and any required remedial measures for the remaining factors that are described in the location approval process under Section 62-9-3(M) and Rule 592.10(H).

Q. Please describe the EAs' evaluations and determinations of potential impacts of the Proposed Project on Air Resources (*see* Rule 592.10(H) (i.e., air quality).

A. The EAs' establish that the potential environmental impacts on air resources (including air quality and climate) associated with the construction, operation, and maintenance of the Proposed Project will be insignificant.[37] Air resource impacts associated with the Proposed Project were evaluated within a designated analysis area, extending one mile in each direction beyond the transmission line route and

[36] *See* Attachment DJB-1(CD)(Initial EA) at 25-26 of 140 (Section 1.6.1).

[37] *See* Attachment DJB-1(CD)(Initial EA) at 57-63 of 140 (Section 3.1) and (2019 EAs) at 19-22 of 64 (Eddy County EA) 18-22 of 64 (Kiowa EA)(Sections 3.1).

substation facilities.[38] The initial EA determined that emissions of air pollutants would occur during construction of the transmission lines and substations (temporary emissions) and, to a lesser extent, during the operation of the transmission lines. Construction-related emissions considered include exhaust from construction vehicles, material movements, and equipment; exhaust from construction worker commuting; and fugitive dust from general construction activity. Operational-related emissions considered include emissions from inspection and maintenance activities (which include exhaust from inspection vehicles and aerial inspections, fugitive dust from unpaved roads, and line maintenance equipment) and fugitive emissions due to leaked emissions from substation transformer equipment. [39]

The initial EA compared the estimated level of emissions of various pollutants resulting from construction and operation activities to the 2011 National Emissions Inventory for Eddy County. In regard to increased construction emissions, each pollutant is equal to or less than 0.18% of Eddy and

[38] *See* Attachment DJB-1(CD)(Initial EA) at Figure A-4 (for map showing the designated analysis area).

[39] *See* Attachment DJB-1(CD)(Initial EA) at 60 of 140.

Lea County's emission inventory, and less than 0.01% of Eddy and Lea County's inventory for operation emissions.[40] Consequently, the EA concluded that impacts to air resources are likely to be insignificant in relation to the construction and operation of the Proposed Project.

Similarly, the 2019 EAs concluded that there would not be significant impact to air quality for the construction and operation of the expanded Eddy County and Kiowa Substations because construction emissions would be short-term, lasting only the duration of construction, and would not result in a substantial increase in emissions.[41] As such, these temporary emissions will be negligible and would not cause or contribute to exceedances of the National Ambient Air Quality Standards. Similarly, operational-related emissions are expected to be minimal and would also not cause exceedances of these same standards; therefore, impacts to air resources would be insignificant from the construction and operation of the Eddy County and Kiowa substation expansions.

[40] *See* Attachment DJB-1(CD)(Initial EA) at 61 of 140 (Tables 3.7 and 3.8).

[41] *See* Attachment DJB-1(CD)(2019 EAs) at 19-23 of 64 (Eddy County EA) and 22-24 of 64 (Kiowa EA) (Sections 3.1).

Q. Please describe the EAs' evaluations and determinations of the potential impacts of the Proposed Project on Cave and Karst Formations (*see* Rule 592.10(H) (i.e., geologic and geographic resources)).

A. The initial EA addresses the Proposed Project's potential environmental impacts on cave and karst resources.[42] The location of the proposed Eddy County to Kiowa transmission line route will cross areas of high, medium, and low cave and karst potential with most of the high potential areas located along the southern portion of the transmission line route.[43] Ground-disturbing activities, including heavy vibrations and alternation of surface drainages, associated with the construction, operation, and maintenance of the Proposed Project could impact cave and karst resources. No other geologic or geographic resources of concern were found to be present in the Project area.

To address these concerns about high potential karst areas, the final transmission line route was sited to parallel the Burton Flats Road for the southern portion of the alignment. In addition, several protection measures were included

[42] *See* Attachment DJB-1(CD)(Initial EA) at 63-65 of 140 (Section 3.2).

[43] *See* Attachment DJB-1(CD)(Initial EA) at Figures A.5 (Cave Potential) and A.6 (Karst Potential).

in the POD to protect cave and karst resources.[44] These include collecting soil bores up to 50 feet deep at all proposed foundation structures (foundations would only be used at locations where the line angle is greater than two degrees) along the centerline prior to construction to ensure the contractor does not drill into voids or karst features to install structures, adjusting pole locations to avoid cave and karst features. The ROW grants require SPS to notify and coordinate with the BLM's Cave/Karst Resource Specialist before performing any blading in high karst potential areas on both BLM and NMSLO lands, and stop construction immediately if any underground voids, subsurface drainage channels, or cave passages are encountered, and route any roads around sinkholes or other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or potential leaks and spills from entering karst systems. Based on these protective measures, the BLM expert's familiarity with the area, and the routing adjacent to the Burton Flats Road, the initial EA concluded that the Proposed Project is not expected to have significant impacts to cave and karst resources.

[44] *See* Attachment DJB-3(CD) at 36 of 82 (Section 3.6.7).

Section 3.6 of the 2019 EAs address potential environmental impacts to cave and karst features as a result of the expansions of the Eddy County and Kiowa Substations.[45] No karst features are located within the Eddy County Substation expansion area so no impacts would be expected associated with that substation expansion. The Kiowa Substation is located in an area with medium karst potential, which is defined as areas in known soluble rock types that exist at surface level or within 300 feet of the surface but may have a shallow insoluble overburden or soils that mask surface features.[46] These areas may contain isolated karst features such as caves and sinkholes. However, no impacts to karst resources are expected to result from the construction of the Kiowa Substation expansion because SPS is required to abide by the standard BLM measures to minimize impacts to karst resources as a condition of its ROW grant.[47]

Q. Please describe the EAs' evaluation and determinations of the potential impacts of the Proposed Project on Soil Resources (*see* Rule 592.10(H)).

A. Both the initial EA and 2019 EAs address the potential environmental impacts on soil resources located along the proposed transmission line route and the

[45] *See* Attachment DJB-1(CD)(2019 EAs) at 30-31 of 64 (Kiowa EA) (Sections 3.6).

[46] *See* Attachment DJB-1(CD)(2019 EAs) at 30 of 64 (Kiowa EA).

[47] *See* Attachment DJB-3(CD) at 36 of 82 (Section 3.6.7).

substation facilities.[48] The initial EA notes that some soil types in the Hobbs to China Draw Project area are highly susceptible to erosion when vegetation is removed, primarily those developed from eolian (windblown) and alluvium parent material which are concentrated along the J-20, J-21, and J-22 transmission line segments. However, none of the soils in the area where the Project will be located are considered prime farmland. Direct impacts to soil resources include the loss of soil productivity due to the removal of soils for construction access roads, laydown yards, transmission line structures, and substations. Clearing of vegetation and topsoil, as well as grading, would be required and these activities would result in newly exposed, disturbed soils that would be subject to accelerated wind and water erosion.

Similarly, the 2019 EAs determined that the construction and subsequent expansion of the Kiowa Substation and expansion of the Eddy County Substation, will permanently remove soils from productivity. Direct impacts to soils associated with the substations include increased erosion from the removal of vegetative cover, contamination from accidental spills or leaks, and soil compaction from heavy equipment resulting in the loss of soil structure and

[48] *See* Attachment DJB-1(CD)(Initial EA) at 65-68 of 140 (Section 3.3) and (2019 EAs) at 24-25 of 64 (Sections 3.3).

porosity. These impacts can lead to increased rainfall runoff and susceptibility to high wind events and consequently increased erosion.

By using established reclamation practices and reestablishing vegetation cover, SPS will minimize impacts to soils and stabilize soils in areas of temporary ground disturbance. These measures are described in the POD and include the use of erosion control devices to minimize erosion during and after construction, stockpiling topsoil following vegetation removal, recontouring temporarily disturbed areas, preparing soil and seedbeds, topsoil replacement, re-seeding with appropriate seed mixes, and installing erosion control devices, silt traps, silt fences, straw rolls and other best management practices, conducting weed control, and continuous monitoring until reclamation has achieved standard BLM success criteria.[49] The BLM expects the seeded vegetation to be re-established within the Project area two years after construction. Based on the BLM's required measures to minimize the impacts to soils during and after the construction phase, the Proposed Project will not significantly impact soil resources.

[49] *See* Attachment DJB-3(CD)(POD) at 32-33 of 82 (Section 3.6.3).

Q. Please describe the EAs' evaluations and determinations of the potential impacts of the Proposed Project on Water Resources (including Watersheds and Drainage) (*see* Rule 502.10(H) (i.e., water quality and water resources).

A. The initial EA's analysis of potential impacts to water resources examined drainages and sensitive aquatic habitats regulated by the U.S. Army Corps of Engineers under the Clean Water Act of 1972. The surface waters in southeast Eddy County are transitory and limited to quantities of runoff impounded in short drainage ways, shallow lakes, and small depressions, including various playas and lagunas. SWCA conducted pedestrian surveys of these areas and found one relatively small playa within the area of the Proposed Project and found no wetlands, perennial, or ephemeral streams within the Project area. The EA also found that no New Mexico Outstanding National Resource Waters are located in the watersheds traversed by the Proposed Project. These findings are documented in a wetland delineation report included in Attachment DJB-3(CD). No impacts to the playa are expected because it will be spanned between transmission structures and during construction SPS will implement standard stormwater best management practices described in the POD.[50]

[50] *See generally* Attachment DJB-3(CD)(POD) at 31-37 of 82 (Section 3.6).

Desktop analysis and field surveys conducted as part of the 2019 EAs confirmed that there were no water features, playas, or other special aquatic sites within either Project area and therefore no impacts to water resources are expected in association with the Eddy County and Kiowa Substation expansions.

Q. Please describe the EAs' evaluation and determinations of the potential impacts of the Proposed Project on Biological Resources including Vegetation, Wildlife, and Special Species (*see* Section 62-9-3(M)(2) (i.e., fish, wildlife and plant life) and Rule 592.10(H) (i.e., flora and fauna)).

A. The EAs establish that the Proposed Project is not expected to have any significant impacts on biological resources. This conclusion is based on SWCA's BA, which is included in Attachment DJB-3(CD) to support the initial EA's analysis. SWCA first conducted a desktop analysis[51] followed by intensive pedestrian field surveys within a 500-foot-wide corridor along the center of the transmission line alignment as well as at each new substation, substation expansion areas, staging areas, pull pockets, and access roads. These surveys assessed general vegetation and habitat suitability for USFWS-, BLM-, and State

[51] Please refer to footnote 17 above.

of New Mexico–protected native plants and special status species. Presence of active and inactive bird nests and burrows were also recorded.

Specific to vegetation, SWCA's field surveys found that vegetation along the Project area is primarily comprised of mesquite, burrograss, narrowleaf yucca, silver bluestem, blue and black grama grasses, tobosagrass, spectaclepod (*Dimorphocarpa sp*.), and shinnery oak. One state endangered and BLM sensitive plant species, Scheer's beehive cactus (*Coryphantha robustispina var. scheeri*) was found in two locations. The BLM, with assistance from the local native plant society, transplanted the Scheer's cactus to an area outside the ROW. No other special status plant species were observed. Plant species recorded during the biological survey are listed in Table 4.2 of the BA.[52]

In the 2019 EAs, SWCA found that the vegetation communities within and/or surrounding the Project's substation areas had previous disturbance from existing oil and gas infrastructure, agriculture, livestock grazing, and the existing substations and transmission lines. No State of New Mexico listed or federally listed noxious weed species were identified.[53] Based on the environmental protection measures prescribed in the POD's reclamation plan, the BLM's

[52] *See* Attachment DJB-3(CD)(BA) at 15-16.

[53] *See* Attachment DBJ-1(CD)(2019 EAs) at 19-21.

conditions of approval for each of the ROW grants, and SPS's commitment to engage biological monitors during construction, the Proposed Project impacts to vegetation communities will be minimized and will not result in any significant impacts.

Specific to wildlife and special status species, the EAs found that the Proposed Project would not result in significant impacts. After conducting a desktop review and pedestrian field surveys for the initial EA, SWCA biologists identified over 40 different bird species, including two special status species (burrowing owl and Sprague's pipit), four reptile species, and under 10 mammal species. Wildlife species recorded during the biological survey are listed in Table 4.3 of the BA.[54]

The 2019 EAs also conducted a desktop analysis followed by field surveys. No special status species were observed. At the Eddy County Substation expansion area, one bird species was observed or heard, and one inactive passerine nest was identified in the survey area. At the Kiowa Substation expansion area, three bird species were observed or heard, and one inactive passerine nest was identified within the proposed project area.

[54] *See* Attachment DJB-3(CD)(BA) at 20-21.

Although Sprague's pipit was observed in the Project area, the grassland habitat observed during surveys was at best marginally suitable due to grazing and other disturbance related to oil and gas development. To hasten post-construction reclamation of disturbed soils and mitigate for localized Sprague's pipit habitat loss, the BLM requires SPS to double the pounds per acre of seed mix within 1-mile of the pipit detection location. For burrowing owls, localized loss of burrows may occur as a result of vegetation removal and ground-disturbing activities. To minimize impacts to burrowing owls, a suite of avoidance and minimization methods would be used. For example, if construction during the migratory bird season (March–August) needs to occur, SPS would be required to conduct nest surveys to identify the possibility of burrowing owls nesting in or adjacent to the project area. If any nests are discovered, a 200-meter (656-foot) avoidance buffer would be established around any active nest burrow until the young have fledged. Any occupied nest burrows detected prior to construction would also be spot checked for nesting activity if construction occurs during the migratory bird season. In accordance with the POD, SPS will also have a biological monitor during construction near occupied burrows. Because of these measures, no long-term impacts to the species or its habitat are anticipated from the Project nor

would the proposed project be likely to contribute to a trend towards federal listing or cause a loss of viability to the population or species.[55]

Other measures to protect wildlife species are described in Section 3.6.5 of the POD and in Section 3.5 of the 2019 EAs.[56] After construction, the Project area would be reclaimed with a BLM-prescribed seed mix. Reclamation of the disturbed ROW is expected to return those affected areas to herbaceous production within 2 years after construction. While impacts to wildlife, primarily avian species, would result from actions that alter wildlife habitats, no significant long-term impacts to migratory birds or any other wildlife species are anticipated.

Q. Please describe the EAs' evaluation and determinations of the potential impacts of the Proposed Project on Cultural Resources (*see* Section 62-9-3(M)(5) and Rule 592.10(H) (i.e., cultural, historic, religious).

A. Sections 3.7 of the initial EA and 2019 EAs address the potential environmental impacts on cultural resources and concluded that the Project is not expected to have significant impacts to cultural resources.[57] The initial EA identified eight

[55] *See* Attachment DJB-3(CD)(POD) at 34-35 of 82 (Section 3.6.5).

[56] *See* Attachment DJB-3(CD)(POD) at 33-34 of 82 and Attachment DJB-1(CD)(2019 EAs) at 30 of 64 (Eddy County EA) and 29-30 of 64 (Kiowa EA).

[57] *See* Attachment DJB-1(CD)(Initial EA) at 92-97 of 140 (Section 3.7) and (2019 EAs) at 31-32 of 64 (Sections 3.7).

cultural resources within the Proposed Project ROW that were determined eligible for the National Register of Historic Places or that are of undetermined eligibility. Of these, SPS was able to avoid five sites by modifying its project design and the remaining three eligible sites will be tested prior to construction, the details of which are described in a detailed treatment plan SWCA prepared for the BLM (Whitehead et al. 2015), which was also reviewed and approved by the New Mexico SHPO and other interested parties. This plan includes the methods, protocols, and requirements for data recovery, construction monitoring, and testing to avoid, minimize, or mitigate impacts to cultural resources. As to the 2019 EAs, no cultural sites were identified within the substation expansion areas.

Q. Please describe the EAs' evaluation and determinations of the potential impacts of the Proposed Project on Visual Resources (*see* Section 62-9-3(M)(5) and Rule 592.19(H)).

A. Because the BLM is responsible for managing public lands for multiple uses while ensuring that the scenic values of public lands are considered before authorizing actions on public lands, it has developed a visual resource management ("VRM") system specific to the BLM. The VRM system classifies land based on visual appeal, public concern for scenic quality, and visibility from

travel routes or other key observation points ("KOP"). The system is based on the premise that public lands have a variety of visual values, and these values mandate different levels of management.[58]

The initial EA addressed the potential environmental impacts on visual resources, which include the natural and human modified landscape.[59] The existing visual quality in the vicinity of the Proposed Project area is influenced by the presence of roads, oil and gas development, existing power lines, and highway corridors. The only KOP (KOP 6) identified in the Project area is located off of New Mexico Highway 82 approximately 10 miles east of Artesia.[60] The landscape surrounding this KOP is relatively flat and irregular and angular built structures dominate the landscape (e.g., transmission lines, tanks, towers, substation, buildings, roadways, fences).[61] Because of the visual clutter of existing structures at this KOP (i.e., high visual absorption capacity), the Project will not have a significant impact on the visual resources in the area.

[58] *See* Attachment DJB-1(CD)(Initial EA) at 97 of 140.

[59] *See* Attachment DJB-1(CD)(Initial EA) at 97-107 of 140 (Section 3.8).

[60] *See* Attachment DJB-1(CD)(Initial EA) at 99 of 140 and Figure A.7 (map showing location of KOP 6).

[61] *See* Attachment DBJ-1(CD)(Initial EA) at Figures 3.14 and 3.15.

The 2019 EAs did not analyze visual resources because both substation expansion areas are located within VRM Class IV areas, which allows for major modifications to the landscape. The visual impacts from the expansions would be consistent with management objectives outlined within VRM Class IV and with the previously developed nature of the landscape (BLM 2014).[62]

Q. Please describe the EAs' evaluation and determinations of the potential impacts of the Proposed Project on Special Districts and Recreation areas (*see* Section 62-9-3(M)(4) and (5)).

A. Section 3.9 of the initial EA addressed the potential environmental impacts on special districts and recreation areas.[63] While it identified two special management areas and one recreational area in its analysis of the environmental impacts, none of these areas are located in the vicinity of the Eddy County to Kiowa transmission line route, and therefore no impacts associated with the construction, operation, and maintenance of the Proposed Project are expected.[64]

[62] *See* Attachment DJB-1(CD)(2019 EAs) at 12 of 64 (Table 1.3).

[63] *See* Attachment DJB-1(CD)(Initial EA) at 107-109 of 140 (Section 3.9).

[64] The special management and recreational areas identified in the EA were located in the vicinity of the Hobbs to China Draw 345-kV transmission line near the Pecos River. As to the substation expansion areas, the 2019 EAs found that no special management or recreation areas exist in proximity to the facilities. *See* Attachment DJB-1(CD)(2019 EAs) at 12 of 64 (Table 1.3).

Q. Please describe the EAs' evaluation and determinations of the potential impacts of the Proposed Project on Public Health and Safety (*see* Section 62-9-3(M)(3), (4) and (6)).

A. The EAs used a 2-mile-wide buffer around the centerline of the Proposed Project as an analysis area for potential impacts to public health and safety.[65] Natural and manmade hazards that could be directly impacted by construction, operations, and maintenance of the Proposed Project were identified. Short-term impacts to occupational safety and impacts from severe weather hazards and potential fire-causing activities would be considered negligible.

The initial EA also studied possible impacts from electromagnetic fields ("EMF").[66] The EMF from the proposed transmission line would occur mainly within the 150-foot ROW and for a short distance beyond (approximately 50 feet beyond the ROW). The EMF analysis was calculated +/- 1,000 feet to either side of the transmission line center. Calculated values representing the EMF at 3.28 feet (1 meter) above ground. Using guidelines established by the International Committee on Electromagnetic Safety, none of the scenarios analyzed would exceed the electric field exposure limit. At the edges of the transmission line

[65] *See* Attachment DJB-1(CD)(Initial EA) at 113-118 of 140 (Section 3.11).

[66] *See* Attachment DJB-1(CD)(Initial EA) at 114-118 of 140.

ROW, the electric field falls well below the recommended exposure limits.[67] Therefore, the initial EA concluded that impacts from the EMF would be considered negligible.

The 2019 EAs eliminated the EMF issue from detailed analysis because no residential or community infrastructure is present near the vicinity of either substation expansion area.[68]

In addition, SWCA conducted a separate noise analysis which concluded that no long-term significant impacts would occur as a result of the Proposed Project. A copy of the Noise Impact Technical Analysis is provided in Attachment DJB-3(CD).

As to the Project's potential interference with communication signals, no commercial AM radio towers were identified within 2,000 feet of the route centerline. One FM station transmitter and three Antenna Structure Registration ("ASR") facilities are located within 2,000 feet of the centerline. One of the ASR facilities is owned and operated by Xcel Energy Services Inc. Based on prior experience on other SPS projects where similar conditions existed, SPS has received no complaints about disruptions to these type of facilities; therefore, no

[67] Attachment DJB-1(CD)(Initial EA) at 118 of 140.

[68] *See* Attachment DJB-1(CD)(2019 EAs) at 12 of 64 (Table 1.3).

interference with communication signals is expected as a result of the location of the Project.

Q. Please summarize your conclusions regarding the Proposed Project's potential impacts on important environmental values under Section 62-9-3(F) as defined by Sections 62-9-3(M) and Rule 592.10(H).

A. As discussed earlier in this section, the EAs analyze and evaluate the potential impacts of the Project on the important environmental values and underlying factors identified in Section 62-9-3(M) and Rule 592.10(H). Based on the resource evaluations in the EAs and the supporting technical reports prepared for the Project, as well as the environmental protection measures enforced as conditions of approval for the BLM ROW grants and my own personal knowledge of the Project area, I have concluded that the Proposed Project will not unduly impair any important environmental values in accordance with Section 62-9-3(F). Accordingly, it is my opinion that the Proposed Project satisfies the requirements for location approval under Section 62-9-3 and Rule 592.10.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

VERIFICATION

STATE OF UTAH)
) **ss.**
COUNTY OF SALT LAKE)

David J. Brown, first being sworn on his oath, states:

I am the witness identified in the preceding testimony. I have read the testimony and the accompanying attachments and am familiar with their contents. Based upon my personal knowledge, the facts stated in the direct testimony are true. In addition, in my judgment and based upon my professional experience, the opinions and conclusions stated in the testimony are true, valid, and accurate.

David J. Brown

SUBSCRIBED AND SWORN TO before me this 28 day of May 2019.

Elizabeth Nancy Hartman
Notary Public, State of Utah
My Commission Expires: 6/26/21

ELIZABETH NANCY HARTMAN
Notary Public – State of Utah
Comm. No. 695548
My Commission Expires on
Jun 26, 2021

CASE NO. 19-00 ___ -UT

IN THE MATTER OF SOUTHWESTERN PUBLIC SERVICE COMPANY'S APPLICATION REQUESTING: (1) ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AUTHORIZING CONSTRUCTION AND OPERATION OF THE EDDY COUNTY TO KIOWA 345-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES; (2) APPROVAL OF THE LOCATION OF THE 345-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES; (3) DETERMINATION OF RIGHT-OF-WAY WIDTH FOR THE TRANSMISSION LINE; AND (4) AUTHORIZATION TO ACCRUE AN ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION FOR THE TRANSMISSION LINE AND ASSOCIATED FACILITIES

Attachment DJB-1(CD)
Attachment DJB-3(CD)

BLM

United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-NM-PO20-2016-0089-EA

Southwestern Public Service Company's Hobbs to China Draw 345-kV Transmission Line Project, Lea and Eddy Counties, New Mexico

January 6, 2016

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It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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List of Abbreviations and Acronyms

°F	degrees Fahrenheit
µg/m^3	microgram per cubic meter
APD	Application for Permit to Drill
APE	area of potential effect
AQB	Air Quality Bureau
ARMS	Archaeological Records Management Section
AUM	animal unit month
BA	biological assessment
BISON-M	Biota Information System of New Mexico
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
BMP	best management practices
CAA	Clean Air Act of 1970
CEHMM	Center for Excellence for Hazardous Materials Management
CEQ	Council on Environmental Quality
CFO	Carlsbad Field Office
CFR	Code of Federal Regulations
CIAA	cumulative impact analysis area
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
DSL	dunes sagebrush lizard
EA	Environmental Assessment
EMF	electromagnetic field
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FERC	Federal Energy Regulatory Committee
FLPMA	Federal Land Policy and Management Act
GHG	greenhouse gas
GIS	geographic information system
GPR	ground-penetrating radar
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HCPI	Historic Cultural Property Inventory
HPILS	High Priority Incremental Load Study
HUC	Hydrologic Unit Code
ICES	International Committee on Electromagnetic Safety
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IPA	Isolated Population Area

KOP	key observation point
kV	kilovolt(s)
kV/m	kilovolts per meter
LPC	lesser prairie-chicken
MBTA	Migratory Bird Treaty Act of 1918
mG	milliGauss
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NERC	North American Electric Reliability Corporation
NHPA	National Historic Preservation Act
NMAAQS	New Mexico Ambient Air Quality Standards
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environmental Department
NMOSE	New Mexico Office of the State Engineer
NMPIF	New Mexico Partners in Flight
NO_2	nitrous oxide
NO_X	nitrogen oxide(s)
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NTC	Notice to Construct
O_3	ozone
OSHA	Occupational Safety and Health Administration
OHV	off-highway vehicle
Pb	Lead
PL	Public Law
PM_{10}	particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
POD	Plan of Development
ppb	parts per billion
ppm	parts per million
ReMi	Refraction Microtremor
RFFA	Reasonably Foreseeable Future Actions
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
ROD	Record of Decision
ROW	right-of-way
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Office

SLO	New Mexico State Land Office
SMA	Special Management Area
SO_2	sulfur dioxide
SPP	Southwest Power Pool
SPS	Southwestern Public Service Company
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
TCP	traditional cultural property
TRS	total reduced sulfur
TSP	total suspended particulate
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
VRM	visual resource management
WRCC	Western Regional Climate Center

1 PURPOSE OF AND NEED FOR ACTION

1.1 Background

Southwestern Public Service Company (SPS), a wholly owned subsidiary of Xcel Energy Inc., has submitted four Applications for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) to the Bureau of Land Management (BLM) Carlsbad Field Office (CFO) for right-of-way (ROW) grants needed to construct, operate, and maintain two 345-kilovolt (kV) transmission lines, a new substation (Kiowa Substation), and two substation expansions (Hobbs Generation and Eddy County Substation) in southeast New Mexico, herein referred to as the "project" or "Proposed Action." Xcel Energy is a registered holding company that owns several electric and natural gas utility operating companies. The project crosses BLM CFO–managed surface lands, New Mexico State Land Office (SLO) lands, and private lands (Figure 1.1). The BLM is serving as the lead federal agency for the undertaking.

The four applications include distinct project components but are considered to be connected actions as defined in the BLM's National Environmental Policy Act (NEPA) handbook (Section 6.5.2.1) and regulations of the Council of Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1508.25). As such, impacts from construction and operation of the proposed project described briefly below (and further detailed in Chapter 2) are analyzed and disclosed together within this Environmental Assessment (EA).

The proposed 345-kV transmission lines interconnect with other existing and proposed electrical system facilities owned and operated by SPS, as parts of the larger electrical system grid. SPS is requesting a 150-foot-wide permanent ROW for the transmission lines:

1. **Hobbs to China Draw 345-kV Transmission Line (including Hobbs Generation Substation, North Loving Substation, and China Draw Substation expansions).** The first Standard Form 299 application (Hobbs to China Draw) would connect the existing Hobbs Generation Substation in Lea County to the proposed China Draw Substation in Eddy County, New Mexico. The Hobbs to China Draw line is composed of three segments that interconnect with intermediary substations, namely the Hobbs Generation Substation to Kiowa Substation segment (which SPS refers to by the circuit number J-20), the Kiowa Substation to North Loving Substation segment (referred to as J-21), and the North Loving Substation to China Draw Substation segment (referred to as J-22). The BLM has assigned this project component the ROW serial number NM-133171 (Table 1.1).

Table 1.1. Legal Description of the Hobbs to China Draw 345-kV Transmission Line

345-kV Line - Hobbs Generation Substation to Kiowa Substation (J-20)	
BLM Lands	**SLO/Private Lands**
T.20 S.,R.30E.,NMPM **Sec. 36:** SW¼SE¼ **T.20 S.,R.31E.,NMPM** **Sec. 31:** L4, SE¼SW¼ **Sec. 32:** SW¼SW¼ **Sec. 33:** SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 34:** NE¼SE¼, SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 35:** NE¼SE¼, NE¼SW¼, NW¼SE¼, NW¼SW¼ **Sec. 36:** NW¼SW¼ **T.20 S.,R.32E.,NMPM** **Sec. 25:** NE¼NE¼, NE¼NW¼, NW¼NE¼, SE¼NW¼, SW¼NW¼ **Sec. 26:** NE¼SE¼, NE¼SW¼, NW¼SE¼, NW¼SW¼, SE¼NE¼, SW¼SW¼ **Sec.27:** SE¼SE¼, SW¼SE¼	**T.18 S.,R.36E.,NMPM** **Sec. 23:** NE¼SE¼, SE¼SE¼, SW¼SE¼ **Sec.24:** NW¼SW¼ **Sec. 26:** NE¼NW¼, NE¼SW¼, NW¼NE¼, NW¼SW¼, SE¼NW¼, SW¼SW¼ **Sec. 32:** NE¼SE¼, NE¼SW¼, NW¼SE¼, SE¼NE¼, SE¼SW¼ **Sec. 33:** SE¼NE¼, SE¼NW¼, SW¼NE¼, SW¼NW¼ **Sec. 34:** SE¼NE¼, SE¼NW¼, SW¼NE¼, SW¼NW¼ **Sec. 35:** NW¼NW¼, SW¼NW¼ **T.19 S.,R.35E.,NMPM** **Sec. 1:** SE¼SE¼, SW¼SE¼ **Sec. 10:** SE¼SE¼, SW¼SE¼ **Sec. 11:** NE¼SW¼, NW¼SE¼, SE¼NE¼, SW¼NE¼, NW¼SW¼, SW¼SW¼ **Sec. 12:** NW¼NW¼, SW¼NW¼, NE¼NW¼, NW¼NE¼

Sec. 31: L3, NE¼SE¼, NE¼SW¼, NW¼SE¼, SE¼SE¼ **Sec. 33:** NE¼SE¼, NE¼SW¼, NW¼SE¼, SE¼NE¼, SE¼SW¼, SW¼SW¼ **Sec. 34:** NE¼NW¼, NW¼NE¼, SE¼NW¼, SW¼NW¼ **T.20 S.,R.33E.,NMPM** **Sec.1:** SE¼SE¼ **Sec. 11:** NE¼SE¼, NE¼SW¼, NW¼SE¼, SE¼NE¼, SE¼SW¼ **Sec. 12:** NW¼NE¼, SE¼NW¼, SW¼NW¼ **Sec. 14:** SE¼NW¼, SW¼NW¼ **Sec. 15:** NE¼SW¼, NW¼SE¼, NW¼SW¼, SE¼NE¼, SW¼SW¼ **Sec. 19:** NW¼SE¼, SE¼SW¼, SW¼SE¼ **Sec. 20:** NE¼SW¼, NW¼SW¼, SE¼NE¼, SE¼NW¼, SW¼NE¼ **Sec. 21:** NW¼NE¼, NW¼NW¼ **Sec. 30:** L1 **T.20 S.,R.34E.,NMPM** **Sec. 1:** SE¼NE¼, SE¼NW¼, SW¼NE¼, SW¼NW¼ **Sec. 2:** SE¼NE¼ **Sec. 3:** SE¼NE¼, SE¼NW¼, SW¼NE¼, SW¼NW¼ **Sec. 4:** SE¼NE¼, SE¼NW¼, SW¼NE¼, SW¼NW¼ **Sec. 5:** NW¼SW¼, SE¼NE¼, SE¼NW¼, SW¼NE¼, SW¼NW¼ **Sec. 6:** L7, NE¼SE¼, NE¼SW¼, SE¼SW¼ **T.20 S.,R.35E.,NMPM** **Sec. 5:** SE¼NE¼, SE¼NW¼, SW¼NE¼ **Sec. 6:** L5, SE¼NE¼, SE¼NW¼, SW¼NE¼ **T.21 S.,R.29E.,NMPM** **Sec. 1:** L1, L2, L3, L4 **Sec. 2:** L1 **Sec. 3:** L1, L10, L15, L8, L9, NW¼SE¼, SW¼SE¼ **T.21 S.,R.30E.,NMPM** **Sec. 5:** L1, L2, L3, L4 **Sec.6:** L4, L5 **T.21 S.,R.31E.,NMPM** **Sec. 4:** L2, L3, L4 **Sec. 5:** L1, L2	**Sec. 15:** NE¼NW¼, NW¼NE¼, NW¼NW¼, SW¼NW¼ **Sec. 16:** NE¼SE¼, NW¼SE¼, SE¼NE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼, **Sec. 21:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 28:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 33:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **T.19 S.,R.36E.,NMPM** **Sec. 5:** L3, L4 **Sec. 6:** L1, L6, L7, NE¼SW¼, SE¼NE¼, SE¼NW¼, SW¼NE¼ **T.20 S.,R.30E.,NMPM** **Sec. 36:** L4, SE¼SE¼, SW¼SE¼ **T.20 S.,R.31E.,NMPM** **Sec. 31:** L4 **Sec. 32:** SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 33:** SW¼SW¼ **Sec. 36:** NE¼SE¼, NE¼SW¼, NW¼SE¼, NW¼SW¼ **T.20 S.,R.32E.,NMPM** **Sec. 31:** L3 **T.20 S.,R.33E.,NMPM** **Sec. 15:** SW¼SW¼ **Sec. 16:** SE¼SE¼, SW¼SE¼ **Sec. 21:** NW¼NE¼ **T.20 S.,R.34E.,NMPM** **Sec. 2:** SE¼NE¼, SE¼NW¼, SW¼NE¼, SW¼NW¼ **Sec. 3:** SE¼NE¼ **Sec. 6:** NE¼SE¼, NE¼SW¼, NW¼SE¼ **T.20 S.,R.35E.,NMPM** **Sec. 4:** L4, SW¼NW¼ **Sec. 5:** SE¼NE¼, SE¼NW¼, SW¼NW¼ **Sec. 6:** SE¼NE¼ **T.21 S.,R.29E.,NMPM** **Sec. 2:** L1, L2, L3, L4 **Sec. 3:** L1
345-kV Line - Kiowa Substation to North Loving Substation (J-21)	
BLM Lands	**SLO/Private Lands**
T. 21 S., R. 29 E., NMPM **Sec. 10:** NW¼NE¼, NW¼SE¼, SE¼SW¼, SW¼NE¼, SW¼SE¼ **Sec. 15:** NE¼NW¼, NW¼SW¼, SE¼NW¼, SW¼NW¼, SW¼SW¼ **Sec. 22:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 27:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 34:** L1, NW¼NW¼, NW¼SW¼, SW¼NW¼ **T. 22 S., R. 28 E., NMPM** **Sec. 13:** L13, L14, L15, L16 **Sec. 14:** SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 15:** SE¼SE¼ **Sec. 22:** NE¼NE¼, NE¼SE¼, SE¼NE¼ **Sec. 27:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼	**T.22 S.,R.28E.,NMPM** **Sec. 22:** NE¼SE¼, SE¼SE¼ **Sec.27:** NE¼NE¼ **T.23 S.,R.28E.,NMPM** **Sec. 9:** NE¼SE¼ **Sec. 10:** NW¼SW¼ **Sec. 16:** NE¼NE¼, NE¼SE¼, NW¼SE¼, SE¼NE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 17:** SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 18:** SE¼SE¼, SE¼SW¼, SW¼SE¼ **Sec.19:** NE¼NW¼

Sec. 34: NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **T. 22 S., R. 29 E., NMPM** **Sec. 4:** L1, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 8:** SE¼SE¼ **Sec. 9:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 17:** NE¼NE¼, NE¼SW¼, NW¼NE¼, NW¼SE¼, NW¼SW¼, SW¼NE¼ **Sec. 18:** L4, NE¼SE¼, NW¼SE¼, SE¼SW¼, SW¼SE¼ **T. 23 S., R. 28 E., NMPM** **Sec. 3:** L1, NE¼SE¼, SE¼NE¼, SE¼SE¼, SE¼SW¼, SW¼SE¼ **Sec. 9:** NE¼SE¼, SE¼SE¼ **Sec. 10:** NE¼NW¼, NW¼NW¼, NW¼SW¼, SW¼NW¼ **Sec. 16:** NE¼NE¼	
345 kV line - North Loving Substation to China Draw Substation (J-22)	
BLM Lands	**SLO/Private Lands**
None	**T.23 S.,R.27E.,NMPM** **Sec. 23:** NE¼NE¼,SE¼SE¼ **Sec. 24:** NW¼SW¼, SE¼NE¼, SE¼NW¼, SW¼NE¼, SW¼NW¼ **Sec. 25:** SW¼SW¼ **Sec.26:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 36:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **T.23 S.,R.28E.,NMPM** **Sec. 19:** L2, NE¼NW¼, SE¼NW¼ **T.24 S.,R.27E.,NMPM** **Sec. 1:** L4, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 12:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 13:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 24:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 25:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 36:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **T.25 S.,R.27E.,NMPM** **Sec. 1:** L4, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 12:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 13:** NE¼SW¼, NW¼NW¼, NW¼SW¼, SE¼SW¼, SW¼NW¼ **Sec. 24:** NE¼NW¼, NE¼SW¼, SE¼NW¼, SE¼SW¼ **Sec. 25:** NE¼NW¼, NE¼SE¼, NW¼SE¼, SE¼NW¼, SE¼SE¼, SW¼NE¼ **Sec. 36:** NE¼NE¼ **T.25 S.,R.28E.,NMPM** **Sec. 31:** L1, L2, L3, NE¼SW¼, SE¼SW¼ **T.26 S.,R.28E.,NMPM** **Sec. 5:** SW¼SW¼ **Sec. 6:** NE¼NW¼, NE¼SE¼, NW¼NE¼, SE¼NE¼, SE¼SE¼, SW¼NE¼ **Sec. 8:** NW¼NW¼
Hobbs Generation Substation Expansion	
Private Lands	
T.18 S.,R.36E.,NMPM **Sec. 24:** NW¼SW¼	

North Loving Substation Expansion
Private Lands
T.23 S.,R.28E.,NMPM **Sec. 19:** NE¼NW¼
China Draw Substation Expansion
SLO Lands
T.26 S.,R.28E.,NMPM **Sec. 5:** SW¼SW¼ **Sec. 8:** NW¼NW¼

2. **Eddy to Kiowa 345-kV Transmission Line.** The second Standard Form 299 application (Eddy to Kiowa 345) would connect the existing Eddy County Substation to the proposed Kiowa Substation, also in Eddy County, New Mexico. The Eddy County to Kiowa transmission line is composed of a single segment and does not have a circuit number assigned yet. The BLM has assigned this project component the ROW serial number NM-134370 (Table 1.2).

Table 1.2. Legal Description of the Eddy to Kiowa 345-kV Transmission Line

345-kV Line - Eddy County Substation to Kiowa Substation	
BLM Lands	**SLO/Private Lands**
T.17 S.,R.27E.,NMPM **Sec. 24:** SE¼SW¼, SW¼SE¼, SW¼SW¼ **T.19 S.,R.28E.,NMPM** **Sec. 33:** NW¼SW¼, SW¼NW¼, SW¼SW¼ **T.20 S.,R.28E.,NMPM** **Sec. 4:** L4, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 9:** NW¼NW¼, NW¼SW¼, SE¼SE¼, SE¼SW¼, SW¼NW¼, SW¼SE¼, SW¼SW¼ **Sec. 10:** SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 11:** SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **Sec. 12:** SE¼SE¼, SE¼SW¼, SW¼SE¼, SW¼SW¼ **T.20 S.,R.29E.,NMPM** **Sec. 7:** L4, SE¼SE¼, SE¼SW¼, SW¼SE¼ **Sec. 17:** NE¼NW¼, NE¼SE¼, NW¼NE¼, NW¼NW¼, SE¼NE¼, SE¼SE¼, SW¼NE¼ **Sec.18:** NE¼NE¼ **Sec. 20:** NE¼NE¼ **Sec. 21:** NE¼NE¼, NE¼NW¼, NW¼NE¼, NW¼NW¼ **Sec. 22:** NE¼NE¼, NE¼NW¼, NW¼NE¼, NW¼NW¼, SE¼NE¼ **Sec. 23:** NE¼SE¼, NW¼SE¼, SE¼NW¼, SE¼SE¼, SW¼NE¼, SW¼NW¼ **Sec. 26:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 35:** NE¼NE¼ **Sec. 36:** NE¼NW¼, NW¼NE¼, NW¼NW¼, SE¼NE¼, SW¼NE¼ **T.20 S.,R.30E.,NMPM** **Sec. 31:** L2, L3, NE¼SW¼, SE¼SE¼, SE¼SW¼, SW¼SE¼ **T.21 S.,R.29E.,NMPM** **Sec. 3:** NE¼SW¼, NW¼SE¼, NW¼SW¼, SW¼SE¼ **Sec.4:** L13, L14, L15, L16, NE¼SE¼ **Sec. 5:** L10, L15, L16, L2, L3, L7	**T.17 S.,R.27E.,NMPM** **Sec. 24:** SE¼SE¼, SW¼SE¼ **T.17 S.,R.28E.,NMPM** **Sec. 19:** L4 **Sec. 30:** L1, L2, L3, L4 **Sec. 31:** L1, L2, L3, L4**,** SE¼SW¼ **T.18 S.,R.28E.,NMPM** **Sec. 6:** L3, L4, L5, NE¼SW¼, SE¼NW¼, SE¼SW¼ **Sec. 7:** NE¼NW¼, NE¼SW¼, SE¼NW¼, SE¼SW¼ **Sec. 17:** SW¼SW¼ **Sec. 18:** NE¼NW¼, NE¼SE¼, NW¼NE¼, NW¼SE¼, SE¼SE¼, SW¼NE¼ **Sec. 20:** NE¼SW¼, NW¼NW¼, NW¼SE¼, SE¼NW¼, SE¼SE¼, SW¼NW¼, SW¼SE¼ **Sec. 29:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 32:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **T.19 S.,R.28E.,NMPM** **Sec. 5:** L1, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 8:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 17:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 20:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 29:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 32:** NE¼NE¼, SE¼NE¼ **Sec. 33:** SW¼NW¼

3. **Kiowa Substation.** The third Standard Form 299 application would be the new Kiowa Substation on BLM lands in Eddy County, New Mexico (Table 1.3). The BLM has assigned this project component the ROW serial number NM-134336.

Table 1.3. Legal Description of the Proposed Kiowa Substation

Proposed Kiowa Substation
BLM Lands
T.21 S.,R.29E.,NMPM **Sec. 10:** NE¼NE¼, NW¼NE¼ **Sec. 30:** SE¼SE¼, SW¼SE¼

4. **Eddy County Substation Expansion**. The fourth Standard Form 299 application is for the expansion of the existing Eddy County Substation (Table 1.4). The BLM has assigned this project component with the ROW serial number NM-077768. The proposed Hobbs Generation Substation expansion is on private land and is not the subject of an application, but will be analyzed for impacts within this EA.

Table 1.4. Legal Description of the Proposed Eddy County Substation Expansion

Proposed Eddy County Substation Expansion
BLM Lands
T. 17 S., R. 27 E., NMPM **Sec. 24:** SW¼SW¼

The proposed project also includes access roads and temporary use areas, such as pull pockets and laydown yards. The legal descriptions for the proposed access roads and additional temporary workspaces are listed in Table 1.5.

Table 1.5. Legal Description of Proposed Access Roads and Temporary Workspaces

Pull Pockets Hobbs to China Draw (J-20 through J-22)	
BLM Lands	**SLO/Private Lands**
No. 8 **T.20 S.,R.34E.,NMPM** **Sec. 5:** L2, L3, SE¼NW¼, SW¼NE¼ **No. 9** **T.20 S.,R.33E.,NMPM** **Sec. 11:** NE¼SW¼ **No. 10** **T.20 S.,R.33E.,NMPM** **Sec. 14:** NE¼NW¼, NW¼NE¼, SE¼NW¼ **No. 11** **T.20 S.,R.32E.,NMPM** **Sec. 33:** SW¼SW¼ **T.21 S.,R.31E.,NMPM** **Sec. 4:** L1, L2 **No. 12** **T.20 S.,R.32E.,NMPM** **Sec. 31:** SE¼SE¼ **T.21 S.,R.31E.,NMPM** **Sec. 5:** L2	**No. 1** **T.18 S.,R.36E.,NMPM** **Sec. 23:** NE¼SE¼ **Sec. 24:** NW¼SW¼ **No. 2** **T.18 S.,R.36E.,NMPM** **Sec. 26:** NW¼SW¼, SW¼SW¼ **Sec. 27:** SE¼SE **No. 3** **T.18 S.,R.36E.,NMPM** **Sec. 35:** SW¼NW¼ **No. 4** **T.18 S.,R.36E.,NMPM** **Sec. 32:** NE¼SW¼, **No. 5** **T.19 S.,R.36E.,NMPM** **Sec. 5:** L2, L3 **No. 6**

No. 13
T.20 S.,R.32E.,NMPM
Sec. 31: NE¼SE¼, NW¼SE¼, SW¼NE¼

No. 14
T.21 S.,R.30E.,NMPM
Sec. 5: L4

No. 15
T.20 S.,R.31E.,NMPM
Sec. 31: SE¼SW¼

No. 16
T.20 S.,R.30E.,NMPM
Sec. 34: SW¼SW¼
T.21 S.,R.29E.,NMPM
Sec. 3: L1

No. 17
T.21 S.,R.29E.,NMPM
Sec. 3: L9

No. 18
T.21 S.,R.29E.,NMPM
Sec. 3: L14, L15

No. 19
T.22 S.,R.29E.,NMPM
Sec. 10: SW¼SW¼
Sec. 15: NW¼NW¼
Sec. 16: NE¼NE¼

No. 20
T.22 S.,R.29E.,NMPM
Sec. 8: SE¼SE¼, SW¼SE¼
Sec. 17: NE¼NE¼, NW¼NE¼

No. 21
T.22 S.,R.29E.,NMPM
Sec. 17: NE¼SW¼, NW¼SE¼

No. 22
T.22 S.,R.28E.,NMPM
Sec. 15: SE¼SE¼
Sec. 22: NE¼NE¼

No. 23
T.23 S.,R.28E.,NMPM
Sec. 3: L1, L2

No. 24
T.23 S.,R.28E.,NMPM
Sec. 3: SE¼NE¼

No. 25
T.19 S.,R.35E.,NMPM
Sec. 16: SW¼SW¼
Sec. 17: SE¼SE¼
Sec. 20: NE¼NE¼
Sec. 21: NW¼NW¼

No. 7
T.20 S.,R.35E.,NMPM
Sec. 4: NW¼SW¼, SW¼NW¼
Sec. 5: NE¼SE¼, SE¼NE¼

No. 19
T.22 S.,R.29E.,NMPM
Sec. 16: NE¼NE¼

No. 24
T.23 S.,R.28E.,NMPM
Sec. 2: SW¼NW¼
Sec. 3: SE¼NE¼

No. 25
T.23 S.,R.28E.,NMPM
Sec. 2: SW¼SW¼
Sec. 3: SE¼SE¼
Sec. 10: NE¼NE¼

No. 28
T.23 S.,R.28E.,NMPM
Sec. 15: NW¼SW¼
Sec. 16: NE¼SE¼

No. 29
T.23 S.,R.28E.,NMPM
Sec. 16: SE¼SW¼, SW¼SE¼

No. 30
T.23 S.,R.28E.,NMPM
Sec. 18: SE¼SW¼

No. 31
T.23 S.,R.28E.,NMPM
Sec. 19: NE¼NW¼, SE¼NW¼

No. 32
T.23 S.,R.27E.,NMPM
Sec. 23: NE¼NE¼, SE¼NE¼
Sec. 24: NW¼NW¼, SW¼NW¼

No. 33
T.23 S.,R.27E.,NMPM
Sec. 36: SW¼SW¼
T.24 S.,R.27E.,NMPM
Sec. 1: l4

No. 34
T.26 S.,R.28E.,NMPM

T.23 S.,R.28E.,NMPM **Sec. 3:** SE¼SE¼ **Sec. 10:** NE¼NE¼ **No. 26** **T.23 S.,R.28E.,NMPM** **Sec. 3:** SE¼SW¼, SW¼SW¼ **Sec. 10:** NE¼NW¼, NW¼NW¼ **No. 27** **T.23 S.,R.28E.,NMPM** **Sec. 9:** NE¼SE¼, SE¼SE¼	**Sec. 5:** SW¼SW¼ **Sec. 8:** NW¼NW¼ **No. 35** **T.26 S.,R.28E.,NMPM** **Sec. 5:** SE¼SW¼, SW¼SW¼ **Sec. 8:** NE¼NW¼, NW¼NW¼
Pull Pockets Eddy to Kiowa	
BLM Lands	**SLO/Private Lands**
No. 7 **T.20 S.,R.28E.,NMPM** **Sec. 8:** NE¼SE¼, SE¼SE¼ **Sec. 9:** NW¼SW¼, SW¼SW¼ **No. 8** **T.20 S.,R.29E.,NMPM** **Sec. 17:** SE¼NE¼ **No. 9** **T.20 S.,R.29E.,NMPM** **Sec. 20:** NE¼NE¼ **Sec. 21:** NW¼NW¼ **No. 10** **T.20 S.,R.29E.,NMPM** **Sec. 23:** NE¼SE¼, SE¼NE¼ **No. 11** **T.20 S.,R.29E.,NMPM** **Sec. 26:** SE¼SE¼ **Sec. 35:** NE¼NE¼ **No. 12** **T.20 S.,R.30E.,NMPM** **Sec. 31:** L2, L3 **No. 13** **T.20 S.,R.30E.,NMPM** **Sec. 31:** L3 **No. 14** **T.20 S.,R.30E.,NMPM** **Sec. 31:** SE¼SE¼, SW¼SE¼ **No. 15** **T.21 S.,R.29E.,NMPM** **Sec. 5:** L15, L16 **No. 16** **T.21 S.,R.29E.,NMPM**	**No. 1** **T.17 S.,R.27E.,NMPM** **Sec. 24:** SE¼SE¼ **T.17 S.,R.28E.,NMPM** **Sec. 19:** L4 **No. 2** **T.17 S.,R.27E.,NMPM** **Sec. 36:** NE¼SE¼, SE¼SE¼ **T.17 S.,R.28E.,NMPM** **Sec. 31:** L3, L4 **No. 3** **T.17 S.,R.28E.,NMPM** **Sec. 31:** SE¼SW¼ **No. 4** **T.18 S.,R.28E.,NMPM** **Sec. 6:** L5 **No. 5** **T.18 S.,R.28E.,NMPM** **Sec. 7:** SE¼SW¼ **Sec. 18:** NE¼NW¼ **No. 6** **T.18 S.,R.28E.,NMPM** **Sec. 20:** SE¼SE¼ **Sec. 29:** NE¼NE¼ **No. 7** **T.20 S.,R.28E.,NMPM** **Sec. 8:** NE¼SE¼, SE¼SE¼

Sec. 3: NW¼SE¼	
Laydown Yards	
SLO Lands	**Private Lands**
Cunningham Laydown Yard	**Doug Lynn Laydown Yard**
T.18 S.,R.36E.,NMPM **Sec. 33:** SE¼NE¼, SW¼NE¼	**T.23 S.,R.27E.,NMPM** **Sec. 6:** SE¼NE¼, SW¼NE¼
	Eddy Potential Laydown Yard
	T.17 S.,R.28E.,NMPM **Sec. 30:** L4
	Kiowa Laydown Yard
	T.21 S.,R.29E.,NMPM **Sec. 2:** NW¼SW¼, SW¼SW¼ **Sec. 30:** NE¼SE¼, SE¼SE¼
	McDonald Laydown Yard
	T.23 S.,R.28E.,NMPM **Sec. 18:** SE¼SE¼ **Sec. 17:** SE¼SW¼, SW¼SW¼
Access Roads	
Existing Roads – To be Improved	
BLM Lands	**SLO/Private Lands**
T.19 S.,R.34E.,NMPM **Sec. 25:** NW¼NE¼, SE¼NW¼, SW¼NE¼ **T.20 S.,R.29E.,NMPM** **Sec. 23:** NE¼NE¼, NE¼SE¼ **Sec. 25:** NW¼NW¼ **Sec. 26:** NE¼NE¼ **T.20 S.,R.31E.,NMPM** **Sec. 31:** NE¼SE¼, NW¼SE¼, SE¼SW¼, SW¼SE¼ **T.20 S.,R.34E.,NMPM** **Sec. 34:** L1, L2 **T.21 S.,R.29E.,NMPM** **Sec. 1:** L2 **Sec. 3:** L12, L5, L6, L7 **Sec. 4:** L16, L9, NE¼SE¼ **T.22 S.,R.28E.,NMPM** **Sec. 13:** L10, L16, L3, L4, L6, L7, L9 **Sec. 14:** NE¼NE¼, NW¼NE¼, NW¼SW¼, SE¼NW¼, SW¼NE¼, SW¼NW¼, SW¼SW¼ **Sec. 15:** SE¼SE¼ **Sec. 22:** NE¼NE¼, NE¼SE¼, SE¼NE¼ **Sec. 26:** NE¼SW¼, NW¼SW¼, SW¼NW¼ **Sec. 27:** NE¼NE¼, SE¼NE¼ **T.22 S.,R.29E.,NMPM** **Sec. 18:** L4 **Sec. 19:** L1, NE¼NW¼, SE¼NW¼	**T.19 S.,R.28E.,NMPM** **Sec. 16:** NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 17:** SE¼NE¼ **Sec. 20:** NE¼NE¼, NE¼SE¼, SE¼NE¼, SE¼SE¼ **Sec. 21:** NW¼NW¼ **Sec. 28:** NW¼NW¼, NW¼SW¼, SW¼NW¼, SW¼SW¼ **Sec. 29:** NE¼NE¼, SE¼SE¼, NE¼NE¼ **Sec. 32:** NE¼NE¼ **Sec. 23:** NW¼NW¼, SW¼NW¼ **T.19 S.,R.35E.,NMPM** **Sec. 1:** SE¼SE¼, SW¼SE¼ **Sec. 10:** SE¼SE¼ **Sec. 11:** NE¼SE¼, NE¼SW¼, NW¼SE¼, SE¼NE¼, SE¼SW¼, SW¼SW¼ **Sec. 12:** NE¼NW¼, NW¼NE¼, NW¼NW¼, SW¼NW¼ **Sec. 15:** NE¼NE¼, NE¼NW¼, NW¼NE¼, SE¼NW¼, SW¼NW¼ **Sec. 16:** NE¼SE¼, NE¼SW¼, NW¼SE¼, SE¼NE¼, SE¼SW¼, SW¼SW¼, SE¼SE¼, NE¼NE¼ **Sec. 17:** SE¼SE¼ **Sec. 20:** NE¼NE¼, NE¼NW¼, NW¼NE¼, SE¼NW¼ **T.19 S.,R.36E.,NMPM** **Sec. 6:** L7 **T.22 S.,R.28E.,NMPM** **Sec. 22:** NE¼SE¼, SE¼SE¼ **Sec. 27:** NE¼NE¼ **T.23 S.,R.27E.,NMPM** **Sec. 14:** SE¼SE¼ **Sec. 23:** NE¼NE¼

	Sec. 24: NW¼NW¼
Access Roads – New Roads	
BLM Lands	**SLO/Private Lands**
T.20 S.,R.30E.,NMPM **Sec. 36:** SE¼SE¼ **T.21 S.,R.29E.,NMPM** **Sec. 3:** NE¼SE¼, SE¼SE¼ **T.21 S.,R.30E.,NMPM** **Sec. 6:** L3 **T.22 S.,R.28E.,NMPM** **Sec. 14:** SW¼SW¼	**T.17 S.,R.28E.,NMPM** **Sec. 30:** L2, L3, L4 **Sec. 31:** L1 **T.18 S.,R.36E.,NMPM** **Sec. 33:** SE¼NW¼ **T.19 S.,R.35E.,NMPM** **Sec. 1:** NE¼SE¼, SE¼SE¼ **Sec. 11:** SE¼NE¼, SW¼NE¼ **Sec. 15:** SW¼NW¼ **T.19 S.,R.36E.,NMPM** **Sec. 6:** L6 **T.20 S.,R.30E.,NMPM** **Sec. 36:** SE¼SE¼ **T.21 S.,R.29E.,NMPM** **Sec. 2:** NW¼SW¼ **Sec. 3:** NE¼SE¼

As part of the application process, a Plan of Development (POD) is required and has been prepared. The appropriate information from the POD has been incorporated into the Proposed Action of this EA. On federal lands administered by the BLM, the POD is an enforceable stipulation of the BLM ROW grant and pertains not only to the construction of the project, but also to the operation and maintenance phase of the project. Along with the Standard Form 299s, a preliminary POD was submitted to the BLM for the Hobbs to China Draw transmission line in August 2014 and for the Eddy County to Kiowa transmission line in November 2014. SPS filed Standard Form 299s for the Kiowa Substation and Eddy County Substation expansion in March 2015. Prior to receiving a Notice to Proceed from the BLM, SPS would be responsible to prepare a final POD based on the EA.

SWCA Environmental Consultants (SWCA) conducted a general biological survey of the proposed disturbance area over several sessions from October 2014 to August 2015 to evaluate the potential for special status species to occur and to identify habitat communities regulated by the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act of 1973 (ESA), jurisdictional drainages or sensitive aquatic habitats regulated by the U.S. Army Corps of Engineers (USACE) under the Clean Water Act of 1972, and active and inactive migratory bird nests protected by the Migratory Bird Treaty Act of 1918 (MBTA). The survey results are included in the biological assessment (BA), (SWCA 2015a), and wetland report (SWCA 2015b). Additionally, SWCA prepared a series of cultural resources inventory reports for the proposed project (Sisneros et al. 2015a, 2015b, 2015c) to aid in complying with Section 106 of the National Historic Preservation Act of 1966 (NHPA). These reports are on file with the BLM CFO.

This EA complies with the requirements of NEPA and federal regulations found in 40 CFR Chapter V. This EA analyzes the site-specific impacts associated with the Proposed Action and its alternatives, identifies project design features to potentially reduce or eliminate those impacts, and provides agency decision makers with detailed information with which to make a decision on the pending applications under review (see Section 1.3).

Figure 1.1 shows an overview of the Proposed Action.

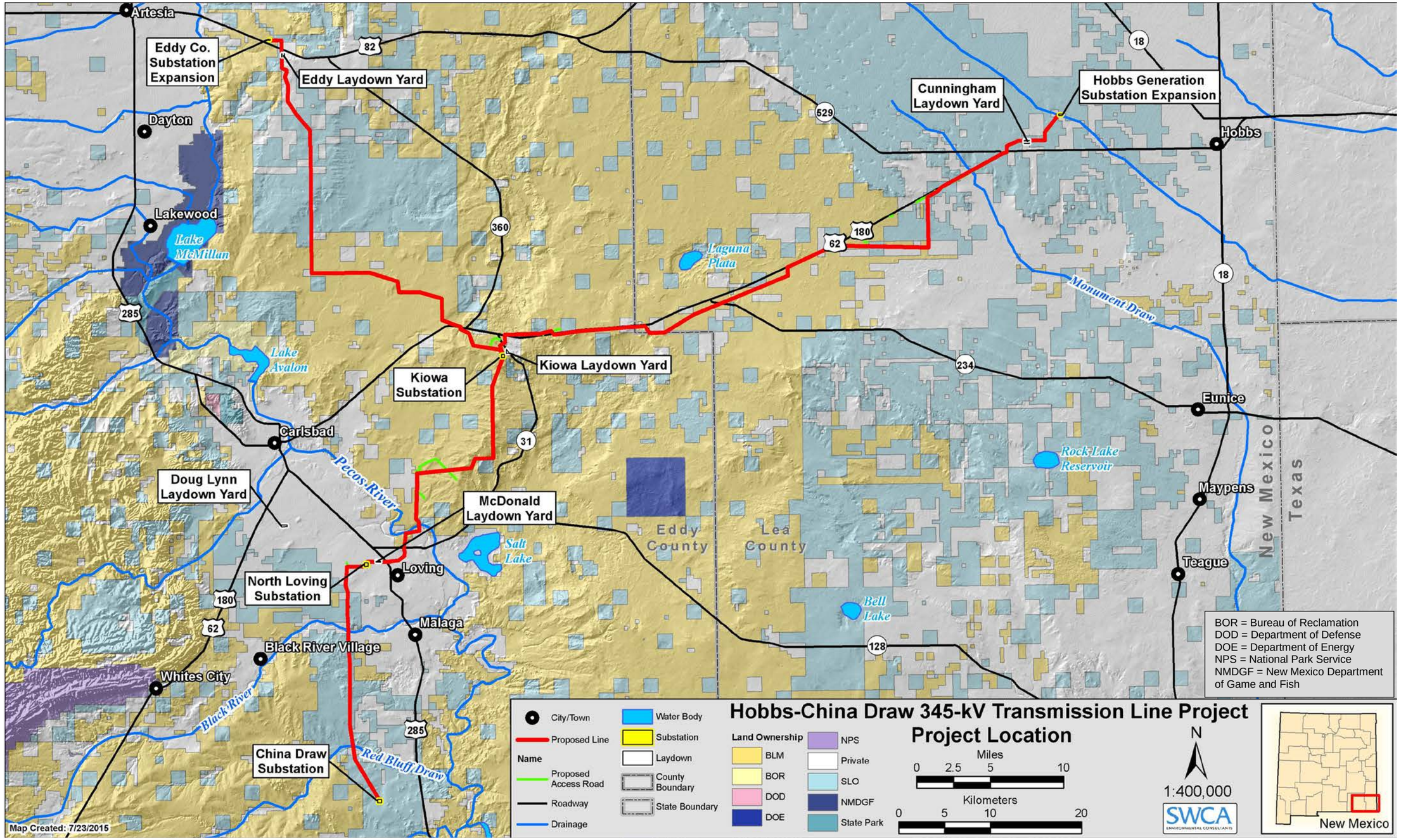


Figure 1.1. Project location map.

1.2 Purpose of and Need for Action

The BLM's purpose is to respond to SPS's request for legal use of and access across BLM-managed public lands by granting SPS a ROW for each transmission line and their associated facilities. As stated in 43 CFR 2801.9, a BLM ROW grant is required for use of public lands for "systems or facilities over, under, on, or through public lands," including transmission lines. The BLM's mandate for multiple uses of public lands includes development of energy transmission in a manner that conserves the multitude of other resources found on public lands. The need for the BLM's action is established by the Federal Land Policy and Management Act (FLPMA) and is to respond to an application for a ROW grant by evaluating the application for use of federal land for construction of two 345-kV transmission lines, a new substation, and the expansion of one substation on federal land. The BLM would consider the application in accordance with 43 CFR 2800, Rights-of-Way under FLPMA, and the Energy Policy Act of 2005, and would decide whether to issue a ROW grant and, if so, under what terms and conditions.

The applicant's need is established by its obligations as a regulated utility subject to the jurisdiction of the New Mexico Public Regulation Commission, the Federal Energy Regulatory Commission (FERC), and its delegates, including the North American Electric Reliability Corporation (NERC) and the Southwest Power Pool (SPP), which is the Regional Transmission Organization to which SPS belongs. SPS is responsible to reliably serve its customers' electrical needs and to plan its system such that it can reliably accommodate the future electrical load within its system. Within its service territory, SPS has recently experienced a substantial increase in electrical demand in southeast New Mexico where development of oil and gas fields has grown tremendously. SPP conducted a High Priority Incremental Load Study (HPILS), finalized in April 2014, to evaluate transmission needs resulting from significant load growth expectations.

Using the results from the HPILS, SPP issued numerous orders to its members in the form of Notices to Construct (NTCs). These included NTCs to SPS to construct a number of new high-voltage transmission lines in southeast New Mexico. Some of these NTCs have been combined as part of the SPS Proposed Action. Therefore, this EA and the associated POD pertains to the following SPP projects:

- installation of new substation equipment at the existing Hobbs Generation, North Loving, and China Draw Substations;
- construction of the proposed Kiowa Substation and installation of new substation equipment therein;
- construction of three segments, totaling approximately 86 miles of, new 345-kV transmission lines connecting the Hobbs Generation Station, the proposed Kiowa Substation; and the existing North Loving and China Draw Substations, and
- construction of a new 345-kV line segment between Kiowa Substation and the existing Eddy substation.

As part of the NTCs, SPP directed SPS to have all of these system additions in service by June 1, 2018.

1.3 Decision to be Made by the BLM

In making its decision, the BLM must determine and consider the environmental impact on all lands crossed as a result of granting a ROW across BLM-administered public lands. In its decision to issue a ROW grant, the BLM must also consider existing resource management plans (RMPs) and other BLM plans in terms of how the authorizations and actions conform to the existing BLM land use plans. This EA analyzes the site-specific impacts associated with the Proposed Action and its alternatives, identifies mitigation measures to potentially reduce or eliminate those impacts, and provides the BLM detailed analyses to inform the decision.

The BLM would decide whether to issue the grant for one and/or all ROWs applications for use of federal land, grant with modifications, or deny one and/or all applications. Modifications could include granting only a portion of the project, modifying the proposed use, or changing the route or location of the proposed facilities if the BLM determines such terms, conditions, and stipulations are in the public interest (43 CFR 2805.10(a)(1)).

1.4 Conformance with Applicable Land Use Plan(s)

The Proposed Action is in conformance with the 1988 Carlsbad RMP as amended (BLM 1988, 1997, 2008a).

Utility corridors are recognized as an appropriate use of public lands by the BLM CFO 1988 RMP (BLM 1988:10-11), which provides management direction for designation of ROW corridors. The BLM encourages applicants to locate new facilities within designated ROW corridors. Deviations from designated corridors may be permitted based on the type and need of the proposed facility and lack of conflicts with other resource values and uses. In order to comply with Section 368 of the Energy Policy Act of 2005, the BLM Pecos District would designate utility corridors for major projects such as interstate electric transmission lines, pipelines, and communications lines for interstate use (BLM 2008a:2-12).

The 2008 Resource Management Plan Amendment (RMPA) states:

> New projects of the type described above [utility corridors for major projects such as interstate electric transmission lines; pipelines; and communications lines for interstate use] that propose to cross the Planning Area would be evaluated based on the impacts to lesser prairie-chicken and sand dune lizard habitats and other resources to meet the overall objectives of this plan. These projects would not be located in ROW avoidance areas if other routes can meet the purposes of the project. (BLM 2008a:2-13)

Appendix 2 of the Carlsbad Approved RMPA and Record of Decision (ROD) (BLM 1997:Appendix 2:8-9) and the 2008 RMPA and ROD (BLM 2008a:6-7) describe Conditions of Approval and mitigation measures for overhead transmission lines. The Proposed Action is not located in a ROW avoidance area and complies with the recommended mitigation measures in the RMP. This site-specific EA tiers to the information and analysis contained in the BLM CFO's RMP, as amended. Therefore, the Proposed Action is in conformance with the RMP.

1.5 Relationship to Statutes, Regulations, or Other Plans

Various federal and state agencies regulate different aspects of electric power transmission projects. Table 1.6 lists the environmental permits and approvals that could be required for the proposed project.

Table 1.6. Potential Permits, Approvals, and Clearances Needed for Construction, Operation, and Maintenance of Facilities

Permit/Notification	Issuing Agency	Status
Federal Permit, Approval, or Clearance		
ROW grant	BLM	Subject of this EA.
Clearance under Section 7 of the ESA	USFWS	Surveys were conducted. Findings are described in Section 3.6 and in the BA (SWCA 2015a).
Clean Water Act Section 404 Permit	USACE	Field investigations have been conducted to identify potential waters of the U.S. that would be impacted by the proposed project. Findings are described in Section 3.4.
Clean Water Act Section 402 General Construction (Stormwater) Permit	U.S. Environmental Protection Agency (EPA)	The permit would be obtained prior to construction under the EPA's Construction General Permit.
State Permit, Approval, or Clearance		
ROW grant	SLO	Subject of this EA.
Certificate of Public Convenience and Necessity	New Mexico Public Regulation Commission	Application for approval of location of the transmission lines and substations is underway.

Permit/Notification	Issuing Agency	Status
Tribal consultation to determine if the proposed project would have any impact on receptors of cultural importance	Native American tribes	Findings are described in Section 3.7 and the associated cultural resources reports.
Clearance under Section 106 of the NHPA	New Mexico State Historic Preservation District	Cultural resources surveys were conducted. Findings are described in Section 3.7 and the associated cultural resources reports.
Clean Water Act Section 401 Permit	New Mexico Environment Department	Field investigations have been conducted to identify potential waters of the U.S. that would be impacted by the proposed project. Findings are described in Section 3.4.
Collection permit for the displacement or removal of any state endangered plant species	New Mexico Energy, Minerals, and Natural Resources Department Forestry Division	Biological resource surveys were conducted. Findings are described in Section 3.6 and in the BA (SWCA 2015a).
Access permit or public highway utility accommodation permit	New Mexico Department of Transportation (NMDOT)	Discussions with the NMDOT regarding the location of the proposed project and access locations are underway.

1.5.1 Executive Order 13212

Executive Order (EO) 13212, dated May 18, 2001, mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner." Furthermore, agencies are directed to expedite projects that would increase the transmission of energy and expedite their review of permits to accelerate the completion of such projects.

1.5.2 Council on Environmental Quality Regulations

Parts 1500 through 1508 of the CEQ regulations (40 CFR 1500.3) provide stipulations applicable to and binding for all federal agencies for implementing the procedural provisions of NEPA, "except where compliance would be inconsistent with other statutory requirements."

Additionally, the ROW grant holder is required to:

- comply with all applicable federal, state, and local laws and regulations; and
- implement the Proposed Action in a way that is as consistent as possible with local, county, or state plans.

1.5.3 Endangered Species Act of 1973

The ESA requires all federal departments and agencies to conserve threatened, endangered, and critical and sensitive species and the habitats on which they depend and to consult with the USFWS on all actions authorized, funded, or carried out by the agency to ensure that the action would not likely jeopardize the continued existence of any threatened and endangered species or adversely modify critical habitat. Consultation with the USFWS, as required by Section 7 of the ESA, would be conducted by BLM for the Proposed Action.

1.5.4 National Historic Preservation Act

Heritage resources are protected by the NHPA (Public Law [PL] 89-665), as amended, and its implementing regulations (36 CFR 800) and other legislation, including NEPA (PL 91-852) and its implementing regulations (40 CFR 1500–1508). Other relevant laws include the following:

- Antiquities Act of 1906 (PL 52-209);
- Archaeological and Historical Conservation Act of 1974 (PL 93-291);

- Archaeological Resources Protection Act of 1979 (PL 96-95) and its regulations (36 CFR 296);
- American Indian Religious Freedom Act (42 United States Code [USC] 1996);
- Native American Graves Protection and Repatriation Act of 1990 (PL 101-601); and
- EO 11593 of 1971.

Compliance with Section 106 responsibilities of the NHPA is achieved by following the BLM–New Mexico State Historic Preservation Office protocol agreement, which is authorized by the National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. The BLM would conduct any consultation with the New Mexico State Historic Preservation Office (SHPO) regarding this Proposed Action.

1.5.5 Clean Water Act

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (codified at 40 CFR 112), protects surface water resources from pollution. The USACE has jurisdiction of navigable waters of the U.S.

Section 401 of the federal Clean Water Act, which through state certification by the New Mexico Environment Department (NMED), requires the USACE to meet state water quality regulations prior to granting a Section 404 permit for discharges of dredge or fill material in waters of the U.S. All federal consultations, including the ESA, must be completed prior to USACE issuance of Section 404 authorizations.

Three wetlands, two perennial streams, one intermittent stream, two playas, and 22 ephemeral streams were recorded within the project area. All of these features are potentially jurisdictional, or waters of the U.S. (SWCA 2015b). All of the potential waters of the U.S., including the Pecos and Black Rivers and Red Bluff Draw, as well as playas, would be avoided by the proposed transmission lines and structures by either spanning the water bodies or designating the areas as avoidance zones in the POD. Any impact to drainages from proposed access road use or construction would be in accordance with the USACE's Nationwide Permit 12 for Utility Line Activities (see Section 3.4).

Prior to construction, a Clean Water Act Section 402 National Pollutant Discharge Elimination System (NPDES) permit would be acquired from the U.S. Environmental Protection Agency (EPA). This would be obtained through the EPA's Construction General Permit. As part of the permit requirements, a Stormwater Pollution Plan (SWPPP) would be written.

1.5.6 Clean Air Act

The Clean Air Act of 1970 (CAA), as amended, establishes National Ambient Air Quality Standards (NAAQS) to control air pollution. The NMED Air Quality Bureau (AQB) oversees air quality regulations and standards for stationary sources of air pollution. Impacts to air quality from transmission lines are controlled by mitigation measures developed on a case-by-case basis. As part of the planning and decision-making process, the BLM must consider and analyze the potential effects of its activities on air resources (see Section 3.1). The Proposed Action would be in compliance with the NAAQS for potential air pollution from the proposed project activities. This EA discusses the recommended mitigation measures during construction that would prevent the potential for adverse impacts to air quality in Section 2.1.2, Project Design Features.

1.6 Scoping, Public Involvement, and Issues

Scoping helps identify resources and resource uses that could be impacted, reducing the chances of overlooking a potentially significant issue or reasonable alternative. Scoping takes place both internally within the BLM via meetings with resource specialists, as well as externally where the public is invited to comment.

The BLM's interdisciplinary team of resource specialists conducted internal scoping on the Proposed Action in November 2014 and identified several resource issues. In addition, the project description and

location were posted to the BLM's website, as well as the *Carlsbad Current-Argus* and the *Hobbs News-Sun* local newspapers, beginning on March 2, 2015, for a 30-day public scoping comment period. Internal and external resource issues identified for the project are listed in Table 1.7. No public comments were received.

Table 1.7. Internal and External Resource Issues

Resource	Issue
Air Resources	How would the proposed project impact air quality, especially during construction and maintenance?
Soils	How would the surface disturbance associated with the proposed project affect soils?
Water Resources	How would the proposed project affect water resources, including wetlands and playas, and groundwater?
Cave and Karst Resources	How would the proposed project affect cave and karst resources known to occur in portions of the project area?
Vegetation	How would the proposed project affect vegetation, especially during construction and regular vegetation maintenance activities? How would the proposed project affect the spread of invasive non-native species?
Wildlife and Special Status Species	How would the proposed project affect wildlife and migratory birds? How would the proposed project and associated noise impacts affect special status species with the potential to occur in the project area, including habitat for the lesser prairie-chicken and dunes sagebrush lizard?
Cultural Resources	How would the proposed project affect cultural resources?
Visual Resources	How would the scenic quality of the landscape be affected by the proposed project?
Special Designations	Which special designations are crossed by the proposed project? How would the proposed project effect the resources protected by these special designations?
Livestock Grazing	How would the proposed project impact livestock grazing in the vicinity of the Proposed Action, specifically fence crossings and water line crossings?
Public Health and Safety	How would the proposed project's construction, operation, and maintenance affect public health and safety?

1.6.1 Issues Considered but Not Analyzed

The following issues were considered but not analyzed in detail in this EA.

Paleontological Resources

Based on a literature, geologic map, and aerial photograph review of the project area, the proposed project is located within an area underlain by geologic units that have been classified using the Potential Fossil Yield Classification system primarily as Class 2 or Class 3a. These classifications indicate these geologic units have low (Class 2) to moderate (Class 3a) potential to contain recognizable fossil remains. Management concern for paleontological resources within Class 2 units is usually low and assessment or mitigation is usually unnecessary (BLM 2007). Management concerns for paleontological resources within Class 3a units is moderate. While surface-disturbing activities may require field assessment to determine appropriate course of action, the Class 3a geologic unit exposed in the project is the Ogallala Formation but is limited to layers of well developed (stage VI) caliche, which is not known to be fossiliferous. An aerial photographic review of the alignment revealed that only a few very small exposures of geologic units with the potential to contain recognizable fossils occur within the proposed disturbance corridor, and no previously recorded fossil localities were found to occur within the project area. Based on these findings and the low to moderate potential of these units to contain recognizable fossil remains, field surveys were not conducted. The proposed project is not expected to impact paleontological resources;

therefore, the issue is not analyzed in this EA. Section 2.1.2 includes a design feature for paleontological resources, if conditions arise.

Minerals

The proposed project crosses areas with heavy oil and gas development, as well as the Designated Potash Area defined by the Secretary of the Interior under the authority of Mineral Leasing Act of 1920, as amended (30 USC 185). The project elements have been routed to avoid potash mine tailings and salt tailings. SPS coordinated with potash mining companies in the project vicinity during the development of the proposed project. No impacts to underground potash mining activity were identified during these meetings.

The refined route was also reviewed for proximity to active caliche pits, and none are located within the project area (Center for Excellence for Hazardous Materials Management [CEHMM] 2015). Two caliche pits are located within 1,000 feet of the route; however, based on aerial photography, these material pits appear to have room for expansion without encroaching on the proposed transmission line route. Based on the coordination with potash mining companies and review of caliche pits near the project are, the issue of mineral resources is not analyzed in this EA.

Native American Religious Concerns

For the Proposed Action, identification efforts for Native American religious concerns were limited to reviewing existing published and unpublished literature, the site-specific Class III survey reports prepared for the Proposed Action (Sisneros et al. 2015a, 2015b, 2015c), and the BLM's cultural resources program regarding the presence of traditional cultural properties (TCPs) identified through ongoing BLM tribal consultation efforts. The Proposed Action would not impact any known TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (42 USC 1996) or EO 13007.

Socioeconomics and Environmental Justice

SPS estimates that approximately 180 workers total would be employed during construction of the $128 million project. These workers would primarily be employed by SPS contractors and the work would be temporary in nature, no new permanent jobs would be created. The number of jobs created and the temporary status of those jobs, compared to the high overall employment rate in the BLM CFO planning area, does not warrant detailed analysis of socioeconomics in this EA, as only marginal and minimal, short-term, impacts to employment and demographics would be expected. The proposed project would not disproportionally impact environmental justice populations as no majority environmental justice population (as defined by EO 12898) was identified in the region.

2 PROPOSED ACTION AND ALTERNATIVES

This chapter provides a detailed description of the proposed project, the No Action Alternative, and those alternatives that were considered but not included for detailed analysis.

2.1 Proposed Action

SPS is proposing to construct, operate, and maintain two single-circuit alternating current 345-kV overhead electric transmission lines that both interconnect with the proposed Kiowa Substation in Eddy County, New Mexico. In addition, SPS is proposing to build one new substation and expand four existing substations and secure the necessary ROWs for associated facilities, including but not limited to access roads and temporary work areas.

The proposed project would cross private, state, and BLM-managed lands. Table 2.1 provides the length of the proposed project and acres of surface disturbance, by land ownership, for the Proposed Action.

Table 2.1. Acreages and Miles of Proposed ROW and Surface Disturbance by Land Ownership

Project Component	Land Ownership	Lengths (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Hobbs to China Draw 345-kV transmission line (150-foot ROW)	BLM	45	803	803
	SLO	30	549	–
	Private	13	241	–
Subtotal		**88**	**1,593**	**–**
Eddy County to Kiowa 345-kV transmission line (150-foot ROW)	BLM	19	347	347
	SLO	9	158	–
	Private	6	109	–
Subtotal		**34**	**614**	**–**
New substation and substation expansions	BLM	–	34	34
	SLO	–	5	–
	Private	–	13	–
Subtotal		**0**	**52**	**–**
Additional temporary workspace (including laydown yards and pull pockets)	BLM	–	76	76
	SLO	–	78	–
	Private	–	136	–
Subtotal		**0**	**290**	**–**
Access roads (60-foot ROW)	BLM	9	67	67
	SLO	7	47	–
	Private	4	24	–
Subtotal		**20**	**138**	**–**
Subtotal (acres)			**2,687**	**1,327**
Overlap of Project Components (acres)			**-26**	**-3**
Total Proposed Disturbance (acres)			***2,661***	***1,324***

Transmission Lines

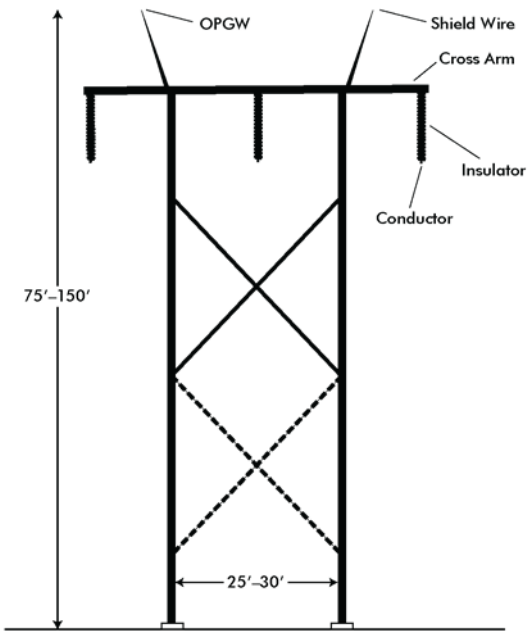
The 345-kV overhead power lines would require a 150-foot-wide ROW throughout the proposed alignments, except in select areas where sensitive resources are actively being avoided through narrowing the ROW, or in select locations where the height of structures are taller to span avoidance areas, requiring a wider ROW between structures. The overhead transmission lines would be supported

by either H-frame, three-pole, or monopole structures (Figure 2.1–Figure 2.3). In rural areas, the most common structure would be a single-circuit, tubular steel pole H-frame at tangent locations. Where the line terminates or turns at an angle, a single-circuit three-pole tubular steel structure would be used. Monopole structures would be used as warranted by land use constraints and transmission line design requirements, monopoles would be least used of the three structure types. All transmission structures would be made of self-weathering steel. Substation structures would be made of galvanized, or dull galvanized steel. The top of the structures would be strung with 3/8-inch extra-high-strength shield wire on one side (for protection from lightning) and optical ground wire for communication purposes on the other side.

The average structure heights would vary depending on clearance, topographic conditions, and line design requirements (Table 2.2). The typical structures would range in height between 100 to 150 feet with a few structures that may be as tall as 175 feet. Typical spans between structures would range from 800 to 1,200 feet or four to six structures per mile. In some situations, longer spans may be necessary, which can reduce ground clearances and require additional vegetation clearing to maintain appropriate electrical clearances. In such instances, taller structures and a wider ROW width may be necessary to maintain clearance for "blowout" conditions. During final engineering, conductor clearances may be increased in certain locations to account for site-specific conditions and for safe operation.

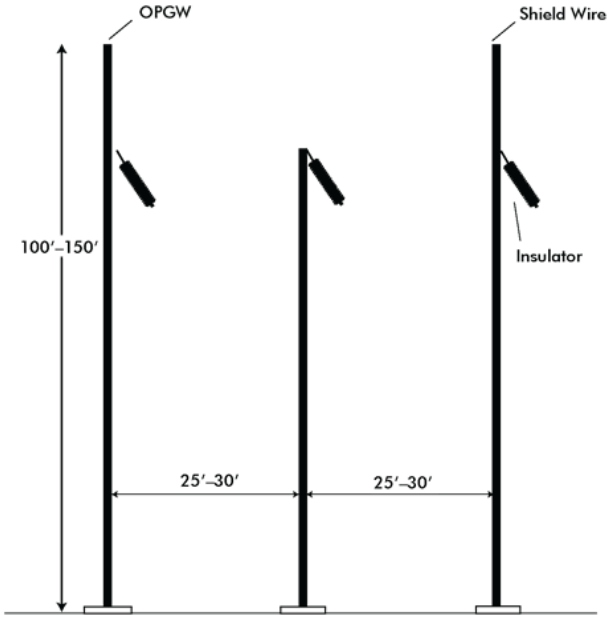
Table 2.2. Summary of Major Features for 345-kV Overhead Power Lines

Feature	Description
345-kV line length	120 miles
Types of structures	Tangent = H-frame structures Angle/Dead-end = three-pole structures Monopole structures as needed
Typical Structure height	100–150 feet
Structure foundation area	30–60 square feet for H-frame structures, 75–150 square feet for three-pole structures, and 15–40 square feet for monopole structures
Span length	Typically 800–1,200 feet
Structures per mile	4–6
ROW width	150 feet



Note: Dimensions are approximate and drawings are not to scale.

Figure 2.1. Basic H-frame structure design.



Note: Dimensions are approximate and drawings are not to scale.

Figure 2.2. Basic three-pole structure design.

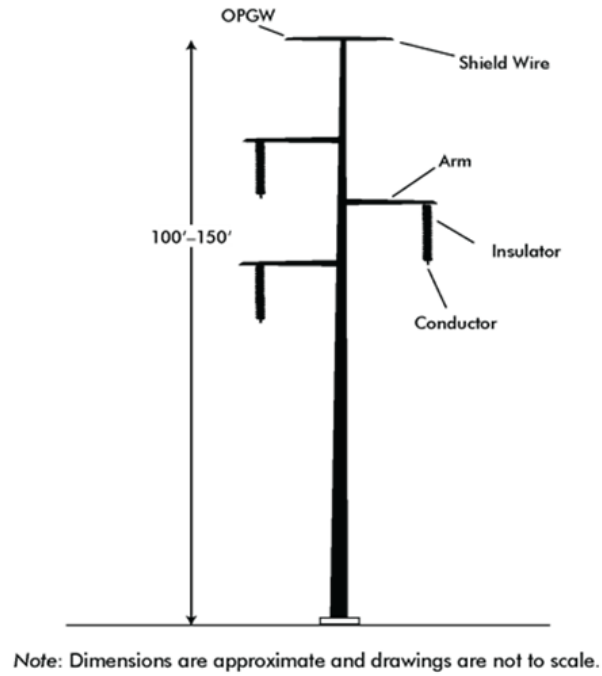


Figure 2.3. Basic monopole structure design.

Substation Details

One new substation would be built and four other substations would be expanded to accommodate the proposed project. The proposed Kiowa Substation would be constructed on approximately 27 acres of BLM land as part of the Proposed Action. The existing Hobbs Generation Substation would be expanded on private lands by 14 acres. The existing North Loving and China Draw Substations would be expanded on private and SLO lands, respectively. The existing Eddy County Substation would be expanded on BLM-managed lands by 7 acres. Table 2.3 provides the proposed acreage for each substation.

Table 2.3. Substation Details

Substation Name	Land Ownership	Proposed Action	Proposed Size Expansion (Acres)
Hobbs Generation Substation	Private	Expand	8
Kiowa Substation (new construction)	BLM	New	27
North Loving Substation	Private	Expand	5
China Draw Substation	SLO	Expand	5
Eddy County Substation	BLM	Expand	7
Total			***52***

Additional Temporary Workspace

Temporary work areas, including pull pockets and laydown yards, would be required to construct the project. The pull pockets would extend outside the permanent 150-foot ROW to ensure safe construction of structures for pulling and tensioning sites at angled structure locations. Each pull pocket would be

approximately 150 × 300 to 400 feet, extending outward from the centerline in both directions of angles greater than 30 degrees and/or approximately every 3 miles. Details on pull pockets are provided in Table 2.4.

Table 2.4. Pull Pockets Detail

Number South to North	Land Status	Acres
Hobbs to China Draw		
1	Private	2.53
2	Private	0.02
	State	2.26
3	State	2.84
4	State	2.74
5	Private	0.14
5	State	2.63
6	Private	1.25
	State	1.45
7	Private	2.84
8	BLM	1.70
9	BLM	2.77
10	BLM	2.78
11	BLM	1.97
12	BLM	2.67
13	BLM	2.71
14	BLM	2.70
15	BLM	2.75
16	BLM	2.84
17	BLM	2.66
18	BLM	2.78
19	BLM	2.13
	State	0.71
20	BLM	2.74
21	BLM	2.69
22	BLM	2.83
23	BLM	2.35
24	BLM	2.27
	State	0.02
25	BLM	2.19
	Private	0.64
26	BLM	2.64
27	BLM	1.89
28	Private	2.58
29	Private	1.91
30	Private	2.83
31	Private	2.84
32	Private	2.84
33	State	2.76
34	State	2.66
35	State	2.84
Total Column 1		***91.39***

Number South to North	Land Status	Acres
Eddy to Kiowa		
1	State	2.84
2	Private	1.38
	State	1.36
3	Private	2.74
4	Private	2.32
5	Private	2.11
6	State	2.34
7	BLM	2.64
	Private	0.20
8	BLM	2.72
9	BLM	2.82
10	BLM	2.79
11	BLM	2.76
12	BLM	2.82
13	BLM	2.78
14	BLM	2.43
15	BLM	2.68
16	BLM	1.80
Total		***41.53***

Number South to North	Land Status	Acres	Number South to North	Land Status	Acres
Hobbs to China Draw			**Eddy to Kiowa**		
Total Column 2		***41.53***			
Grand Total		***132.92***			

Also proposed are five temporary laydown yards for the staging of materials and equipment and assembly of structures as needed. The laydown yards would require a total of 158 acres of private and SLO lands. The temporary laydown yards would be located close to existing highways or roads within the project area. They would be used to park vehicles, assemble crews, and collect trash for off-site disposal, etc. The laydown yards may also contain a temporary portable construction office trailer, bathroom, and electric power. For this project, the laydown yards either have electrical service already or are located near existing distribution lines from which new service could be attained. The exact alignments of any necessary distribution lines has not been determined at this point. If acquiring new electrical service is impractical, then the laydown yards could use diesel-operated generators. Table 2.5 lists the temporary laydown yards needed to construct the proposed project.

Table 2.5. Laydown Yards

Name	Land Status	Dimensions (north-south)	Acres
Eddy laydown yard	Private	1,167 × 1,112 feet	29.8
Kiowa laydown yard	Private	1,477 × 1,155 feet	19.6
Cunningham laydown yard	SLO	1,208 × 1,843 feet	50.7
Doug Lynn laydown yard	Private	605 × 2,085 feet	29.0
McDonald laydown yard	Private	718 × 1,729 feet	28.5
		Total	**157.6**

Access Roads

Access roads would be needed to facilitate both construction and regular inspection and maintenance activities. Existing roads would be used to access the ROW and individual structures to the maximum extent practical, but in some cases new access roads would need to be developed or existing roads would need to be improved to accommodate construction vehicles. In some cases, the ROW or individual structures may be accessed by constructing short spur roads from existing access roads. Access roads would be temporarily constructed up to 60 feet in width during construction and reduced through reclamation to resemble a two-track road, for long-term operation and maintenance (to be located within the ROW to the maximum extent possible) (Figure 2.4).

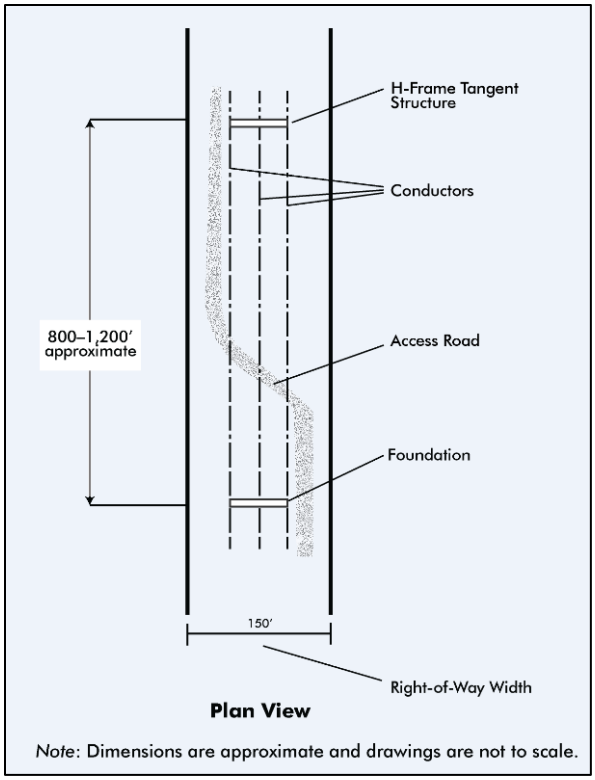


Figure 2.4. Typical access road schematic.

Four types of access to the ROW would be used as described here and listed in Table 2.6 and Table 2.7 below.

1. New access road (outside ROW): This type of road would include areas that do not have existing access and require new permanent access during construction and operations. This access would typically have a 60-foot-wide ROW during construction and reclaimed to 30-feet width of permanent traveled surface width. The travel surface road base would be compacted to provide a smooth, uniform surface. An example application of this type of road would be in an area where there are no existing roads available for access to proposed structures, new access cannot be achieved by clear and cut methods, and permanent access would be needed for operation and maintenance. This access type could include cuts in steep slopes and/or soil removal.

2. New access road (within ROW): This type would be contained within the ROW and have an up to 60-foot wide access road constructed between structures following a 'least disturbance' path and avoiding straight lines where practical.' This road would be fully reclaimed following construction, for the majority of the route, and as maintenance vehicles access the ROW over time it would begin to resemble a two-track in the long-term. In some places, it would be surfaced with caliche to deter vehicles from veering off the designated path.

3. Existing access road (to be improved): This category would require widening or blading inside and/or outside the existing roadway. This access road type pertains to access that must be improved to function as permanent access road. An example of this type of road would be an existing 8-foot-wide road (with ruts or a two-track road), improved to meet road surface standards, that is identified as a route on the BLM Transportation Plan, or identified as a county road. The standard for traveled surface road width is 14 feet plus an additional 1 foot on fill slopes to accommodate sloughing. When fills are over 6 feet high at shoulder, 2 feet would be added to the road width.

4. Existing permanent access road (no improvement): This type includes paved highways and other developed roadways, including well-traversed and established dirt roadways (e.g., a well-graded 14-foot-wide or wider road surface with a road base in good condition), which would not be expected to be affected by inclement weather or degradation due to the construction, operation, and maintenance activities. These types of roads are typically maintained by entities other than the applicant. SPS would be a named user on these BLM, SLO, and private roads for the duration of the project (see Table 2.7).

Table 2.6. Proposed New Access Roads and Roads to be Improved

Type	Land Ownership	Miles	Acres of Disturbance
1. New access road (outside ROW)	BLM	0.5	3.5
	SLO	0.5	3.6
	Private	0.1	0.5
Subtotal		**1.1**	**7.6**
2. New access road (within ROW)	BLM	0.0	0
	SLO	0.0	0
	Private	0.0	0
Subtotal		**0.0**	**0***
3. Existing access road (to be improved)	BLM	8.6	62.9
	SLO	6.0	43.8
	Private	3.2	23.2
Subtotal		**17.8**	**129.9**
Total		***18.9***	***137.5***
*Disturbance from access within the ROW is already accounted for as part of transmission line disturbance, therefore it is not repeated here..			

Table 2.7. Existing Access Roads Utilized with No Improvements

Type	Land Ownership	Miles	Acres of Disturbance
4. Existing permanent access road – (no improvement)	BLM	51	0
	SLO	34	0
	Private	17	0
Total		***102***	***0***

2.1.1 Project Phases

The project would occur in four separate phases:

1. Pre-construction Activities
2. Construction Phase
3. Operations and Maintenance Phase
4. Right-of-way Renewal or Decommissioning

See Section 2.1.2, for built-in environmental design features.

Pre-construction Activities

If the BLM issues the ROW grants for the project, the Standard Form 299 and associated POD would be finalized with the project design details, including the associated plans, maps, ROW acquisition, centerline surveys, and pre-construction resource surveys.

Right-of-way Acquisition

SPS would acquire ROWs for the transmission line facilities on non-federal land (state, private, or fee-owned) in perpetual easements or fee purchases. Every effort would be made to purchase all of the land rights on private land through reasonable negotiations with the present owners. In the event an agreement with the landowners cannot be reached, SPS could potentially obtain land rights by eminent domain.

Worker Awareness Training

All construction personnel would receive environmental training prior to constructing the project. Training would emphasize compliance with all applicable environmental laws, including the stipulations in the ROW grant and POD.

Engineering Surveys

Field investigations and surveys would be completed at the substations and within the approved ROW locations to accurately locate the centerline and approved access routes. Before any surveying begins, the required permits to survey on federal lands, state lands, or right-of-entry on private lands would be obtained.

Prior to finalizing the design, SPS would collect subsurface information to preliminarily design individual transmission line structure (structure) foundations. The geotechnical investigation would follow conventional drilling methods with boreholes approximately 1 foot in diameter and as deep as 50 feet. Drilling would be conducted with a variety of field equipment, including conventional rubber-tired and/or tracked drilling rigs. The boreholes would be backfilled with auger cuttings and on-site soils. Existing access would be used wherever possible to facilitate these surveys; however, cross-country travel may be necessary. In these areas, access would be designed to follow future access routes to minimize disturbance.

If drilling is impractical, geophysical exploration techniques, such as ground-penetrating radar (GPR) or Refraction Microtremor (ReMi) may be used to identify subsurface soil and rock stratification. GPR uses electromagnetic signals emitted from a device typically mounted to a pedestrian-operated wheeled cart similar in size to a lawnmower. The GPR sends pulses of energy into the ground then records the signal strength and reflection times to scan an analysis area. The data are then analyzed to assess and interpret the different electrical conduction properties of the subsurface. A ReMi survey analyzes energy from seismic sources. A multichannel seismograph and low and high frequency geophones are typically laid out from 10- to 50-foot intervals. Geophones are typically 3 inches long and can be hand pushed into the ground and removed after the readings are taken. In hard ground conditions, hand placement of geophones can be aided by pre-drilling holes with handheld drills. The geophones record data in response to signals generated from either active or passive seismic sources, such as sledgehammers striking a metal plate or nearby vehicle traffic.

Flagging and Fencing

Survey flags and stakes would be installed before the start of construction. Structure sites (e.g., tower locations, anchor points, and reference points), designated access roads, spur roads, parking areas, and pullout areas would be marked to facilitate travel to and from the ROW. Pull pockets, wire stringing/pulling sites, and laydown yards would be demarcated as necessary to indicate the limits of the approved work area. In areas where access routes traverse existing fences, a contractor would cut the fences and install gates and/or cattle guards as needed.

Signs, flags, and/or fencing would be used to establish exclusion areas to protect sensitive environmental resources (e.g., biological, wetland, and karst resources) in the vicinity of construction activities. A system of standardized and simplified exclusion markings would be used to reduce potential confusion during construction without revealing the underlying reason for their use. For example, the exclusion marking could not be interpreted as protecting land ownership rights versus sensitive environmental resources versus underground pipelines. Signs would also be used to identify approved access roads. The BLM serial number assigned to each ROW grant would be posted on a sign in a permanent, conspicuous manner and be maintained in a legible condition for the term of the ROW at all major road crossings and at all serviced facilities.

Routine monitoring by environmental monitors would include an ongoing assessment of the need for replacement or repair of exclusionary flagging or fencing. If maintenance of an exclusionary device (e.g., signs, flagging, and fencing) is needed within an active construction area, corrective action would be taken immediately. Maintenance of signs, flagging, and fencing within inactive work areas would be implemented as soon as practical. All exclusionary devices would be removed after project cleanup and reclamation activities.

Stormwater Pollution Prevention Planning and Installation

Before construction begins, the construction contractor(s) would be responsible for developing a SWPPP and obtaining coverage under the NPDES Storm Water General Permit for Construction Activities by filing a Notice of Intent and appropriate fee with the NMED's Surface Water Quality Bureau. Prior to construction, a contractor would install erosion and sediment control measures to control and minimize erosion at the source, such as silt fences and/or berms in areas that could drain to arroyos.

Construction Phase

Construction would begin following approval of the Proposed Action, issuance of the BLM ROW grants, and completion of the pre-construction activities described above, as well as the certificate of public convenience necessity from the State of New Mexico, and final notice to proceed from BLM. It is estimated the project would take approximately 18 to 24 months to complete. Construction would be conducted in a sequential set of tasks performed by multiple crew types. The construction activities would include conducting access and site preparation, installing foundations, assembling and erecting structures, stringing conductors and shield wires, testing and commission, and cleaning up the construction site. Due to the length of the project, there may be several sets of crews engaged in constructing the line.

Construction of Transmission Lines, Laydown Yards, and Access Roads

Laydown Yards

Early in the construction phase, the five laydown yards would be established and constructed. These are located close to existing highways or roads within the project area. The surface of the laydown yards may require some grading to create a flat surface and installation of an all-weather surface. All laydown yards would be fenced and secured with locked gates.

Site Access and Preparation

Clearing and grading of unpaved access roads to the ROW and individual structure locations would begin after completion of the pre-construction activities identified above. After the access roads are cleared and/or graded, the work areas or construction pads at each structure site would be cleared and/or graded to install the structures and prepare for future maintenance. Individual structure sites would be cleared using the appropriate equipment, such as a masticator, brush hog flail-type mower, bulldozer, or blade, to provide a safe working space to place equipment, vehicles, and materials necessary for structure assembly and erection.

Prior to construction, woody vegetation would be removed (such as creosote bush [*Larrea tridentata*] and mesquite [*Prosopis* sp.]) and chipped, except in riparian areas. Vegetation clearing would include mechanical methods and herbicide application. Low-growing shrubs would be cut at the basal root.

Following removal of woody vegetation, the full ROW would be mowed except in avoidance zones designated in the construction contractor bid package. On BLM lands, blading would not occur without prior approval.

The overland drive-and-crush method would be used to prepare the work site in areas that are relatively level and have low-growing vegetation, such as grasses and forbs. This method involves crushing but not cropping vegetation. In similarly level areas where the vegetation is dense, aboveground cutting methods would be used with the intent of leaving the root crown intact. When grading must occur to create a safe, level workspace for structure installation, the topsoil would be segregated and stored on-site for post-construction reclamation efforts except for structure holes excavated by an auger. Excess fill may also be used to create level areas in other locations where needed.

Foundation Installation

The excavation and installation of the structure foundations would require the use of a power auger or drill, crane, material trucks, and concrete trucks, which would access each foundation site via access roads. Holes for the foundations would typically be excavated using a power auger mounted to a heavy vehicle. In some areas, a drilling rig would be necessary to excavate the foundation holes. Excavated spoils would typically be hauled off-site or used for fill where suitable.

After a structure hole is excavated, it would be prepared for a cast-in-place concrete footing, except where structures would be directly embedded into the ground. Reinforced steel and anchor bolts would be inserted into the foundation hole and then encased in concrete. Excess concrete or concrete washout would be removed from the work area or temporarily placed on spoil stockpiles. Some excess soil from the foundation hole excavations would be placed around the base of each structure to provide positive drainage away from the structure.

Foundation designs and installation processes would depend on the geotechnical analysis and line design parameters of each structure site. It is anticipated that most H-frame structures would be direct embedded foundations. For all H-frame structures over a line angle of two degrees, they would be installed on drilled pier concrete foundations. All three pole and monopole structures would be installed on drilled pier concrete foundations. The structure foundation diameter and depth would vary at each location based on structure height, terrain, and soil type.

Structure Assembly and Erection

The components required for each structure would be bundled and shipped by truck to each site. The structures would be assembled on-site and lifted into place by a crane. Structures would be fully assembled within the ROW to the greatest extent possible. Additional space may be required based on ground conditions.

Guard structures would be erected over highways, railroads, other power lines, and similar features. They would be temporary H-frames directly embedded into the ground. It is anticipated that guard structures would be located within the 150-foot ROW.

At the base of each structure, copper ground rods would be buried near the structure foundation and connected to the structure with copper cables. When resistance to the ground is too great, counterpoise—a bare copper-clad or galvanized-steel cable—would be installed underground. The counterpoise would extend from the structure outward to approximately 200 feet within the ROW and would be buried a foot or more.

Conductor Stringing

Reels of conductor and shield wire would be delivered to the ROW and loaded onto vehicle-mounted pulling machines. Each section of conductor, usually 18,000 feet per reel, would be delivered by truck and spliced together to fuse the two ends together.

Heavy vehicles would be used to pull the shield wire and conductor bundles into place with powered pulling equipment at one end and powered braking or tensioning equipment at the other end. A pilot wire would be attached to a stronger pulling wire, used to thread the shield wire and conductor bundles into place without allowing them to contact the ground. Once the conductor and shield wire are strung through the pulleys, adjustments would be made to achieve the correct sagging of the lines between structures.

On straight sections of line, conductor stringing activity would be contained within the ROW. At turning points and angles greater than 30 degrees, additional temporary workspace would be required to accommodate pull pockets. A description of the pulling and tensioning sites would be included in the final POD.

Cleanup

All construction sites, laydown yards, and access roads would be kept in an orderly condition throughout construction. All refuse and trash would be removed and disposed of properly. There would be no open burning on BLM-managed lands. The BLM would be consulted prior if the need for open burning arises.

Cleanup would occur after the transmission line is installed and all construction activities are completed. Cleanup of the surface along the construction ROW would consist of the removal of construction debris and final grading to the finished contours. Permanent erosion control measures would be installed and seeding would occur in accordance with BLM requirements.

Construction of Kiowa Substation and Substation Expansions

The proposed Kiowa Substation would be construction as part of the project. The following discussion is an overview of the types of construction activities that would take place at the Kiowa Substation and the four substations to be expanded (Hobbs Generation, North Loving, China Draw, and Eddy County).

Access Roads

A new access road extending from the existing access road to the Potash Junction Substation would be constructed to provide permanent, all-weather access for personnel, material deliveries, vehicle trucks, heavy equipment, and ongoing maintenance activities. The alignment and parameters of the access road would be determined during final design and included in the final POD. The existing access roads to the Hobbs Generation, North Loving, China Draw, and Eddy County substations would be used for constructing the substation expansions.

Clearing and Grading

Clearing and grading of the entire substation area would be necessary to prepare the site for construction. The site would be graded to create a level surface with a moderate slope for drainage. Grading would be engineered to provide adequate clearances from energized conductors entering the substation. All topsoil would be segregated and stockpiled away from other excavated soil, which would be used as backfill, berms or fill for other areas, with the exception of structure holes excavated by an auger.

The surface of the substation would be covered with an insulating layer to protect personnel from high currents and voltages in the event of a fault condition. Approximately 2 to 4 inches of crushed rock would be applied to the finished surface of the substation, which would then be treated with a soil sterilizer to prevent vegetation growth. If necessary, drainage structures such as ditches, culverts, and sumps would be installed.

Grounding

A grounding system consisting of buried copper conductor arranged in a grid system and driven ground rods 8 to 10 feet long would be installed. The ground rods and any equipment and structures would be connected to the grounding conductor. The amount of conductor, length, and number of ground rods required is calculated based on fault current and soil characteristics.

Fencing

Security fence would be installed around the entire perimeter of the substation. The fence would be 8 feet tall and made of chain link topped with barbed wire. Locked gates would be installed at appropriate locations for authorized vehicle and personnel access.

Foundation Installation

Structures entering the substation would be either directly embedded into the ground or placed on a drilled pier foundation. Equipment foundations for circuit breakers and transformers would be slab-on-grade. These foundations would be installed by excavating the foundation area, placing forms, placing reinforced steel and anchor bolts as necessary, and placing concrete into the forms. After the foundations are poured, the forms would be removed, and the surface of the foundation dressed. Reinforced steel and anchor bolts would be transported to each site by truck, either as a prefabricated cage or loose pieces, and would be fabricated into cages on-site. Concrete would be hauled to the site in concrete trucks.

Oil Containment

Some substation equipment such as transformers, reactors, and circuit breakers are filled with an insulating mineral oil. Containment structures would be used to prevent oil from escaping into the ground. The type of containment device varies depending on site requirements, environmental conditions, and regulatory restrictions. The simplest type of oil containment is an excavated pit of a calculated capacity under the oil-filled equipment with an oil impervious liner. The pit may use grates to facilitate access to the equipment. In the event of an oil leak or rupture, the oil captured in the containment pit is pumped into tanks or barrels and transported to a disposal facility. If required, more elaborate oil containment systems can be installed. This may take the form of an on- or off-site storage tank and/or oil-water separator equipment, depending on site requirements. The exact type of containment structure would be determined as part of the final substation design.

Structure and Equipment Installation

Steel structures to support some substation equipment would be affixed to the concrete foundation anchor bolts with a track-mounted crane. Equipment such as transformers, reactors, and circuit breakers can be mounted directly to the foundations without supporting structures. The equipment is then assembled, tested, and connected electrically to the control building through multi-conductor control cables installed in conduits and/or a precast concrete cable trench system.

Cleanup

The substation site would be kept in an orderly condition throughout construction. All refuse and trash would be removed and disposed of appropriately. If landscaping is required by the permitting agency, drought-tolerant and primarily native plant materials would be used.

Stabilization and Rehabilitation Post-construction

After construction, disturbed areas would be restored using a BLM-approved seed mix and according to BLM, SLO, and private landowner standards. Vegetation, soil, and rocks left as a result of construction would be randomly scattered over the project area and would not be left in rows, piles, or berms unless requested by the BLM. In those areas where erosion control structures would be required to stabilize soil, the structures would be installed for the specific soil conditions encountered in the field and in accordance with industry best management practices (BMPs) and design features identified in Section 2.1.2.

Once construction of the facilities and 345-kV lines is complete, all areas not needed for the operations and maintenance phase would be reclaimed (reseeded for optimal vegetation regrowth of species compatible with SPS's vegetation management standards). Reclamation would occur as soon as possible after completion of final construction activities.

Areas Reclaimed

Except for those portions of the ROW necessary for maintenance and operation (such as a permanent patrol access road), the entire 150-foot wide ROW would be reclaimed, as well as areas of temporary disturbance outside the ROW that are no longer needed, such as temporary access roads, pull pockets, and laydown yards. The 60-foot-wide access road used for construction would be fully reclaimed and over time converted into a permanent patrol access road similar to a two-track. In some locations, the patrol road would be surfaced with a caliche base to encourage a single travel route and continual avoidance of sensitive resources. A level work area at the base of each structure would be reseeded but not recontoured to facilitate future maintenance activities that may require use of an extended-reach vehicle or crane.

Reclamation Procedures

The steps to reclamation include:

1. **ROW preparation:** Vegetation removed during construction, including trees that measure less than 3 inches in diameter at ground level and slash/brush, would be chipped or mulched and spread across the ROW. All tree and shrub species that are not compatible with SPS's vegetation management standards would be cut to ground level, delimbed, and subsequently treated with herbicides to discourage regrowth.
2. **Soil stockpiling:** Following the removal of vegetation, the top 6 inches of topsoil would be stripped from the ROW where necessary. The topsoil would be free of brush and tree limbs, trunks, and root balls. Except for locations where structure holes would be excavated by an auger, the topsoil would be stockpiled separately from subsoil or other excavated material and stored along the ROW corridor. Topsoil would be labeled as such and protected from erosion and inadvertent use as fill. Topsoil would not be mixed with subsoil. When stockpiled, topsoil would be tackified with water to a 2-inch wetting depth to minimize erosion, and overall handling should be kept to a minimum. Gaps would be made in soil stockpiles (where necessary) to avoid ponding or to divert water during storm events. If present, surface rocks would be stockpiled adjacent to the topsoil stockpile(s). Vehicle and equipment traffic would not be allowed to cross topsoil stockpile(s). A SWPPP would be developed to include BMPs intended to minimize stockpile erosion and prevent topsoil loss.
3. **Recontouring:** Within areas that require recontouring, the surface would be recontoured to match pre-disturbance conditions or to blend with the surrounding landform as closely as possible. Excess subsoil from excavated or graded areas (around structure bases) would be evenly spread over disturbed areas and moistened and compacted to a relative average density comparable to undisturbed adjacent material before respreading topsoil. Subsoils would not be spread outside the approved construction areas.
4. **Soil and seedbed preparation:** Where any compaction exists, the surface would be ripped or scarified to a depth of 6 inches as appropriate (e.g., not applicable to rock faces, severe slopes, or cliff areas), and would retain a 12-inch buffer from existing vegetation or plants designated as preserve in place. Depth and area of compaction relief would depend on site-specific conditions. Decompaction or ripping would be conducted to avoid corn rows. Cross ripping is preferable and care should be taken to prevent inverting the soil layers and preserving any vegetation in place. Deep sandy soils do not need to be decompacted and would not be ripped.
5. **Topsoil replacement:** Topsoil would be replaced without mixing with subsoil to prevent mixing fertile, shallow soils with deeper soils that may be less productive because of rock, gravel, sand, calcareous layers, salinity, or other chemical characteristics that would adversely affect growth of desired vegetation. Stockpiled topsoil would be evenly redistributed prior to final seedbed preparation. Topsoil would not be redistributed when the ground or topsoil is frozen or wet.
6. **Seeding:** During seeding of the reclamation area, a disc-type drill with two boxes for various seed sizes would be used. The drill rows would be 8 to 10 inches apart. Where practicable with the seeding equipment being used, planting depths for smalls seeds would be 0.25 inch, for intermediate seeds would be 0.50 inch, and for large seeds would be 1 to 2 inches. Where these seed depths are impracticable with the seeding equipment being used, planting depths would be no more than 0.25 inch. A drag, packer, or roller would follow the seeder to ensure uniform seed

coverage and adequate compaction. Seeding would run perpendicular to slopes in order to minimize runoff and erosion. In areas where the slope is too steep for a seed drill, hand- or broadcast-seeding methods would be used, and the seeds would be covered to the depths described above. BLM-prescribed seed mixes would be used.

7. **BMP installation:** Prior to construction, a SWPPP would be developed to include BMPs according to BLM prescriptions, including erosion control devices such as silt traps, silt fencing, straw rolls, etc.
8. **Weed control**: SPS has enrolled in the county weed programs for both Lea and Eddy Counties. These programs enable the BLM to identify target areas for treatment to prevent the spread of noxious weeds and invasive species. These programs would include annual surveys of the ROW and subsequent treatment of weed infested areas for up to 5 years after construction is complete.
9. **Monitoring:** Monitoring would be conducted after construction activities are complete until reclamation has achieved the success criteria established by the BLM.

Operations and Maintenance Phase

The transmission lines constructed as part of the project would become critical infrastructure of the SPS and southeast New Mexico transmission systems. Therefore, limiting the duration of unplanned outages and planning for the use of live-line maintenance techniques to minimize the requirement for any outages is an important part of the design, construction, and operation/maintenance requirements of the project.

Inspections

Regular inspection of transmission lines, vegetation conditions, substations, and support systems is critical for safe, efficient, and economical operation of the project. Responsibly conducted routine maintenance activities are anticipated to have minimal impact and are usually authorized under the transmission line easements and BLM ROW grants.

Aerial inspections are conducted annually to identify conditions that pose an immediate hazard to the public or employees, or that risk immediate loss of supply or damage to the electrical system. Any conditions identified are to be resolved prior to peak demand in the summer and winter months.

Ground inspections would be done on approved access roads, including the patrol road, or along the transmission line ROWs to each structure as appropriate. The inspector would access each of the structures and would check all equipment and other components that could require repairs. Inspectors performing such inspections would use conventional four-wheel-drive trucks and/or four-wheel-drive all-terrain vehicles, or they may walk the line. The ground inspection would be conducted at a time deemed appropriate based on the weather conditions, results of aerial inspections, and other conditions subject to change on an annual basis. SPS may perform minor repairs during its ground inspections, such as installing new numbers, installing/repairing ground wire, or performing other minor tasks that do not involve long duration, specialized equipment, or large work crews.

Each year aerial inspections would be conducted annually and ground patrols would be conducted bi-annually.

Line Maintenance

Routine maintenance activities are ordinary maintenance tasks that have historically been performed and are regularly carried out on a routine basis, including the replacement of individual structures, components, cables, lines, insulators, and other facilities that, due to obsolescence, age, or wear, are in need of replacement or repair. It is expected these replacements would be required infrequently (every 5 to 10 years) or as determined by inspection. The work performed is typically repair or replacement of individual components, performed by relatively small crews using a minimum of equipment, and usually is conducted within a period from a few hours up to a few days. The type of equipment used to perform routine maintenance activities varies depending on the extent of the work to be performed. Typical equipment used for these kinds of activities includes four-wheel-drive pickups, man-haul, material flatbeds, line trucks, cranes, tractor trailers, and high reach bulldozers/caterpillars.

Typically, maintenance vehicles and equipment would access the ROW and individual structures using the patrol roads and would remain within the level work area that surrounds the structure, and no new ground disturbance would be required. If maintenance activities and/or equipment are required beyond the permanent maintenance work area, maintenance crews would coordinate with the BLM Authorized Officer(s) to obtain any required temporary use approval/permits to complete the work, and maintenance activities would be conducted within the previously disturbed temporary work areas from project construction. The ROW and access used for regular maintenance activities would be stabilized and rehabilitated following the procedures laid out in the POD. SPS would coordinate with the BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete. Any berms or boulders that were in place to limit access would also be reclaimed after completion of the maintenance work.

Major maintenance activities may need to occur on an infrequent basis. These activities would require planning and budgeting in advance and agency coordination. They may involve larger work crews than routine maintenance activities and a variety of equipment, including heavy equipment, and usually require several days or longer to complete. SPS would notify the BLM before initiating major maintenance activities to identify what, if any, special notification or additional clearance approvals would be required. All major maintenance activities would adhere to all standards and guidelines contained in the POD and the terms and conditions of the ROW grant.

In an emergency, SPS must respond as quickly as possible to restore power. As soon as an incident is detected, SPS' control room dispatchers would notify the responsible operations staff in the area(s) affected and crews and equipment would be organized and dispatched to respond to the incident. In these cases, SPS would immediately deploy the necessary crews to restore power and notify the appropriate land management agency depending on the location of the incident. Examples of emergency maintenance include transmission structure or conductor failure due to natural hazard, fire, or human-caused damages to a line. Such work is required to eliminate a safety hazard, prevent imminent damage to the power line, or restore service if there is an outage. The equipment necessary to carry out emergency repairs is similar to that necessary to conduct routine maintenance, in most cases. Emergency response to outages may require additional equipment to complete the repairs. For example, where the site of the outage is remote, helicopters may be used to respond quickly to emergencies. SPS would adhere to the same constraints identified for routine and major maintenance activities to minimize impacts to resources, when possible.

Vegetation Management

SPS would need to manage vegetation to meet its requirements for conductor clearances at maximum loading (sag) and maximum blowout (sway) locations and to minimize potential ignition sources and to provide access within the ROW. Within or adjacent to the ROW, mature vegetation would be removed under or near the conductors to provide adequate electrical clearance, as required by the NERC. Typically, woody vegetation would be removed and treated with herbicides. Slash would be left in place or disposed of in accordance with the requirements of the land management agency or landowner. If necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be removed selectively in a manner that protects biological resources as much as possible. Shrubs and other obstructions would be removed regularly within the ROW.

Vegetation treatments to control the growth of woody species along the ROW would be conducted every 4 years. These treatments consist of spraying target species such as creosote and mesquite with herbicides to prevent vegetation encroachment on SPS' conductor clearance requirements, its facilities, patrol road, and/or inhibits future operation and maintenance activities. All herbicide applications would be performed in accordance with federal, state, and local regulations, and in compliance with land management agency and/or landowner requirements. SPS has established guidelines that their contractors are required to follow to protect birds and bird nests during these spraying events.

Vegetation may also be removed using mechanical equipment such as chainsaws, weed trimmers, rakes, shovels, brush hooks, and mowers. Clearing efforts in heavy growth areas would use equipment such as a masticator, mounted brush mower or similar. The duration of activities and the size of crew and

equipment required would be dependent on the amount and size of the vegetation to be pruned or removed.

Herbicides will be used to control noxious weeds or incompatible tree and brush species (e.g., mesquite and creosote) that regenerate from the root systems after removal to meet vegetation management objectives. These activities would be performed in coordination with the land management agency or landowner in the case of private property.

Access Road Maintenance

Repairs to the ROW or access roads would be scheduled as a result of line inspections or would occur in response to a significantly degraded condition or an emergency situation. Where access is required for maintenance of the line, SPS would maintain the approved access roads for which it is solely responsible in a safe, useable condition. Access road repairs include grading or repair of existing maintenance access roads and work areas and spot repair of sites subject to erosion, slumping of side slopes, inadequate drainage, flooding or scouring. In some cases, cut and/or fill of foreign material may be required to repair the access roads into suitable condition for safe travel of maintenance repair vehicles, such as high reach boom trucks. When an approved access road to a structure location needs improvement, heavy equipment appropriate for the required work would be used after notifying the BLM Authorized Officer. Required equipment may include a grader, backhoe, four-wheel-drive pickup truck, and a steel-tracked front-loader or bulldozer. The ROW and access used for regular maintenance activities would be stabilized and rehabilitated following the procedures laid out in the POD. SPS would coordinate with the BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete. Any berms or boulders that were in place to limit access would also be reclaimed after completion of the maintenance work.

Right-of-way Renewal or Decommissioning

Right-of-way Renewal

The proposed project would have a minimum projected operation life of 50 years or longer. A ROW grant issued for 50 years with the option of renewal would be necessary for the operation, maintenance, and decommissioning of the transmission line facilities located on BLM-managed lands. At the end of the ROW grant term (50 years), SPS would have the option to renew the ROW grant past 50 years to continue operation of the line. The terms and conditions in the original ROW grant could be modified for the renewed ROW grant.

Project Decommissioning

At the end of the transmission lines useful life, estimated to be 50 years from construction, the necessary authorizations would be obtained from the BLM Authorized Officer to decommission the project. Future decommissioning of the transmission line would include removal of conductors and structures. All materials would be removed from the ROW. Equipment at the substations and unsalvageable materials would be disposed of at authorized sites. Regrading and revegetation of disturbed areas would be completed according to BLM, SLO, or landowner standards. The abandoned ROW would revert to the control of the landowners.

2.1.2 Project Design Features

The following applicant-committed environmental protection measures have been incorporated into the project design of the Proposed Action to lessen or avoid impacts to resources. These design features are organized below under the resource they are designed to protect, although some of these measures are designed to protect or mitigate impacts to multiple resources. The design features incorporate applicable BMPs, which are industry- or agency-recommended construction methods that are routinely implemented to minimize impacts to resources.

General

- All construction vehicle movement outside the ROW would be restricted to predesignated access, contractor-acquired access, or public roads.
- The spatial limits of construction activities would be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents indicating survey or construction limits would be applied to rocks, vegetation, structures, fences, etc.
- Prior to construction, an environmental awareness training would be conducted to instruct all personnel on the protection of cultural, ecological, and other natural resources including 1) federal and state laws regarding antiquities and plants and wildlife, including collection and removal; 2) the importance of these resources; and 3) the purpose and necessity of protecting them.
- Sensitive resource areas located within the ROW or designated temporary work areas would be mapped and avoided by use of an appropriate monitor. Flagging and fencing materials would not be used because they may inadvertently draw attention to the resources being protected.
- The contractor would limit movement of crews, vehicles, and equipment on the ROW and approved access roads to minimize damage to property and disruption of normal land use activity.
- Construction vehicles and equipment would be maintained in proper operating condition and would be equipped with manufacturers' standard noise control devices or better (e.g., mufflers, engine enclosures, etc.).
- SPS would construct aboveground flowline crossings by pushing adjacent soil up and over the lines (4.5 inches or less in diameter). The BLM would be notified if any larger aboveground lines are encountered.
- SPS would use overburden to place the necessary fill over belowground pipelines and would leave and reclaim the overburden in place.

Air Quality

- All requirements of those entities having jurisdiction over air quality matters would be adhered to. Any necessary permits for construction activities would be obtained. Open burning of construction trash would not be allowed unless permitted by appropriate authorities.
- Construction-related dust disturbance would be controlled by the periodic application of water to all disturbed areas along the ROW and access roads, when necessary.

Soils and Vegetation

- SPS would reclaim disturbed areas per the approved POD using a BLM-specified seed mixture and would work with BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete.
- All soils compacted by movement of construction vehicles and equipment would be 1) loosened and leveled through harrowing or disking to approximate pre-construction contours, and 2) reseeded with certified weed-free native grasses and mulched (except in cultivated fields). The specific seed mix(es) and rate(s) of application would be determined by the BLM.
- Excavated material not used in the backfilling of poles would be spread around each pole or hauled off-site or transported as fill to other locations where needed.
- In newly disturbed temporary work areas, the soil would be salvaged and would be distributed and contoured evenly over the surface of the disturbed area after construction completion. The soil surface would be left rough to help reduce potential wind erosion.
- On completion of the work, all work areas, except any permanent access roads/trails, would be regraded as required so that all surfaces drain naturally and blend with the natural terrain, and are left in a condition that would facilitate natural revegetation, provide for proper drainage, and prevent erosion.
- SPS has enrolled in the Eddy and Lea County noxious weed control programs. Through these programs, which entail treatment of weeds in target areas identified by BLM, noxious weeds would be sprayed annually through the life of the project. The noxious weed program would apply to the length of the project regardless of land ownership.

- Gravel and fill to be used must come from a weed-free source(s). Gravel pits and fill sources would be inspected to identify weed-free sources.
- Compatible vegetation would be preserved and protected from damage by construction operations to the maximum extent practicable.
- In construction areas where recontouring is not required, vegetation would be left in place wherever possible, and original contour would be maintained to avoid excessive root damage and allow for resprouting in accordance with the reclamation plan. Vegetation not consistent with line safety and operation would be removed according to SPS vegetation management practices.
- Vegetation treatments to control the growth of woody species along the ROW would be conducted every 4 years. These treatments consist of spraying target species such as creosote and mesquite with herbicides to prevent vegetation encroachment on SPS' conductor clearance requirements, its facilities, patrol road, and/or inhibits future operation and maintenance activities. SPS has established guidelines that their contractors are required to follow to protect birds and bird nests during these spraying events.
- If necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be removed selectively in a manner that protects biological resources as much as possible.

Dunes and Hummocks

- Blading would occur at and between structures that have dunes or hummocks that would otherwise impede construction activities, in an area of up to 150 × 150 feet at or adjacent to those structures.
- Blading up to 60 feet in total width along the line between structures following a "least disturbance" path and avoiding straight lines where practical.
- SPS would reclaim disturbed linear or crescent-shaped dunes (generally over 6 feet tall with at least one slipface, and being significantly longer than they are tall) to landforms of similar size and orientation in the same general areas to the extent that access can be maintained for periodic SPS patrols and regular/emergency maintenance.
- SPS would reclaim areas with disturbed hummocks (knolls or mounds, generally less than 6 feet tall) to a generally undulating surface to the extent that access can be maintained for periodic SPS patrols and regular/emergency maintenance.
- For aboveground flowlines less than or equal to 4.5 inches, SPS would construct aboveground flowline crossings by pushing adjacent soil up and over the lines and would leave and reclaim the cover in place. For aboveground flowlines larger than 4.5 inches, SPS will notify the BLM Environmental Protection Specialist and wait for instructions.
- SPS would use overburden to place the necessary fill over belowground pipelines and would be allowed to leave and reclaim the overburden in place.
- SPS would reclaim disturbed areas per the approved POD using a BLM-specified lesser prairie-chicken (*Tympanuchus pallidicinctus*; LPC) seed mixture and would work with BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete.

Water Resources

- Any chemical treatments of the ROW would comply with the applicable laws and procedures of the land management agencies, the EPA, and the NMED.
- No wetlands and/or waters of the U.S. would be altered, crossed, filled, or cut unless previously permitted to do so by the USACE or the NMED.
- Construction activities would be performed by methods that prevent entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into flowing streams or dry water courses, lakes, and underground water sources. Such pollutants and wastes include but are not restricted to refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

- Dewatering work for structure foundations or earthwork operations adjacent to or encroaching on streams or water courses would not be performed without prior approval by the BLM or the applicable land management agency.
- Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other water course perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the actual water source itself.
- Wastewaters from construction operations would not enter streams, water courses, or other surface waters without use of such turbidity control methods as settling ponds, gravel filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such wastewaters discharged into surface waters would be essentially free of settleable material. Settleable material is defined as that material that settles from the water by gravity during a 1-hour quiescent period.
- Refueling and storing of potentially hazardous materials would not occur within a 100-foot radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water supply wells. Spill preventive and containment measures or practices would be incorporated as needed and included in the POD.
- Where access routes would need to cross aboveground flow lines (4.5 inches or less in diameter), the contractor would push adjacent soil up and over the lines. The BLM would be notified if any larger aboveground lines are encountered. The contractor would use overburden to place the necessary fill over belowground pipelines and would leave and reclaim the overburden in place.
- Temporary culverts would be installed to cross small drainages. These would be removed after construction.
- Ground disturbance will be avoided within 200 meters of playas.

Wildlife and Special Status Species

- Special status species or other species of particular concern would be considered in accordance with management policies set forth by appropriate land management agencies. This may entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities (e.g., substations, access roads, laydown yards, etc.) as agreed upon by the agencies. In cases where such species are identified, adverse impacts on the species and its habitat would be avoided to the maximum extent practical and in consultation with the agencies.
- SPS designs and constructs all new transmission facilities to raptor-safe design standards as described in its Avian Protection Plan (EDM International 2008), which includes avian electrocution and collision minimization practices described in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Edison Electric Institute and Avian Power Line Interaction Committee 2006).
- To the extent possible, construction activities during the migratory bird nesting season (March–August) in suitable habitat would be avoided. Seasonal dates may vary depending upon the species, current environmental conditions, and pre-construction survey results.
- If construction and maintenance activities, including mechanical or herbicide treatments of woody vegetation, cannot be avoided in the primary nesting season for migratory birds (March–August), migratory bird and nest surveys would be performed up to two weeks prior to commencing with those activities, and an avoidance buffer around each active nest would be implemented until the young have fledged, the size and timing of which may vary by species, but would be no less than 100 feet. This stipulation would not apply in the event of an emergency as per Xcel's *Migratory Bird Special Purpose Utility Permit* (USFWS 2015a).
- A 200-meter avoidance buffer would be implemented around any active burrowing owl (*Athene cunicularia*) nest burrow or active raptor nest until the young have fledged.
- The BLM may require a biological monitor near occupied nests and burrowing owl burrows identified during pre-construction surveys.
- Active raptor nests would be monitored for activity until the hatchlings fledge.

- Removal of any unoccupied raptor nests may need to be replaced by nest platforms.
- Foundation holes left open or unguarded would be covered to protect the public, wildlife, and livestock. If practical, temporary safety fencing may be used.
- During reclamation of disturbed areas, the seed mixture quantity for 1 mile along the Eddy to Kiowa route in Section 12 would be doubled for Sprague's pipit (*Anthus spragueii*) as identified in the POD.
- Bird flight diverters would be installed on the conductors for the crossing of the Pecos River.

Dunes Sagebrush Lizard

- SPS would follow excavation BMPs during construction within the dunes sagebrush lizard (*Sceloporus arenicolus*; DSL) habitat boundary, as required by the BLM RMPA (2008a) and the BLM Open Trench Wildlife Removal Workshop materials (BLM 2013). This stipulation would apply to the length of the project in DSL habitat regardless of land ownership.
- Any holes left open for 8 hours or less is not required to have escape ramps; however, before the hole is backfilled, a BLM-approved monitor would inspect the hole and remove all trapped wildlife and release them at least 300 feet away.
- For holes left open for 8 hours or more, escape ramps would be placed in the hole. The hole would be monitored each day by a BLM-approved monitor during the following three time periods: 1) 5:00 to 10:00 a.m., 2) 11:00 a.m. to 2:00 p.m., and 3) 3:00 p.m. to sunset. All trapped wildlife would be released at least 300 feet away.
- One BLM-approved monitor would be required for every up to 3-mile segment that contains open holes in DSL habitat. A daily report (consolidate if there is more than one monitor) on the wildlife found and removed from the hole would be provided to the BLM (email is acceptable) the following morning.
- SPS and its contractors would instruct personnel working on the construction of the project to avoid intentionally harassing all animals, including the DSL and Texas horned lizard (*Phrynosoma cornutum*).

Lesser Prairie-Chicken

- Timing and noise restrictions would be applied to construction and maintenance activities within the LPC Isolated Population Area (IPA) to prevent disruption of mating and nesting activities. All construction and maintenance activities would be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15.
- Exceptions to these timing requirements would be considered in emergency situations such as mechanical failures. Exceptions would not be granted after March 15, or during the March 1 to 15 period if the BLM determines, on the basis of biological data or other relevant facts or circumstances, that the granting of an exception would disrupt LPC booming activity during the breeding season. Requests for exceptions on a non-emergency basis may also be considered, for the period of March 1 to June 15, but these exceptions would not be granted if the BLM determines that there is LPC habitat, LPC sightings within 1.5 miles of the proposed location, historic leks, and/or active leks within 1.5 miles of the proposed location, or any combination of the above mentioned criteria.

Sheer's Beehive Cactus

- Workers would be instructed not to park off the roads to protect any threatened or endangered species, including Scheer's beehive cactus (*Coryphantha robustispina* ssp. *scheeri*).

Cultural Resources

- In consultation with appropriate land management agencies and the SHPO, specific mitigation measures for cultural resources would be developed and implemented to mitigate any identified adverse impacts. These may include project modifications to avoid adverse impacts, monitoring of construction activities, and data recovery studies.

- An archaeological construction monitor would be present during ground-disturbing activities in site-specific areas identified in the POD.
- An Unanticipated Discovery Plan would be prepared to specify the protocols to follow in the event of an unanticipated discovery of any previously unknown historic/prehistoric sites or artifacts encountered during construction. The Unanticipated Discovery Plan would identify communication protocols and immediate measures to be used to protect the site until further evaluation can be completed. The Unanticipated Discovery Plan would be prepared in coordination with the SHPO and jurisdictional land management agency.

Cave and Karst Resources

- SPS would notify and coordinate with the BLM Cave/Karst Resource Specialist before performing any blading in the high karst potential areas on both BLM and SLO lands on the Eddy to Kiowa line length.
- In the event that any underground voids, subsurface drainage channels, or cave passages are encountered during construction activities, construction would be halted in the immediate vicinity of the discovery and the BLM would be notified immediately.
- Pole locations would be adjusted as necessary to avoid cave and karst features.
- The BLM would be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no further construction would be allowed until clearance has been issued by the Authorized Officer. Special restoration stipulations or realignment may be required.
- Roads would be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Soil bores would be collected at all proposed foundation structures along the centerline prior to construction. Proposed foundation locations will be based on any line angle larger than two degrees. The bores would be up to 50 feet deep to ensure the contractor does not drill into voids or karst features to install structures. If a void is encountered, depth of boring may exceed 50 feet to determine the depth of the void.

Paleontological Resources

- In the event that any fossils are encountered during construction activities, construction would be halted in the immediate vicinity and the BLM would be notified immediately.

Visual Resources

- Self-weathering steel would be used to reduce visual impacts except in substations.
- Reclamation would be implemented to disguise disturbance.
- Vegetation, soil, and rocks left as a result of construction would be randomly scattered over the project area and would not be left in rows, piles, or berms unless requested by the BLM.

Livestock Grazing and Farmland

- All fences and gates would be maintained during the construction period. Fences, gates, and walls would be replaced, repaired, or reclaimed to their original condition as required by the landowner or the land management agency in the event that they are removed, damaged, or destroyed by construction activities. Fences would be braced before cutting. Gates or enclosures would be installed only with the permission of the landowner or the land management agency and would be removed/reclaimed following construction should it be necessary. Cattle guards would be installed on a case-by-case basis in negotiation with the landowner or land management agency.
- Prior to construction, the conditions of the water lines crossed by the proposed project would be evaluated and appropriate protections would be put in place to maintain their function during the construction of the proposed project. If necessary, waterlines would be protected either by

burying or pushing adjacent soil over the lines within the construction area to shield the lines from damage.

- The contractor would eliminate at the earliest opportunity all construction ruts that are hazardous to agricultural operations and/or movement of vehicles and equipment. Such ruts would be leveled, filled, and graded or otherwise eliminated in an approved manner. Damage to ditches, tile drains, culverts, terraces, local roads, and other similar land use features would be corrected as necessary by the contractor. The land and facilities would be restored as nearly as practicable to their original condition.
- On agricultural land, the ROW would be aligned, insofar as is practical, to reduce the impact to farm operations and agricultural production.
- In cultivated agricultural areas, soil compacted by construction activities would be decompacted except where a permanent two-track access route would be kept for future operation and maintenance activities.

Travel Management

- Where appropriate, signage would be installed on newly installed gates to deter users from circumventing the gates and traversing areas that were formerly inaccessible or harder to access.

Public Health and Safety

- The contractor would make all necessary provisions for conformance with federal, state, and local traffic safety standards, and would conduct construction operations so as to minimize obstruction and inconvenience to public traffic.
- During construction of the transmission lines, the ROW would be free of non-biodegradable debris. Slash would be left in place or disposed of in accordance with requirements of the land management agency or landowner.
- Towers and/or conductors and/or shield wires would be marked with high visibility devices (e.g., marker balls or other marking devices) where required by governmental agencies with jurisdiction (e.g., the Federal Aviation Administration). Tower heights would be less than 200 feet to avoid the need for aircraft obstruction lighting.
- A Fire Protection Plan would be developed and incorporated into the final POD.
    - Construction vehicles would be equipped with approved spark arresters.
    - The contractor would maintain in all construction vehicles a current list of local emergency response providers and methods of contact/communication.
- A Spill Prevention, Containment, and Countermeasure Plan would be prepared to specify preventative procedural actions to minimize the potential impact of any unanticipated spills or releases of fuel, lubricant, or hazardous materials during construction.
    - Hazardous material would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

2.2 No Action

BLM NEPA Handbook H-1790-1 states that for EAs on externally generated applications, the No Action Alternative generally means that the proposed activity would be denied (BLM 2008b:52). This option is provided in 43 CFR 3162.3-1(h)(2). Under this alternative, the BLM would not grant the ROW to the applicant, the proposed electric transmission lines and substations would not be built, and the associated surface disturbance would not occur. The No Action Alternative is presented for baseline analysis of resource impacts.

2.3 Alternatives Considered but Eliminated from Detailed Study

Alternatives to the Proposed Action are developed to explore different ways to accomplish the purpose and need while minimizing environmental impacts and resource conflicts and meeting other objectives of

the RMP. Consistent with BLM NEPA Handbook H-1790-1, the agency "need only analyze alternatives that would have a lesser effect than the proposed action" (BLM 2008b:80). Those with greater adverse resource impacts or those that are not feasible because of existing physical constraints or infrastructure are not brought forward for detailed analysis in this EA.

The proposed route described in the EA has been adjusted or realigned in several segments to minimize impacts to resources and to avoid conflicts with other ROWs, where possible. This process is referred to as "route refinement." The following is a concise summary of the route refinement process used by the proponent, with input from the BLM, to develop the refined Proposed Action route presented in the EA.

Prior to siting the preliminary route for the proposed project, a desktop analysis was conducted by the proponent to identify sensitive areas to avoid (constraints) and developed corridors within the project vicinity (opportunities) that could be used to route the project. SPS then conducted preliminary meetings with the BLM to refine the route. During these meetings, additional siting constraints and opportunities were discussed including the preference to parallel US Highway 62/180 for the J-20 segment between the Hobbs Generation and proposed Kiowa substations. The J-21 segment (Kiowa to North Loving) was routed cross-country as it heads south from the Kiowa substation rather than following Highway 31. This routing was necessary to avoid a four-mile long drill island, as well as the potash mining activities to the east of Highway 31. The J-22 segment was sited parallel to a new 115kV line being developed to connect the North Loving and China Draw substations. The opportunities and constraints analysis resulted in a preliminary route, which was submitted to the BLM in August 2014.

Once the preliminary route was identified, SPS staff consulted with various landowners and stakeholders in proximity to the route. Subsequent discussions were held to modify the route to minimize conflicts with their interests and/or properties. As a result, several re-routes were developed to minimize conflicts with oil and gas developers, potash mines, private landowners, and private developers.

Field investigations were conducted to identify biological resources, record cultural resources, and identify other ROW conflicts along the preliminary route. Biological resources that were identified include special status species and associated habitat, wetlands, playas, migratory bird nesting areas, cave and karst features, and potentially jurisdictional water bodies (see the resource sections in Chapter 3 for details regarding these listed resources).

The biological survey consisted of a pedestrian survey within a 500-foot wide corridor following the centerline of the proposed route, substation locations, laydown yards, pull pockets, and access roads to assess general vegetation and habitat suitability for USFWS, BLM, and State of New Mexico protected native plants and special status species. Presence of active and inactive bird nests and burrows were also recorded. The survey included an assessment of wetlands, surface waters, and other potential waters of the U.S., referred to as a "wetland delineation." In addition to the general biological field survey, at the request of the BLM, LPC lek surveys were conducted for portions of the proposed project traversing through the BLM-designated IPA for the LPC. Within the IPA, the majority of the proposed route is located within 0.5 mile of U.S. Highway 62/180 to minimize impacts to LPC. Approximately 10 miles of the route within the IPA is more than 0.5 mile from U.S. Highway 62/180; however, this route was deemed necessary to avoid new ROW encroachments (discussed below in detail). This 10-mile reroute, known as the Marathon Road reroute, was presented to the BLM in July 2015, and the route was refined further to avoid dunes known to be occupied by the DSL.

Portions of the proposed route also cross areas of high karst potential. The proposed project was routed to avoid the Cave Resources Special Management Area (SMA). Cave and karst features were identified during the biological survey on the Eddy to Kiowa segment. The observed cave and karst features were located outside the proposed route's ROW.

On February 20, 2015, representatives of the BLM CFO, SPS, and SPS's contractors attended a field visit to discuss the locations to be considered for the Pecos River crossing. The preliminary route identified a crossing location for the transmission line that roughly bisected the Pecos River Corridor SMA. After reviewing other potential river crossing locations, the current route across the Pecos River

was selected as the optimal location for balancing resource protection with safety and constructability factors (SWCA 2015c).

An intensive Class III cultural resources inventory of the preliminary route's area of potential effect (APE) was also conducted in accordance with the *Procedures for Performing Cultural Resources Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2005) and *Standards for Survey Site Evaluation and Reporting for the CFO* (BLM 2012). The preliminary route was readjusted to avoid all eligible cultural resources, except for five locations where avoidance would have resulted in impacts to other cultural resources (see Section 3.7 for details regarding avoidance of cultural sites).

The proponent has engaged the CEHMM to conduct ongoing monitoring of the proposed route to identify conflicts between the proposed transmission line and substation corridor with other, newly proposed ROWs. Due to the amount of development within the CFO planning area, situations commonly arise where proposed ROWs, under review by the CFO, can intersect each other resulting in encroachment conflicts during the planning phase. This can lead to uncertainty among the involved parties for how to proceed with the ROW permitting process. The CEHMM's role is to monitor the proposed route regularly to identify the potential ROW encroachments, report the potential conflicts to the proponent, and facilitate communication among the parties to resolve the ROW conflicts prior to issuance of the ROW grant by the CFO. During the route refinement process, the proponent adjusted approximately 10 miles of the preliminary route to follow Marathon Road to avoid ROW encroachments by other proposed infrastructure projects in the area.

In November of 2015, an area oil and gas operator notified SPS about another potential conflict and small reroute on the alignment south of the Pecos River crossing was agreed upon. Resource surveys were conducted prior to adopting the alignment change.

The refined route was also reviewed for proximity to active caliche pits (CEHMM 2015). No caliche pits are located within the proposed route (CEHMM 2015). Two caliche pits are located within 1,000 feet of the route; however, based on aerial photography, these material pits appear to have room for expansion without encroaching on the proposed transmission line route (CEHMM 2015).

The proposed transmission line route and design would meet the BLM's purpose and need while minimizing environmental impacts to the greatest extent possible. The scoping process did not identify any additional unforeseen alternatives; therefore, only the No Action and Proposed Action alternatives were brought forward for detailed analysis in this EA.

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3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter is organized by relevant major resources or issues/concerns as presented in Section 1.5. On the basis of CEQ guidance and BLM NEPA Handbook H-1790-1, the following discussion is limited to those resources that could be impacted to a degree that warrants detailed analysis (40 CFR 1502.15) (BLM 2008b:96) as determined by the BLM CFO interdisciplinary team. Each resource section includes the following analyses:

Affected Environment:

This section succinctly describes the existing condition and trend of issue-related elements of the human environment that would be affected by implementing the Proposed Action or an alternative, as described in Chapter 2 and limits the description of the affected environment to be commensurate with the potential impacts: "1500.4 (c) impacts shall be discussed in proportion to their significance." For the purposes of providing baseline data for the affected environment, an analysis area for each resource was delineated, as appropriate.

Impacts from the No Action Alternative:

Direct and Indirect Impacts: The No Action Alternative reflects the current situation within the project area and serves as the baseline for comparing the environmental impacts of the Proposed Action.

Cumulative Impacts: Since the No Action Alternative means the Proposed Action would not be approved, no cumulative impact, or incremental addition to existing trends would occur. No cumulative analysis is provided for the No Action Alternative.

Impacts from the Proposed Action:

Direct and Indirect Impacts: This EA addresses the resources and impacts on a site-specific basis as required by NEPA. Pursuant to 40 CFR 1508.28 and 1502.21, this site-specific EA tiers to the information and analysis contained in the BLM CFO's RMP, as amended (BLM 1988, 1997, 2008a). For each resource analyzed, the impacts discussion identifies:

- Direct impacts – impacts that are caused by the action and occur at the same time and in the same general location as the action.
- Indirect impacts – impacts that occur at a different time or in a different location than the action to which the impacts are related.
- Short- or long-term impacts – the duration of impacts are described as short or long term. For the purposes of this EA, short-term impacts occur during or immediately after the construction phase, approximately 1 year for construction and an additional year following construction for a total of 2 years. Long-term impacts occur beyond the first 2 years and apply to the production and the overall life of the project through eventual decommissioning.
- Impact indicators – for each resource, the indicator to measure the impact is provided in Table 3.1.

Table 3.1. Impact Indicators by Resource or Resource Use

Resource/Resource Use	Indicators
Air Resources	Emission estimates for regulated pollutants; exceedance of air quality standards, including NAAQS or New Mexico Ambient Air Quality Standards, Class I or Class II Prevention of Significant Deterioration increments, air quality related values, or general conformity de minimis levels
Cave and Karst Resources	Acres of disturbance within high and medium cave and karst potential
Soils	Acres of soil to be disturbed by construction and maintenance, by soil

Resource/Resource Use	Indicators
	type
Water Resources	Number of potential jurisdictional waterways to be crossed by the proposed project; acres of disturbance within potential jurisdictional drainages, playas, and floodplains; qualitative description of potential impacts to groundwater resources
Upland Vegetation	Acres of surface disturbance from construction and maintenance activities
Wildlife and Special Status Species	Acres of habitat to be disturbed by construction and maintenance activities; qualitative description of direct and indirect impacts to individuals
Cultural Resources	Number of eligible cultural resources sites to be disturbed within the project area
Visual Resources	Changes in visual contrast that exceed visual resource management class objectives
Special Designations and Recreation	Acres and number of special designations and recreation areas to incur surface disturbance from the proposed project
Livestock Grazing	Acres and number of grazing allotments to incur surface disturbance from the proposed project, number of fences to be disturbed during construction, and number of water tanks within the proposed project area
Public Health and Safety	Potential for occupational safety and severe weather hazards, level of human exposure to electromagnetic field at representative segments of the project area

Cumulative Impacts: Cumulative impact analysis methodology is described in detail in the next section (below).

Mitigation Measures and Residual Impacts: As directed by 40 CFR 1508.20, mitigation measures are those measures that could reduce or avoid adverse impacts and have not already been incorporated into the Proposed Action (as listed in the project design features, Section 2.1.2). These measures may:

- avoid the impact altogether by not taking a certain action or parts of an action;
- minimize the impact by limiting the degree of magnitude of the action and its implementation;
- rectify the impact by repairing, rehabilitating, or restoring the affected environment;
- reduce or eliminate the impact over time by implementing preservation and maintenance operations during the life of the action; and/or
- compensate for the impact by replacing or providing substitute resources or environments.

Residual impacts are those remaining after implementation of mitigation measures. These impacts may be to the subject resource or a different resource.

Cumulative Impact Analysis Methodology for Proposed Action

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other action.

The geographic extent of cumulative impact analysis area (CIAA) varies by the type of resource and impact. Four different spatial and temporal CIAAs have been developed and are listed with their total acreage in Table 3.2. The time frames, or temporal boundaries, for those impacts may also vary by resource. In some areas, restoration may potentially include plant species that are not locally native or are not present within the adjacent, native plant communities. Although the replanting of disturbed soils may successfully establish vegetation in some locations, the success of project area rehabilitation is dependent on many factors, including rainfall, seed mix, and appropriate seedbed preparation. For this

reason, the temporal boundary for several of the CIAAs is 3 years, allowing 2 years after construction for vegetative regrowth within the project area.

Table 3.2. Cumulative Impact Analysis Areas by Resource

Resource	CIAA	Total CIAA Acreage	Temporal Boundary
Cave and Karst Soils Water Vegetation Wildlife Cultural Resources Visual Resources Livestock Grazing	The total area of the 14 Hydrologic Unit Code (HUC) 10-digit watersheds intersected by the project area. This area was chosen because it is an area with clear natural topographical boundaries with vegetative connectivity, similar soil types, habitat availability, geologic conditions, visual and cultural landscapes, and hydrological functionality. This area also includes available grazing lands on all land jurisdictions considered in the EA. The watersheds are Upper Monument Draw, Rio Peñasco, Burton Flat, Pamilla Draw, Williams Sink, Monument Springs-Monument Draw, Laguna Plata, Clayton Basin, Salt Lake, Dark Canyon-Pecos River, Black River, Red Bluff Draw, Black River-Pecos River, and Delaware River-Pecos River (Figure A.1 in Appendix A).	2,359,693	3 years (1 year for construction and rehabilitation, plus 2 years for vegetative cover regrowth)
Special Status Species: LPC DSL	Total area of LPC Habitat Evaluation Areas, the LPC IPA, and DSL habitat areas as delineated in the RMPA, intersected by the proposed project. Because there is substantial overlap between the IPA and DSL known distribution, the IPA is used as the CIAA (Figure A.2 in Appendix A).	794,683	3 years (1 year for construction and rehabilitation, plus 2 years for vegetative cover regrowth)
Special Designations and Recreation Areas	Total area of special designations (SMAs) and the Hackberry Lake Off-highway Vehicle Recreation Area that are crossed by the proposed project (Figure A.3 in Appendix A).	81,542	3 years (1 year for construction and rehabilitation, plus 2 years for vegetative cover regrowth)
Air Quality and Climate Public Health and Safety	Lands within the CFO planning area.	6,257,412	Life of the proposed project

Past and Present Actions

The past and present actions can be defined as all actions contributing to the current condition of resources found in the project area, as described in the affected environment sections below. Past and present actions that have contributed to the current condition of resources include heavy oil and gas development, land use authorizations that require ROW grants, livestock grazing, and dispersed recreational use of public lands. No data are available to estimate the acreage of impacts of past or present livestock grazing and recreation.

Estimates were obtained from the BLM CFO to calculate area of disturbance resulting from past actions (BLM 2014). A factor of 3.0 acres of disturbance was applied to each existing well on federal and non-federal lands within the 6,257,412-acre CFO planning area (Table 3.3). Surface disturbance associated with all existing land use authorizations, including roads, pipelines, sites, power lines, and other easements, on both federal and non-federal lands were also included in the past disturbance calculations (Table 3.3). In total, the past actions account for approximately 5% of the planning area. This percentage

was then applied to the acreage of each CIAA identified above to estimate the past disturbance within each CIAA. Table 3.4 summarizes past actions by CIAA.

Table 3.3. Summary of Past Disturbance within CFO Planning Area

Past Action	Quantity	Acres
Oil and gas wells	25,751	77,253
Roads	1,159	15,700
Pipelines/facilities	6,626	50,985
Power lines/facilities	2,117	12,473
Telephone/Fiber optic cables	94	1,580
Water facilities, ditches, reservoirs	196	146,898
U.S. Forest Service easements/grants	1	2
Other	8	12,239
Total	***35,952***	***317,130***
Source: BLM 2014		

Present Actions and Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions (RFFAs) are those for which there are existing decisions, formal proposals, or highly probably, based on known opportunities or trends. The BLM has identified the following RFFAs occurring within the CIAAs identified above. It is likely several other oil and gas well and road activities would also occur within these areas.

- *SPS' other SE New Mexico transmission line projects* –. SPS has launched 'Power for the Plains,' a transmission expansion plan in Texas, New Mexico, and Oklahoma, to accommodate future projected power needs. Details regarding existing and future projects can be found on their public website: http://powerfortheplains.com/projects/index.asp. Total miles of 115-kV and 345-kV transmission projects (including Potash Junction to Roadrunner that is almost completely constructed) that intersect the HUC-10 watershed CIAA in SE New Mexico amount to approximately 194 miles of new lines and associated substations. The total acreage of impacts are approximately 1,788 acres within the watershed CIAA, and 621 acres of disturbance within the CIAA for LPC and DSL.
- *Western Refining Southwest, Inc. 70-12 Pipeline Project* – This project is an approved 76-mile, 12-inch crude oil pipeline with an estimated 403 acres of surface disturbance for the pipeline and aboveground appurtenances.
- *DCP Midstream, Lea County Lateral Pipeline Project* – This project is an approved 12-inch-diameter natural gas pipeline with an estimated 598 acres of surface disturbance for the pipeline and aboveground appurtenances.
- *DCP Midstream, Zia II Natural Gas Processing Plant and Pipeline Project* – This project is an approved natural gas processing plant and series of gathering pipelines with an estimated 694 acres of surface disturbance.
- *Enterprise Gaucho-Thistle Crude Oil Pipeline Project* – The pipeline project is 26.1 miles of 10-inch-diameter pipeline and four aboveground facilities. The pipeline would transport crude oil from the Thistle 44 Truck Station and Central Delivery Point, the Thistle Central Delivery Point, and the Gaucho Central Delivery Point to the Lynch Station. From the Lynch Station, crude oil would be injected into the existing C88 pipeline to be transported to the Hobbs Station and ultimately moved towards Midland, Texas. The total project area is 174.4 acres.
- *Expansion of Enterprise's Chaparral Gas Plant* – Enterprise is proposing to expand the existing Chaparral Gas Plant, which is located on public lands managed by the BLM, approximately 25 miles northeast of Carlsbad. The legal description of the plant expansion site is the SW¼ of Section 17, Township 19 South, Range 31 East, New Mexico Prime Meridian, Eddy County, New Mexico. The permanent footprint of the expansion area is 4.6 acres.
- *Navitas Midstream New Mexico, Delaware Basin Natural Gas Cryogenic Processing Plant and Pipeline Project* – This project is a proposed natural gas processing plant, associated gathering

pipelines, natural gas liquid pipeline, and lateral pipeline, gathering compression stations, and downstream interconnect points.

- *Mid-America Y-Grade Pipeline Project* **–** The pipeline project is approximately 35.8 miles of 12-inch-diameter pipeline to transport natural gas liquids from the South Eddy Cryogenic Gas Plant on the south end of the pipeline and would terminate at a mainline valve on the north end of the pipeline to facilitate takeaway to storage and additional processing facilities. Project area is estimated to be 220 acres. The proposed pipeline project would deliver 25 million barrels per day, with an increase capacity up to 65 million barrels per day of natural gas liquids.
- *Enterprise South Eddy Interconnects and Cryogenic Gas Plant* – Enterprise is planning to build the South Eddy Cryogenic Gas Plant on a 40-acre parcel in eastern Eddy County. The gas processing capacity of the plant is estimated at 200 million cubic feet per day. The proposed plant would also require several pipeline interconnects, access roads, and electric easements.
- *OXY USA Inc. Sand Dunes Master Development Plan* – OXY USA Inc. is proposing to drill, produce, and finally abandon 31 to 155 oil and natural gas wells and construct, use, and reclaim the associated surface features in the Sand Dunes Area of Eddy County, New Mexico. Total surface disturbance for the proposed project is 320 acres. Project elements include 31 well pads, seven access roads, five buried pipelines, 62 surface pipelines, utility poles, and several centralized tank batteries.
- *Other oil and gas proposed well pad and access road activity* – According to the BLM CFO's NEPA log published on July 7, 2015, 156 Applications for Permit to Drill (APDs) in Lea County and 295 APDs in Eddy County were listed as pending or approved within the first 7 months of 2015. This analysis assumes each of these projects represents an average disturbance of approximately 3 acres. While exact location data for these pending actions were not available, this analysis assumes that the projects would be located evenly across Lea and Eddy Counties and, as a result, approximately 40% or 62 projects would fall within the Lea County portion of the CIAAs. Approximately 60% or 177 projects would fall within the Eddy County portion of the CIAAs.

Table 3.4 summarizes known past, present, and reasonably foreseeable disturbance impacts by CIAA.

Table 3.4. Past, Present and Reasonably Foreseeable Disturbance Impacts by CIAA

CIAA	Past Actions (acres)	Present Actions and RFFAs (acres within CIAA)*
Cave and Karst Soils Water Vegetation Wildlife Cultural Resources Visual Resources Livestock Grazing	117,985	5,040
Special Status Species: LPC DSL	39,734	11,220
Special Designations and Recreation	4,077	85
Air Quality and Climate Public Health and Safety	Qualitative discussion of past, present, and RFFAs within CIAA	

*See resource specific sections below for full cumulative analysis.

3.1 Air Resources

3.1.1 Affected Environment

Air quality and climate are components of air resources that may be affected by the Proposed Action. Air resource impacts associated with the Proposed Action were evaluated within a designated analysis area, extending 1 mile beyond the site of the Proposed Action. The analysis area includes portions of Eddy and Lea Counties in New Mexico. Climate, ambient air quality standards, existing air quality, and county emissions inventories are discussed in this section. The analysis area is presented in Figure A.4 in Appendix A.

Climate

Southeastern New Mexico's climate is generally categorized as semiarid. The area receives low annual precipitation, has low annual humidity, and is among the highest evaporation rates in the state. During summer months, individual daytime temperatures can exceed 100 degrees Fahrenheit (°F); the warmest days often occur in June just before the monsoon season begins (monsoon season in the southwestern United States typically occurs from June to September). Precipitation in semiarid regions typically varies markedly between seasons with intense precipitation events in the summer providing the majority of the annual precipitation. May through October are the warmest 6 months of the year and provide an average of 80% of the annual total precipitation for the state's eastern plains where the Proposed Action site is located (Western Regional Climate Center [WRCC] 2015a).

There are two wind measurement stations near the Proposed Action: Paduca, near the southern end of the Proposed Action, and Caprock, near the northern end. The data from Paduca and Caprock indicate that the prevailing winds most frequently arrive from the south-southeast and southeast, respectively (WRCC 2015b, 2015c).

Ambient Air Quality Standards

Under the CAA, the EPA has the authority to regulate emissions from both stationary and mobile sources. The CAA requires the EPA to establish NAAQS for pollutants considered harmful to public health and the environment. Per the requirement, the EPA has created national standards for six common air pollutants, also known as criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), lead (Pb), and particulate matter (particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]).

The NAAQS include primary standards that provide for the protection of human health and secondary standards that provide for the protection of public welfare (e.g., visibility, the health of vegetation and animals). The NAAQS are defined in terms of threshold ambient concentrations measured as an average for specified periods of time. Pollutants with acute health effects are assigned short-term standards and those with chronic health effects are assigned long-term standards. The NAAQS undergo periodic revisions to ensure that emerging science and technology result in the most up-to-date and protective standards achievable.

Under the provisions of the CAA, states can elect to develop their own ambient air quality standards, and New Mexico has adopted its own standards (New Mexico Ambient Air Quality Standards [NMAAQS]) for CO, NO_2, total suspended particulates (TSP), SO_2, hydrogen sulfide (H_2S), and total reduced sulfur (TRS). The NAAQS and NMAAQS are presented in Table 3.5.

Table 3.5. Ambient Air Quality Standards

Pollutant	NMAAAQS	NAAQS	
		Primary	Secondary
CO			
1-hour average	13.1 ppm	35 ppm	-
8-hour average	8.7 ppm	9 ppm	-

Pollutant	NMAAAQS	NAAQS	
		Primary	Secondary
Pb			
Rolling 3-month average	-	0.15 µg/m^3	Same as Primary
NO_2			
1-hour average	-		
24-hour average	0.05 ppm	100 ppb	-
Annual average	0.10 ppm	53 ppb	Same as Primary
O_3			
8-hour average	-	0.075 ppm	Same as Primary
TSP			
24-hour average	150 µg/m^3	-	-
7-day average	110 µg/m^3	-	-
30-day average	90 µg/m^3	-	-
Annual geometric mean	60 µg/m^3	-	-
PM_{10}			
24-hour average	-	150 µg/m^3	Same as Primary
$PM_{2.5}$			
24-hour average	-	35 µg/m^3	Same as Primary
Annual average	-	12 µg/m^3	15 µg/m^3
SO_2			
1-hour average	-	75 ppb	-
3-hour average	-	-	0.5 ppm
24-hour average	0.10 ppm	-	-
Annual average	0.02 ppm	-	-
H_2S			
½ hour average [a]	0.100 ppm	-	-
TRS			
½ hour average [a]	0.010 ppm	-	-

[a] H_2S and TRS 0.5-hour average for the Pecos-Permian Basin Intrastate Air Quality Control Region.
µg/m^3: microgram per cubic meter.
ppb: parts per billion.
ppm: parts per million.
Source: New Mexico Administrative Code 20.2.3, EPA 2014.

Existing Air Quality and Emissions Inventory

In accordance with the CAA, the EPA must review air quality conditions reported by states to determine whether states are meeting the national standards for air quality. Areas with ambient concentrations of criteria pollutants within the NAAQS are deemed to be "attainment" areas; conversely, those that do not meet the standards are referred to as "non-attainment" areas. Areas that cannot be classified on the basis of insufficient data are designated as "unclassifiable." The designation "attainment/unclassifiable" may be assigned to areas that are lacking sufficient monitoring data but meet the standard or will soon meet the standard.

The EPA designates Eddy and Lea Counties in New Mexico as being in attainment/unclassifiable with respect to the NAAQS for O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and Pb. Similarly, the NMED designates these counties as being in attainment/unclassifiable with respect to the NMAAQS for CO, NO_2, SO_2, TSP, H_2S, and TRS (EPA 2015a). The Proposed Action is located within New Mexico Air Quality Control Region 155.

Emission inventories are useful in comparing emission source categories to determine which industries or practices are contributing to the general level of pollution in an area. Emission inventories provide an overview of the type and amount of pollution emitted on an annual basis from sources in the area. For the

purposes of this assessment, the most recent National Emissions Inventory conducted in 2011 was summarized for Eddy and Lea Counties. The emission inventory data are presented in Table 3.6.

Table 3.6. Emissions Inventory in Tons per Year for Eddy and Lea County

Source	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOCs	HAPs
Eddy County, New Mexico							
Agriculture	-	-	656	131	-	-	-
Biogenics [1]	16,729	438	-	-	-	85,527	16,787
Dust	-	-	18,905	1,928	-	-	-
Fires	13,153	268	1,424	1,198	127	3,100	385
Fuel Combustion	943	1,377	87	72	48	199	27
Industrial Processes	9,593	8,234	1,919	708	2,289	41,972	1,804
Miscellaneous [2]	9	-	23	21	-	864	126
Mobile	10,388	1,964	112	75	9	1,332	330
Waste Disposal	632	21	82	66	1	48	5
Subtotal	***51,447***	***12,303***	***23,208***	***4,200***	***2,473***	***133,042***	***19,465***
Lea County, New Mexico							
Agriculture	-	-	2,031	406	-	-	-
Biogenics [1]	14,220	1,619	-	-	-	63,497	14,360
Dust	-	-	23,685	2,407	-	-	-
Fires	4,919	152	591	473	63	1,067	195
Fuel Combustion	3,598	11.782	318	310	56	777	301
Industrial Processes	9,431	7,185	259	242	10,247	39,140	1,675
Miscellaneous [2]	9	-	23	22	-	875	142
Mobile	9,555	1,726	92	59	7	929	241
Waste Disposal	1,098	35	130	104	1	78	7
Subtotal	***42,829***	***22,500***	***27,131***	***4,023***	***10,374***	***106,364***	***16,920***
Total Emissions	***94,276***	***34,803***	***50,339***	***8,223***	***12,847***	***239,406***	***36,385***

Note: "-" denotes no information available. Due to an incomplete data set, greenhouse gas emissions are not presented. Totals may not sum exactly due to rounding.

[1] Biogenic emissions are those emissions derived from natural processes (such as vegetation and soil).

[2] Miscellaneous categories include bulk gasoline terminals, commercial cooking, gas stations, miscellaneous non-industrial (not elsewhere classified), and solvent use.

NO_x = nitrogen oxides.

VOC = Volatile Organic Compounds.

HAPs = Hazardous Air Pollutants.

Source: EPA 2015b.

According to the 2011 National Emissions Inventory, the major pollutants emitted in Eddy and Lea Counties are volatile organic compounds (VOCs) and CO. The major sources contributing to VOC emissions are biogenics and industrial processes. The major sources contributing to CO emissions are biogenics, fires, mobile sources, and industrial processes. PM_{10} emissions are principally generated from dust, industrial processes, agriculture, and fires; $PM_{2.5}$ emissions are primarily attributable to dust and fires. Industrial processes and mobile sources are the major contributors to nitrogen oxides (NO_X) emissions in both counties. SO_2 emissions are mostly generated in Eddy and Lea Counties through industrial processes. Industrial facilities near the Proposed Action area in New Mexico include compressor stations, gas processing plants, booster stations, refineries, and power plants (NMED 2015).

Pollutants included in the 2011 National Emissions Inventory are the criteria pollutants and hazardous air pollutants (HAPs). Due to an incomplete data set from the 2011 National Emissions Inventory, greenhouse gas (GHG) emissions are not represented. However, according to the NMED, emissions of GHGs in New Mexico remained essentially level from 2000 to 2007, despite a 6.7% growth in New

Mexico's population over that period. The largest sources of GHG emissions in New Mexico in 2007 were electricity production (41%), the fossil fuel industry (22%) and transportation fuel use (20%). Estimated total gross GHG emissions in 2007 for New Mexico were 76.2 million metric tons (NMED 2010).

3.1.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, the ROW for the proposed project would not be granted. As a result of the No Action Alternative, emissions due to the construction and operation of the transmission lines and associated substations would not occur. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.1.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Under the FLPMA and the CAA, the BLM cannot conduct or authorize any activity that does not conform to all applicable federal, state, tribal, or local air quality laws, statutes, regulations, standards, or implementation plans. As such, the criteria for assessing air quality impacts are based on existing regulatory requirements across all applicable jurisdictions. Therefore, significant direct and indirect impacts from the Proposed Action can be assumed to result if it is demonstrated that the NAAQS or NMAAQS would be exceeded.

Emissions from the construction and operation of the Proposed Action have been estimated to characterize the potential emissions increase that would result. While these estimates are not directly comparable to any ambient air quality standard, these emissions estimates are compared to Eddy and Lea County's emissions inventory as a percentage of both county's emissions. This comparison is provided for informational purposes only and carries no regulatory significance. The comparison offers an estimate of the scope of the Proposed Action.

Emissions of air pollutants would occur during construction of the transmission lines and substations and, to a lesser extent, during the operation of the transmission lines. Impacts are evaluated separately as construction phase emissions (those emissions that are expected to be temporary in nature) and operational phase emissions (those emissions that are expected to occur during operation of the Proposed Action). Construction-related emissions considered include exhaust from construction vehicles, material movement, and equipment; exhaust from construction worker commuting; and fugitive dust from general construction activity. Construction emissions take into account expansion and construction of associated substations. Operational-related emissions considered include emissions from inspection and maintenance activities (which includes exhaust from inspection vehicles and aerial inspections, fugitive dust from unpaved roads, and line maintenance equipment) and fugitive emissions due to leaks of sulfur hexafluoride (SF_6), a potent GHG, in substation transformer equipment.

Construction Emissions

Exhaust emissions from off-road construction vehicles and equipment were calculated using the South Coast Air Quality Management District (SCAQMD) Off-Road Model Mobile Source Emission Factors using the 2015 vehicle fleet. Several variables were incorporated into these calculations, including equipment-specific emission factors, quantity of each equipment type, and duration of use. Emissions from helicopter use during the construction phase were estimated according to emissions factors from the Emissions and Dispersion Modeling System and the California Climate Action Registry General Reporting Protocol (California Public Utilities Commission 2012).

Construction worker commute and equipment delivery emissions were calculated using SCAQMD emission factors for On-Road Passenger Vehicles for the 2015 vehicle fleet (SCAQMD 2007a). The construction workers were assumed to originate from Carlsbad, New Mexico. Emissions associated with equipment delivery were estimated using SCAQMD emission factors for Heavy-Heavy-Duty-Vehicles

(with vehicle weights ranging from 33,001 to 60,000 pounds) (SCAQMD 2007b). Fugitive dust emissions due to general construction activities were estimated using the Western Regional Air Partnership's (2006) Fugitive Dust Handbook. Construction related emissions resulting from the Proposed Action is presented in Table 3.7.

Table 3.7. Construction-related Emissions in Tons Resulting from the Proposed Action

Source	CO	NO_X	SO_X [1]	PM_{10}	$PM_{2.5}$	VOC	HAPs	GHG [2]
Construction equipment	12.82	29.94	0.51	1.49	1.38	2.88	0.29	2,519
Construction worker commuting	4.93	2.37	0.01	0.16	0.12	0.62	0.06	1,040
Equipment and material delivery	10.40	28.78	0.06	1.42	1.19	2.42	0.24	5,180
Fugitive dust emissions	-	-	-	6.31	0.64	-	-	-
Total	***28.15***	***61.09***	***0.58***	***9.38***	***3.33***	***5.93***	***0.59***	***8,739***
Percent of Total Eddy and Lea County Emissions	***0.03%***	***0.18%***	***< 0.01%***	***0.02%***	***0.04%***	***< 0.01%***	***< 0.01%***	***N/A [3]***

[1] All oxides of sulfur (including SO_2). For purposes of comparison, SO_2 emissions reported in the county inventory are assumed to be equal to SO_X.
[2] GHG emissions are reported in metric tons of carbon dioxide equivalent (CO_2e). For any quantity and type of GHG, CO_2e signifies the amount of CO_2 which would have the equivalent global warming impact.
[3] GHG emissions are not reported for all sources in the county inventory. Therefore, GHG emissions are not compared to the county inventory.

The most abundant pollutants estimated to be produced during the construction phase of the Proposed Action, in total tons, are GHG, NO_X, PM_{10}, and CO. The greatest contributors to these pollutants are construction equipment, construction worker commuting, and equipment and material delivery for GHG, NO_X, and CO, and fugitive dust emissions for PM_{10}. Each pollutant is equal to or less than 0.18% of both Eddy and Lea County's emissions inventories. Additionally, the construction phase would be temporary and advance down the line as construction progresses. Therefore, impacts to air resources are likely to be insignificant from the construction of the Proposed Action.

Operational Emissions

Operations-related emissions include inspection and maintenance-related activities and fugitive emissions due to leaks of SF_6 in substation transformer equipment. Inspection and maintenance activities are assumed to occur every year of operation. Leaks of SF_6 are conservatively assumed to equal 1% of the original SF_6 transformer content for every year of operation. Operational-related emissions resulting from the Proposed Action are presented in Table 3.8.

Table 3.8. Operational-related Emissions in Tons per Year Resulting from the Proposed Action

Source	CO	NO_X	SO_X [1]	PM_{10}	$PM_{2.5}$	VOC	HAPs	GHG [2]
Inspection and maintenance activities	0.62	1.42	0.03	0.19	0.08	0.12	0.01	120
Fugitive leaks of SF_6	-	-	-	-	-	-	-	522
Total	***0.62***	***1.42***	***0.03***	***0.19***	***0.08***	***0.12***	***0.01***	***642***
Percent of Total Eddy and Lea County Emissions	***< 0.01%***	***< 0.01%***	***< 0.01%***	***< 0.01%***	***< 0.01%***	***< 0.01%***	***< 0.01%***	***N/A [3]***

Source	CO	NO_X	SO_X [1]	PM_{10}	$PM_{2.5}$	VOC	HAPs	GHG [2]

[1] All oxides of sulfur (including SO_2). For purposes of comparison, SO_2 emissions reported in the county inventory are assumed to be equal to SO_X.

[2] GHG emissions are reported in metric tons of carbon dioxide equivalent (CO_2e). For any quantity and type of GHG, CO_2e signifies the amount of CO_2 which would have the equivalent global warming impact.

[3] GHG emissions are not reported for all sources in the county inventory. Therefore, GHG emissions are not compared to the county inventory.

The most abundant pollutant emitted during operation of the Proposed Action, according to the methodology described above, are GHGs (from fugitive leaks of SF6 from substation transformers). All emissions from the operation of the Proposed Action are less than 0.01% of the county's emissions inventory. Therefore, significant impacts to air resources are not likely to occur from the operation of the Proposed Action.

Cumulative Impacts

Impacts from the Proposed Action, when considering neighboring oil and gas development projects and existing ambient air quality, may contribute to air quality deterioration. Oil and gas development, which includes oil and gas production, natural gas compressor stations and pipelines, gas plants, and petroleum refining, generates air pollutants (primarily VOCs and HAPs) and GHG emissions throughout the analysis area. The analysis area is currently experiencing a rapid expansion of oil and gas development, which is expected to continue into the future.

Present and Reasonably Foreseeable Future Actions

Present actions within the analysis area include existing oil and gas production facilities and supporting infrastructure. RFFAs in the area are generally those serving the oil and gas industry. Project types generally include transmission lines, pipelines, oil and gas production facilities, and natural gas processing plants.

Transmission line and pipeline projects have similar emissions profiles to the Proposed Action; the majority of emissions from these projects would be during construction. Present transmission line and pipeline projects include the Potash Junction to Roadrunner 345-kV Transmission Line Project, Western Refining Southwest, Inc.'s 70-12 Pipeline Project, DCP Midstream's Lea County Lateral Pipeline Project, and Enterprise's Gaucho-Thistle Crude Oil Pipeline Project. RFFAs include the Mid-America Y-Grade Pipeline Project. Similar to the Proposed Action, construction emissions would include exhaust from construction vehicles, material movement, and equipment; exhaust from construction worker commuting; and fugitive dust from general construction activity. These projects would emit a small amount of construction-related emissions over a large area in the short-term, and relatively small amount of pollutants during the operational phase. Typically, these levels of emitted pollutants do not contribute largely to the overall cumulative impact to air resources. Therefore, concurrent construction or operation of these actions during construction or operation of the Proposed Action is expected to have an insignificant impact on air quality.

Construction and operation of natural gas processing plants and oil and gas production facilities would release regulated air pollutants to the atmosphere. Present projects include DCP Midstream's Zia II Natural Gas Processing Plant and Pipeline Project and Enterprise's Chaparral Gas Plant Expansion. RFFAs include Navitas Midstream New Mexico's Delaware Basin Natural Gas Cryogenic Processing Plant and Pipeline Project, Enterprise's South Eddy Interconnects and Cryogenic Gas Plant, and OXY USA Inc.'s Sand Dunes Master Development Plan. OXY USA Inc.'s Sand Dunes Master Development Plan proposes 31 to 155 oil and natural gas wells in the Sand Dunes Area of Eddy County, New Mexico. These projects would emit emissions during construction, but would emit higher amounts of pollutants during the operational lifetime of the facility. Natural gas processing plants (like the ones listed above) typically emit large amounts of NO_x, CO, VOCs, SO_2, and GHGs. Operation of the Sand Dunes Master Development Plan would result in emissions of VOCs and HAPs, in addition to smaller amounts of NO_x and CO.

Sufficient data are not currently available to determine cumulative impacts from the present or future actions listed above. The RFFAs outlined above could cumulatively impact air quality through emissions from surface disturbance, tailpipe and fugitive dust emissions from mobile sources, and point-source emissions from industrial activities. These air quality impacts, collectively, could result in degradation of air resources within the project analysis area. However, all proposed actions in the analysis area would be regulated by the appropriate regulatory authority ensuring that anthropogenic air pollution emissions are minimized.

Climate Change

Climate change analyses consist of several factors, including GHGs, land use management practices, and the albedo effect. There are no sites within or near the Proposed Action area that are collecting ambient GHG data. The tools necessary to quantify incremental climatic impacts of specific activities associated with those factors are presently unavailable. As a consequence, impact assessment of effects of specific anthropogenic activities cannot be performed. Ambient background data that exist are parametrically derived from fossil fuel combustion and other industrial sources. While the cumulative effect of climate change in the air resources CIAA may be major and long term, it is difficult to state with certainty what the Proposed Action would contribute to those climate impacts.

However, CEQ draft guidance states that NEPA documents for proposed federal actions resulting in direct GHG emissions of 25,000 metric tons per year should include a GHG emissions analysis of alternatives. The reference point of 25,000 metric tons of direct GHG emissions is not an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but serves as a minimum for conducting a quantitative analysis (CEQ 2014). While a quantitative analysis of alternatives was provided, the Proposed Action would have GHG emissions much less than the reference point.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

3.2 Cave and Karst Resources

3.2.1 Affected Environment

The proposed project is located in gypsum karst terrain, a land form that is characterized by underground drainage systems through solutionally enlarged conduits. Gypsum karst terrain may contain sinkholes, sinking streams, caves, fissures, and springs (Stafford 2006). Sinkholes, fissures, and other karst features leading to underground drainages and voids are common and some karst features within this region are responsible for the rapid recharge of several widespread shallow freshwater aquifers and springs. Subsurface voids with little or no surface expression are also common within this landscape.

Sinkholes and cave entrances may collect water and can subsequently accumulate rich organic materials and soils. This, in conjunction with the stable microclimate near cave entrances, supports a rich diversity and abundance of plant life which, in turn, provides habitat and food for a variety of wildlife such as insects, rodents, mammals, and reptiles.

Caves and other karst features provide habitat that supports a diverse ecosystem, including a variety of troglobitic, or cave-adapted, species (Reddell 1988; Cokendolpher 2004). These troglobitic species, including millipedes, beetles, and spiders, have adapted specifically to the cave environment due to constant temperatures, high humidity, and complete darkness (Culver et al. 2003). These subterranean ecosystems are extremely sensitive due to the delicate balance between the cave-adapted biological communities and the influential biotic and abiotic factors on the surface (Barr and Holsinger 1985).

The BLM categorizes all areas within the CFO planning area as having either low, medium, high karst and cave potential occurrence. These criteria are based on geology, occurrence of known caves, density of karst features, and potential impacts to freshwater aquifers. Figure A.5 and Figure A.6 in Appendix A show the proposed project alignment in relation to the cave and karst potential zones. Table 3.9 shows

the acres of the project area within each potential category. No critical zones for caves or karsts are crossed by the proposed project.

Table 3.9. Acreage of the Proposed Project within Areas of High, Medium, and Low Cave and Karst Potential

Potential Level	Project Area within Cave Potential (acres)	Project Area within Karst Potential (acres)
High	605	506
Medium	1,048	1,068
Low	1,007	1,087

3.2.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no new surface disturbance within areas of cave and karst potential resulting from the proposed project, because the ROWs would not be granted. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.2.3 Impacts from the Proposed Action

Direct and Indirect Impacts

The proposed project crosses areas of high, medium, and low potential for occurrence for both cave and karst resources (see Table 3.9). The proposed project area crosses approximately 605 acres of are mapped with high cave potential and 506 acres of are mapped as high karst potential. Although no caves, voids, or karst features were identified within the project area during field surveys, ground-disturbing activities, including heavy vibrations and alternation of surface drainages, associated with this proposed project could impact cave and karst resources. Some surface karst features were identified near the proposed ROW, within the area surveyed for archaeological resources, along the Eddy County to Kiowa route. Excessive siltation and sedimentation, resulting from ground disturbance, can affect surface water infiltration and plug downstream sinkholes and/or other karst features, resulting in adverse impacts to groundwater quality and the cave ecosystem. Construction activities could activate or contribute to existing slow subsidence or sudden collapse of a sinkhole, cave passage, or void during construction activities. This development would cause both safety hazards for the construction crew and cause environmental impacts. Opening a new entrance into a karst system can change air flow patterns, temperatures, and modify the environment on which the biological community relies. Opening a new entrance may cause other undetermined effects on the cave ecosystem. Encountering a void would also have adverse impacts on the stability of the power pole structures and may result in the subsequent failure structures placed in or near voids. Per the design features found in Section 2.1.2, soil bores would be drilled in high cave and karst potential areas in investigate the potential presence of voids and karst features below ground prior to undertaking excavation activities for the structure foundations. If voids are found, the structure locations would be relocated. Additionally, close coordination with the BLM would occur when working in high potential areas. The BLM would be notified if any caves, voids, or sinkholes are encountered during construction activities. These design features are intended to minimize impacts to cave and karst resources.

Other adverse impacts would include the transportation of contaminants from spills or leaks occurring during construction or operation of the proposed project directly into the nearby Pecos River or underground water systems without filtration or biodegradation. In addition, contaminates spilled or leaked into or onto cave/karst zone surfaces and subsurfaces may lead directly to the disruption or displacement of cave species and critical biological processes.

Indirect impacts would include potential disruptions to recharge processes and moisture regimes within the karst system. Other indirect impacts would include changes in airflow patterns within the karst

environment and alterations in the surface communities (vegetative and animal) surrounding karst features. This would impact those animals, particularly invertebrates and small mammals that may use the karst features for shelter and sources of food.

Cumulative Impacts

Impacts from past actions within the 2,359,693-acre CIAA include approximately 117,985 acres of surface-disturbing activities, including past construction of oil and gas well pads, access roads, transmission lines, and other linear features. Past actions account for soil disturbance on approximately 5% of the CIAA. The past surface disturbance has occurred in areas with medium and high potential for cave and karst resources within the CIAA. Studies completed by the CFO have demonstrated a positive connection between lost circulation zones encountered during oil and gas drilling and karst aquifers. The contamination of these aquifers may affect all users of these water sources, including riparian and in-cave biological community (BLM 2014).

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 5,040 acres of surface and vegetation disturbance within the CIAA, or 0.2% of the CIAA. Impacts to cave and karst resources would depend on the placement and type of surface disturbance, the level of cave and karst potential as well as the hydrologic conditions within the individual project areas. The subject projects would require BMPs and other mitigation to reduce these impacts. Together, past, present, and reasonably foreseeable surface and vegetation disturbance would total 121,460 acres (approximately 5.1% of the CIAA).

The Proposed Action would disturb an additional 2,661 acres, which is approximately 0.1% of the CIAA. This comprises an additional 2% to the past, present, and reasonably foreseeable surface disturbance identified above. This contribution would be localized and minimized from implementation of project design features and BMPs. Cumulative impacts to cave and karst resources are difficult to estimate because, as with the Proposed Action, impacts would occur from accidental spills during construction or operation that intercept cave or karst features. BMPs would be in place for all projects considered for the cumulative impacts analysis; therefore, spills would be rare. If a spill did occur, response would be immediate, thereby reducing the likelihood of groundwater contamination.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

3.3 Soil Resources

3.3.1 Affected Environment

According to the Natural Resources Conservation Service ([NRCS] 2015a), 68 mapped soil types occur within the proposed project area. For a complete list of soil types, please refer to the BA (SWCA 2015a). Those soil types that make up 5% or more of the proposed project area, are associated with dunes, or those that contain gypsum components (denoted in bold) are listed in Table 3.10.

Table 3.10. Major soil types, gypsum soils, and dunes in the proposed project area.

Map Unit Name	Acres	Percent of Project Area	Abridged Soil Description
Berino complex, 0 to 3 percent slopes, eroded	250	10	Berino component is on fan piedmonts, uplands. Pajarito component is on upland and dunes. Parent material for both components consists of mixed alluvium and/or eolian sands. Not prime farmland.
Berino-Pajarito complex, 0 to 3 percent slopes, eroded	14	1	The Berino component is on uplands, fan piedmonts. The Pajarito component is on uplands, dunes. Parent material for both components consists of mixed alluvium and/or eolian sands. Not prime farmland.

Map Unit Name	Acres	Percent of Project Area	Abridged Soil Description
Gypsum land	1	Less than 0.1	Gypsum land makes up 100 percent of this map unit. Not prime farmland
Gypsum land-Cottonwood complex, 0 to 3 percent slopes (GC map unit)	20	1	Gypsum land makes up 60 percent of this map unit. The Cottonwood component is on hills, uplands. The parent material of both components consists of residuum weathered from gypsum. Not prime farmland
Gypsum land-Cottonwood complex, 0 to 3 percent slopes (Gs map unit)	34	1	Gypsum land makes up 60 percent of this map unit. The Cottonwood component is on hills, uplands. The parent material for both components consists of residuum weathered from gypsum. Farmland of statewide importance
Jal association	14	1	The Jal component is on playa rims, tablelands. The parent material consists of calcareous alluvium and/or calcareous lacustrine deposits derived from sedimentary rock. The Drake component is on playa dunes, tablelands. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Farmland of statewide importance.
Kermit-Berino fine sands, 0 to 3 percent slopes	120	5	Kermit component on uplands, alluvial fans. Berino component on uplands, fan piedmonts. Parent material for both components consists of mixed alluvium and/or eolian sands. Not prime farmland
Kermit-Palomas fine sands, 0 to 12 percent slopes	27	1	The Kermit component is on dunes, sandhills. The parent material consists of calcareous sandy eolian depots derived from sedimentary rock. The Palomas component is on dunes, sandhills. The parent material consists of alluvium derived from sandstone. Not prime farmland.
Kermit soils and dune land, 0 to 12 percent slopes	78	3	Dune land makes up 45 percent of the map unit. The Kermit component is on dunes, sandhills. The parent material consists of calcareous sandy eolian deposits derived from sedimentary rock. Not prime farmland.
Kimbrough gravelly loam, 0 to 3 percent slopes	137	5	The Kimbrough component is on tablelands, plains. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Not prime farmland
Kimbrough-Lea complex	143	5	The Kimbrough and Lea components are on tablelands, plains. The parent material for both components consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Not prime farmland
Kimbrough-Stegall loams, 0 to 3 percent slopes	176	7	The Kimbrough and Stegall components are on uplands, alluvial fans. The parent material for both components consists of alluvium and/or eolian sands. Not prime farmland
Pajarito loamy fine sand, 0 to 3 percent slopes, eroded	28	1	Pajarito component is on dunes, uplands. Parent material for both components consists of mixed alluvium and/or eolian sands. Not prime farmland.
Pajarito-Dune land complex, 0 to 3 percent slopes	7	0.3	Dune land makes up 45 percent of the map unit. The Pajarito component is on dunes, uplands. Parent material consists of mixed alluvium and/or eolian sands. Not prime farmland.
Pyote soils and dune land	82	3	Dune land makes up 45 percent of the map unit. The Pyote component is on depressions, sandhills. The parent

Map Unit Name	Acres	Percent of Project Area	Abridged Soil Description
			material consists of sandy eolian deposits derived from sedimentary rock. Farmland of statewide importance.
Reagan-Upton association, 0 to 9 percent slopes	32	1	The Reagan component is on alluvial fans, uplands. The parent material consists of alluvium and/or eolian deposits. Upton component is on fans, uplands. The parent material consists of residuum weathered from limestone. Farmland of statewide importance
Reeves-Gypsum land complex, 0 to 3 percent slopes	**284**	**11**	**The Reeves component is on hills, uplands. The parent material consists of residuum weathered from gypsum. Gypsum land makes up 45 percent of map unit. Not prime farmland**
Other	1,447	54	
Total	***2,661***	***100***	

Source: NRCS 2015a.

The major soil types found in the project area as summarized in the above table and the BA (SWCA 2015a) are sensitive soils, including dunes, sand hills, sand sheets, or soils developed from eolian (windblown) and alluvium parent material. They can be best characterized as loamy sands to sandy soils with coarse to moderately textured surface soils. Due to the texture of the soils within the project area, they are highly susceptible to erosion when vegetation cover is removed (NRCS 2015a).

Approximately 7 acres of soils found in the project area are considered prime farmland, if irrigated. Several soil types are considered farmland of statewide importance, which indicates the lands that could be economically produce high yield of crops when treated and managed according to acceptable farming methods (NRCS 2015b). Active irrigated farmland does occur within the project area in the vicinity of the Pecos River.

3.3.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no new surface disturbance and no impact to soils resulting from the proposed project, because the ROWs would not be granted. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.3.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Direct impacts to soil resources include the loss of soil productivity due to the removal of soils for construction access roads, laydown yards, transmission line structures, and substations. A total of 2,661 acres of soil would be disturbed for construction of the proposed project, of which approximately 330 acres are gypsum soils and approximately 420 acres have dune components in their soil type. Clearing of vegetation and topsoil, as well as grading, would be required and these activities would result in newly exposed, disturbed soils that would be subject to accelerated wind and water erosion. This has the greatest chance of occurring on sensitive soils, which include soils that are easily eroded with shallow profiles, such as those found in the project area.

Any soil removal associated with development of structure foundations and at substation sites would be permanent. The construction of the new Kiowa Substation and substation expansions would total 58 acres and would permanently remove soils from productivity. Direct impacts to soils include increased erosion from the removal of vegetative cover, contamination from accidental spills or leaks, and soil compaction from heavy equipment resulting in the loss of soil structure and porosity. These impacts can

lead to increased rainfall runoff and susceptibility to high wind events and consequently increased erosion.

As mentioned above, active irrigated agricultural land does occur within the project area in the vicinity of the Pecos River. SPS would work with landowners of active agricultural land to minimize permanent impacts to farmland. Per the design features found in Section 2.1.2, the ROW within agricultural lands would be aligned, insofar as is practical, to reduce the impact to farm operations and agricultural production. Soil compacted by construction activities would be decompacted except where a permanent two-track access route would be kept for future operation and maintenance activities. The contractor would eliminate at the earliest opportunity all construction ruts that are hazardous to agricultural operations and/or movement of vehicles and equipment. The land and facilities would be restored as nearly as practicable to their original condition.

An indirect impact is the colonization of noxious weeds on disturbed soils. This can occur anywhere soil is disturbed. Weeds can outcompete native species due to their ability to thrive under conditions with low soil moisture content, poor nutrient availability, and coarse soil textures.

Per communication with the BLM CFO and comparison with similar projects in the region, it is reasonable to expect seeded vegetation to be re-established within the project area 2 years after construction. This assumes the project area would receive sufficient rainfall, proper seed bed preparation, and appropriate seeding techniques, and that a BLM-prescribed seed mix would be used.

Cumulative Impacts

Impacts from past actions within the 2,359,693-acre CIAA include approximately 117,985 acres of surface-disturbing activities, including past construction of oil and gas well pads, access roads, transmission lines, and other linear features. Past actions account for soil disturbance on approximately 5% of the CIAA. The loss of vegetation results in a loss of forage available to livestock within the grazing allotments located in the CIAA. Reclamation of some disturbed areas and use of BMPs for erosion control and stormwater events has reduced impacts to soil resources by improving vegetative cover from construction conditions and reducing soil loss.

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 5,040 acres of surface and vegetation disturbance within the CIAA, or 0.2% of the CIAA. Impacts to soil resources would depend on the placement and type of surface disturbance, the type of soil and the topography within the individual project areas. Generally, soil erosion would be expected to occur, especially when storm events occur during construction of the future actions. The subject projects would require BMPs and other mitigation to reduce these impacts. Together, past, present, and reasonably foreseeable surface and vegetation disturbance would total 121,460 acres (approximately 5.1% of the CIAA).

The Proposed Action would disturb an additional 2,661 acres, which is approximately 0.1% of the CIAA. This comprises an additional 2% to the past, present, and reasonably foreseeable surface disturbance identified above. This contribution would be localized and minimized from implementation of project design features and BMPs.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

3.4 Water Resources

3.4.1 Affected Environment

Surface Hydrology

The surface water supplies in southeast Eddy County and Lea County are transitory and limited to quantities of runoff impounded in short drainage ways, shallow lakes, and small depressions, including

various playas and lagunas (New Mexico Office of the State Engineer [NMOSE] 1999). The proposed project crosses 14 watersheds, as defined by the 10-digit Hydrologic Unit Codes (HUCs) (Table 3.11). There are no New Mexico Outstanding National Resource Waters within these watersheds.

Table 3.11. Watersheds Crossed by the Proposed Project

Watershed Name	HUC-10 ID	Portion of Project Area within the Watershed (acres)	Total Watershed Size (acres)
Upper Monument Draw	1208000306	35	260,185
Rio Peñasco	1306000714	86	122,105
Burton Flat	1306001101	67	93,707
Pamilla Draw	1306001103	236	215,057
Williams Sink	1306001115	100	94,792
Monument Springs-Monument Draw	1307000701	355	212,779
Laguna Plata	1306001116	327	156,915
Clayton Basin	1306001102	366	156,259
Salt Lake	1306001117	177	233,510
Dark Canyon- Pecos River	1306001110	124	185,130
Black River-Pecos River	1306001112	516	126,571
Red Bluff Draw	1306001113	122	107,503
Black River	1306001111	74	249,791
Delaware River-Pecos River	1306001114	76	145,388
Total		***2,661***	***2,359,692***

A pedestrian survey of the project area was conducted over several sessions from October 2014 to August 2015 to determine the presence of potential waters of the U.S., including wetlands and other special aquatic sites. Defining elements of potential waters of the U.S. include ordinary high water marks, defined bed and banks, or the three mandatory wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Three wetlands, two perennial streams (Pecos and Black Rivers), one intermittent stream (Red Bluff Draw), 22 ephemeral streams, and two playas were recorded within the project area (SWCA 2015b).

The proposed project ROW crosses approximately 0.8 acre of the Pecos River 2 miles north of New Mexico State Highway 31 within the Pecos River Corridor SMA (see Section 3.9 for a full description of the SMA). Figure 3.1 shows a photograph of the Pecos River crossing location. The crossing location lacks dense aquatic and emergent vegetation (SWCA 2015a).



Figure 3.1. View of the Pecos River crossing location, facing downstream.

The proposed project ROW crosses an estimated 0.2 acre of the Black River approximately 8 miles upstream from the confluence with the Pecos River. Figure 3.2 shows a photograph of the Black River crossing location. The proposed project ROW crosses an estimated 0.2 acre of Red Bluff Draw approximately 9 miles upstream from the confluence with the Pecos River. Figure 3.3 shows a photograph of the Red Bluff Draw crossing location.



Figure 3.2. View of the Black River crossing location from the south bank.



Figure 3.3. View of the Red Bluff Draw from the south bank.

The presence of playas and vegetated depressions were identified in the field according to the CFO's guidance. The CFO defines a playa as a "shallow, nearly level, often saline, dry lake bed. Playas vary

considerably in materials, salinity, and hydrologic regime. In general, playas: (1) collect surface runoff in closed basins; (2) are poorly vegetated; (3) are ephemerally flooded; and (4) have a thin surface of non-gravelly, fine-textured sediment" (BLM 2014). These features are of interest to the BLM and subject to protective measures due to their ability to serve as intermittent surface water sources for wildlife in otherwise arid habitats. Additionally, vegetated depressions supporting surface runoff sufficient to affect a type-change in vegetation toward more mesic species, plants adapted to moderate moisture, or toward more vigorous upland species, such as mesquite, are also of importance due to their similar, although less significant, ability to support ephemeral surface waters and are therefore subject to identification during project surveys (personal communication, telephone conversation with Steve Daly, Soil Conservationist, BLM, with Greg Everett, SWCA, on November 7, 2014).

Groundwater Hydrology

The project area occurs primarily within four groundwater areas: the Roswell, Capitan, Lea County, and Carlsbad Basins (NMOSE 1999; Pecos Valley Water Users Organization 2001).

Capitan Basin

Groundwater use within this basin is relatively limited, with small livestock and domestic uses, and industrial use for potash, oil, and gas development. Groundwater supplies in the Capitan Basin are primarily derived from the Capitan Limestone and also from the Castile, Rustler, and Dockum Formations. Groundwater quality is generally poor and well yields are limited (Pecos Valley Water Users Organization 2001).

Roswell Basin

The Roswell Basin is the largest declared basin lying in the Pecos Valley. The Pecos River runs through the eastern side of the basin, from north to south. Groundwater in this basin is derived from several geological formations, including the Yeso and San Andres Formations, the Artesia Group, the Glorieta Sandstone, and alluvium (water eroded) and river terrace deposits (Pecos Valley Water Users Organization 2001). The two major aquifers that yield large supplies of water are the Permian artesian aquifer and the shallow-water aquifer found in alluvium and river terrace deposits. These two aquifers provide water for the cities of Roswell, Artesia Lake Arthur, Dexter, and Hagerman. Irrigation wells have been developed throughout the basin as well, with the largest concentration in the Pecos River valley between Roswell and Seven Rivers. The quality of groundwater ranges widely, and chloride and sulfate are the most common elements that degrade quality of the Roswell Basin (Pecos Valley Water Users Organization 2001).

Carlsbad Underground Basin

The Carlsbad Underground Basin stretches from the Guadalupe Mountains, west of Carlsbad, south to the Texas border, and east into Lea County. Groundwater in this basin is derived from several geological formations, including the Delaware Mountain Group, the Carlsbad and Capitan Limestones, the Castile, the Rustler and Dockum Formations, and alluvium (water eroded) and river terrace deposits (Pecos Valley Water Users Organization 2001). The two major aquifers that yield large supplies of water are the Capitan Reef and the shallow water aquifer found in the alluvium and river terrace deposits. The city of Carlsbad, the village of Loving, and five other community water systems derive their water supplies from the two major aquifers in the basin. Mineral extraction industries (potash, oil and gas) also use water from the basin. The groundwater quality within the Carlsbad Underground Basin can vary from good to poor. The major constituents affecting water quality are salts and sulfur (Pecos Valley Water Users Organization 2001).

Lea County Basin and Ogallala Aquifer

The Lea County Basin is a geographic area designated by the NMOSE for the purposes of groundwater management; the Lea County Basin geographically ends at the Texas border. Physically, however, the primary aquifer of the Lea County Basin is the Ogallala Formation, which extends into Texas. The Ogallala Formation is a Tertiary-age sedimentary formation, composed primarily of unconsolidated, poorly

sorted clay, silt, sand, and gravel. The Ogallala Aquifer is unconfined and the saturated thickness of the Ogallala Aquifer in the vicinity of the pipeline is approximately 50 to 250 feet (NMOSE 1999). Groundwater flow in the Ogallala Aquifer is generally to the southeast. The primary uses of groundwater in the vicinity of the pipeline are irrigation and public water supply, with Hobbs, Lovington, and Tatum having municipal well fields accessing the Ogallala. Areas of discontinuous shallow alluvial aquifers may also exist in the vicinity of the proposed pipeline (NMOSE 1999). Groundwater quality is variable, with generally good quality water but some areas in the vicinity of the pipeline have elevated dissolved solids (NMOSE 1999).

Groundwater Levels

Groundwater level data are limited for the project vicinity. Based on the New Mexico Water Rights Reporting System, average groundwater levels in the subject groundwater basins range from 70 feet to 235 feet below the ground surface (Table 3.12) (NMOSE 2015).

Table 3.12. Depth to Groundwater within Groundwater Basins crossed by the proposed project

Groundwater Basin	Average Depth (feet)	Minimum Depth (feet)	Maximum Depth (feet)
Capitan Basin	235	17	1,334
Roswell Basin	144	0	1,280
Carlsbad Underground Basin	93	0	639
Lea County Basin/Ogallala Aquifer	70	0	1,072

3.4.1 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no new surface disturbance and no impacts to water resources from the proposed project, because the ROWs would not be granted. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.4.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Three wetlands, two perennial streams, one intermittent stream, 22 ephemeral streams, and two playas were recorded within the project area. All of these features are potentially jurisdictional, or waters of the U.S. (SWCA 2015b). All of the potential waters of the U.S., including the Pecos and Black Rivers and Red Bluff Draw, as well as playas, would be avoided by the proposed project by either spanning the water bodies or designating the areas as avoidance zones in the construction contractor bid package. No permanent surface disturbance within the ordinary high water mark of waters of the U.S., their associated 100-year floodplains, and playas would occur as a result of the proposed project.

Nationwide Permit 12 authorizes the construction of utility lines, such as a transmission lines, and other activities in one single and complete project that does not result in the loss of greater than 0.5 acre of waters of the U.S. Any temporary stream or arroyo crossings required for construction would occur either by a low water crossing or a temporary culvert. The proposed project falls within the regulatory threshold of Nationwide Permit 12, as it is estimated to temporarily disturb less than 0.5 acre of potential waters of the U.S., with no permanent discharge of fill material into waters of the U.S. (SWCA 2015b).

The potential to impact water resources primarily lies with the indirect impacts that could occur due to stormwater runoff from construction activities into downstream waters or the nearby playas. While indirect impacts from stormwater movement of contaminants or sediment due to ground disturbance is a possibility, the stabilization and rehabilitation procedures described in Section 2.1.2, including established stormwater BMPs, are likely to limit any movement of contaminants or sediment and limit any indirect impacts.

Riparian areas would also be avoided to the greatest extent possible. Per the design features in Section 2.1.2, vegetation removal within riparian areas would be limited to selective removal of plants in a manner that protects biological resource as much as possible. Since the 100-year floodplain and potentially jurisdictional water bodies would be spanned by the proposed project, impacts to riparian areas would be minimal (SWCA 2015c).

Depth to groundwater in the project vicinity can be relatively shallow. There is also the potential to impact groundwater resources from construction activities, especially the excavation of holes for structure foundations. Section 2.1.2 includes a design feature for dewatering the construction area near streams and watercourses, if the need arises. Another potential impact could result from accidental spills or release of contaminants that could migrate to groundwater. The use of BMPs, and spill prevention, control, and cleanup procedures would minimize the risk of any impact to shallow groundwater resources, if they exist.

Cumulative Impacts

Impacts from past actions within the 2,359,693-acre CIAA include approximately 117,985 acres of surface-disturbing activities, including past construction of oil and gas well pads, access roads, transmission lines, and other linear features. Past actions account for soil disturbance on approximately 5% of the CIAA. Reclamation of some disturbed areas and use of BMPs for erosion control and stormwater events has reduced impacts to water resources by limiting sedimentation and controlling runoff.

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 5,040 acres of surface and vegetation disturbance within the CIAA, or 0.2% of the CIAA. Impacts to water resources would depend on the placement and type of surface disturbance, the type of soil and the hydrologic conditions within the individual project areas. Generally, soil erosion and sedimentation of local drainages would be expected to occur, especially when storm events occur during construction of the future actions. The subject projects would require BMPs and other mitigation to reduce these impacts. Together, past, present, and reasonably foreseeable surface and vegetation disturbance would total 121,460 acres (approximately 5.1% of the CIAA).

The Proposed Action would disturb an additional 2,661 acres, which is approximately 0.1% of the CIAA. This comprises an additional 2% to the past, present, and reasonably foreseeable surface disturbance identified above. This contribution would be localized and minimized from implementation of project design features and BMPs. Cumulative impacts to groundwater are difficult to estimate because, as with the Proposed Action, impacts to groundwater would occur from accidental spills during construction or operation that would reach the water table. BMPs would be in place for all projects considered for the cumulative impacts analysis; therefore, spills would be rare. If a spill did occur, response would be immediate, thereby reducing the likelihood of groundwater contamination.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

3.5 Upland Vegetation, Including Noxious Weeds

3.5.1 Affected Environment

The project area occurs within four EPA Level IV ecoregions (Griffith et al. 2006): Arid Llano Estacado, Shinnery Sands, Chihuahuan Desert Grasslands, and Chihuahuan Basin and Playas (Table 3.13).

Table 3.13. EPA Level IV Ecoregions Crossed by the Proposed Project

Level IV Ecoregion	Project Area (acres)
Chihuahuan Basin and Playas	1,273
Chihuahuan Desert Grasslands	763

Shinnery Sands	349
Arid Llano Estacado	276
Total	***2,661***

Arid Llano Estacado

The Arid Llano Estacado ecoregion is present along approximately 11 miles on the east end of the proposed project area. This ecoregion is drier than the main Llano Estacado region to the north. The ecoregion is a climate transitional area from the Chihuahuan Desert region to the southwest, and it has somewhat more broken topography and fewer playas than the plain to the north. Yearly precipitation is less due to a lack of winter precipitation and the absence of snow cover. Lack of precipitation in this region often causes a caliche layer closer to the surface, which increases the general drought condition of the soil.

The following dominant species were observed throughout the Arid Llano Estacado ecoregion habitat during the 2014–2015 biological surveys. The grasses seen include blue grama (*Bouteloua gracilis*), black grama (*B. eriopoda*), hairy grama (*B. hirsuta*), buffalograss (*B. dactyloides*), silver bluestem (*Bothriochloa saccharoides*), sand dropseed (*Sporobolus cryptandrus*), threeawn (*Aristida* sp.), Arizona cottontop (*Digitaria californica*), hairy tridens (*Erioneuron pilosum*), muhly (*Muhlenbergia* sp.), bottlebrush (*Callistemon* sp.), squirreltail (*Elymus elymoides*).Burrograss (*Scleropogon* sp.), threeawns, tobosagrass (*Pleuraphis mutica*), and broom snakeweed (*Gutierrezia sarothrae*) increase with grazing activities. The forbs seen include bush sunflower (*Encelia californica*), gray goldaster (*Heterotheca canescens*), dalea (*Dalea* sp.), sand sagebrush (*Artemisia filifolia*), and gayfeather (Liatris sp.). Mesquite, narrowleaf yucca (*Yucca angustissima*), juniper (*Juniperus* sp.), and ephedra (*Ephedra* sp.) compose invading shrub cover (Griffith et al. 2006). The majority of the land use is dominated by livestock grazing and oil and gas production activities are widespread throughout the ecoregion.

Shinnery Sands

The Shinnery Sands ecoregion is present along approximately 16 miles of the proposed project area between the Arid Llano Estacado and Chihuahuan Desert Grasslands ecoregions. This area includes sand hills and dunes, as well as flat sandy recharge areas. These sand beds lie at the western edge of the High Plains where rising winds drop heavier sand grains and carry finer material further east onto the flat expanse of the Llano Estacado. The ecoregion is named for the Havard (shinnery) oak (*Quercus havardii*) brush that stabilizes sandy areas subject to wind erosion. Although shinnery oak rarely grows higher than 4 feet, its extensive root system can reach over 50 feet through dune sand to reach water. The largest area of sand dunes, at the southwestern edge of the Llano Estacado, is composed of sands blown out of the Pecos River Basin against the Mescalero Escarpment of the Llano Estacado by prevailing southwesterly winds. These dunes serve as a major recharge area for the Pecos River.

Dominant species observed during the 2014–2015 biological surveys in the dune areas include shinnery oak, fourwing saltbush (*Atriplex canescens*), yucca (*Yucca* sp.), sand verbenas (*Abronia fragrans*), sunflowers (*Helianthus annuus*), fringed sagewort (*Artemisia frigida*), and hoary rosemary-mint (*Poliomintha incana*). Ephemeral ponds and swales between the dunes support rushes (*Juncus* sp.), sedges (*Carex* sp.), and sandbar willow (*Salix interior*) (Griffith et al. 2006). The Shinnery Sands are habitat for the LPC and DSL, two species that have exhibited significant population declines. The shrubs offer cover and shade for nesting LPCs, and shinnery oak acorns are a staple food source. The dunes are dominated by oil and gas production in patches throughout the shinnery sands ecoregion.

Chihuahuan Desert Grasslands

The Chihuahuan Desert Grassland ecoregion occurs along approximately 32 miles of the Hobbs to China Draw segment and the southern extent to Eddy to Kiowa near the new Kiowa Substation. The ecoregion is found in areas of fine-textured soils, such as silts and clays that have a higher water retention capacity than coarse-textured, rocky soil These grasslands are present in areas of somewhat higher annual precipitation (10–15 inches) than the Chihuahuan Basins and Playas ecoregion, such as elevated basins between mountain ranges, low mountain benches and plateau tops, and north-facing mountain slopes.

Chihuahuan Desert Grasslands were once more widespread, but heavy grazing in the late nineteenth and early twentieth centuries was unsustainable, and desert shrubs invaded where the grass cover became fragmented. In grassland areas with lower rainfall, areal coverage of grasses may be sparse, 10% or less. Some areas are now mostly shrubs as grasslands continue to decline due to erosion, drought, and climatic change.

Typical grasses of this ecoregion were observed during the 2014-2015 field surveys, such as black grama, blue grama, sideoats grama (*Bouteloua curtipendula*), dropseeds (*Sporobolus* sp.), bush muhly (*Muhlenbergia porteri*), and tobosagrass, with scattered creosote bush, prickly pear (*Opuntia* sp.), and cholla (*Cylindropuntia* sp.) (Griffith et al. 2006). Land use is dominated by livestock grazing, and oil and gas production activities are widespread throughout the Chihuahuan Desert Grasslands ecoregion.

Chihuahuan Basins and Playas

The Chihuahuan Basins and Playas ecoregion is the dominant habitat region present along the western portion of the project area, occurring along the majority of the Eddy to Kiowa line and approximately 31 miles of the Hobbs to China Draw line. Chihuahuan Basins and Playas include alluvial fans, internally drained basins, and river valleys mostly below 4,500 feet. The major Chihuahuan basins formed during tertiary basin and range tectonism when the Earth's crust stretched and fault collapse resulted in sediment-filled basins. These low elevation areas are some of the hottest and most arid habitats in the state. The playas and basin floors have saline or alkaline soils and areas of salt flats, dunes, and windblown sand.

Biologists observed the following dominant vegetation in this ecoregion: creosote bush, mesquite, tarbush (*Flourensia cernua*), fourwing saltbush, acacias (*Acacia* sp.), blue grama, and alkali sacaton (*Sporobolus airoides*). The vegetation observed along the project area is primarily comprised of mesquite, burrograss, narrowleaf yucca, silver bluestem, blue and black grama grasses, tobosagrass, spectacle pod (*Dimorphocarpa wislizeni*), and shinnery oak. Plant species recorded during the biological survey are listed in Appendix B. One state endangered and BLM sensitive plant species, Scheer's beehive cactus, was found in two locations along the route. No other special status plant species were observed.

Noxious Weeds

Class A or C noxious weeds were not observed at the time of the investigation (New Mexico Department of Agriculture 2009). One Class B noxious weed species, malta starthistle (*Centaurea melitensis*), was found along the north bank of the Black River. This infestation was small, consisting of several plants. Based on review the latest CFO geographic information system (GIS) data set (July 2015), no other noxious weed locations nor noxious weed treatment areas were identified along the proposed route. Table 3.14 lists the previously treated noxious weed areas within 0.5 mile of the proposed ROW.

Table 3.14. Existing Noxious Weed Treatment Areas within 0.5 mile of the Proposed ROW

Vegetation Code	Species Common Name	Size of Treatment Area
Noxious Weed Treatment Polygons		
CEME	Malta star thistle	63 acres
PEHA	African rue	73 acres
TASP	Salt cedar/tamarisk	84 acres
	Total Area	**220 acres**
Noxious Weed Treatment Lines		
CEME	Malta star thistle	133 miles
HAHE	Rayless goldenrod	4 miles
PEHA	African rue	265 miles
PRGL	Honey mesquite	2 miles
TASP	Salt cedar/tamarisk	2 miles
Unnamed	N/A	5 miles
	Total Length	**411 miles**

Species common name source: USDA PLANTS database (http://plants.usda.gov/java/)

3.5.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no new surface disturbance and no impacts to vegetation from the proposed project, because the ROWs would not be granted. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.5.3 Impacts from the Proposed Action

Direct and Indirect Impacts to Upland Vegetation, Including Noxious Weeds

Impacts to plant communities and habitats from the construction of the proposed project would include 2,661 acres of direct impacts from vegetation removal. Prior to construction, woody vegetation would be removed (such as creosote bush and mesquite) and chipped except in riparian areas. Following removal of woody vegetation, the full ROW would be mowed, except in dunes and hummocks, riparian areas, and other environmentally sensitive locations. If it becomes necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be removed selectively in a manner that protects biological resources as much as possible. Short-term impacts would occur from the vegetation removal activities during site preparation and would continue until revegetation of the project area by faster growing plants is achieved, which is estimated to be 2 years after construction.

After construction, the project area would be reclaimed following the BLM-approved reclamation plan (see Section 2.1.1) and using a BLM-prescribed seed mix. However, even after the proposed project area is revegetated, it is expected that the vegetation community within the ROW would be different than that outside the ROW because SPS vegetation management practices require permanent removal of woody vegetation except within riparian areas. Therefore the vegetation community within the ROW would be permanently shifted to predominantly grasses and forbs. In addition, the planting of non-native species may result in the introduction of those species into nearby natural areas. The establishment of mature native plant communities may require decades, and some community types may never fully recover from disturbance. Successful re-establishment of some habitat types, such as sand sagebrush communities, may be difficult and may require considerably greater periods of time. Woody species would be suppressed via herbicides so as not to encroach upon the transmission lines, and would therefore not be reestablished. Restoration of plant communities in areas with arid climates (e.g., averaging less than 9 inches of annual precipitation) would be especially difficult (Monsen et al. 2004).

Long-term, permanent impacts from the construction of the substations would result in 58 acres of vegetation loss as a result of the construction of the new Kiowa Substation and expansion of two additional substations. These impacts are expected to change the vegetation species composition, abundance, and distribution in and adjacent to the project area.

Indirect impacts to vegetation would occur as a result of deposition of fugitive dust generated during clearing and grading activities, the use of access roads, and from wind erosion of exposed soils. This could reduce photosynthesis and productivity, increase water loss (Eveling and Bataille 1984) in plants near the project area, and result in injury to leaves. Localized fugitive dust could be generated from the large areas of disturbed soil from foundation boring and blading associated with construction. Plant community composition could subsequently be altered, resulting in habitat degradation. Localized impacts on plant populations and communities could occur if seed production in some plant species is reduced. BMPs to control fugitive dust are incorporated into the project design features found in Section 2.1.2.

Any surface disturbance can increase the possibility of establishment of new populations of invasive, non-native species. Noxious weed seeds could be carried to and from the project area by construction equipment and transport vehicles. The spread of noxious weeds could occur during construction on the north bank of the Black River, where a small population of malta starthistle has been documented. However, it is expected that this infestation would be treated with herbicide prior to construction as SPS has enrolled in the Eddy and Lea Counties noxious weed programs. Several previously treated noxious weed areas occur within 0.5 mile of the proposed ROW (see Table 3.14). African rue, saltcedar,

goldenrod, malta starthistle, and mesquite have been the targets of the ongoing weed treatments. BMPs to prevent the spread and new propagation of invasive, non-native species are incorporated into the project design are listed in Section 2.1.2.

Cumulative Impacts

Impacts from past actions within the 2,359,693-acre CIAA include approximately 117,985 acres of surface-disturbing activities, including past construction of oil and gas well pads, access roads, transmission lines, and other linear features. Past actions account for surface disturbance and vegetation removal on approximately 5% of the CIAA. The loss of vegetation results in a reduction of stable ground cover, which can encourage the growth of non-native and invasive weeds in the CIAA. Reclamation of some disturbed areas and use of BMPs, such as reseeding construction areas, has reduced impacts to vegetation.

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 5,040 acres of surface and vegetation disturbance within the CIAA, or 0.2% of the CIAA. Impacts to vegetation would depend on the placement and type of surface disturbance and the plant species present within the individual project areas. Generally, native vegetation loss and the spread of noxious weeds would be expected to occur, especially during construction of the present and future actions. The subject projects would require BMPs and other mitigation to reduce these impacts. In time, the reclaimed and seeded areas would result in stable plant communities with densities that are similar to the pre-disturbance plant densities, although species composition may not be similar to pre-disturbance conditions. Together, past, present, and reasonably foreseeable surface and vegetation disturbance would total 121,460 acres (approximately 5.1% of the CIAA).

The Proposed Action would disturb an additional 2,661 acres, which is approximately 0.1% of the CIAA. This comprises an additional 2% to the past, present, and reasonably foreseeable surface and vegetation disturbance identified above. This contribution would be localized and minimized from implementation of project design features and BMPs.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

3.6 Wildlife and Special Status Species

3.6.1 Affected Environment

The project area falls within four EPA Level IV ecoregions: Arid Llano Estacado, Shinnery Sands, Chihuahuan Desert Grasslands, and Chihuahuan Basins and Playas (Griffith et al. 2006), all of which provide habitat for a variety of wildlife species. The BLM CFO RMPA contains a description of wildlife species that are found within the planning area (BLM 2008a). One of the BLM CFO wildlife management objectives is to manage habitats on public land for the conservation and rehabilitation of fish, wildlife, and plant resources consistent with multiple use management principles (BLM 2008a).

Biological field surveys of the project were conducted over several months from October 2014 to August 2015. Biologists detected 42 bird species, nine mammals, and four reptiles (Table 3.15). Three special status species or their sign were observed (denoted in bold). A full description of the biological survey and effects analysis is found in the BA (SWCA 2015a).

Table 3.15. Wildlife Observed during the Biological Survey

Common Name	Scientific Name
Birds	
American kestrel[1]	*Falco sparverius*
Ash-throated flycatcher[1]	*Myiarchus cinerascens*
Barn owl[1]	*Tyto alba*
Barn swallow[1]	*Hirundo rustica*

Common Name	Scientific Name
Brewer's blackbird[1]	*Euphagus cyanocephalus*
Brewer's sparrow[1]	*Spizella breweri*
Burrowing owl[1, 2, 3]	*Athene cunicularia*
Cactus wren[1]	*Campylorhynchus brunneicapillus*
Canyon towhee[1]	*Pipilo fuscus*
Chihuahuan raven[1]	*Corvus cryptoleucus*
Chipping sparrow[1]	*Spizella passerina*
Clay colored sparrow[1]	*Spizella pallida*
Common raven[1]	*Corvus corax*
Crissal thrasher[1]	*Toxostoma crissale*
Curve-billed thrasher[1]	*Toxostoma curvirostre*
Eastern meadowlark[1]	*Sturnella magna*
Gadwall[1, 2]	*Anas strepera*
Great-tailed grackle[1]	*Quiscalus mexicanus*
Greater roadrunner[1, 2]	*Geococcyx californianus*
Green-tailed towhee[1]	*Pipilo chlorurus*
Harris's hawk[1]	*Parabuteo unicinctus*
House finch[1]	*Haemorhous mexicanus*
House wren[1]	*Troglodytes aedon*
Ladder-backed woodpecker[1]	*Picoides scalaris*
Lark bunting[1]	*Calamospiza melanocorys*
Lark sparrow[1]	*Chondestes grammacus*
Loggerhead shrike[1, 2]	*Lanius ludovicianus*
Mourning dove[1]	*Zenaida macroura*
Northern bobwhite[1]	*Colinus virginianus*
Northern mockingbird[1]	*Mimus polyglottos*
Pyrrhuloxia[1]	*Cardinalis sinuatus*
Red-tailed hawk[1]	*Buteo jamaicensis*
Sage sparrow[1]	*Amphispiza belli*
Say's phoebe[1]	*Sayornis saya*
Scaled quail[1]	*Callipepla squamata*
Spotted towhee[1]	*Pipilo maculatus*
Sprague's pipit[1]	*Anthus spragueii*
Vesper sparrow[1]	*Pooecetes gramineus*
Western meadowlark[1]	*Sturnella neglecta*
White-crowned sparrow[1]	*Zonotrichia leucophrys*
White-throated sparrow[1]	*Zonotrichia albicollis*
Yellow-rumped warbler[1]	*Setophaga coronata*
Mammals	
Domestic cattle[1]	*Bos* spp.
Cottontail rabbit[1]	*Sylvilagus* sp.
Coyote[1]	*Canis latrans*
Jackrabbit[1]	*Lepus californicus*
Javelina[3]	*Pecari tajacu*
Kangaroo rat[2]	*Dipodomys* sp.
Mule deer[1]	*Odocoileus hemionus*
Pronghorn[1]	*Antilocapra americana*
Wood rat[2]	*Neotoma* sp.
Reptiles	
Common side-blotched lizard[1]	*Uta stansburiana*
Unknown spiny lizard[1]	*Sceloporus* sp.
Ornate box turtle[1]	*Terrapene ornate*

Common Name	Scientific Name
New Mexico whiptail lizard[1]	*Cnemidophorus* sp.

Note: [1]Direct observation; [2] mounds and/or nests; [3] tracks and/or scats; [4] carcass/shell.

Besides mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), javelina (*Pecari tajacu*), and scaled quail (*Callipepla squamata*), other game species that have the potential to occur in and around the project area include Montezuma quail (*Cyrtonyx montezumae*). Furbearer game species likely to occur in the project area include badger (*Taxidea taxus*), long-tailed weasel (*Mustela frenata*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), ringtail (*Bassariscus astutus*), and bobcat (*Lynx rufus*) (Findley et al. 1975; Frey 2004).

An abundance of non-game species is also known to occur within the CFO's jurisdiction, including mammals, reptiles, amphibians, raptors, and neotropical migrant bird species not discussed above. Due to the range of habitats present within the project area, such species are numerous and diverse. Non-game mammals with the potential to occur in the project area include desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), and a variety of small mammals (*Order Rodentia*). Numerous bat species are also known to occur in the surrounding area, including big brown bat (*Eptesicus fuscus pallidus*), California myotis bat (*Myotis californicus*), western small-footed myotis bat (*M. ciliolabrum melanorhinus*), Mexican free-tailed bat (*Tadarida brasiliensis*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), hoary bat (*Lasiurus cinereus*), eastern red bat (*L. borealis*), pallid bat (*Antrozous pallidus*), and western pipistrelle bat (*Pipistrellus hesperus*) (Findley et al. 1975; Frey 2004).

Reptiles and amphibians with the potential to occur in the project area include, but are not limited to, western diamondback rattlesnake (*Crotalus atrox*), coachwhip (*Coluber flagellum*), desert kingsnake (*Lampropeltis getula*), bullsnake (*Pituophis catenifer*), Texas horned lizard, common side-blotched lizard (*Uta stansburana*), checkered whiptail (*Aspidoscelis tesselata*), collared lizard (*Crytaphytus collaris*), ornate box turtle (*Terrapene ornata*), Great Plains toad (*Anaxyrus cognatus*), Mexican spadefoot (*Spea multiplicata*), Couch's spadefoot (*Scaphiopus couchii*), and eastern tiger salamander (*Ambystoma tigrinum*) (Degenhardt et al. 1996; Stebbins 2003).

Migratory Birds

EO 13186, dated January 17, 2001, calls for increased efforts to more fully implement the MBTA. The federal MBTA prohibits the taking, hunting, killing, selling, purchasing, etc., of migratory birds, parts of migratory birds, or their eggs and nests. Most bird species native to North America are covered by the MBTA.

Numerous bird species, as well as active and inactive passerine, burrowing owl, and raptor nests, were observed during the biological field surveys (see Table 3.15). Most of these species occur in southern New Mexico during the breeding season and may nest on the ground or in shrubs documented in the project area. Raptor nests were primarily found on exiting transmission and distribution line structures.

Raptor species with the potential to occur in the project area include, but are not limited to, golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), Swainson's hawk (*B. swainsoni*), red-tailed hawk (*B. jamaicensis*), rough-legged hawk (*B. lagopus*), bald eagles (*Haliaeetus leucocephalus*), Harris's hawk (*Parabuteo unicinctus*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), barn owl (*Tyto alba*), burrowing owl, great horned owl (*Bubo virginianus*), western screech owl (*Otus kennicotti*), American kestrel (*Falco sparverius*), and prairie falcon (*F. mexicanus*). Burrowing owls, as well as an active burrowing owl burrow, were observed in the project area.

Bald and Golden Eagles

Bald eagles and golden eagles are protected under the Bald and Golden Eagle Protection Act and the MBTA. In New Mexico the bald eagle is found typically in association with water and nests only at a few undisclosed locations along lakes or streams in the northern and western portions of the state (Stahlecker and Walker 2010). The golden eagle nests primarily on rock ledges or cliffs, less often in large trees at

elevations ranging from 4,000 to 10,000 feet and is typically found in mountainous regions of open country, prairies, arctic and alpine tundra, open wooded areas, and barren areas. Both bald and golden eagles are carnivores. In New Mexico, bald eagles prey on fish but also on mammals, especially prairie dogs (*Cynomys* sp.). Golden eagles feed mainly on small mammals, as well as invertebrates, carrion, and other wildlife (Biota Information System of New Mexico [BISON-M] 2015). No bald or golden eagles were observed during the biological survey. Suitable foraging and marginal nesting habitat for bald eagles is present along the Pecos River. Golden eagles may occur in the project area outside the breeding season when they can perch on utility poles far from cliffs and other rugged terrain.

Special Status Species

The special status species evaluated in this EA are described in the BA (SWCA 2015a) and consist of 1) all federally protected (i.e., endangered and threatened) species, 2) additional species listed by the USFWS as candidate and proposed and species under review (USFWS 2015b), 3) state-listed endangered and threatened species (BISON-M 2015), and 4) BLM sensitive species, some of which are also listed as candidates or are under the review by the USFWS and/or are state listed. The BLM manages certain sensitive species that are not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. The authority for this policy and guidance is established by the ESA, as amended; Title II of the Sikes Act, as amended; FLPMA; and Department of the Interior Manual 235.1.1A.

Based on the biological survey conducted in the project area and additional biological research, 14 special status species have the potential to occur in the project area (Table 3.16). Of these special status species, loggerhead shrike (*Lanius ludovicianus*), Sprague's pipit (*Anthus spragueii*), and burrowing owl were observed during the field survey of the project area.

Table 3.16. Special Status Species with the Potential to Occur in the Project Area

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Plants			
Scheer's beehive cactus (*Coryphantha robustispina* var. *scheeri*)	State E BLM Sensitive	Typically associated with gravelly or silty soil in desert grassland and Chihuahuan desert scrub. May also be found on rocky benches or bajadas on limestone or gypsum; the elevation range of this cactus is 3,300–3,600 feet.	Individuals of this species were observed during field surveys.
Reptiles			
Texas horned lizard (*Phrynosoma cornutum*)	BLM Sensitive	Inhabits arid and semiarid areas in the southwestern United States, characterized by open country with little vegetation. These areas often consist of grasses interspersed with cacti, yucca, mesquite, and other assorted woody shrubs and trees. In New Mexico, the species is associated with *Yucca-Prosopis-Ephedra* and *Larrea-Acacia-Fouquieria* associations often in playas or on bajadas and mountain foothills.	May occur. Open mesquite associations within the project area represent suitable habitat for the species.

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Dunes sagebrush lizard (*Sceloporus arenicolus*)	State E BLM Sensitive	A habitat specialist native to the shinnery oak sand dune habitats extending from the San Juan Mesa in northeastern Chaves County, Roosevelt County, and through eastern Eddy and southern Lea Counties. DSLs have an extremely strong affinity for bowl-shaped depressions in active dune complexes referred to as sand dune blowouts. They prefer relatively large blowouts and select microhabitat within a given blowout. Within their geographic range, the presence of the DSL is also associated with composition of the sand; they only occur at sites with relatively coarse sand.	May occur. Shinnery oak sand dune habitat occurs in the project area. Portions of project are within the known distribution area for the DSL.
Birds			
Aplomado falcon (*Falco femoralis septentrionalis*)	USFWS ENEP State E	Associated with semi-desert grasslands with scattered yuccas, mesquite, and cactus. Naturally occurring populations are essentially restricted to the southern tier of New Mexico. The species has also been reintroduced on the Armendaris Ranch in Socorro and Sierra Counties and on lands administered by the BLM, White Sands Missile Range, and the SLO beginning in 2006.	May occur in the project area. Aplomado falcons occur in open country in southern New Mexico. Utility poles in the project area offer hunting perches.
Bald eagle (*Haliaeetus leucocephalus alascanus*)	State T BLM Sensitive	Occurs in New Mexico year-round. Breeding is restricted to a few areas mainly in the northern part of the state along or near lakes. In migration and during winter months the species is found chiefly along or near rivers and streams and in grasslands associated with large prairie dog colonies. Typically perches in trees.	May occur as a migrant along the Pecos and Black Rivers.
Burrowing owl (*Athene cunicularia hypugaea*)	BLM Sensitive	Present mainly during the breeding season in the northern half of the state and present year-round in the southern half. Found in grasslands especially in association with prairie dog colonies, in desert scrub, and in agricultural and semi-urban environments. Depends on prairie dogs, rock squirrels (*Otospermophilus variegatus*), and other fossorial mammals for the availability of burrows.	May occur due to grassland and desert scrub vegetation in the project area. Species was observed during surveys.
Common ground dove (*Columbina passerina pallescens*)	State E	Associated with shrubby riparian habitat or riparian woodland edges. Also occurs in desert scrub dominated by mesquite or creosote. Feeds exclusively on the ground, in sparsely vegetated areas.	May occur in the project area due to the presence of mesquite-dominated desert scrub.

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Ferruginous hawk (*Buteo regalis*)	BLM Sensitive	Occurs year-round in New Mexico. During the breeding season it is present in grasslands, badlands, and along the ecotone between grasslands and piñon-juniper woodlands, especially in the vicinity of prairie dog towns. During the winter, ferruginous hawks are primarily associated with grasslands but may be found in other habitat types such as ponderosa pine (*Pinus ponderosa*) forest. Prairie dogs are important year-round in the diet of New Mexico's ferruginous hawks.	May occur in open vegetation habitat in the project area. Utility poles in the project area offer hunting perches.
Lesser prairie-chicken (*Tympanuchus pallidicinctus*)	BLM Sensitive	The LPC occurs in southeastern New Mexico primarily in shinnery oak or sand sagebrush grasslands. Also occurs in shinnery oak-bluestem habitats dominated by sand bluestem (*Andropogon hallii*), little bluestem (*Schizachyrium scoparium*), sand dropseed, threeawn, and blue grama.	Portions of the project area lie within a BLM designated management area for this species. May occur in grassland and dune habitat within the project area.
Loggerhead shrike (*Lanius ludovicianus*)	BLM Sensitive	The loggerhead shrike is a year-round resident in New Mexico and is found throughout the state primarily in open country, including grasslands, improved pastures, hayfields, shrub steppe, and desert scrub, as well as piñon-juniper woodland and woodland edges.	May occur. The project area contains thorny desert scrub habitat preferred by the species.
Neotropic cormorant (*Phalacrocorax brasilianus*)	State T	Associated with wetlands. Key requirements include areas of deep water for diving and elevated perches in trees, shrubs, and other structures for nesting, roosting, and drying plumage after feeding.	May occur. The Pecos River provides an adequate food source for the species. The project area lacks large, mature trees for roosting and nesting.
Peregrine falcon (*Falco peregrinus*)	State T	Found in New Mexico year-round. All nests in New Mexico are found on cliffs. In migration and during winter months New Mexico's peregrine falcons are typically associated with water and large wetlands.	May utilize areas along the Pecos and Black Rivers for foraging.
Sprague's pipit (*Anthus spragueii*)	USFWS C BLM Sensitive	Occurs in New Mexico only as a sporadic winter resident. Its distribution in the state is not well known, but includes the lower Pecos River valley, Otero Mesa, and the Animas Valley. It is associated with southern desert grasslands of the state. The species as a whole prefers dry, open grasslands.	Observed during surveys and could occur in grasslands of the project area during winter.
Varied bunting (*Passerina versicolor versicolor*)	State T	This species is associated with desert canyons, thorn-scrub and riparian edge habitats within the extreme southern portion of New Mexico. A small breeding population has been located in canyons of Carlsbad Caverns National Park. Prefers nesting along washes or on slopes of dense shrubby vegetation.	May occur in desert scrub habitat present in the project area.

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area

* Federal (USFWS) status definitions:

E = **Endangered.** Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

T = **Threatened.** Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA specifically prohibits the take (see definition above) of a species listed as threatened.

C = Candidate. Any species (taxon) for which the USFWS has sufficient information to propose that it be added to the list of endangered and threatened species, but the listing action has been precluded by other, higher priority listing activities.

ENEP = Experimental, Non-essential Population. Any reintroduced population established outside the species' current range, but within its historical distribution. For purposes of Section 7 consultation, experimental, non-essential populations are treated as proposed species (species proposed in the *Federal Register* for listing under Section 4 of the ESA), except on national wildlife refuges and national parks, where they are treated instead as threatened.

w/CH = with Critical Habitat. Critical habitat corresponds to specific areas within the geographical area occupied by the species at the time of listing, with physical or biological features essential to the species' conservation and requiring special management considerations or protection.

* State status definitions:

E = **Endangered.** Any species that is considered by the State of New Mexico (New Mexico Department of Game and Fish for wildlife, Forestry and Resources Conservation Division for plants) as being in jeopardy of extinction or extirpation from the state.

T = **Threatened.** Any species that, in the view of the State of New Mexico, is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico.

Note: A no effect determination is defined based on recommendations by the USFWS.

Except where otherwise noted, range or habitat information for wildlife species is taken from the BISON-M website (BISON-M 2015), the USFWS New Mexico Southwest Region Ecological Services Field Office (USFWS 2015b), the New Mexico Forestry Division (2006), Cartron (2010), and the New Mexico Rare Plant Technical Council (1999).

3.6.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no impacts to wildlife, migratory birds, or special status species because the ROW would not be granted and no ground disturbance or noise related to construction and operations would occur. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.6.3 Impacts from the Proposed Action

Direct and Indirect Impacts

General Wildlife

Impacts to wildlife would result from actions that alter wildlife habitats, including changes to habitat and disturbance. Altering wildlife habitat in ways that would be considered adverse may occur directly (through habitat loss from surface disturbance) or indirectly (through the reduction in habitat quality caused by increased noise levels and increased human activity).

Construction of the transmission line, access roads, and substations would result in approximately 2,661 acres of temporary, direct surface disturbance and habitat removal. Additional short-term impacts may include displacement of wildlife during construction activities or exposure of wildlife to hazards such as entrapment in foundation holes and collisions with project-related vehicle traffic. Construction noise would also indirectly impact wildlife. Infrequent, abrupt, and unpredictable noise could be perceived as threats and cause wildlife to flee or hide, which could impact individual survival and fitness (Francis and Barber 2013).

Long-term, direct impacts to wildlife include the permanent removal of approximately 58 acres of habitat for substation construction and expansion activities.

After construction, the project area would be reclaimed with a BLM-prescribed seed mix. Reclamation of the disturbed ROW is expected to return those affected areas to herbaceous production within 2 years after construction, depending on drought conditions. In some areas, restoration may potentially include plant species that are not locally native or plant communities different from local native communities because SPS vegetation management practices require permanent removal of woody vegetation except within riparian areas. Although the replanting of disturbed soils may successfully establish vegetation in some locations (i.e., with a biomass and species richness similar to those of local native communities), the resulting plant community is expected to be quite different from native communities in terms of species composition and representation of particular vegetation types, predominantly grasses and forbs.

In addition, the planting of non-native species may result in the introduction of those species into nearby natural areas. The establishment of mature native plant communities may require decades, and some community types may never fully recover from disturbance. Successful re-establishment of some habitat types, such as shinnery oak and sand sagebrush communities, may be difficult and may require considerably greater periods of time. As a result, reclamation of the project area could have a long-term impact to wildlife by modifying the habitat within and adjacent to the project area. The change in vegetative species composition may modify cover and foraging opportunities for wildlife.

Migratory Birds

Short-term impacts to migratory birds include displacement from the project area until vegetation has become re-established within the ROW. No long-term impacts to migratory birds are anticipated from the implementation of the proposed project. If possible, vegetation removal, or treatment with herbicides during maintenance every four years, would be scheduled outside the migratory breeding bird season (March–August). Any vegetation removal during the breeding bird season would be preceded by pre-removal nesting surveys to identify occupied nests. Active nests would be avoided until the young have fledged to prevent impacts to species protected under the MBTA. Plant communities present in the project area are widespread elsewhere and many birds occurring locally would likely move into adjacent habitats in response to temporary habitat loss from 2,661 acres of temporary construction-related surface disturbance and 58 acres of permanent upland vegetation loss for the new Kiowa substation and additional substation expansions.

Burrowing owls and an active nest burrow were observed during the field surveys. These birds are protected by the MBTA and are designated sensitive by the BLM. Pre-construction surveys would establish the occupancy status of suitable burrows detected within the project area. A 200-meter avoidance buffer would be established around all occupied burrowing owl burrows.

Activities in the survey area are not expected to impact bald and golden eagles. No bald or golden eagles were observed during the field survey, and eagles that may occur in the survey area likely would not be disturbed. Golden eagles may occur in the project area, especially outside the breeding season when they can perch on utility poles far from cliffs and other rugged terrain. However, their presence would likely be of short duration and nesting within or adjacent to the project area would be unlikely. Active raptor nests would be subject to 200-meter construction setbacks during active nesting. Raptor nests (except for bald and golden eagle nests) within 200 meters of the construction ROW that are found to be inactive during pre-clearing nest surveys may be subject to removal. Section 2.1.2 includes measures to minimize impacts to migratory birds including the installation of bird flight diverters on the lines crossing the Pecos and Black rivers.

Special Status Species

Special status species with the potential to occur in the project area were evaluated for possible impacts from the proposed project. However, effect determination categories are written differently based on the legal status of a species and the responsibilities of the agency tasked to manage or protect that species. The aplomado falcon is listed as a federal experimental, non-essential population, and is the only federally protected species identified as likely to occur within the project area.

Impact determinations for all other species (USFWS candidate, BLM sensitive, species under federal review, and state-listed species that are not federally threatened or endangered) were evaluated for possible impacts as follows.

- *Beneficial impact*—the project is likely to benefit the species, whether it is currently present or not, by creating or enhancing habitat elements known to be used by the species.
- *May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability*—the project is not likely to adversely impact a species if 1) the species may occur but its presence has not been documented, and 2) project activities would not result in disturbance to areas or habitat elements known to be used by the species.
- *May impact individuals or habitat and is likely to result in a trend toward federal listing or loss of viability*—the project is likely to adversely impact a species if 1) the species is known to occur in the project area, and 2) project activities would disturb areas or habitat elements known to be used by the species or would directly affect an individual.

Scheer's Beehive Cactus (*Coryphantha robustispina* var. *scheeri*)

Scheer's beehive cactus is a state endangered plant and a BLM sensitive species. The cactus is found at a limited number of locations in Arizona, New Mexico, Texas, and possibly Mexico (New Mexico Rare Plant Technical Council 1999). Primary threats to Scheer's beehive cactus include cattle grazing and trampling, and oil and gas development.

Scheer's beehive cactus could potentially occur throughout the project area, and two were observed during the biological surveys. The BLM, with assistance from the local native plant society, has transplanted the Scheer's cactus to an area outside the ROW. Vegetation removal and ground-disturbing activities may impact cactus habitat within the ROW or individual cactus undetectable during the survey. Exposed soils would be reclaimed following construction. The status of Scheer's beehive cactus in southern New Mexico is unlikely to be affected by the construction and maintenance of the proposed project, and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Dunes Sagebrush Lizard (*Sceloporus arenicolus*)

The DSL is a state-listed endangered species. Suitable habitat for this species consists of shinnery oak sand dune habitat. Suitable habitat also consists of scattered patches of open sand called "blowouts" that are present in areas where the sand dunes are well developed. The DSL has been found to be closely associated with sand dune blowouts, patches of bare open sand that form from wind erosion along the bases of tall dune crests (Fitzgerald et al. 1997). Threats to the DSL include the fragmentation and loss of shinnery oak dune habitat as a result of disturbance and herbicide application.

Approximately 8 miles of the project traverses through the known distribution area for the DSL. Approximately 120 acres of the proposed project area is located within the DSL distribution area. Potential impacts to the DSL include temporary disturbance of individuals and temporary localized habitat loss during construction. To minimize potential impacts to occupied DSL habitat, SPS sited the route within 0.5 mile of U.S. Highway 62/180 and other existing ROW easements to the extent feasible. SPS has coordinated with the BLM throughout the planning process to develop a route that avoids dunes known to be occupied by DSL, thereby minimizing the impact to DSL to the fullest extent feasible. Disturbance to dunes and hummocks would be minimized to the extent feasible and reclaimed following construction. BMPs for DSL would be adhered to while digging foundation holes (BLM 2008a). No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause

a loss of viability to the population or species. Overall, no long-term impacts are anticipated to the DSL or its habitat.

Texas Horned Lizard (*Phrynosoma cornutum*)

The Texas horned lizard is a BLM sensitive species. Threats to the Texas horned lizard include habitat loss from destruction and fragmentation, commercial collection, chemical spraying of non-native vegetation, and red fire ant (*Solenopsis invicta*) introduction (Degenhardt et al. 1996; Jones and Lovich 2009).

The project area is characterized by suitable habitat for the species. No Texas horned lizards were observed during the biological surveys of the project area. If Texas horned lizards are present in the project area during construction, they could avoid the disturbance by moving to adjacent habitat. The proposed project is not likely to adversely impact this species. Per Section 2.1.2, all personnel working on the construction of the proposed project would be instructed to avoid intentionally harassing all animals. Following BMPs to minimize the duration and extent of open holes would reduce potential for accidental Texas horned lizard mortality resulting from entrapment. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Aplomado Falcon (*Falco femoralis septentrionalis*)

The aplomado falcon is currently listed as a state endangered species and a federal experimental, non-essential population in New Mexico (Cartron 2010). Currently in New Mexico the aplomado falcon is restricted to the southwestern portion of the state and is a year-round resident. Threats to the aplomado falcon include habitat loss from brush encroachment, drought, grazing, and energy development, as well as pesticide contamination.

The project area is within the known distribution of the species, and provides suitable foraging habitat of mesquite shrubs and sparse yuccas with a sparse grass understory, as well as the presence of utility poles, used for hunting perches. Suitable nesting habitat for this species is not present in the project area. No aplomado falcons were observed during the biological surveys of the project area. Impacts to any aplomado falcons present in the general area of the project are possible in the form of noise disturbance, but such impacts would be minimal and temporary. No long-term impacts to the aplomado falcon or its habitat are anticipated. The proposed project may affect, is not likely to adversely affect the aplomado falcon.

Bald Eagle (*Haliaeetus leucocephalus alascanus*)

The bald eagle is listed as threatened by the State of New Mexico and sensitive by the BLM. Primary threats to the species include degradation of habitat and lead poisoning from the ingestion of wounded waterfowl. Bald eagles have the potential to forage in the project area or be present during migration.

Potential impacts to bald eagles could include temporary disturbance of individuals during construction. Per the project design features described in Section 2.1.2, construction during the migratory bird season (March–August) would be preceded by nesting bird surveys to identify the possibility of eagles nesting in the project area and establish avoidance buffers around any occupied nesting sites. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Overall, no long-term impacts are anticipated to the bald eagle or its habitat.

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is protected under the MBTA. It is also a BLM sensitive species. Primary threats to the species consist chiefly of prairie grassland habitat loss and fragmentation, human-caused mortality on wintering grounds and during migration, and the loss of colonial sciurids such as prairie dogs.

Burrowing owls were observed in the vicinity of the project area during the biological surveys. Suitable nesting burrows were observed in the project area, including one active burrowing owl burrow. Most of

these burrows appeared to be of leporine, hare or rabbit, origin. No prairie dog colonies, extant or historic, were identified within the project area. Potential impacts to burrowing owls could range from temporary disturbance to loss of burrows.

Potential impacts to burrowing owls could include temporary disturbance of individuals during construction. Per Section 2.1.2, construction and vegetation treatments conducted during the migratory bird season (March–August) would be preceded by nesting bird surveys to identify the possibility of burrowing owls nesting in the project area and establish avoidance buffers around any occupied nesting sites. The proposed project may impact individuals or habitat, but likely would not contribute to a trend toward federal listing or cause a loss of viability to the population or species. Overall, no long-term impacts are anticipated to the burrowing owl or its habitat.

Common Ground Dove (*Columbina passerina pallescens*)

The common ground dove is a State of New Mexico–listed endangered species and is also protected under the MBTA. In New Mexico, this species prefers shrubby riparian habitat or edges of riparian woodlands; it also occurs in desert shrub dominated by mesquite or cholla, and in abandoned agricultural fields with tall weeds. Common ground doves feed exclusively on the ground, in sparsely vegetated areas (New Mexico Partners in Flight [NMPIF] 2015).

Potential impacts to common ground doves could include temporary disturbance of individuals. SPS would not remove woody vegetation in riparian areas as part of preparing the ROW for construction. If it is necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be selectively removed. Per the project design features described in Section 2.1.2, construction and vegetation treatments conducted during the migratory bird season (March–August) would be preceded by nesting bird surveys to identify the possibility of common ground doves nesting in the project area and establish avoidance buffers around any occupied nesting sites. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Overall, no long-term impacts are anticipated to the common ground dove or its habitat.

Ferruginous Hawk (*Buteo regalis*)

The ferruginous hawk is designated as a BLM sensitive species. In southern New Mexico the species is primarily a winter resident. Primary threats to the species consist primarily of loss of quality habitat (Cartron et al. 2010).

No ferruginous hawks were observed in the vicinity of the project area during the field surveys. The project area represents marginal habitat for the ferruginous hawk. Any impacts to ferruginous hawks would likely be in the form of noise disturbance only and ferruginous hawks present in or near the project area would relocate to a nearby area with similar habitat. Per Section 2.1.2, construction and vegetation treatments conducted during the migratory bird season (March–August) would be preceded by nesting bird surveys to identify the possibility of ferruginous hawks nesting in the project area. No long-term impacts to the ferruginous hawk or its habitat are anticipated from the proposed project. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*)

As of September 2, 2015, the lesser prairie-chicken was removed from listing under the ESA (U.S. District Court, Western District of Texas 2015). However, this species is still a BLM sensitive species. Preliminary data over 2 years show that inactive lek sites are exposed to higher ambient sound levels than active sites (Hunt and Best 2002). The same study also reports a significantly higher number of operating wells within 1 mile of inactive than active lek sites (NMPIF 2015). A growing body of evidence suggests that LPCs actively avoid areas of human activity, noise, and proximity to vertical elements (such as trees or power poles), particularly during nesting (Robel et al. 2004; NMPIF 2015). Predation on nests, chicks, and adult birds is by far the largest source of mortality for this species (NMPIF 2015). The introduction of trees, power lines, or other vertical structures into prairie habitats provides hunting perches

for raptors and may indirectly increase raptor predation on LPCs (Bidwell et al. 2002). Fences and power lines may also be a significant cause of direct mortality by collision (Bidwell et al. 2002).

The project area lies within the IPA, a special status species RMPA zoning area established by the BLM for the LPC (BLM 2008a). Approximately 23.5 miles of the IPA are crossed by the project. To minimize potential impacts to LPC within the IPA boundary, SPS sited the route within 0.5 mile of U.S. Highway 62/180 to the extent feasible.

LPC lek surveys were conducted along the proposed route. No LPCs or indicators of this species (e.g., tracks, scat, feathers) were detected during biological surveys performed in 2015.

The proposed project includes design features specifically for LPCs (see Section 2.1.2). Short-term impacts to LPCs potentially present in the general area of the project are possible in the form of construction-related noise disturbance. SPS has coordinated with the BLM throughout the planning process to develop a route that minimizes surface disturbance in the project area and avoids crossing through any Habitat Evaluation Areas for LPC. Long-term impacts to LPCs would result from fragmentation of potential habitat, as well as creation of new nesting and perching opportunities in some areas; however, SPS has sited the route along corridors of existing disturbance to the extent feasible. Therefore, new impacts to suitable LPC habitat along the project route are not expected.

Impacts to LPCs potentially present in the vicinity of the project are possible in the form of construction-related noise disturbance, but such impacts would be temporary. Any LPCs present locally during construction activities would likely move to adjacent suitable habitat. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is designated as a BLM sensitive species. The loggerhead shrike is known to occur within the vicinity of the project area, and suitable thorny shrub habitat is present. The species was observed during the biological surveys.

Per Section 2.1.2, construction and vegetation treatments conducted during the migratory bird season (March–August) would be preceded by nesting bird surveys to identify the possibility of loggerhead shrikes nesting in the project area and establish avoidance buffers around any occupied nests until the young have fledged. Disturbance of loggerhead shrikes or their habitat would be temporary. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Neotropic Cormorant (*Phalacrocorax brasilianus*)

Neotropic cormorant is a threatened species in the State of New Mexico and is also protected under the MBTA. Neotropic cormorants are known to occur along the Pecos River. This species could forage, roost, or nest within the project area; however, human activity in the surrounding area is high.

Potential impacts to neotropic cormorants could range from temporary disturbance of individuals during construction to loss of nesting habitat. Per the project design features described in Section 2.1.2, construction and vegetation treatments conducted during the migratory bird season (March–August) would be preceded by nesting bird surveys to identify the possibility of neotropic cormorant nesting in the project area and establish avoidance buffers around any occupied nesting sites. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Overall, no long-term impacts are anticipated to the neotropic cormorant or its habitat.

Peregrine Falcon (*Falco peregrinus*)

The peregrine falcon is a State of New Mexico threatened species and is protected under the MBTA. It has recovered from low populations brought on by organochloride pesticide contaminations that resulted

in thin egg shells and low brood success (NMPIF 2015). Preferred habitat is montane and canyon areas, and nesting usually occurs on cliffs. The species may nest on human-made structures, such as towers or tall buildings (NMPIF 2015). The species may pass through the project as a migrant following the Pecos River.

Potential impacts to peregrine falcons could include temporary disturbance of individuals during construction. Per the project design features described in Section 2.1.2, construction and vegetation treatments conducted during the migratory bird season (March–August) would be preceded by nesting bird surveys to identify the possibility of raptors nesting in the project area and establish avoidance buffers around any occupied nesting sites. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Overall, no long-term impacts are anticipated to the peregrine falcon or its habitat.

Sprague's Pipit (*Anthus spragueii*)

Sprague's pipit is listed as a candidate species by USFWS, and is also protected under the MBTA. The species prefers open native grassland. Primary threats to Sprague's pipit consist chiefly consist of habitat conversion to agricultural use. This species occurs in New Mexico during winter and migration. It does not breed in the state. One Sprague's pipit was observed during biological surveys.

Potential impacts to Sprague's pipit could range from temporary disturbance of individuals during construction to loss of foraging habitat. Per the project design features described in Section 2.1.2, the seed mixture quantity for 1 mile along the Eddy–-Kiowa route in Section 12 would be doubled during reclamation of disturbed areas. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Overall, no long-term impacts are anticipated to the Sprague's pipit or its habitat.

Varied Bunting (*Passerina versicolor versicolor*)

Varied bunting is listed as threatened by the State of New Mexico and is also protected under the MBTA. The species nests in dense, shrubby vegetation. Primary threats to the species consist chiefly of habitat loss and degradation.

Potential impacts to varied bunting could range from temporary disturbance of individuals during construction to loss of nesting habitat. Per the project design features described in Section 2.1.2, construction and vegetation treatments conducted during the migratory bird season (March–August) would be preceded by nesting bird surveys to identify the possibility of varied bunting nesting in the project area and establish avoidance buffers around any occupied nesting sites. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Overall, no long-term impacts are anticipated to the varied bunting or its habitat.

Cumulative Impacts

Cumulative Impacts to Wildlife and Special Status Species, except for LPC and DSL

Surface-disturbing activities affect wildlife, migratory birds, and special status species through decreasing available forage and habitat and causing habitat alteration and fragmentation. Well pad and road density break the available habitat into smaller and smaller pieces, which can lead to displacement and physiological stress in wildlife species. Fragmentation results in indirect habitat loss and degradation. Wildlife species would have to expend an increased amount of energy to avoid disturbed areas or when experiencing alarm due to human presence, traffic, and associated noise.

Watkins et al. (2007) describe quantitative thresholds of fragmentation impact as moderate, high, and extreme, based on the density of well pads per section and cumulative surface disturbance. Moderate impact is defined as one to four wells and less than 20 acres of disturbance per section. High impact is defined as five to 16 wells and 20 to 80 acres of disturbance per section. Extreme impact is defined as

more than 16 wells and greater than 80 acres of disturbance per section. Based on the above-described definitions, the density of current oil and gas development is extreme within the project area. This indicates habitat function is severely compromised with long-term habitat fragmentation consequences (Watkins et al. 2007).

Impacts from past actions within the 2,359,693-acre CIAA include approximately 117,985 acres of surface-disturbing activities, including past construction of oil and gas well pads, access roads, transmission lines, and other linear features. Past and present actions account for surface disturbance and potential habitat removal on approximately 5% of the CIAA.

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 5,040 acres of surface and vegetation disturbance within the CIAA, or 0.2% of the CIAA. Impacts to wildlife, migratory birds, and special status species, would depend on the placement and type of surface disturbance and the available habitat within the individual project areas. Generally, native vegetation loss, increased noise, and habitat degradation would be expected to occur, especially during construction of the future actions. The subject projects would require BMPs and other mitigation to reduce these impacts. In time, the reclaimed and seeded areas would result in stable plant communities with densities that are similar to the pre-disturbance plant densities, although the plant species may be different than the vegetative communities present prior to construction. Some species would also adapt to noise associated with maintenance and operation of these actions. Together, past, present, and reasonably foreseeable surface and vegetation disturbance would total 121,460 acres (approximately 5.1% of the CIAA). Based on the cumulative impacts, habitat fragmentation in the project area is expected to be maintained at high to extreme levels into the future.

The Proposed Action would disturb an additional 2,661 acres, which is approximately 0.1% of the CIAA. This comprises a negligible addition (~2%) to the past, present, and reasonably foreseeable surface and vegetation disturbance identified above. This contribution would be localized and minimized from implementation of project design features and BMPs.

Cumulative Impacts to LPC and DSL

The specific CIAA for the LPC and DSL is based on the habitat zones identified in the 2008 RMPA. Due to the substantial overlap between the LPC IPA and DSL known distribution area, the IPA is used as the CIAA. For all other special status species with potential to occur in the project area, the cumulative effects analysis above for general wildlife would also apply.

Impacts to LPC and DSL from past and present actions within the 794,683-acre CIAA include surface-disturbing activities primarily from past construction of well pads, access roads, transmission lines, and other linear features. Past actions account for surface disturbance and vegetation removal on approximately 5% or 39,734 acres of the CIAA. Reclamation of some disturbed areas has reduced impacts to LPC and DSL from some of this development.

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 11,220 acres of surface and vegetation disturbance within the CIAA, or 1.4% of the CIAA. There are no specific data on when RFFA activities are scheduled to begin and when reclamation would be complete, but most of the soil types identified in the CIAA and in the project area have characteristics that could limit successful reclamation of LPC and DSL habitat. RFFAs would require BMPs or other mitigation measures to mitigate LPC and DSL habitat loss. Together, past, present, and reasonably foreseeable surface disturbance would total 50,954 acres (approximately 6.4% of the CIAA).

The Proposed Action would cross 24 miles LPC IPA and 8 miles of DSL known habitat as defined by the 2008 RMPA (see Figure A.2 in Appendix A). The Proposed Action would disturb an estimated 454 acres of potential LPC habitat and 120 acres of DSL distribution, which is approximately 0.06% and 0.02% of the CIAA, respectively. This comprises a 1% addition to the past, present, and reasonably foreseeable surface disturbance identified above. This contribution would be minimized from implementation of project design features and BMPs presented in Section 2.1.2.

Mitigation Measures and Residual Impacts

To offset potential impacts to riparian areas at the Pecos River crossing, and to freshwater avian species that potentially nest in the vicinity, SPS will install up to 10 poles, some of which will have multiple artificial nesting platforms, at locations within Section 30 of Township 22 South, Range 28 East (see map and diagram in Appendix C of the Plan of Development [on file with BLM]). BLM will be responsible to secure all necessary access and land rights as well as associated permitting requirements, if any. Short-term and long-term maintenance of the nesting platforms will be the responsibility of BLM.

Residual impacts from installation of the nesting platforms include minor disturbance (less than 0.05 acre) to vegetation and soils from excavation of the holes necessary to construct the poles. The platforms will be visible to passersby but are not in a high-use recreation area or high-value scenic area. BLM will perform cultural resources survey prior to installation of the platforms, and ensure compliance with the NHPA. No impacts to air resources, cave and karst resources, water resources, special designations, livestock grazing, or public health and safety are expected. The platforms would provide beneficial impacts to herons by providing a safe platform for perching and nesting.

3.7 Cultural Resources

3.7.1 Affected Environment

Several federal laws and implementing regulations apply to the evaluation and protection of significant cultural resource properties and preservation of cultural standards. Among the most significant of these laws and regulations are:

- NHPA, Section 106, as amended (16 USC 470, EO 13007);
- NRHP (36 CFR 60);
- Protection and Enhancement of the Cultural Environment, 1971 (EO 11593);
- American Indian Religious Freedom Act Amendments of 1978, as amended (42 USC 1996, 43 CFR 7);
- Archaeological Resources Protection Act of 1979 (16 USC 470aa-47011, 43 CFR 7); and
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001, 43 CFR 10).

Management of cultural resources on BLM lands is determined by policy directives contained in the CFO RMP (BLM 1988), as amended. The BLM makes land use decisions that could limit access or require alterations to the Proposed Action to minimize impacts to cultural resources.

A Class I inventory was conducted by SWCA using the online database available at the Archaeological Records Management Section (ARMS) of the New Mexico Historic Preservation Division in order to identify previously recorded archaeological sites within 0.25 mile of the proposed project area, also known as the area of potential effect (APE). Additionally, records searches of data maintained by the CFO and the National Park Service National Register of Historic Places (NRHP) were also conducted. The results of the record search show that 616 previous cultural resources investigations have been completed within 0.25 mile of the APE, with 142 archaeological sites previously recorded (see Sisneros et al. 2015a, 2015b, 2015c). Of these sites, 81 were potentially in the project area. In addition to these sites, the northern edge of the Maroon Cliffs Archaeological District is crossed by the Proposed Action.

Resources in the vicinity of the APE, which consists of the entire project footprint, span the entire prehistoric period from the Paleoindian through the Formative periods, as well as the post-Formative or protohistoric period. Historic sites date from the mid-1800s into the mid twentieth century and are the result of homesteading and ranching/agricultural activities. Resources related to historic oil and gas exploration are also common in the area. The Class I inventory concluded that of the 142 known archaeological sites within 0.25 mile of the project area (10 of which are multicomponent sites), 40 sites have unknown chronological components, 38 sites have a historic component, one site has a prehistoric Plains component, 21 have an Archaic component, and 45 sites have a Jornada Mogollon component.

SWCA conducted a Class III archaeological survey of the project area between November 2014 and September 2015 to assist the BLM in complying with Section 106 of the NHPA. The survey examined

11,173 acres, consisting of 150-foot-wide ROW corridor and 175-foot-wide cultural resources buffer on both sides of the ROW corridor, for a total survey width of 500 feet. In the area of the Marathon Road reroute, the survey corridor was 250 feet wide and included a 50-foot-wide buffer on either side of the ROW corridor for a total survey width of 600 feet. For portions of unpaved roads that would be upgraded for the proposed project, a 50-foot buffer was surveyed on either side of the surveyed 60-foot road ROW width. For road junctions, 200 feet was surveyed on each side of the road junction. Following submission of the cultural resources report in October 2015, SPS proposed a reroute 1,514 m (5,296 feet) in length within the southwestern portion of the project area to accommodate planned development by an oil and gas development company, along the original proposed route. In this area, the survey corridor was 76.2-m-wide (250-foot-wide) and included a 15.2-m-wide (50-foot-wide) cultural resources buffer on either side of the 45.7-m-wide (150-foot-wide) APE.

SWCA's investigation included 178 resources. This total includes 160 recorded resources, 10 sites that were not relocated, five sites that were relocated outside the survey corridor, one site that was subsumed into another site, and two resources that have both an HCPI number and an LA number. Of the 160 recorded resources, 141 are archaeological sites (68 previously recorded and 73 newly recorded) and 19 are HCPI properties. A full summary of the archaeological survey is presented in Sisneros et al. (2015a, 2015b, 2015c, and 2015d).

Of the 141 archaeological sites recorded during the inventory of the survey area, 34 are prehistoric artifact scatters and artifact scatters with one or more feature that date between the Archaic and Formative periods. Another 38 scatters/scatters with features are most likely prehistoric in origin, but were assigned an unspecified aboriginal affiliation because of a lack of diagnostic artifacts. Fifty-three historic archaeological sites were recorded and consisted of artifact scatters with or without features, industrial, ranching/agriculture, transportation/communication, and government/military resources. Sixteen multicomponent sites were identified; of these, 10 exhibited discrete prehistoric and historic occupations, one exhibited two discrete historic occupations, two exhibited two discrete prehistoric occupations, and one exhibited two discrete prehistoric components and a historic component, and two sites exhibit multiple components in that they overlap the Archaic and Formative periods.

Of the 141 archaeological sites, 41 sites were recommended eligible to the NRHP, 53 were recommended not eligible, 46 sites have undetermined eligibility, and one site—LA 132493—is a non-contributing segment of an eligible resource. Of the 19 HCPI resources recorded during this investigation, two are recommended eligible to the NRHP, 11 are recommended not eligible, and five have undetermined eligibility. Site summaries for previously and newly recorded sites eligible for the NRHP or of undetermined eligibility that intersect the proposed project area are presented in Table 3.17 and Table 3.18, respectively. Eligible HCPI resources that intersect the proposed project area are provided in Table 3.19.

Table 3.17. Previously Recorded Sites, Eligible for the NRHP, within the Surveyed Area.

Site No.	Cultural Affiliation and Dates	Landowner	Eligibility
LA 8055	Jornada Mogollon, Formative tradition (A.D. 450–1450)	BLM	Eligible, Criterion D
LA 34389	Jornada Mogollon, Late Formative tradition (A.D. 1150–1450)	BLM	Eligible, Criterion D
LA 45730	Multicomponent: Archaic, Late Archaic (1500–1000 B.C.); Jornada Mogollon, Formative tradition (A.D. 500–1450); Anglo, U.S. Territorial to Statehood/WWII (A.D. 1890–1929)	BLM	Eligible, Criterion D
LA 51813	Unspecified aboriginal (< A.D. 1800)	BLM	Eligible, D
LA 79926	Jornada Mogollon, Formative tradition (A.D. 500–1450)	Private	Eligible D
LA 99414	Jornada Mogollon, Late Formative tradition (A.D. 1100–1450)	BLM	Eligible, Criterion D
LA 102897	Multicomponent: Late Archaic (1500 B.C.–A.D. 300); Anglo, Statehood–WWII (A.D. 1900–1945)	BLM	Eligible D
LA 124293	Jornada Mogollon, Formative tradition (A.D. 500–1450)	Private	Eligible D

Site No.	Cultural Affiliation and Dates	Landowner	Eligibility
LA 124864	Unspecified aboriginal (< A.D. 1800)	SLO	Eligible, Criterion D
LA 130739	Jornada Mogollon, Formative tradition (A.D. 500–1450)	BLM	Eligible D
LA 130740	Jornada Mogollon, Formative tradition (A.D. 500–1450)	BLM	Eligible, Criterion D
LA 132486	Multicomponent: Archaic, Middle to Late Archaic (3000 B.C.-A.D. 200); Anglo, U.S. Territorial to Statehood/WWII (A.D. 1890–1945)	SLO	Eligible, Criterion D
LA 132487	Multicomponent: Late Archaic to Jornada Mogollon, Formative tradition (A.D. 70–380 and 500−1450)	Private	Eligible, Criterion D
LA 132488	Multicomponent; Late Archaic (1800 B.C.–A.D. 200) and Jornada Mogollon, Formative tradition (A.D. 500–1450)	BLM, SLO, and private	Eligible, Criterion D
LA 132494	Multicomponent: Late Archaic through Jornada Mogollon, Early Formative (1000 B.C.–A.D. 980)	BLM	Undetermined
LA 141498	Unspecified aboriginal (< A.D. 1800)	BLM	Eligible D
LA 142391	Multicomponent: Jornada Mogollon, Late Formative (A.D. 1150–1450) and Anglo, Statehood/WWII to recent historic (A.D. 1912–1950)	BLM	Eligible, D
LA 156242	Jornada Mogollon, Formative tradition (A.D. 500–1450)	BLM	eligible, D
LA 156243	Jornada Mogollon, Late Formative tradition (A.D. 1125–1500)	BLM	recommended eligible, D
LA 156249	Unspecified aboriginal (< A.D. 1800)	BLM	Eligible, D
LA 171860	Unspecified aboriginal (< A.D. 1800)	Private	Eligible, Criterion D
LA 171861	Archaic, Late Archaic (1000 B.C.–A.D. 300)	BLM	recommended eligible, Criterion D
LA 172572	Multicomponent: Unspecified aboriginal (< A.D. 1800); Anglo, Statehood/WWII (A.D. 1880−1930)	SLO and private	Eligible, D
LA 172574	Archaic, Late Archaic (1600 B.C.–A.D. 300)	Private	Eligible, Criterion D
LA 174340	Archaic, Late Archaic (1600 B.C.–A.D. 300)	Private	Eligible, D
LA 174341	Unspecified aboriginal (< A.D. 1800)	Private	Eligible, Criterion D
LA 174376	Archaic, Late Archaic (1600 B.C.–A.D. 300)	SLO	Eligible D
LA 174714	Jornada Mogollon, Formative tradition (A.D. 500–1450)	SLO	Eligible D
LA 174715	Archaic, Late Archaic (1600 B.C.–A.D. 300)	SLO	Eligible D
LA 174716	Multicomponent: Jornada Mogollon, Formative tradition (A.D. 500–1450); Anglo, Statehood/WWII (A.D. 1880−1930)	SLO	Eligible D
LA 179130	Multicomponent; Jornada Mogollon, Formative tradition (A.D. 200–1450); Anglo, Statehood to recent historic (A.D. 1920–1960s	BLM	Eligible, D
LA 179413	Multicomponent: Archaic and Jornada Mogollon, Late Archaic through Early Formative (A.D. 100–900)	BLM	Eligible, D

Table 3.18. Newly Recorded Sites, Eligible for the NRHP, within the Surveyed Area

Site No.	Cultural Affiliation and Dates	Landowner	Eligibility
LA 181918	Unspecified aboriginal (< A.D. 1800)	SLO	Eligible, D
LA 181925	Multicomponent: unspecified aboriginal (< A.D. 1800), and Anglo, Statehood/WWII (A.D. 1910–1945)	BLM	Undetermined
LA 181926	Multicomponent: Late Archaic to Jornada Mogollon, Formative tradition (100 B.C.−A.D. 200–1450)	BLM	Eligible, Criterion D
LA 181932	Multicomponent: unspecified aboriginal (< A.D. 1800) and Anglo, Statehood to WWII (A.D. 1912–1945)	SLO	Eligible, Criterion D
LA 181934	Jornada Mogollon, Formative tradition (A.D. 500–1450)	BLM	Eligible D
LA 181935	Unspecified aboriginal (< A.D. 1800)	BLM	Eligible, Criterion D
LA 181936	Jornada Mogollon, Late Formative tradition (A.D. 1150–1450)	BLM	Eligible D
LA 181953	Unspecified aboriginal (< A.D. 1800)	BLM	Eligible, Criterion D
LA 181954	Jornada Mogollon, Formative tradition (A.D. 500–1450)	BLM	Eligible, Criterion D

Site No.	Cultural Affiliation and Dates	Landowner	Eligibility
LA 181959	Unspecified aboriginal (< A.D. 1800)	Private	Eligible, Criterion D
LA 181976	Jornada Mogollon, Formative tradition (A.D. 500–1450)	BLM	Eligible D
LA 183250	Jornada Mogollon, Late Formative (A.D. 1050-1400)	SLO	Eligible, Criterion D
LA 183251	Unknown aboriginal (< A.D. 1800)	SLO	Eligible, Criterion D
LA 183311	Multicomponent: unspecified aboriginal (< A.D. 1800) and Anglo, U.S. Territorial to Statehood/WWII (A.D. 1900–1930)	BLM	Eligible, Criterion D

Table 3.19. HCPI Resources, Eligible for the NRHP, within the Proposed Project Area

HCPI No.	Site Type	Cultural Affiliation and Dates	Landowner	Eligibility
HCPI 31531	Southern Canal	ca. 1880–1966	Private	Eligible, Criteria A and C
HCPI 38945	Railroad	A.D. 1891	Private	Eligible, Criterion A

3.7.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no new surface disturbance and no impacts to cultural resources from the proposed project, because the ROWs would not be granted. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.7.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Direct impacts to a cultural site, if disturbed by construction, would include alterations to the physical integrity of the site. The primary impact indicator for cultural resources is the number of eligible cultural resources sites to be disturbed within the project area.

In total, 24 NRHP-eligible resources or resources of undetermined eligibility intersect the proposed project ROW. Fifteen of these are previously recorded sites, while six are newly recorded. The remaining three are HCPI resources. LA 181924 is just outside the ROW and would not be impacted by the proposed project. In addition, a qualified archaeological monitor is required for all construction activities taking place within 100 feet of the site to ensure the sites are avoided.

Where possible, transmission tower locations would be sited so as to avoid (or span) these resources as a means to mitigate adverse impacts to the sites. Patrol roads would be established well away from all site boundaries. Prescribed patrol routes would be flagged with temporary markers and monitoring would ensure that all equipment follows these routes during all construction-related activities. In proximity to these sites, the proposed project area would be accessed by an existing access road to the south. New formal spur roads would be established off of the ROW so that mechanical equipment would access the project area without impacting sites. See the Mitigation Measures and Residual Impacts section below for more details regarding data recovery and testing.

If a cultural resource is significant for reasons other than its scientific information potential, indirect impacts may also include audible, atmospheric, or visual elements that are out of character for the cultural resource. These impacts include temporary, non-physical effects that would last the duration of construction, such as increased noise due to heavy equipment and an increase in construction-related traffic in the area. Long-term effects may include a permanent increase in human and vehicle activity due to the construction, operation, and maintenance of facilities built within the Proposed Action area. An increase in human activity in the area, as an indirect impact, could potentially contribute to direct adverse effects such as unauthorized removal or other alterations to cultural resources in the vicinity.

There are 117 archaeological sites that are either not eligible for the NRHP or are eligible but are located outside the ROW. No further management is required for these sites.

Cumulative Impacts

Impacts from past actions within the 2,359,693-acre CIAA include approximately 117,985 acres of surface-disturbing activities, including past construction of oil and gas well pads, access roads, transmission lines, and other linear features. Past actions account for surface disturbance on approximately 5% of the CIAA. The construction of existing pipelines, roads, and other mineral extraction infrastructure would have had the greatest effect on cultural resources through ground disturbance; transmission lines are more flexible and can be designed to avoid resources as well as minimize ground disturbance. Many of these past projects with adverse effects to cultural resources would have been mitigated under Section 106 of the NHPA, which would serve to reduce the adverse effects. Mitigation for most cultural resources would have involved data recovery which would contribute to our knowledge of prehistoric and historic peoples. In the Permian Basin especially, data recovery projects conducted in compliance with Section 106 and the Permian Basin Mitigation Program have greatly expanded our understanding of cultural resources in southeastern New Mexico.

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 5,040 acres of surface disturbance within the CIAA, or 0.2% of the CIAA. Ground disturbance associated with present actions and RFFAs would contribute to cumulative impacts if cultural resources are present; however these projects are subject to applicable State and Federal laws and regulations, and adverse impacts would be reduced through mitigation in accordance with those laws and regulations. If data recovery is conducted as mitigation, these projects have the potential to contribute to our knowledge of the past and may result in a moderate, long-term positive effect. Together, past, present, and reasonably foreseeable surface and vegetation disturbance would total 121,460 acres (approximately 5.1% of the CIAA).

The Proposed Action would disturb an additional 2,626 acres, which is approximately 0.1% of the CIAA. This comprises an additional 2% to the past, present, and reasonably foreseeable surface disturbance identified above. This contribution would be minimized from implementation of project design features and mitigation measures (discussed below), such as spanning sites with the transmission line and avoiding the placement of structures within cultural resource site boundaries.

Mitigation Measures and Residual Impacts

Mitigation measures would apply to cultural sites recommended eligible for listing in the NRHP that could potentially be adversely impacted by the Proposed Action. Eligibility recommendations and mitigation measures are provided in Table 3.20 and Table 3.21. The vast majority of the archaeological resources encountered in the proposed project area have been avoided; however, some sites cannot be avoided by re-routing the alignment due to other resource constraints, constructability issues, and/or design limitations. Therefore, a testing and data recovery plan has been designed to mitigate impacts to these sites and collect valuable scientific data in the areas that would be adversely affected during the construction of the proposed project.

As part of cultural remediation actions, the testing plan includes 14 sites and data recovery is recommended for five sites (LA 45730, LA 99414, LA 171861, LA 172574, and LA 181926) and consultation with the BLM and SHPO is currently underway.

In general, data recovery has been recommended for sites that completely occupy the proposed ROW; testing has been proposed for those sites that are only partially within the ROW and could be avoided by restricting the spatial extent of construction activities and strategically locating the patrol road away from the site boundaries. Testing would involve limited hand excavations and some potential mechanical scraping to determine if any cultural remains and information potential exist within the project ROW. If significant deposits are determined to be present, the sites would be avoided within the ROW by siting of the access road away from the site and restrictions on travel during construction and operations.

Archaeological testing would be completed before construction to ensure that the portion of the site overlapping the proposed project ROW is non-contributing to the eligibility of the overall site.

Table 3.20. Site Summary, NRHP Eligibility, and Mitigation Recommendations

Site No.	Landowner	Eligibility	Recommended Mitigation
Previously Recorded Sites			
LA 34389	BLM	Eligible, D	Testing
LA 45730	BLM	Eligible, D	Data recovery
LA 99414	BLM	Eligible, D	Data recovery
LA 124864	SLO	Eligible, D	Testing
LA 130740	BLM	Eligible, D	Testing
LA 132486	SLO	Eligible, D	Testing
LA 132494	BLM	Eligible, U	Testing
LA 156243	BLM	Eligible, D	Testing
LA 171860	BLM	Eligible, D	Testing
LA 171861	BLM	Eligible, D	Data recovery
LA 172574	Private	Eligible, D	Testing
LA 174341	Private	Eligible, D	Testing
Newly Recorded Sites			
LA 181932	SLO	Eligible, D	Testing
LA 181935	BLM	Eligible, D	Testing
LA 181953	BLM	Eligible, D	Testing
LA 181954	BLM	Eligible, D	Testing
LA 183250	SLO	Eligible, D	Testing
LA 183251	SLO	Eligible, D	Data recovery
LA 183311	BLM	Eligible, D	Data recovery

Table 3.21. HCPI Summary, NRHP Eligibility, and Mitigation Recommendations

HCPI No.	Site Type	Cultural Affiliation and Dates	Landowner	Eligibility	Recommended Mitigation
HCPI 31531	Southern Canal	ca. 1880–1966	Private	Eligible, A and C	Avoidance by spanning
HCPI 38943	Irrigation ditch	Late 1800s or early 1900s	Private	Undetermined	Avoidance by spanning
HCPI 38945	Railroad	A.D. 1891	Private	Eligible, A	Avoidance by spanning

3.8 Visual Resources

3.8.1 Affected Environment

The BLM is responsible for managing public lands for multiple uses while ensuring that the scenic values of public lands are considered before authorizing actions on public lands. The BLM accomplishes this through the visual resource management (VRM) system. The VRM system classifies land based on visual appeal, public concern for scenic quality, and visibility from travel routes or other key observation points (KOPs). The system is based on the premise that public lands have a variety of visual values, and these values mandate different levels of management. Visual values are identified through the VRM inventory (BLM 1986) process that consists of scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones. Based on these three factors, BLM-administered lands are placed into one of four

visual resource inventory classes. VRM Classes I and II are the most restrictive with regard to the allowable change to the visual landscape, Classes III and IV are more lenient with regard to allowable modification.

The proposed project area is located in an area with VRM Classes III and IV (see Figure A.7 in Appendix A). Within the project area, there are approximately 30 acres of VRM Class III and 2,631 acres of Class IV lands. The objective of Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. The objective of Class IV is to provide for management activities that require major modifications to the existing character of the landscape. The level of change to the landscape can be high. Management activities may dominate the view and may be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic visual elements of form, line, color, and texture.

Visual resources include the natural and human modified landscape. The existing visual quality of the project area is influenced by the presence of roads, oil and gas development, existing power lines, highway corridors, and development near Hobbs, Carlsbad, and other populated areas. The visual character of the landscape within and surrounding the project area is generally open with unencumbered views to surrounding lands. Grasslands and sagebrush shrublands form sparse irregular clumps of vegetation across a relatively flat landscape with occasional rolling hills. The Pecos River corridor creates a contrasting sinuous line on the land due to the presence of water, additional vegetation, and eroded banks. Human elements on the landscape include scattered rural structures, along with pumpjacks, well pads, and aboveground tanks associated with oil and gas production facilities. Highways, rural roads, and well field access roads provide lines that can be seen from a distance and visually fragment the land. Existing power lines provide noticeable vertical elements and create implied lines on the landscape. Predominant colors include tans and browns from the sandy soils and light to medium greens from the vegetation. Human elements are muted grays, whites, and browns, punctuated with occasional red and yellow signage.

Six KOPs with potential views of the proposed transmission line were identified for analysis (see Figure A.7 in Appendix A). Each KOP was visited on January 26 or 27, 2015. Sections A and B of BLM Form 8400-4 (Visual Contrast Rating Worksheet) were completed in the field on January 26–27, 2015 at each KOP location. KOP 4 was revisited on March 31, 2015. Photographs of surrounding views at each KOP were also taken to record the visual character of the landscape. A representative photograph from each KOP and an associated visual simulation of the proposed project are included in Section 3.8.3 below.

KOP 1

KOP 1 is located in Lea County on U.S. Highway 62/180 approximately 6 miles northeast of the intersection of U.S. Highway 62/180 and New Mexico Highway 243 (see Figure A.7 in Appendix A). The landscape is relative flat with clumps of low gray-green vegetation scattered across exposed light brown sandy soils. Brown grasses provide a visual matrix for other landscape elements. A strong horizon line is evident in every direction. Existing transmission lines and fencing are noticeable adjacent to the highway and in the distance (Figure 3.4).

KOP 2

KOP 2 is located at the intersection of U.S. Highway 62/180 and New Mexico Highway 31 in Eddy County (see Figure A.7 in Appendix A). Surrounding terrain is relatively flat with low sloping hills. Views are unimpeded to the horizon in all directions. Vegetation is a mix of light brown spiky grasses and clumps of darker green vegetation. Dark asphalt roads, signage, fences, transmission lines, and substation structures provide visually obvious elements and implied lines on the land (Figure 3.6).

KOP 3

KOP 3 is located north of Loving in Eddy County and adjacent to the Pecos River corridor. The KOP is approximately a mile north of where New Mexico Highway 31 crosses the river (see Figure A.7 in

Appendix A). The terrain on the east side of the river is slightly undulating and rough with flat, open well pads visible. To the west of the river, the landscape is flat and uniform with low agricultural vegetation and scattered rural structures visible. Non-cultivated areas are sparsely covered with low, uniform, dark green vegetation interspersed with gray sand, gravel, and cobble. The river itself is flat and straight, appearing almost channelized, and reflecting the sky. Views extend to the horizon in all directions (Figure 3.8).

KOP 4

KOP 4 is located on New Mexico Highway 31 approximately 2 miles east of where it intersects U.S. Highway 285 in Eddy County (see Figure A.7 in Appendix A). Low hills typify the area and are covered with irregular clumps of low grasses and low to mid-size shrubs and dark soils. The highway provides a dominant linear element on the land. Scattered rural structures and transmission lines are visible to the south of the highway (Figure 3.10).

KOP 5

KOP 5 is located on U.S. Highway 285, approximately 3 miles due east of the China Draw Substation (see Figure A.7 in Appendix A). In the foreground to the west, a gravel road, gated fence line, and small-diameter white pipe on the ground surface are evident. Low rolling hills occur in the middleground of the view to the west. Exposed light-colored patches of soil and medium gray-green clumps of vegetation comprise the majority of the surrounding views (Figure 3.12).

KOP 6

KOP 6 is located in Eddy County on New Mexico Highway 82 approximately 10 miles east of Artesia (see Figure A.7 in Appendix A). The landscape is relatively flat surrounding the KOP. Built structures dominate the landscape. Irregular and angular structures (e.g., transmission lines, tanks, towers, substation, buildings, roadways, fences) all dominate and define the local visual landscape from the foreground to background. Vegetation constitutes secondary visual elements and consists of brown grasses and low gray-green clumps of shrubs (Figure 3.14).

3.8.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, the characteristic visual landscape would generally remain the same with sparsely vegetated flat and rolling terrain with unconfined views of surrounding lands. Ongoing land uses and development would likely mimic adjacent uses. This would result in a gradual increase over time of more transmission lines, oil and gas facilities, access roads, and other development. Though the landscape would likely retain its open and rural visual quality, additional vertical structural elements would become part of the visual landscape. The BLM could authorize other management activities that may result in moderate to major modifications to the existing visual landscape on federal lands.

3.8.3 Impacts from the Proposed Action

Direct and Indirect Impacts

The construction, operation, and maintenance of the Proposed Action would not exceed management objectives for VRM Classes III or IV, given the substantial existing visual modifications to the landscape due to residential, agricultural, and commercial structures; transmission lines; substations; and oil and gas wells and facilities. Proposed activities would likely attract attention and may, in some cases, dominate the view, but would be consistent with VRM objectives. Self-weathering steel structures would reduce reflectivity and the distance at which structures are noticeable to the casual observer. Vegetation removal and soil disturbance would create some visual contrast and be noticeable as linear swaths across the landscape, but would not exceed VRM objectives. Reclamation would reduce visual contrasts over time.

KOP 1

The proposed transmission line structures would create dominant vertical elements adjacent to the highway and that would appear from a distance as an implied line on the landscape. This visual contrast would be diminished by the existence of other nearby linear elements (i.e., transmission line, fence line) visible to observers from the highway (Figure 3.5). Ground disturbance would create a temporary visual contrast with surrounding vegetation and exposed soils, but would lessen over time as disturbed areas are reclaimed.

KOP 2

From the KOP, only subtle changes to the existing structural elements of the landscape would be noticeable (Figure 3.7). No changes to vegetation would be noticeable.

KOP 3

The proposed transmission line would have a weak to moderate contrast with the visual landscape. Structures would be visible and create noticeable vertical elements, forming an implied line against the horizon to the west (Figure 3.9). No changes to vegetation would be noticeable.

KOP 4

The proposed transmission line structures would create a strong vertical contrast on the landscape directly adjacent to New Mexico Highway 31 (Figure 3.11). This contrast would quickly diminish as the transmission line receded from the highway to the north and south. The structures would form an obvious line as observers approached the crossing. Vegetation removal and soil disturbance would not be visible until the observer was very close to the crossing, but would lessen over time as disturbed areas are reclaimed.

KOP 5

The proposed transmission line and China Draw Substation would not be visible from KOP 5 due to distance and topography between the proposed project area and the highway (Figure 3.13).

KOP 6

Because of the visual clutter of existing structures at KOP 6 (i.e., high visual absorption capacity), the Proposed Action would have little discernable visual impact (Figure 3.15). The transmission line would become more noticeable as it moves away from the substation across the rural landscape. Little to no vegetation removal or soil disturbance would be noticeable.



Figure 3.4. KOP 1 facing east along U.S. Highway 62/180.



Figure 3.5. The simulation at KOP 1 illustrates the placement and scale of the proposed transmission line on the south side of U.S. Highway 62/180.



Figure 3.6. KOP 2 facing southeast along New Mexico Highway 31.



Figure 3.7. The simulation at KOP 2 illustrates the proposed transmission line coming from the west and terminating at the Kiowa Substation.



Figure 3.8. KOP 3 facing northwest across the Pecos River.



Figure 3.9. The simulation at KOP 3 shows the proposed transmission line coming from the north and crossing the Pecos River approximately 0.5 mile away.



Figure 3.10. KOP 4 facing east along New Mexico Highway 31.



Figure 3.11. The simulation at KOP 4 illustrates the proposed transmission line crossing the highway north to south.



Figure 3.12. KOP 5 facing west toward the China Draw Substation.



Figure 3.13. The simulation at KOP 5 shows that due to topography and distance (approximately 2.85 miles) the proposed transmission line and substation would not be visible from Highway 285.



Figure 3.14. KOP 6 facing east along New Mexico Highway 82.



Figure 3.15. The simulation at KOP 6 shows that the addition of proposed transmission line is indistinguishable from the existing infrastructure at this KOP.

Cumulative Impacts

As described under past actions in the introduction to Chapter 3 and further described in the affected environment section above, Eddy and Lea Counties have experienced high development of oil and gas related projects and infrastructure which is visible on the landscape. Impacts from past actions within the 2,359,693-acre CIAA include approximately 117,985 acres of surface-disturbing activities. Past actions account for surface disturbance and vegetation removal on approximately 5% of the CIAA. Reclamation of some disturbed areas and use of BMPs, such as reseeding construction areas and painting aboveground facilitates, have reduced impacts to visual resources.

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 5,040 acres of surface and vegetation disturbance within the CIAA, or 0.2% of the CIAA. These actions would introduce new visual elements to the landscape in the form of oil and gas facilities, and others would contribute to the presence of linear on-the-ground features from cleared vegetation and disturbed soils associated with ROWs. Changes in of form, line, color, and texture would be expected to occur. The subject projects would require BMPs and other mitigation to reduce these impacts. In time, the reclaimed and seeded areas would result in stable plant communities with densities that are similar to the pre-disturbance plant densities, thereby reducing the changes to texture and color. Together, past, present, and reasonably foreseeable surface and vegetation disturbance would total 121,460 acres (approximately 5.1% of the CIAA).

The Proposed Action would disturb an additional 2,661 acres, which is approximately 0.1% of the CIAA. The proposed project would draw the attention of viewers in some locations, but based on the photo simulations presented above, the proposed project would not dominate the viewshed. In terms of surface disturbance, the proposed project comprises an additional 2% to the past, present, and reasonably foreseeable surface and vegetation disturbance identified above. The RFFAs cumulatively with the Proposed Action are in compliance with VRM Class IV objectives as they represent a major modification to the landscape and, at close range, would dominate the attention of the casual observer.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

3.9 Special Designations and Recreation Areas

3.9.1 Affected Environment

The proposed project crosses two SMAs (Table 3.21) (see Figure A.3 in Appendix A), the Maroon Cliffs Archeological District and Pecos River Corridor. SMAs are locations containing one or a combination of unique resources or values that receive more intensive management.

The Maroon Cliffs Archeological District SMA is has been determined eligible for the NRHP as an archaeological district. The archaeological sites recorded thus far are open campsites dating from the Archaic period (5000 B.C.) to the Jornada Mogollon period (A.D. 900–1450) (BLM 2014). Pit house structures have been reported at Maroon Cliffs; however, excavation is required to confirm this report (BLM 2014). The Maroon Cliffs area is topographically diverse, providing a variety of exploitable environments for prehistoric peoples. The Maroon Cliffs Archaeological District is an ideal laboratory for the study of human-environment adaptations in southeastern New Mexico. The main objective of this archaeological district is to protect and preserve the important and sensitive cultural resource values for research (BLM 2014).

The Pecos River Corridor is approximately 6,000 acres and includes a 0.5-mile corridor of BLM-administered lands along the Pecos River, as well as the lands surrounding Red Bluff Reservoir in Texas. Management objectives identified in the 1988 RMP provide protection for “scarce water-based recreation, public access, protect the natural values and still allow for semi-primitive motorized recreation opportunities. Additional goals are to reduce soil erosion and vegetation destruction while still allowing leasable minerals and other resource development to occur in the area” (BLM 1988:C-39).

The proposed project also crosses a small portion of the Hackberry Lake Off-Highway Vehicle (OHV) Recreation Area. (Table 3.21) (see Figure A.3 in Appendix A). The Hackberry Lake OHV Recreation Area is located approximately 20 miles northeast of Carlsbad, which provides approximately 55,800 acres of rolling stabilized dune lands and cliffs for open use of motorcycles, sand dune buggies, and other OHVs. Trails within the area take advantage of a variety of soils and topographic features, which include many turns and steep hill climbs. Routes go from shallow rocky, loamy soil on low hills to deep alluvial soils with sandy inclusions. The trails travel across small draws and along the bottom of deep arroyos. The area also includes a sand dune complex. An estimated 6,850 visits occurred at the Hackberry Lake OHV area during fiscal year 2011 (BLM 2014). The Hackberry Lake OHV Recreation Area is used by the Desert Rough Riders Club for an annual competitive motorcycle event—the Carlsbad 100 Desert Race—which traverses more than 44 miles of public land. The annual race typically occurs in the spring.

Table 3.22. Special Designations (SMAs) and Recreation Areas Crossed by the Proposed Project

Special Designation Area	Size of Project Area within Special Designation (acres)	Total Size of Special Designation (acres)
Special Management Areas (SMAs)		
Pecos River Corridor	16	6,088
Maroon Cliffs Archeological District	23	17,878
Recreation Areas		
Hackberry Lake OHV Recreation Area	0.5	57,576
Total	***39.5***	***81,542***

3.9.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no new surface disturbance within the special designations and recreation areas resulting from the proposed project, because the ROWs would not be granted. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.9.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Surface disturbance within the Maroon Cliffs and Pecos River Corridor SMAs by the proposed project would be the primary impact to special designations. Construction of the transmission line would temporarily remove approximately 23 acres of vegetation along the northern border of the Maroon Cliffs SMA, which represents 0.1% of the special designation. The proposed ROW is collocated along U.S. Highway 62/180 and existing energy infrastructure, where the project would cross the SMA thereby minimizing impacts to the archeological district. Periodic operation and maintenance activities for the proposed transmission line would occur using a permanent access road within the ROW. No temporary access roads are proposed within the Maroon Cliffs SMA. Due to the location of the proposed project, along the northern boundary of the SMA and the small portion of surface disturbance compared to the total size of the SMA, the proposed project is not in conflict with the management objective for Maroon Cliffs. However, cultural resource sites within the archeological district may be impacted by the proposed project. Refer to Section 3.7 for more information regarding cultural resource impacts.

The proposed project would remove approximately 16 acres of vegetation within the Pecos River Corridor SMA, which represents 0.4% of the special designation. The proposed project would cross the SMA and the Pecos River in proximity to an existing electric distribution line, thereby minimizing the impacts to the special designation. The proposed project is not in conflict with the management objectives for the Pecos River Corridor. However the addition of new infrastructure to the area would add a new, although incremental, visual element to the landscape, which would also would impact the semi-primitive motorized

recreational opportunities in the SMA. Refer to Section 3.8 for more information regarding visual resource impacts. The collocation of the proposed project along an existing transmission line would minimize the level of intrusion on the natural landscape.

Approximately 0.5 acre of the Hackberry Lake OHV Recreation Area would be temporarily disturbed along the southern boundary of the OHV area where the proposed transmission line would parallel U.S. Highway 62/180. The transmission line and support structures would be located within the ROW within the Hackberry Lake OHV Recreation Area. Due to the small area of disturbance and the collocation of the ROW along an existing transportation corridor, impacts to recreation opportunities within the area would be minimal. Although the area is designated for open recreation use, it is also open to other types of development, such as livestock grazing and mineral leasing activities. Recreation users are notified of the multiple uses within the Hackberry Lake OHV Recreation Area in published BLM materials. Therefore, the public should be aware of other, non-recreation uses in the area.

Indirect impacts to recreation from the proposed project include increased truck traffic during the construction phase of the project and potential conflicts among vehicle drivers access the OHV area. The proposed project is not expected to impact OHV trail usage or create congestion on designated trails. Portions of the reclaimed, temporary access roads and segments of the permanent ROW could create new informal access points to parcels of BLM land previously considered inaccessible to the public. Increased hunting and dispersed recreation activities may occur in areas where gates would be installed to replace existing fences within the ROW because the gates could be viewed as new access points by members of the public using the ROW as an unauthorized route. Where appropriate, signage would be installed on newly installed gates to deter users from circumventing the gates and traversing areas that were formerly inaccessible or harder to access.

Portions of the project area within the special designations and recreation area not required for long-term maintenance or access would be reclaimed with a BLM-approved seed mix at the end of the construction phase. This design feature would minimize impacts to the SMAs and OHV area by supporting regrowth of vegetation within the disturbed areas.

Cumulative Impacts

Impacts from past actions within the 81,542-acre CIAA, which includes the Maroon Cliffs Archeological District SMA, Pecos River Corridor SMA, and Hackberry Lake OHV Area, have resulted in approximately 4,077 acres of surface-disturbing activities, including past construction of oil and gas well pads, access roads, transmission lines, and other linear features. Past actions are estimated to have disturbed approximately 5% of the CIAA.

Present actions and RFFAs, not including the Proposed Action, have been identified for the special designations and recreation areas, are estimated to create an additional 85 acres of surface and vegetation disturbance within the CIAA, or 0.1% of the CIAA. Cumulative impacts to the SMAs and recreation area include surface disturbance, vegetation removal, and infrastructure developments within areas established for other resource protections and resource uses. For example, the Maroon Cliffs SMA was established to protect and preserve sensitive cultural resource values for research. As new surface disturbance is introduced into the SMA, the cultural resource management objectives become more challenging to manage as surface disturbance can expose sensitive cultural resource material. Similarly, the Pecos River Corridor management goals are to reduce soil erosion and vegetation destruction while allowing resource development. Cumulative impacts to this SMA can lead to increased soil erosion and vegetation loss through surface-disturbing activities. Cumulative impacts to the Hackberry Lake OHV Area would occur in the form of increased conflicts between recreation activities and permitted infrastructure.

The Proposed Action would disturb an additional 49 acres within the CIAA, which is approximately 0.06% of the CIAA. This comprises an additional 1.2% to the past, present, and reasonably foreseeable surface and vegetation disturbance identified above. This contribution would be localized and minimized from implementation of project design features and BMPs.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

3.10 Livestock Grazing

3.10.1 Affected Environment

The BLM is responsible for managing livestock grazing on 1,947,890 federal acres within the CFO, which includes approximately 367,656 active animal unit months (AUMs) of livestock forage in 265 grazing allotments. Livestock grazing includes the grazing of domestic cattle, sheep, goats, and horses (BLM 2014). Almost all livestock grazing within the CFO planning area is permitted for year-round. The most common livestock operations in the project area are cattle and calf operations.

Permitted livestock numbers for each allotment are set at levels that provide for plant recovery to enhance rangeland health. These levels have been determined by quantitative measurements of forage present. Prolonged drought and rangeland wildfire continues to threaten rangeland health and forage availability within and near the project area. When rangelands are not meeting resource objectives, changes in grazing management are implemented, including adjusting permitted livestock numbers, adding additional waters and fences, or providing rest in certain pastures during the growing season.

The project area coincides with 27 BLM allotments within the CFO's jurisdiction, as well as infrastructure associated with the allotments, summarized in Table 3.23. Based on review of the CFO GIS data set, there are no water troughs located within the project area. Twelve water wells, watering troughs, or storage tanks are located within 200 meters of the proposed ROW (Table 3.24).

Table 3.23. BLM CFO Allotments on BLM-administered Lands Coinciding with the Project Area

CFO Allotment Name	Allotment Number	Size of Project Area within Allotment (acres)	Total Allotment Size (acres)	No. of Fences Crossed by Proposed Project	No. of Waterlines Crossed by Proposed Project
Alkali Lake	77020	5	22,281	5	-
Angell Draw	77015	74	14,266	4	2
Brookin West	76056	73	3,899	4	-
Brushy Knob	77031	206	34,457	5	2
Burton South	77014	69	7,777	8	-
China Draw	78094	129	22,823	4	1
Clayton Basin	77013	85	58,607	4	-
Delaware River West	78142	34	19,834	2	-
Fenton Draw	77048	43	6,266	4	-
Halfway	76021	89	17,203	7	1
Harkey Crossing	78088	14	7,027	1	-
Hart Ranch	76049	4	14,233	2	-
Herradura Bend	78099	44	1,356	1	-
Jackson East	76057	48	3,228	1	-
Laguna Tonto	76011	98	23,588	10	-
Laguna Totson	76022	42	3,835		-
Lea Townsite	76020	66	19,606	3	-
Lindsey Lake	77045	56	9,736	3	-
Maroon Cliffs	77022	70	20,247	4	-
Mimosa	77049	200	26,229	8	1
Quahada Ridge	77026	44	2,877	9	-
Red Bluff Draw	78101	66	7,327	4	-
Salt Lake	76011	18	47,844		-

CFO Allotment Name	Allotment Number	Size of Project Area within Allotment (acres)	Total Allotment Size (acres)	No. of Fences Crossed by Proposed Project	No. of Waterlines Crossed by Proposed Project
Salt Lake	77029	18	47,844	3	-
Turkey Track	65075	244	237,267		-
Twin Wells North	77012	178	99,940	7	-
West Bilbrey	77021	13	7,238	6	-
West Jackson	76055	18	648	2	-
Total		***2,048***	***787,483***	***111***	***7***

Table 3.24. Water Troughs, Tanks, Wells within 200 meters of Proposed ROW

Trough Type	Name	Improvement Number	Allotment Name	Allotment Number
Water Well & Storage	N/A	N/A	China Draw	78094
Trough	N/A	N/A	China Draw	78094
Water Well & Storage	N/A	N/A	China Draw	78094
Base Water	N/A	N/A	China Draw	78094
Trough	N/A	N/A	Clayton Basin	77013
Trough	McCarty Pipeline Reconstruction	665629	Laguna Totson	76022
Well	Snyder #1 Well	661656	Twin Wells North	77012
Water Well & Storage	Nimenim Storage & Tub	660952	Twin Wells North	77012
Windmill	N/A	N/A	Twin Wells North	77012
Trough	N/A	015635	Angell Draw	77015
Trough	N/A	N/A	Angell Draw	77015
Storage Tank	N/A	N/A	Angell Draw	77015

3.10.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no new surface disturbance within livestock grazing allotments resulting from the proposed project, because the ROWs would not be granted. Baseline conditions for this resource would continue as described under the Affected Environment section above.

3.10.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Forage removal from the 31 grazing allotments crossed by the proposed project would be the primary impact to grazing resources. Construction of the proposed project elements, including the transmission line, access roads, and substations, would temporarily remove approximately 2,059 acres of vegetation, which represents 0.3% of the BLM grazing allotments intersected by the Proposed Action. Approximately 27 acres would be permanently removed from grazing within the Mimosa grazing allotment to accommodate the Kiowa Substation. Approximately 7 acres would be permanently removed from grazing with the Turkey Track grazing allotment to accommodate the Eddy County Substation expansion.

Range improvements would also be temporarily impacted by the proposed project. In total, 112 pasture fences occur within the proposed transmission line construction area; therefore, many of these fences would need to be temporarily disturbed to accommodate installation of the transmission line and access roads. Per the design features in Section 2.1.2, pasture fences would be maintained during construction and would be replaced, repaired, or reclaimed upon completion of the construction phase. Seven livestock watering lines would be crossed by the proposed project. Prior to construction, the conditions of

the water lines would be evaluated and appropriate protections would be put in place to maintain their function during the construction of the proposed project. If necessary, waterlines would be protected either by burying or pushing adjacent soil over the lines within the construction area to shield the lines from damage.

Surface disturbance resulting from construction and ongoing maintenance may facilitate the introduction and spread of noxious weeds throughout grazing allotments and could accelerate soil erosion, which would reduce site productivity and limit grazing opportunities through a reduction in available AUMs. One Class B noxious weed species, malta starthistle, is documented along the north bank of the Black River. This infestation, as identified during the project's biological survey, is small, consisting of several plants. Based on review the latest CFO GIS data set (July 2015), no other noxious weed locations or noxious weed treatment areas were identified along the proposed route. However, several previously treated noxious weed areas occur within 0.5 mile of the proposed ROW (Table 3.14). African rue, saltcedar, goldenrod, malta starthistle, and mesquite have been the targets of the ongoing weed treatments. Design features listed in Section 2.1.2 would help reduce these spread of noxious weeds into the project area.

Construction activities could result in the expansion and spread of this noxious weed area. This impact is expected to be minimal because the project proponent, SPS, has entered into noxious weed programs in both Eddy and Lea Counties. In addition, portions of the project area not required for long-term maintenance or access would be reclaimed with a BLM-approved seed mix at the end of the construction phase. These design features would mitigate impacts to livestock grazing within one or two growing seasons after construction. Ongoing drought in the region could threaten the target of successful reclamation of the project area within 2 years if conditions do not improve and indirectly impact grazing opportunities. If sufficient rainfall does not occur, it is unlikely that herbaceous production and forage levels would return to pre-construction levels, within the average two growing seasons. However, if drought conditions improve, and the area receives abundant precipitation, herbaceous production and forage levels may be restored within two to three growing seasons.

Additional short-term impacts may include displacement of permitted livestock during construction activities or exposure of livestock to hazards. Movement of livestock may also be temporarily impeded in areas of active construction. Twelve water wells, storage tanks, or troughs are located within 200 meters of the proposed ROW. Construction activities may temporarily hinder the ability of grazing livestock to access to these range improvements. After construction, livestock should become acclimated to the maintenance and operation activities along the transmission line and at the substations. Vehicle traffic associated with the Proposed Action could pose impacts to livestock considering that the area is open range and livestock may be found on access roads in the area.

Direct impacts to livestock occur when holes, ditches, or trenches are not excluded properly. Any type of hole or ditch is potentially a hazard to livestock while grazing. Cow or calf injuries may occur if they fall into a ditch or trench-type cavity or in the process of trying to get out. Cow or calf leg injuries also may occur when any hole is left uncovered. Livestock can step into the hole and break or injure a leg. Design features found in Section 2.1.2 include the covering of foundation holes to protect livestock from becoming injured. The project has the potential to temporarily impact natural or human-made barriers to livestock movement (fencing/ditches) and range improvements such as watering troughs or water delivery systems (ditches/pipelines) on BLM-administered lands. However, the design features for the proposed project (see Section 2.1.2) identify measures to prevent these types of impacts to grazing livestock after construction is complete. Indirect impacts include extra time required by the permit holder to locate livestock or potential trespass issues for the livestock owner if the livestock cross allotment boundaries.

Under the Proposed Action, the proponent would manage vegetation to meet its requirements for conductor clearances at maximum loading (sag) and maximum blowout (sway) locations, minimize potential ignition sources, and to provide access within the ROW. Within or adjacent to the ROW, mature vegetation would be removed under or near the conductors to provide adequate electrical clearance, as required by the NERC. These vegetation maintenance activities would result in a long-term transition within the ROW from woody shrub communities of primarily creosote bush and mesquite to a vegetation community dominated by grasses and forbs. This would have a beneficial impact to livestock grazing over the long-term because there would be more forage available within the maintained ROW.

Cumulative Impacts

Impacts from past actions within the 2,359,693-acre CIAA include approximately 117,985 acres of surface-disturbing activities, including past construction of oil and gas well pads, access roads, transmission lines, and other linear features. Past actions account for surface disturbance and vegetation removal on approximately 5% of the CIAA. The loss of vegetation results in a loss of forage available to livestock within the grazing allotments located in the CIAA. Reclamation of some disturbed areas and use of BMPs, such as reseeding construction areas, has reduced impacts to vegetation and livestock grazing conditions.

Present actions and RFFAs, not including the Proposed Action, are estimated to create an additional 5,040 acres of surface and vegetation disturbance within the CIAA, or 0.2% of the CIAA. Impacts to vegetation and livestock grazing conditions would depend on the placement and type of surface disturbance and the plant species present within the individual project areas. Generally, native vegetation loss and the spread of noxious weeds would be expected to occur, especially during construction of the future actions. The subject projects would require BMPs and other mitigation to reduce these impacts. In time, the reclaimed and seeded areas would result in stable plant communities with densities that are similar to the pre-disturbance plant densities, thereby reclaiming the forage available to livestock. Together, past, present, and reasonably foreseeable surface and vegetation disturbance would total 121,460 acres (approximately 5.1% of the CIAA).

The Proposed Action would disturb an additional 2,661 acres, which is approximately 0.1% of the CIAA. This comprises an additional 2% to the past, present, and reasonably foreseeable surface and vegetation disturbance identified above. This contribution would be localized and minimized from implementation of project design features and BMPs.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

3.11 Public Health and Safety

3.11.1 Affected Environment

This section describes the existing conditions of public health and safety in the analysis area. The analysis area for impacts to public health and safety is a 2-mile-wide buffer around the centerline of a 200-foot-wide representative ROW. The actual construction ROW would likely be configured to avoid certain environmental impacts, or for other logistical reasons. The representative ROW is used to identify natural and manmade hazards that could be directly impacted by construction, operations, and maintenance of the Proposed Action.

Occupational Safety

Work related fatalities, injuries, and illnesses associated with utility and construction workers can occur in and around utility construction sites. According to the Occupational Safety and Health Administration (OSHA), “Over the past three decades, occupational injuries and illnesses in the U.S. have declined by 42 percent, even though employment has more than doubled” (OSHA 2012).

The Bureau of Labor Statistics (BLS) released a report in December 2014 with estimates from the Survey of Occupational Injuries and Illnesses that found that the construction industry had 3.8 total recordable cases per 100 equivalent full-time workers compared to the average 3.3 total recordable cases per 100 equivalent full-time workers for private industry (BLS 2014). The BLS also reported, “Over half of the more than 3.0 million private industry injury and illness cases reported in 2013 were of a more serious nature that involved days away from work, job transfer, or restriction. These cases occurred at a rate of 1.7 cases per 100 full-time workers, a statistically significant decrease from 2012.” (BLS 2014).

Incidence rates of non-fatal occupational injuries and illness in New Mexico rate (at 2.6 incidents per 100 full-time workers) is below the national statistic for construction-related injuries and illnesses (BLS 2013).

Statistics for injuries and illnesses incurred during operations and maintenance activities for the proposed project are not available.

Risk of Severe Weather Hazard and Fire

The most common severe weather events in the analysis area are extreme heat in the summer, extreme cold in the winter, strong winds, and lightning strikes. Earthquakes, tornadoes, and hurricanes/tropical storms are historically uncommon events within the analysis area.

The most recent severe weather event to occur within the analysis area that met the NERC reporting criteria was a cold weather–related outage in February 2011. This event caused a severe loss of generation across West Texas, New Mexico, and Arizona, for a total of several thousand megawatts of generation loss and impacts for more than 4 million customers (FERC and NERC 2011). Severe heat can also cause power outages in the summer due to increased demand for electricity to power air conditioners and other climate control devices. Although common in the analysis area, a severe heat event has not triggered an outage that meets the NERC reporting criteria.

High winds frequently occur in southern New Mexico. On occasion, sustained high winds over dry terrain can cause large dust storms. The largest of these dust storms, called a haboob, can cover very large areas with dust and dirt and damage transmission lines. Several large haboobs have occurred and/or originated from southern New Mexico in recent summers.

Lightning strikes can cause fires and transmission outages. Lightning often strikes tall objects because it provides the easiest path for the lightning to take. In a rural desert region, transmission towers are often the tallest objects available.

Electromagnetic Fields

Electromagnetic fields (EMFs) are phenomena that occur both naturally and as a result of human activity. Naturally occurring EMFs are caused by the weather and Earth's geomagnetic field. In the case of a transmission line, magnetic fields are created when current flows through power lines. The strength of the fields is determined mainly by line current, line height, and distance. Most objects, including fences, shrubbery, and buildings, block electric fields. Around transmission lines, measurable electric fields at ground level typically are highest in outdoor areas on the ROW cleared of vegetation.

Many studies have been conducted to review the possible health effects associated with EMF (see International Commission on Non-Ionizing Radiation Protection [ICNIRP] 1998; National Institute for Environmental Health Sciences 1998; Scientific Committee on Emerging and Newly Identified Health Risks 2007, 2009). Overall, the published conclusions of these studies have been consistent in concluding that neither electric fields nor magnetic fields are a known or likely cause of any adverse health effect at the long-term, low exposure levels found in the environment. However, research has confirmed that short-term exposure to higher intensity EMF could produce adverse stimulation of nerves and muscles. This has led to the creation of guidelines for exposure limits for the general public recommended by the International Committee on Electromagnetic Safety (ICES) and the ICNIRP to address health and safety issues (ICES 2002; ICNIRP 2010). The exposure limits recommended by ICES and ICNIRP to protect against these acute adverse effects from short-term exposures are listed in Table 3.23.

Table 3.25. Recommended Short-term Exposure Limits for Magnetic and Electric Fields

Organization Recommending Limit	Magnetic Fields	Electric Fields
ICNIRP	2,000 milligauss*	4.2 kilovolts per meter† (kV/m)
ICES	9,000 milligauss*	5 kV/m 10 kV/m (within transmission line ROW)
*The strength of magnetic fields is expressed as magnetic flux density in units of milligauss (mG), where 1 Gauss = 1,000 mG.		

[†]The strength of electric fields is expressed in units of kilovolts per meter (kV/m), which is equal to 1,000 volts per meter. Typical electric field levels in the home and at work are less than 0.1 kV/m. Electric fields within 1 foot of small appliances are in the range of 0.02 to 0.2 kV/m, while the electric field immediately adjacent to the heating wires of some electric blankets can be considerably higher.

The only confirmed relationship between electric fields or magnetic fields and an adverse biological or health effect is when electric currents, at very high levels of exposure, are experienced in the body as a shock-like effect. The levels at which these short-term effects occur are typically much higher than levels found under transmission lines, and higher than levels found in most homes or commercial establishments.

3.11.2 Impacts from the No Action Alternative

Direct and Indirect Impacts

Under the No Action alternative, the proposed transmission line would not be constructed; therefore, there would not be an increased risk to occupational safety from the construction and operation/maintenance of the transmission line, nor would there be an increased risk of fire from potential fire-causing activities. Severe weather events would continue to potentially impact the existing transmission infrastructure. The public would not benefit from an increase in reliability in electric service that the proposed infrastructure would provide should a severe weather or other disruptive event occur that causes a disruption in service from damage to the existing infrastructure.

3.11.3 Impacts from the Proposed Action

Direct and Indirect Impacts

Occupational Safety

Potential risks associated with construction activities include, but are not limited to, electrocution, exposure to extreme weather, falling, exposure to hazardous materials, and injury from equipment and materials. Site-specific risks such as difficult or remote terrain or highway crossings would exist throughout the project area. Construction information including workers and types of equipment and materials are included in the POD for the proposed project. Specific mitigation measures and safety procedures are also included in the POD. The construction of the proposed project is temporary and would be confined to the footprint of the facilities, access roads, and laydown yards. Implementation of the proposed project mitigation would help to limit the frequency and magnitude of potential health and safety risks to construction workers. Construction safety requirements and mitigation measures would meet the OSHA standards and site specific occupational safety measures (such as a smoking ban in fire-prone areas) would be developed as appropriate. Construction of the proposed transmission line and associated facilities would not be expected to generate injury or fatality rates that are higher than industry averages. The implementation of OSHA safety requirements through the use of BMPs, mitigation measures, and other safety requirements would minimize the chance that an accident could occur. Therefore, short-term impacts to occupational safety would be considered negligible.

The number of workers that would be required for operation and maintenance of the proposed project would be much smaller than would be required for construction. All operations and maintenance staff would be required to be fully trained to safely perform their duties in full compliance with OSHA and all other safety requirements. Although more workers would be required to operate and maintain the transmission lines, substations, and ancillary facilities, there would not be an increased risk to occupational safety as a result of the construction of any of the action alternatives. Therefore, impacts to occupational safety during operation and maintenance would be considered negligible.

Severe Weather Hazards

A severe weather event during construction such as high wind, excessive heat, or excessive cold could pose a danger to construction workers during construction of the proposed transmission line and associated facilities; however, this risk could be minimized by appropriate BMPs to stop, limit, or delay

construction until it is safe to continue with construction. Should a severe weather event occur during construction, the impact would be temporary and limited to the construction site. The general public would not be affected by this impact because the proposed transmission line would not be operating.

Potentially fire-causing activities (such as welding or the use of combustion engines) would occur during construction of the proposed transmission line and associated facilities in areas known for extreme fire danger during the dry season. The implementation of project design features and mitigation measures would reduce the potential for health and safety impacts that could result from fires associated with construction and/or operation and maintenance of the proposed project. Therefore, impacts from severe weather hazards and potential fire-causing activities during construction would be considered negligible.

Electromagnetic Fields

EMFs during construction would not occur because the proposed transmission line and associated facilities that would be constructed would not be transmitting electricity. The existing transmission infrastructure in the proposed alignment areas does not pose a risk to the public for EMFs because the EMFs are below proposed cautionary levels outside the ROW. EMFs would typically not impact workers constructing the proposed transmission line and associated facilities due to precautions during construction that would keep them from working directly under or parallel to the existing facilities for extended periods of time. If constant work were being performed near existing facilities that posed any kind of safety threat, the existing transmission facilities would be turned off, eliminating exposure to EMFs for construction crews. Therefore, impacts from electromagnetic fields would be considered negligible.

The EMF from the proposed transmission line would occur mainly within the 150-foot ROW and for a short distance beyond (approximately 50 feet beyond the ROW). An EMF analysis was performed using PLS-CADD's built in EMF calculator, and was calculated +/- 1,000 feet to either side of the transmission line center. Calculated values represent the EMF at 3.28 feet (1 meter) above ground. The analysis was completed assuming a 345-kV line design using H-frame and single pole tangent structures as well as three-pole and single-pole dead-ends and corners. Wire height was minimized to the SPS design criteria stipulation of 30 feet vertical clearance to ground. The ampacity assumptions are based on the maximum operating condition of 795 thousand circular mils aluminum conductor, steel supported Drake conductor at 345-kV operation. Figure 3.16 and Figure 3.17 show examples of the calculated results of the EMF analysis. The electric and magnetic fields associated with the line loading would be at a maximum between spans that approach the minimum SPS-required ground clearance of 30 feet for a 345-kV transmission line. The reported values are the maximum conditions. Also, large portions of any transmission line often exceed the minimum ground clearance requirements, which would result in lower EMF values. It is expected that the typical EMF of the proposed transmission line would be lower than the reported values.

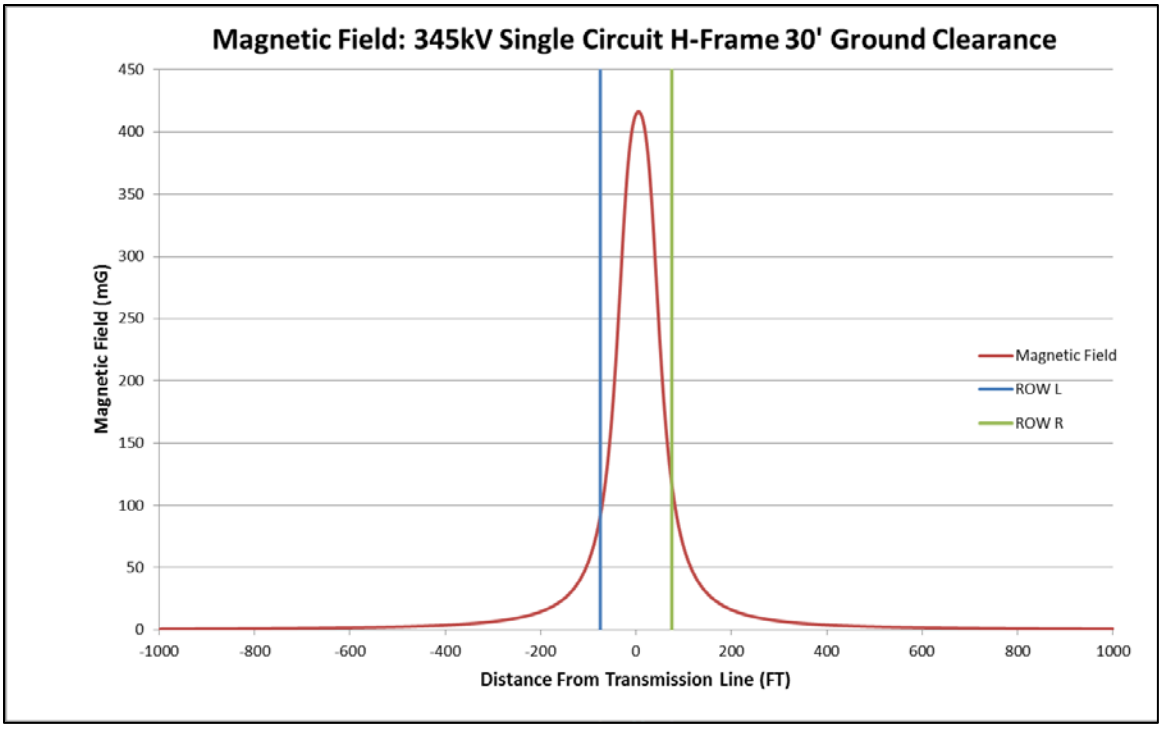


Figure 3.16. Magnetic field analysis results for 345-kV single circuit H-frame with 30-foot ground clearance

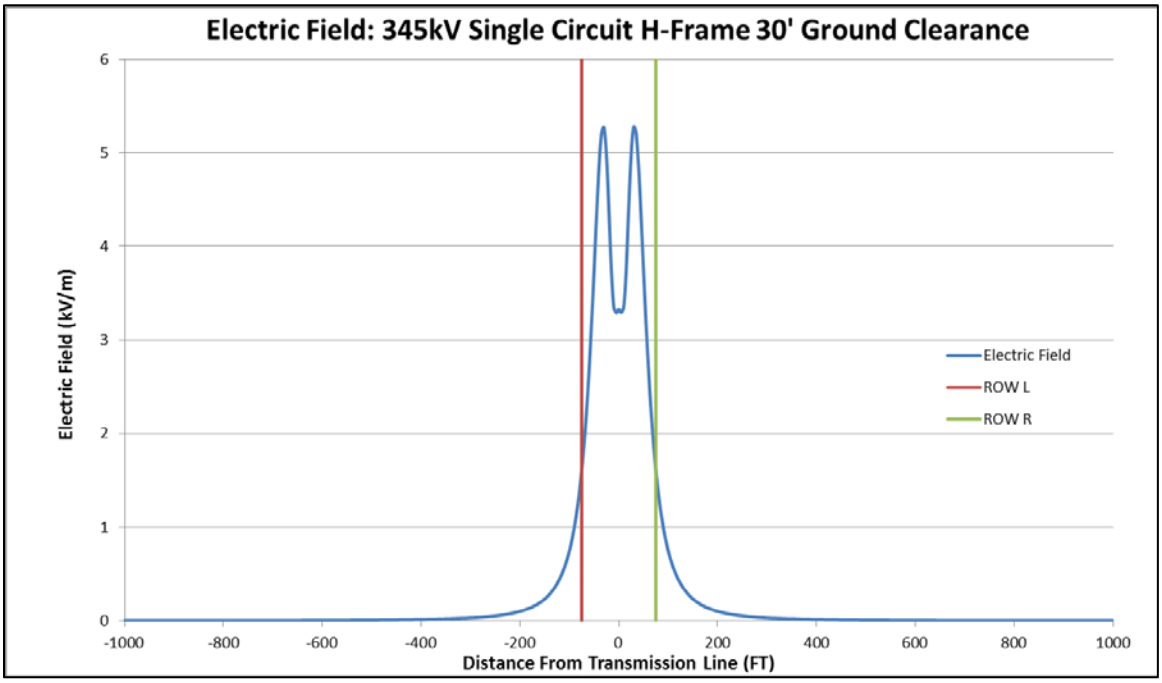


Figure 3.17. Electric field analysis results for 345-kV single circuit H-frame with 30-foot ground clearance

All of the scenarios analyzed would fall well below the recommended short-term magnetic field exposure limits listed in Table 3.23. All the scenarios analyzed would exceed the recommended short-term electric

field exposure limits listed in Table 3.23 when the electric field is measured directly beneath the transmission line. However, the ICES recognizes a 10-kilovolt-per-meter (kV/m) exposure limit when within a transmission line ROW. None of the scenarios analyzed would exceed the 10-kV/m electric field exposure limit. At the edges of the transmission line ROWs analyzed in the scenarios, the electric field falls well below the recommended exposure limits.

Cumulative Impacts

Past actions have had a negligible impact on public health and safety. Construction of linear projects such as roads, transmission lines, pipelines, well pads, and mines has occurred throughout the CFO planning area, with negligible impacts on public health and safety. There is no evidence that EMFs from the existing transmission lines are impacting public health and safety.

Present and RFFAs in the CFO planning area have the potential to result in cumulative impacts to human health and safety by increasing the potential for occupational and fires risks, and generating EMFs where they previously did not exist. Construction of these projects would have a short-term minor impact to public health and safety by temporarily increasing occupational risk and fire risks. However, because construction of these projects would be unlikely to occur at the same time and location as construction of the Proposed Action, there would not be a cumulative impact. Future transmission projects that would occur within the analysis are would increase the potential for public exposure to EMFs; however, this impact would be consider negligible because EMFs would not exceed the exposure guidelines outside the transmission line ROW.

Mitigation Measures and Residual Impacts

No additional mitigation measures are recommended.

4 SUPPORTING INFORMATION

4.1 Tribes, Individuals, Organizations, or Agencies Consulted

Table 29 contains a list of tribes, individuals, organizations, and agencies consulted with during development of the proposed action.

Table 4.1. Tribes, Individuals, Organizations, and Agencies

Name	Tribe, Organization, or Agency
David Eck, Archeologist	NMSLO
Will Barnes, Natural Resource Specialist	NMSLO
Andrew Zink, Archaeologist	NM SHPO
Judy Bock, Weed Program Coordinator	Eddy County
Shay Hager, Weed Program Coordinator	Lea County

4.2 List of Preparers

The following individuals contributed to or reviewed portions of this EA.

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John Chopp, Wildlife Biologist	BLM CFO
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Aaron Stockton, Planning and Environmental Coordinator	BLM CFO
Jim Goodbar, Cave and Karst Specialist	BLM CFO
Deanna Younger, Recreation and Visual Resources	BLM CFO
Steve Daly, Soils, Water, Range Specialist	BLM CFO
Bryant Coon, Siting and Land Rights Agent	SPS
Nisha P. Fleischman, Siting and Land Rights Agent	SPS
Tiffany Pulliam, Siting and Land Rights	SPS
David Brown, Project Manager	SWCA
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Paige Marchus, NEPA Coordinator	SWCA
Coleman Burnett, NEPA Coordinator	SWCA
Jenny Addy, NEPA Specialist	SWCA
Tom Hale, Visual Resources and Senior NEPA Review	SWCA
Matt Bandy, Cultural Resources Lead	SWCA
Daniel Sloat, Air Quality Specialist	SWCA
Brianne Sisneros, Cultural Resources Specialist	SWCA
Georgia Knauss, Paleontologist	SWCA
Anne Russell, GIS Specialist	SWCA

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APPENDIX A. MAPS

LIST OF MAPS

Figure A.1. HUC-10 Watersheds Crossed by the proposed project used to define the CIAA for karst resources, soil resources, water resources, upland vegetation, wildlife, cultural resources, visual resources, and livestock grazing. A-1
Figure A.2. CIAA for LPC and DSL. A-2
Figure A.3. CIAA for special designations and recreation areas. A-3
Figure A.4. Air resources analysis area. A-4
Figure A.5. Cave potential areas crossed by the proposed project. A-5
Figure A.6. Karst potential areas crossed by the proposed project. A-6
Figure A.7. Visual Resource Management classes crossed by proposed project. A-7

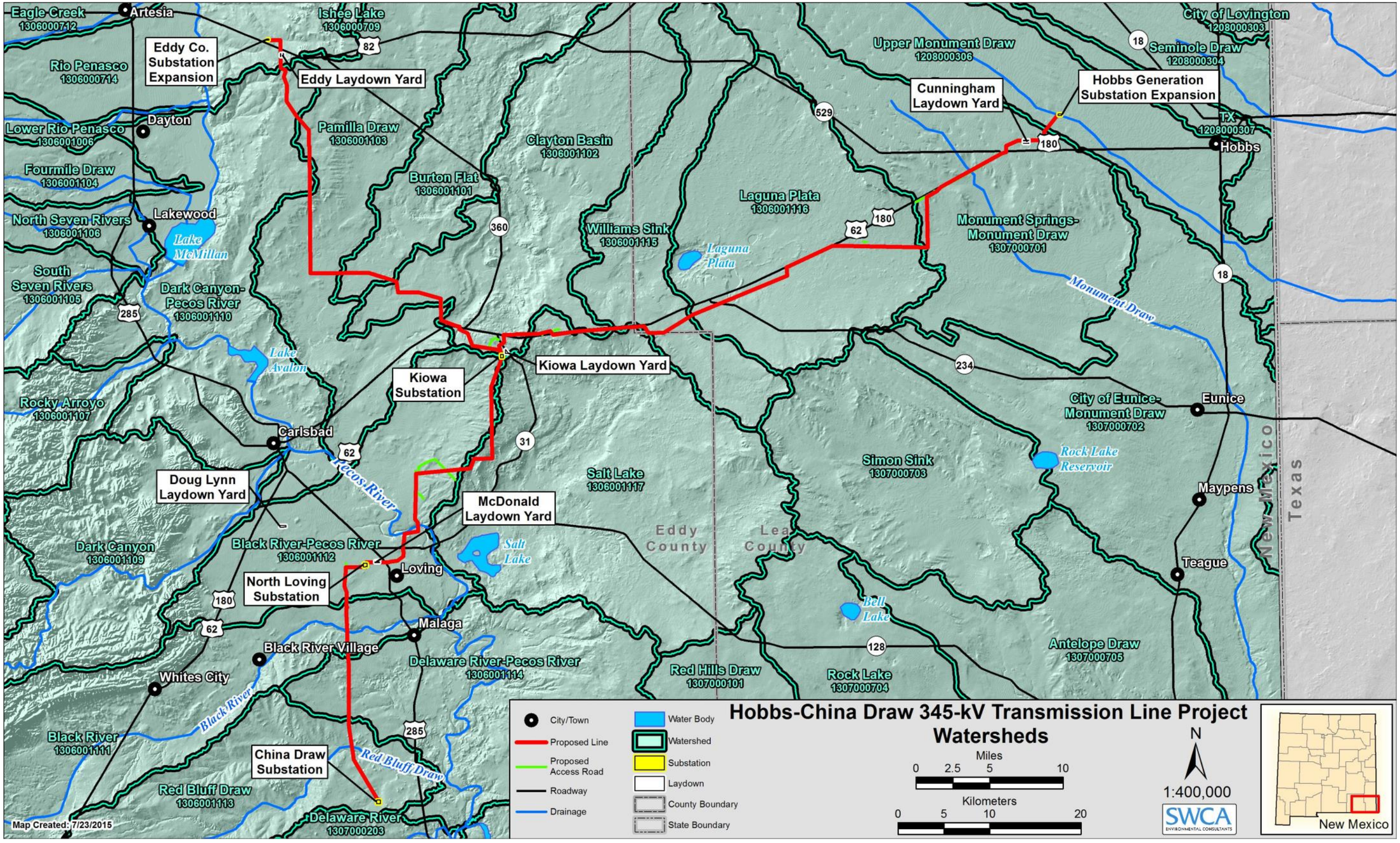


Figure A.1. HUC-10 Watersheds Crossed by the proposed project used to define the CIAA for karst resources, soil resources, water resources, upland vegetation, wildlife, cultural resources, visual resources, and livestock grazing.

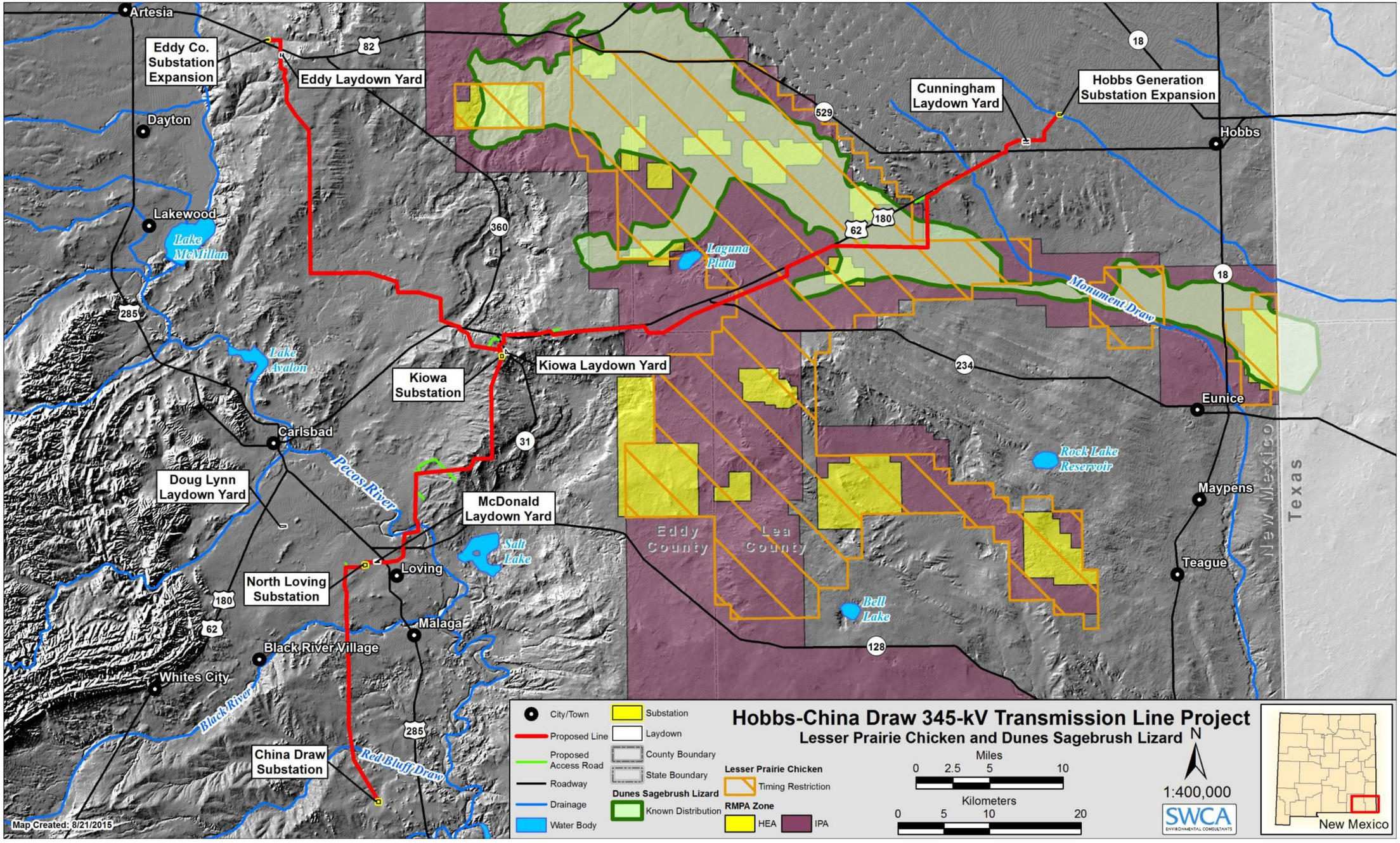


Figure A.2. CIAA for LPC and DSL.

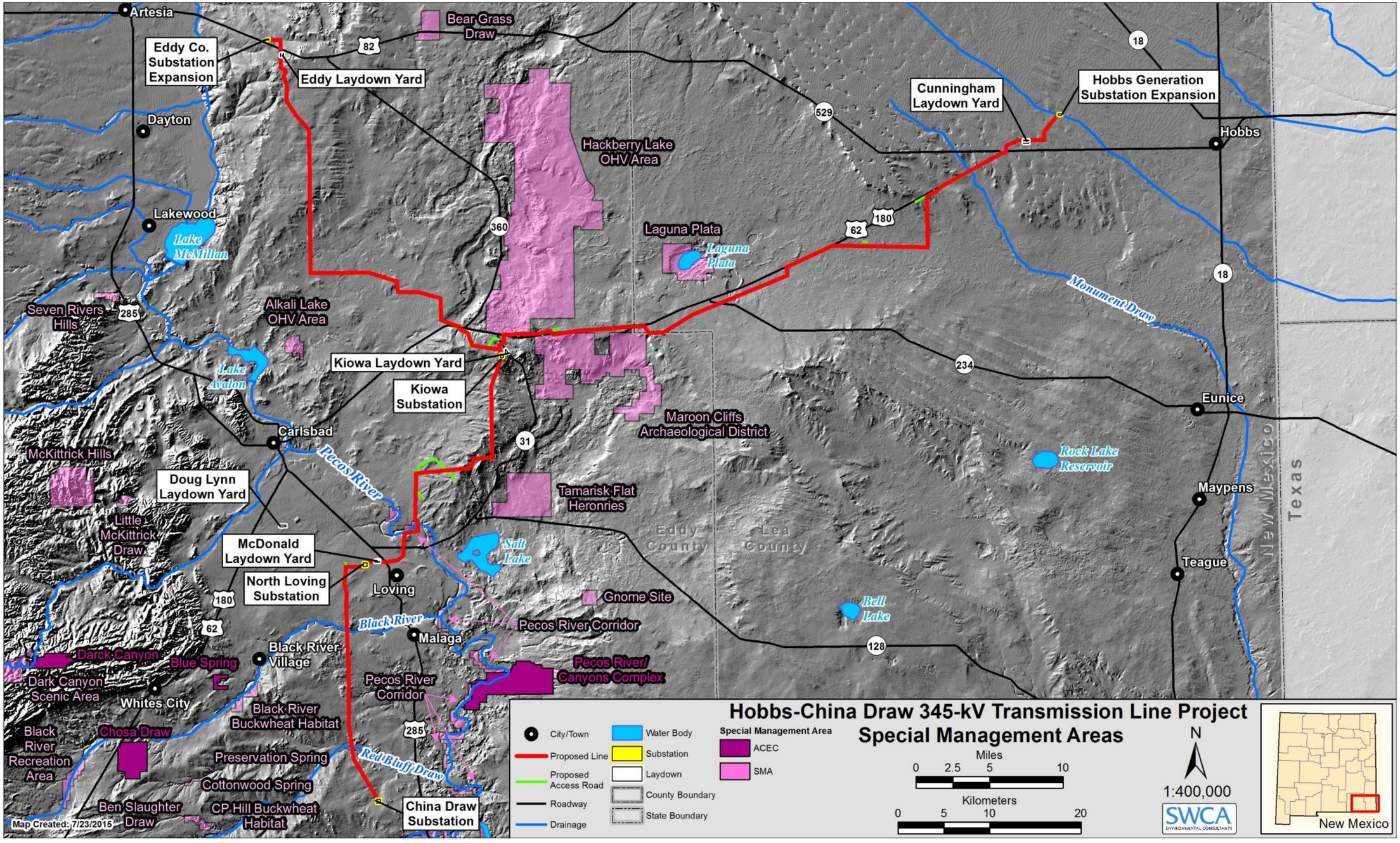


Figure A.3. CIAA for special designations and recreation areas.

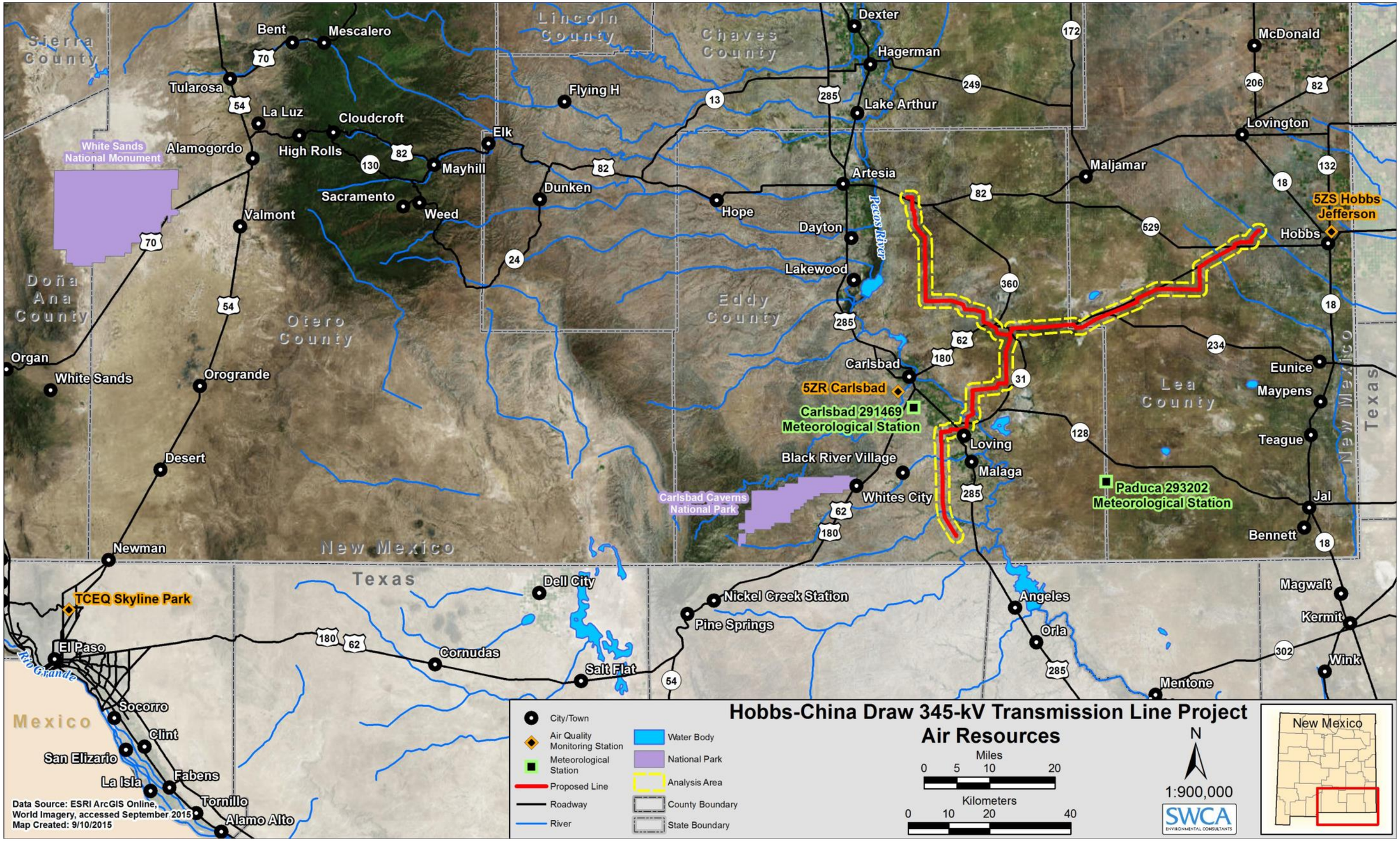


Figure A.4. Air resources analysis area.

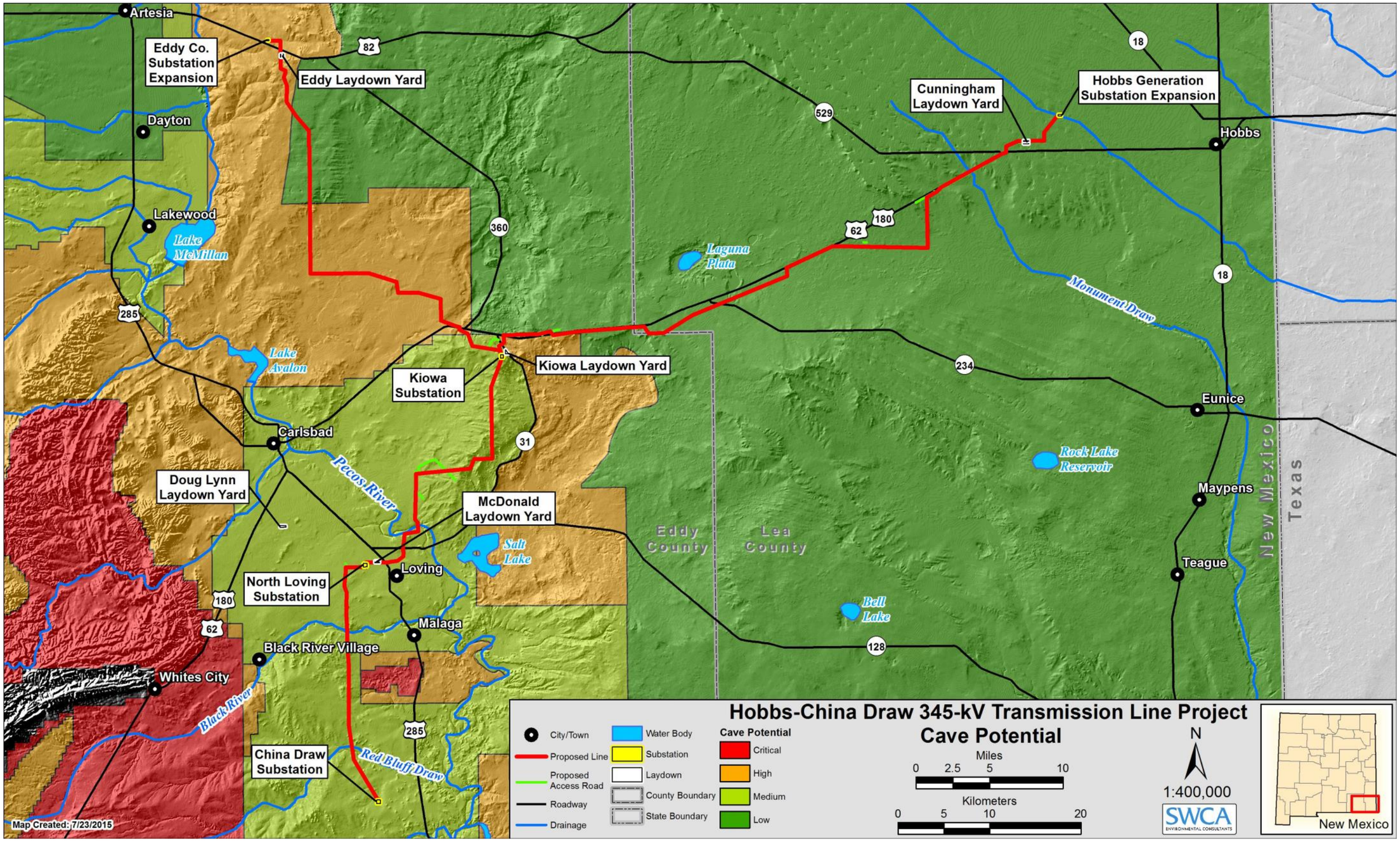


Figure A.5. Cave potential areas crossed by the proposed project.

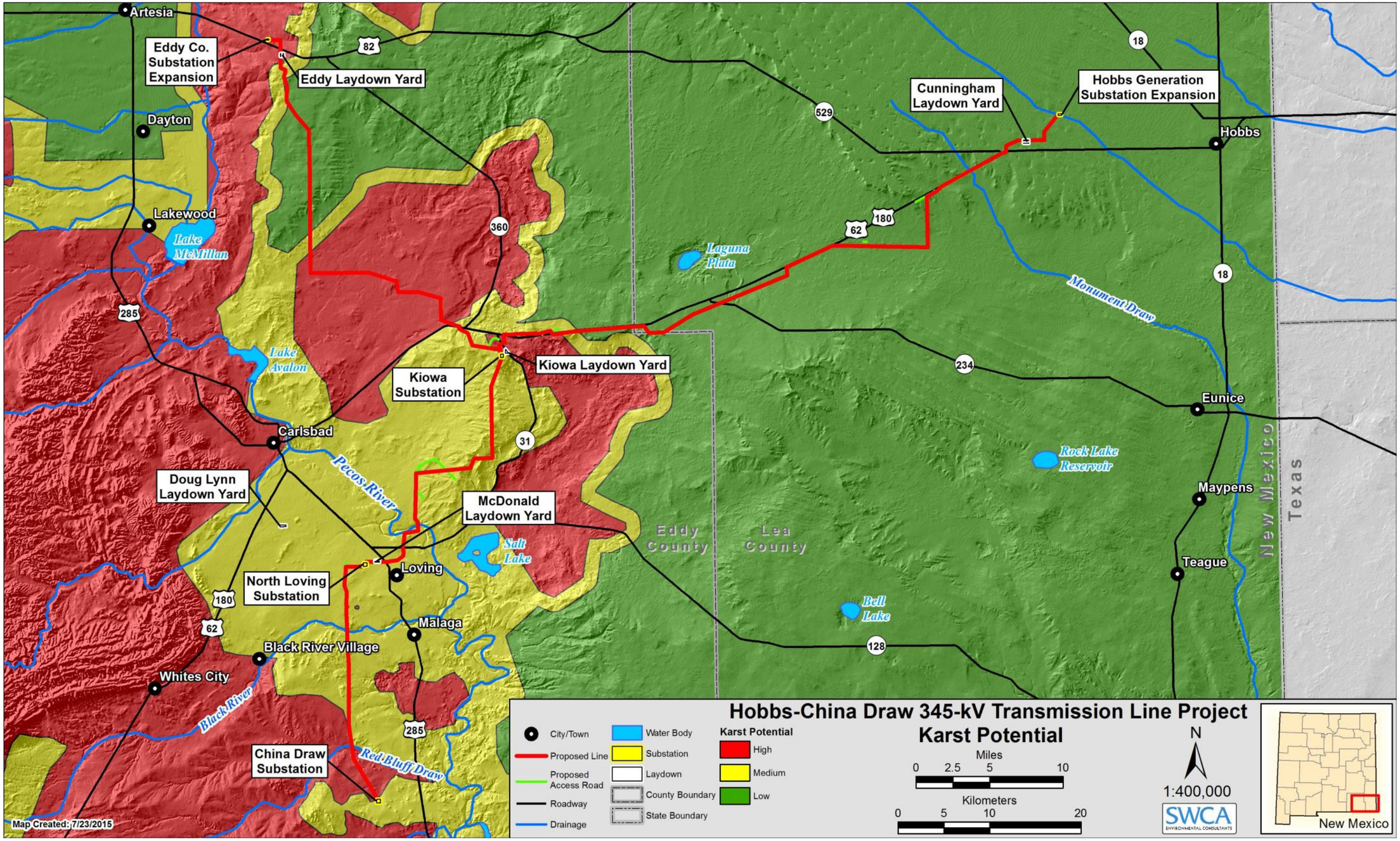


Figure A.6. Karst potential areas crossed by the proposed project.

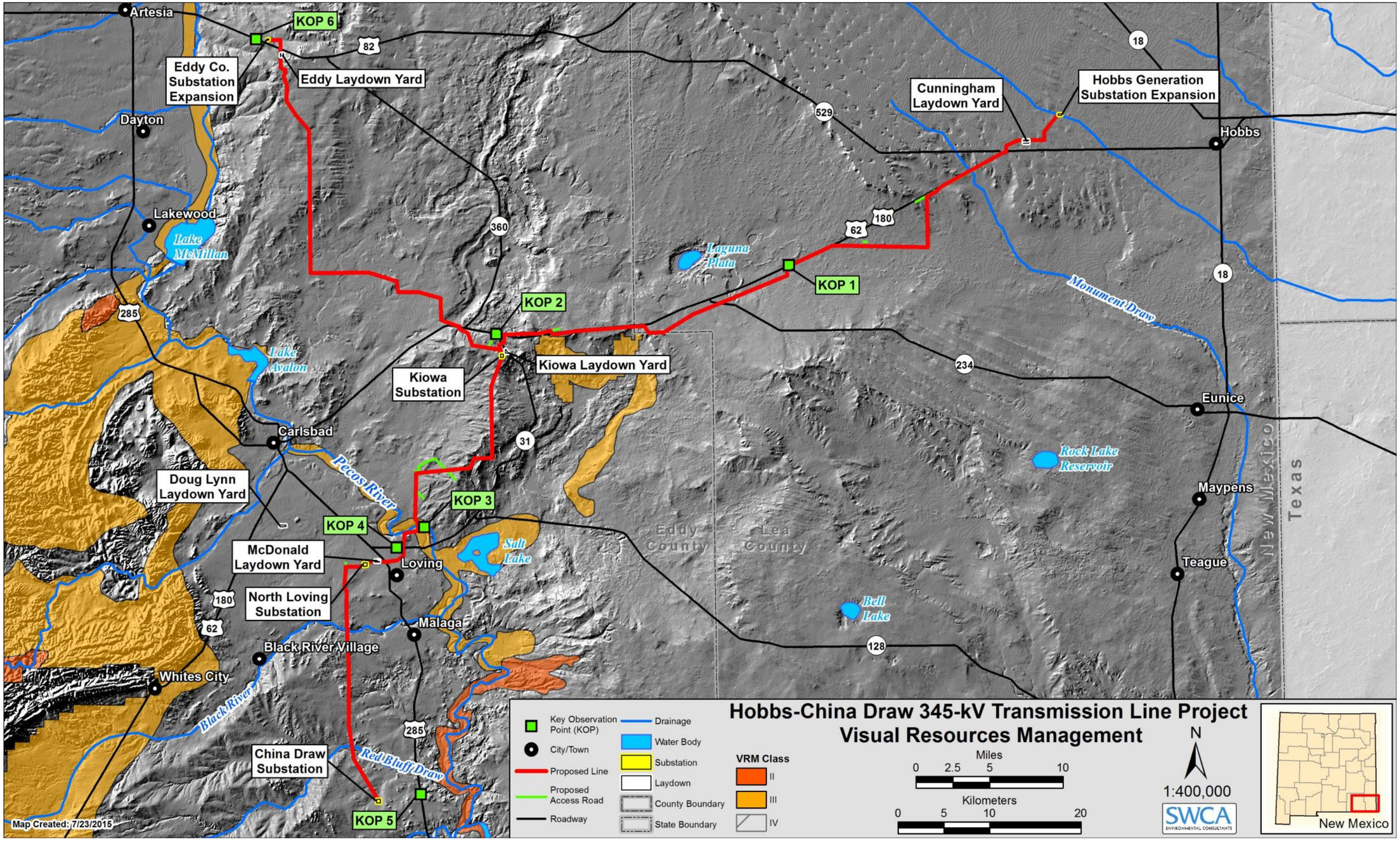


Figure A.7. Visual Resource Management classes crossed by proposed project and Key Observation Points (KOPs).

APPENDIX B. PLANT SPECIES OBSERVED DURING BIOLOGICAL SURVEY

Common Name	Scientific Name
Snowball sand verbena	*Abronia fragrans*
Whitethorn acacia	*Acacia constricta*
Catclaw acacia	*Acacia greggii*
Angel's trumpets	*Acleisanthes longiflora*
Dwarf desertpeony	*Acourtia nana*
Brownfoot	*Acourtia wrightii*
Trailing windmills	*Allionia incarnata*
Geyer's onion	*Allium geyeri*
Washerwoman	*Alternanthera caracasana*
Pigweed	*Amaranthus*
Cuman ragweed	*Ambrosia psilostachya*
Big bluestem	*Andropogon gerardii*
New Mexico silverbush	*Argythamnia neomexicana*
Sixweeks threeawn	*Aristida adscensionis*
Purple threeawn	*Aristida purpurea*
Spidergrass	*Aristida ternipes*
Carruth's sagewort	*Artemisia carruthii*
Sand sagebrush	*Artemisia filifolia*
White sagebrush	*Artemisia ludoviciana*
Broadleaf milkweed	*Asclepias latifolia*
Woolly locoweed	*Astragalus mollissimus*
Hairyseed bahia	*Bahia absinthifolia*
Burningbush	*Bassia scoparia*
Lyreleaf greeneyes	*Berlandiera lyrata*
Cane bluestem	*Bothriochloa barbinodis*
Sixweeks grama	*Bouteloua barbata*
Gypsum grama	*Bouteloua breviseta*
Sideoats grama	*Bouteloua curtipendula*
Buffalograss	*Bouteloua dactyloides*
Black grama	*Bouteloua eriopoda*
Blue grama	*Bouteloua gracilis*
Coastal sandbur	*Cenchrus spinifex*
Malta starthistle	*Centaurea melitensis*
Rose heath	*Chaetopappa ericoides*
Hairy five eyes	*Chamaesaracha sordida*
Whitemargin sandmat	*Chamaesyce albomarginata*
Ribseed sandmat	*Chamaesyce glyptosperma*
Hoary sandmat	*Chamaesyce lata*
Slimleaf goosefoot	*Chenopodium pallescens*
Hooded windmill grass	*Chloris cucullata*
Watermelon	*Citrullus lanatus*
Drummond's clematis	*Clematis drummondii*
Whitemouth dayflower	*Commelina erecta*
Javelina bush	*Condalia ericoides*
Scheer's beehive cacti	***Coryphantha robustispina var. scheeri***
Grassland croton	*Croton dioicus*
Leatherweed	*Croton pottsii*
Texas croton	*Croton texensis*
James' cryptantha	*Cryptantha cinerea*
Missouri gourd	*Cucurbita foetidissima*
Dodder	*Cuscuta*
Winged pigweed	*Cycloloma atriplicifolium*
Thistle cholla	*Cylindropuntia davisii*
Tree cholla	*Cylindropuntia imbricata*
Christmas cactus	*Cylindropuntia leptocaulis*
Featherplume	*Dalea formosa*
Woolly prairie clover	*Dalea lanata*

Common Name	Scientific Name
Low woollygrass	*Dasyochloa pulchella*
Chinese thorn-apple	*Datura quercifolia*
Touristplant	*Dimorphocarpa wislizeni*
Fetid marigold	*Dyssodia papposa*
Horse crippler	*Echinocactus texensis*
Lace hedgehog cactus	*Echinocereus reichenbachii*
Nylon hedgehog cactus	*Echinocereus viridiflorus var. chloranthus*
Engelmann's daisy	*Engelmannia peristenia*
Cory's jointfir	*Ephedra coryi*
Torrey's jointfir	*Ephedra torreyana*
Torrey's jointfir	*Ephedra torreyana*
Lehmann lovegrass	*Eragrostis lehmanniana*
Red lovegrass	*Eragrostis secundiflora*
Western daisy fleabane	*Erigeron bellidiastrum*
Abert's buckwheat	*Eriogonum abertianum*
Annual buckwheat	*Eriogonum annuum*
Roundleaf buckwheat	*Eriogonum rotundifolium*
Shortleaf woollygrass	*Erioneuron avenaceum*
Spurge	*Euphorbia* sp
American tarwort	*Flourensia cernua*
Red dome blanketflower	*Gaillardia pinnatifida*
Beeblossom	*Gaura*
Dakota mock vervain	*Glandularia bipinnatifida*
Curlytop gumweed	*Grindelia nuda*
Curlycup gumweed	*Grindelia squarrosa*
Small matweed	*Guilleminea densa*
Threadleaf snakeweed	*Gutierrezia microcephala*
Broom snakeweed	*Gutierrezia sarothrae*
Common sunflower	*Helianthus annuus*
Texas blueweed	*Helianthus ciliaris*
Phlox heliotrope	*Heliotropium convolvulaceum*
Fragrant heliotrope	*Heliotropium greggii*
Sicklepod holdback	*Hoffmannseggia drepanocarpa*
Foxtail barley	*Hordeum jubatum*
Matted bluet	*Houstonia humifusa*
Collegeflower	*Hymenopappus flavescens*
Chalk Hill hymenopappus	*Hymenopappus tenuifolius*
Slimlobe globeberry	*Ibervillea tenuisecta*
Southern goldenbush	*Isocoma pluriflora*
Arctic rush	*Juncus arcticus*
Warty caltrop	*Kallstroemia parviflora*
Crown of thorns	*Koeberlinia spinosa*
Littleleaf ratany	*Krameria erecta*
Trailing krameria	*Krameria lanceolata*
Creosote bush	*Larrea tridentata*
Mesa pepperwort	*Lepidium alyssoides*
Fendler's bladderpod	*Lesquerella fendleri*
Woolly marsh elder	*Leuciva dealbata*
Bristle flax	*Linum aristatum*
Narrowleaf stoneseed	*Lithospermum incisum*
Collected	*Lorandersonia baileyi*
Berlandier's wolfberry	*Lycium berlandieri*
Common wolfstail	*Lycurus phleoides*
Hoary tansyaster	*Machaeranthera canescens*
Lacy tansyaster	*Machaeranthera pinnatifida*
Tanseyleaf tansyaster	*Machaeranthera tanacetifolia*
Horehound	*Marrubium vulgare*

Common Name	Scientific Name
Hairy waterclover	*Marsilea vestita*
Rough menodora	*Menodora scabra*
Grassland blazingstar	*Mentzelia strictissima*
Fourvalve mimosa	*Mimosa quadrivalvis*
Smooth four o'clock	*Mirabilis glabra*
Green carpetweed	*Mollugo verticillata*
Bush muhly	*Muhlenbergi porteri*
Sand muhly	*Muhlenbergia arenicola*
False buffalograss	*Munroa squarrosa*
Bicolor fanmustard	*Nerisyrenia camporum*
White Sands fanmustard	*Nerisyrenia linearifolia*
Texas false garlic	*Nothoscordum texanum*
Devil's bouquet	*Nyctaginia capitata*
Evening primrose	*Oenothera* sp
Tulip pricklypear	*Opuntia phaeacantha*
Plains pricklypear	*Opuntia polyacantha*
Othake	*Palafoxia sphacelata*
Mexican panicgrass	*Panicum hirticaule*
Vine mesquite	*Panicum obtusum*
James' nailwort	*Paronychia jamesii*
Gray's feverfew	*Parthenium confertum*
Mariola	*Parthenium incanum*
Lemonscent	*Pectis angustifolia*
Gilia beardtongue	*Penstemon ambiguus*
Buckley's beardtongue	*Penstemon buckleyi*
Drummond's leaf-flower	*Phyllanthus abnormis*
Ivyleaf groundcherry	*Physalis hederifolia*
James' galleta	*Pleuraphis jamesii*
White milkwort	*Polygala alba*
Bushy knotweed	*Polygonum ramosissimum*
James' holdback	*Pomaria jamesii*
Kiss me quick	*Portulaca pilosa*
Shrubby purslane	*Portulaca suffrutescens*
Sanddune unicorn-plant	*Proboscidea sabulosa*
Honey mesquite	*Prosopis glandulosa*
Woolly paperflower	*Psilostrophe tagetina*
Havard oak	*Quercus havardii*
Chinese lantern	*Quincula lobata*
Upright prairie coneflower	*Ratibida columnifera*
Littleleaf sumac	*Rhus microphylla*
Buffpetal	*Rhynchosida physocalyx*
Canaigre dock	*Rumex hymenosepalus*
Prickly Russian thistle	*Salsola tragus*
Wingleaf soapberry	*Sapindus saponaria*
Threadleaf glowwort	*Sartwellia flaveriae*
Little bluestem	*Schizachyrium scoparium*
Burrograss	*Scleropogon brevifolius*
Spreading moonpod	*Selinocarpus diffusus*
Threadleaf ragwort	*Senecio flaccidus*
Riddell's ragwort	*Senecio riddellii*
Twinleaf senna	*Senna bauhinioides*
Twoleaf senna	*Senna roemeriana*
Streambed bristlegrass	*Setaria leucopila*
Silverleaf nightshade	*Solanum elaeagnifolium*
Melonleaf nightshade	*Solanum heterodoxum*
Copper globemallow	*Sphaeralcea angustifolia*
Scarlet globemallow	*Sphaeralcea coccinea*

Common Name	Scientific Name
Spear globemallow	*Sphaeralcea hastulata*
Brickellia laciniata	*splitleaf brickellbush*
Alkali sacaton	*Sporobolus airoides*
Sand dropseed	*Sporobolus cryptandrus*
Mesa dropseed	*Sporobolus flexuosus*
Giant dropseed	*Sporobolus giganteus*
Early shaggytuft	*Stenandrium barbatum*
Queen's-delight	*Stillingia sylvatica*
Five-stamen tamarisk	*Tamarix chinensis*
Coulter's wrinklefruit	*Tetraclea coulteri*
Stemmy four-nerve daisy	*Tetraneuris scaposa*
Longstalk greenthread	*Thelesperma longipes*
Hopi tea greenthread	*Thelesperma megapotamicum*
Pricklyleaf dogweed	*Thymophylla acerosa*
Fiveneedle pricklyleaf	*Thymophylla pentachaeta*
Woolly tidestromia	*Tidestromia lanuginosa*
Woody crinklemat	*Tiquilia canescens*
Hairy crinklemat	*Tiquilia hispidissima*
Stemless Townsend daisy	*Townsendia exscapa*
Branched noseburn	*Tragia ramosa*
Slim tridens	*Tridens muticus*
Fanleaf vervain	*Verbena plicata*
Golden crownbeard	*Verbesina encelioides*
Texas sleepydaisy	*Xanthisma texanum*
Rough cocklebur	*Xanthium strumarium*
Plains yucca	*Yucca campestris*
Don Quixote's lace	*Yucca treculeana*
Desert zinnia	*Zinnia acerosa*
Rocky Mountain zinnia	*Zinnia grandiflora*
Lotebush	*Ziziphus obtusifolia*

Note: Nomenclature follows the NRCS PLANTS Database (http://plants.usda.gov/java/).

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Southwestern Public Service Company, Inc.
Eddy County Substation Expansion Project
Eddy County, New Mexico

BLM Serial No. NM-124559-01 & NM-139982

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March 2019

Confidentiality Policy
Any comments, including names and street addresses of respondents, you submit may be made available for public review. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AMS	Analysis of the Management Situation
amsl	above mean sea level
BLM	Bureau of Land Management
CAA	Clean Air Act
CCA	Candidate Conservation Agreement
CFO	Carlsbad Field Office
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
COA	condition of approval
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act
GHG	greenhouse gas
GIS	geographic information system
HAP	hazardous air pollutant
HUC	Hydrologic Unit Code
IM	Instruction Memorandum
IPCC	Intergovernmental Panel on Climate Change
MBTA	Migratory Bird Treaty Act of 1918
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NMED	New Mexico Environment Department
NMOSE	New Mexico Office of the State Engineer
NMPM	New Mexico Principal Meridian
NO_2	nitrogen dioxide
NO_x	nitrogen oxide(s)
NRCS	Natural Resources Conservation Service
O_3	ozone
OHWM	ordinary high-water mark
Pb	lead
PBPA	Permian Basin Programmatic Agreement

PFYC	Potential Fossil Yield Classification
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
POD	Plan of Development
project	Eddy County Substation Expansion Project
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
ROW	right-of-way
SF-299	Standard Form 299
SO_2	sulfur dioxide
SPS	Southwestern Public Service Company, Inc.
SWCA	SWCA Environmental Consultants
TCP	traditional cultural property
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1 PURPOSE AND NEED FOR ACTION

1.1 Background

Southwestern Public Service Company, Inc. (SPS), a wholly owned subsidiary of Xcel Energy Inc. has submitted a Standard Form 299 (SF-299) Application for an amended right-of-way to the Bureau of Land Management (BLM) Carlsbad Field Office (CFO) for the Eddy County Substation Expansion Project (Proposed Action, or project).

The existing Eddy County substation was granted an expansion of 6.5 acres under NM-077768 in 2016. That approved expansion was not constructed before the two year natural resource survey timeframe required by the BLM. Therefore, the BLM requested that an updated natural resource survey be conducted for the 6.5 acres under NM-077768.

SPS also proposes to amend NM-124559-01 by expanding the substation area an additional 6.7 acres, to address substation drainage issues and provide additional area for the 345 kilovolt (kV) overhead electric line from Eddy County Substation to Kiowa Substation (NM-134370). The proposal also includes access roads to the substation totaling 0.5 acres, a relocation to the Southern Union Road and Chase Road (County Road), and a 9.1 acre construction area. In total, the proposed amendment to NM-124559-01 would result in approximately 18.0 acres of new surface disturbance.

The proposed action analyzed herein is to reauthorize construction already granted under NM-077768 by providing results for an updated natural resource survey, in addition to analyzing impacts from the proposed amendment to NM-124559-01.

In total the proposed project area analyzed herein, including the previously granted expansion area (NM-077768) and proposed new expansion area, substation access roads, Southern Union Road and Chase Road (County Road) relocation, and construction area is 24.5 acres.

The proposed project is located on approximately 24.5 acres of BLM lands in Eddy County, New Mexico. The BLM CFO would serve as the lead federal agency for the undertaking and has assigned the project a case file number **NM-124559-01.**

- **The total new permanent right-of-way acreage on BLM lands is 7.2 acres.**

The proposed project would be located in Eddy County, New Mexico, approximately 12 miles southwest of the city of Loving (Figure 1.1). The legal land description (New Mexico Principal Meridian [NMPM]) for the permanent ROW is provided below.

1.1.1 Substation

BLM Lands

Township 17 South, Range 27 East, NMPM

Section 24: W½SW¼, SE¼SW¼

SWCA Environmental Consultants (SWCA) performed a general biological survey of the proposed project area on March 2, 2019. The results of the biological survey are described in Chapter 3 below. The purpose of the biological survey was to evaluate the potential for special-status species to occur and to identify habitat communities for special-status species regulated by the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act of 1973 (ESA) and migratory bird nests protected by the Migratory Bird Treaty Act of 1918 (MBTA).

The entire length of the project falls within the Permian Basin Programmatic Agreement (PBPA) area for cultural resources. However, the project does not qualify for enrollment into the PBPA; therefore SWCA conducted a Class I Archaeological Records Management Section database search of the proposed

project area in March 2019. Although the entire 24.5-acre proposed project area did not have 100% survey coverage, the BLM indicated that since only small portions of the project area were not covered by surveys no further cultural resource surveys were required.

This EA complies with the requirements of the National Environmental Policy Act of 1969 (NEPA) and federal regulations found in 40 Code of Federal Regulations (CFR) Chapter V. This EA analyzes the site-specific impacts associated with the Proposed Action, identifies mitigation measures to potentially reduce or eliminate those impacts, and provides agency decision makers with detailed information with which to approve or deny the Proposed Action or an alternative. This EA analysis assumes the BLM CFO's standard conditions of approval (COAs) would apply (BLM 1997:Appendix 2).

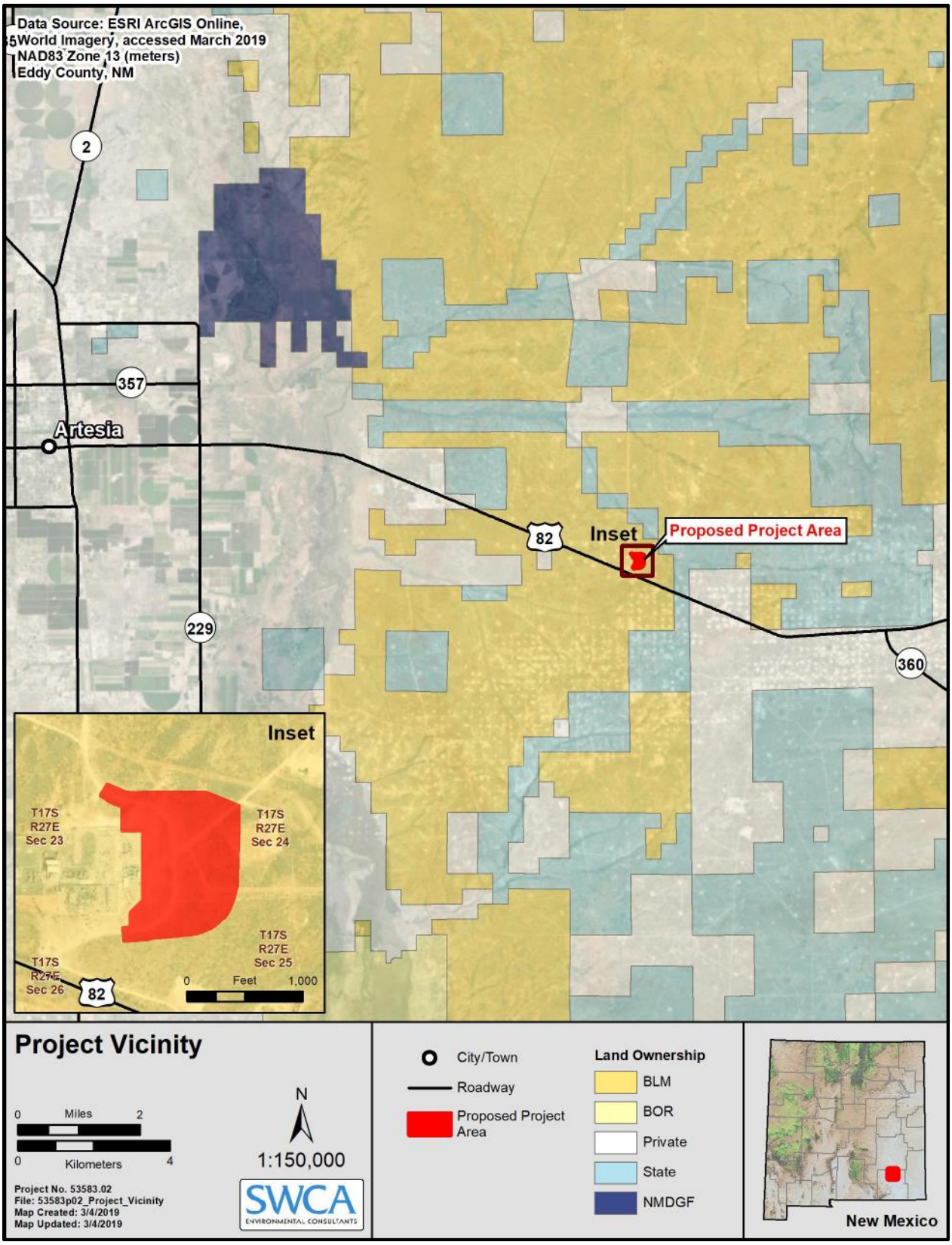


Figure 1.1. Project vicinity map.

1.2 Purpose and Need for Action

The BLM's purpose is to respond to SPS's request for legal use of and access across BLM-managed public lands by granting SPS a ROW for the proposed substation expansion and associated infrastructure.

As stated in 43 CFR 2801.9, a BLM ROW grant is required for use of public lands for "systems or facilities over, under, on, or through public lands," including transmission lines. The BLM's mandate for multiple uses of public lands includes development of energy transmission in a manner that conserves the multitude of other resources found on public lands. The need for the BLM's action is established by the Federal Land Policy and Management Act (FLPMA) and is to respond to an application for a ROW grant by evaluating the application for use of federal land for construction of one substation expansion on federal land.

The BLM would consider the application in accordance with 43 CFR 2800 (Rights-of-Way under FLPMA) and the Energy Policy Act of 2005.

1.3 Decision to Be Made

The BLM will decide whether to issue the subject ROW grant and, if so, under what terms and conditions.

1.4 Conformance with Applicable Land Use Plan(s)

The Proposed Action is in conformance with the 1988 BLM Carlsbad Resource Management Plan (RMP) (BLM 1988), as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment (RMPA) (BLM 1997). The 1988 RMP, as amended, provides for the integrated multiple use and sustained yield of resources for the planning area. The 1997 RMPA, while not directly applicable, as it was designed for fluid mineral development and management, does provide COAs for overhead power lines (BLM 1997:Appendix 2). After review, the BLM has determined that the Proposed Action conforms to the land use plan terms and conditions as required by 43 CFR 1610.5.

Name of Plan: 1988 Carlsbad Resource Management Plan
Date Approved: September 1988

Decision: "…public lands are available for utility and transportation facility development; however, applicants will be encouraged to locate new facilities within the designated ROW corridors. Deviations from designated corridors may be permitted based on the type and need of the proposed facility, and lack of conflicts with other uses" (BLM 1988:9).

Name of Plan: 2008 Special Status Species Record of Decision and Resource Management Plan Amendment—to address management of the lesser prairie-chicken (*Tympanuchus pallidicinctus*) and the dunes sagebrush lizard (*Sceloporus arenicolus*)
Date Approved: April 2008

Decision: "New projects of the type described above [utility corridors for major projects such as interstate electric transmission lines; pipelines; and communications lines for interstate use] that propose to cross the Planning Area would be evaluated based on the impacts to lesser prairie-chicken and sand dune lizard habitats and other resources to meet the overall objectives of this plan. These projects would not be located in ROW avoidance areas if other routes can meet the purposes of the project" (BLM 2008a:2-13).

The Proposed Action is not within the management areas identified in the 2008 Special-Status Species RMPA (BLM 2008a).

The ROW would be granted only after site-specific analysis (BLM 2008a:6). Site-specific impacts associated with the proposed project are analyzed and disclosed in this EA; specifically, impacts on special-status species, are discussed below (see Section **3.5** and Appendix A). Appendix 2 of the Carlsbad Approved RMPA and Record of Decision (BLM 1997:Appendix 2:8-9) and the 2008 RMPA and

Record of Decision (BLM 2008a:6-7) describe COAs and mitigation measures for overhead transmission lines.
The Proposed Action is not located in a ROW avoidance area. Therefore, the Proposed Action is in conformance with the RMP, as amended.

1.5 Relationship to Statutes, Regulations, or Other Plans

Various federal and state agencies regulate different aspects of electric power transmission projects. Table 1.1 lists the environmental permits and approvals that could be required for the proposed project.

Table 1.1. Potential Permits, Approvals, and Clearances Needed for Construction, Operation, and Maintenance of the Proposed Project

Permit/Notification	Issuing Agency	Status
Federal Permit, Approval, or Clearance		
Application for Transportation and Utility Systems and Facilities on Federal Lands (ROW grant)	BLM	Subject of the SF-299 and this EA.
Clearance under Section 7 of the ESA	USFWS	A biological survey was conducted in March 2019. Findings are described in Chapter 3. The BLM would determine what form of consultation with USFWS is warranted for this project.
MBTA (16 United States Code 703–712)	BLM	The BLM has not identified any requirements for MBTA compliance other than the biological survey to document nests and activity. One inactive passerine nest was observed during the March 2019 biological survey of the proposed project area.
Clean Water Act Section 404 Permitting Discharges of Dredge or Fill Material into Waters of the U.S. (including wetlands)	U.S. Environmental Protection Agency and New Mexico Environment Department (NMED)	Section 3.2 describes water resources. The biological survey was conducted in March 2019 and there were no potentially jurisdictional water bodies (i.e., waters of the U.S.) that would be crossed by the proposed project area. Nationwide Permit 12 – Utility Line is not required.
State Permit, Approval, or Clearance		
Clean Water Act Section 401 Water Quality Permit	NMED	Section 3.2 describes water resources. The biological survey was conducted in March 2019 and there were no potentially jurisdictional water bodies (i.e., waters of the U.S.) that would be crossed by the proposed project area. No Section 401 permit is required.
Clean Air Act New Mexico Air Quality Control Act	NMED	Impacts to air quality are described in Section **3.1**. No NMED new source permit or Notice of Intent is required for facilities emitting less than 10 tons per year of any criteria pollutant; therefore, the Proposed Action is in compliance with the No Permit Required regulation (NMED 2019).

Permit/Notification	Issuing Agency	Status
Section 106 of the National Historic Preservation Act	State Historic Preservation Office	Although the entire 24.5-acre proposed project area did not have 100% survey coverage, the BLM indicated that since only small portions of the project area were not covered by surveys no further cultural resource surveys were required. Any consultation with the State Historic Preservation Office would be managed by the BLM.
Tribal communications: consultation to determine if the proposed project would impact receptors of cultural importance	Native American tribes	Any consultation with Native American tribes would be managed by the BLM.
Access permit or public highway utility accommodation permit	New Mexico Department of Transportation	Discussions with the New Mexico Department of Transportation regarding the location of the proposed project and access locations are underway.

1.6 Scoping, Public Involvement, and Issues

Appropriate scoping helps identify issues, resources, and resource uses that could be impacted, reducing the chances of overlooking a potentially significant issue or reasonable alternative. Scoping takes place internally within the BLM via meetings with resource specialists. Resource issues identified for the proposed project are listed in Table 1.2. No formal public scoping has occurred for the proposed project.

Table 1.2. Resource Issues Identified for the Proposed Project

Resource/Issue	Issue for Detailed Analysis
Air Resources	How would the proposed project impact air quality, especially during construction of the proposed project?
Water Resources	How would the proposed project affect surface water resources, including drainages and playas? How would the proposed project affect groundwater resources?
Soils	How would the surface disturbance associated with the proposed project affect sensitive soils?
Vegetation and Invasive, Non-Native Species	How would the proposed project affect vegetation? How would the proposed project minimize the spread of invasive, non-native species?
Wildlife and Special-Status Species	How would the proposed project and associated noise impacts affect habitat for wildlife and migratory birds?
Karst Resources	How would the proposed project affect karst resources?
Cultural Resources and Native American Religious Concerns	How would surface-disturbing activities affect cultural resources? Are any traditional cultural properties affected by the proposed project?
Paleontological Resources	How would the proposed project impact paleontological resources, such as fossils?
Livestock Grazing	How would the proposed project impact livestock grazing in the vicinity of the proposed project?

Resource issues considered by the BLM for potential impacts from the proposed project and then dismissed from further analysis in this EA are listed in Table 1.3 with rationale for the dismissal.

Table 1.3. Resource Issues Considered but Not Analyzed in Detail for the Proposed Project

Resource/Issue	Rationale for Dismissal from Detailed Analysis
Mineral Development	SPS would not develop minerals, including excavated material to build the structure foundations.
Special Designations	There are no special designations crossed by the proposed project. The Bluntnose Shiner Habitat Special Management Area is located approximately 9.1 miles northwest of the proposed project area.
Recreation Areas	Dispersed recreation could occur in the vicinity of the proposed project. There are no special designations for recreation within or near the proposed project area. The Square Lake Extensive Recreation Management Area is approximately 18.3 miles northeast of the proposed project area.
Visual Resources	The proposed project is within Visual Resource Management Class IV, which allows for major modifications to the landscape. The visual impacts from the proposed substation would be consistent with management objectives outlined within Visual Resource Management Class IV and with the previously developed nature of the landscape (BLM 2014).
Socioeconomic Conditions	The small number of jobs created and the temporary status of those jobs does not warrant detailed analysis in this EA.
Environmental Justice	No environmental justice population, as defined by Executive Order 12898 (U.S. Environmental Protection Agency 2015) would be affected by the proposed project.
Public Health and Safety	No residential or community infrastructure is present near the vicinity of the Proposed Action. Hazardous materials are typically not used or stored on the proposed ROW. All laws and regulations regarding the handling of any fuels or trash would be adhered to. Therefore, this issue is not analyzed in detail.

2 PROPOSED ACTION AND ALTERNATIVE

2.1 Proposed Action

SPS proposes to expand the existing Eddy County substation (NM-124559-01). The proposed project would include a 13.2-acre substation expansion, which includes the previously approved and granted 6.5-acre substation expansion (NM-077768) in addition to the newly proposed 6.7-acre substation expansion. In addition, the proposed project would include two access roads, one 788.6-foot long perimeter fence surrounding the substation expansion area, and a relocation of the County Road, totaling approximately 5,752 feet. SPS is also requesting a 9.1-acre temporary construction workspace around the substation expansion area and roads. In total the project area analyzed herein, including previously granted expansion area and the proposed new expansion area, substation access roads, County Road relocation, and construction area is 24.5 acres.

The proposed amendment to NM-124559-01 would result in approximately 18.0 acres of new surface disturbance (Table 2.1), however 24.5 acres are analyzed in detail in Chapter 3 due to the additional natural resources survey required to reauthorize construction for NM-077768. Approximately 8.9 acres of long-term disturbance would result from the Proposed Action. All surface disturbance not needed for operation or maintenance of the proposed project would be reclaimed following construction.

Table 2.1. Total Acres of Proposed Action Components by Land Ownership

Project Element	Land Ownership (acres)	Short-Term Disturbance (acres)	Long-Term Disturbance (acres)	Total Proposed Disturbance (acres)
Eddy County Substation Expansion (including one 788.6-foot perimeter fence)	BLM	-	6.7	6.7
2016 Eddy County Substation (NM-077768)	BLM	-	6.5	6.5
Substation Construction Boundary	BLM	9.1	-	9.1
Southern Union Road and Chase Road (approximately 5,752-feet)	BLM	-	1.7	1.7
Substation Access Roads (Qty: 2)	BLM	-	0.5	0.5
Total Project Analysis Acreage*		***9.1***	***15.4***	***24.5***
Deduction for NM-077768				***-6.5***
Total Acreage of amended NM-124559-01 Disturbance*				**18.0**

*24.5 acres was surveyed for natural resources by SWCA and is analyzed in Chapter 3.

SPS would use as many existing roads as possible to access the proposed project area during construction. However, two new access roads would be required to access the project area. Additionally, SPS would coordinate with Eddy County Road Department and the BLM to relocate Southern Union Road and Chase Road to accommodate the expansion of the substation. The proposed project is in the general vicinity of existing roads, well pads, and utility corridors (see Figure 2.1). The location of the proposed project area is provided in Section 1.1 and Figure 1.1. Additional project details are provided in the SF-299 and approved 2016 plan of development (POD) on file at the BLM CFO.

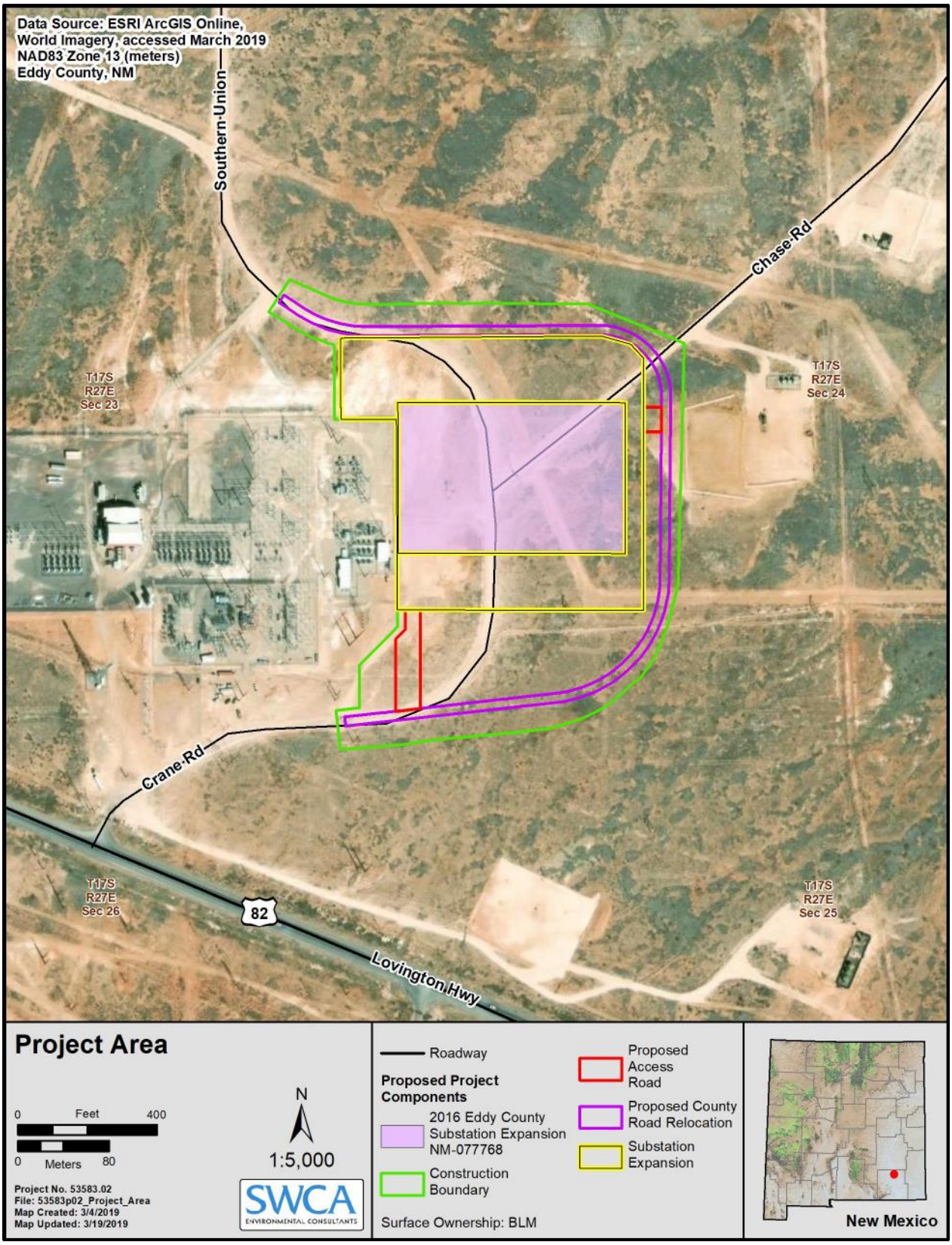


Figure 2.1. Project area map.

2.1.1 Proposed Project Phases

Construction of the proposed project is scheduled to begin after applicable required federal, state, and local permits and approvals are obtained. Construction of the proposed project would begin following the issuance of the BLM ROW grant and Certificate of Public Convenience and Necessity (CCN) from the New Mexico Public Regulation Commission. Construction would take approximately 12 months to complete. In general, implementing the Proposed Action would consist of four phases: 1) construction, 2) operation and maintenance, 3) post-construction reclamation, and 4) final reclamation and abandonment. These phases are described below. For a detailed description of construction practices associated with the Proposed Action, refer to the POD on file at the BLM CFO. SPS would follow the stipulations attached to the approved ROW grant and standard COAs (BLM 1997:Appendix 2) during applicable project phases.

During the proposed project phases, vehicles would use developed BLM roads, county roads, and highways. Traffic would include light and heavy vehicles. SPS would be rerouting the existing Southern Union Road and Chase Road that are currently within the proposed project area. The county roads would be rerouted around the proposed substation expansion area. SPS would also construct two new permanent access roads connecting from the rerouted county road to the proposed substation expansion.

Construction Phase

Construction would begin following approval of the Proposed Action, issuance of the BLM ROW grant, completion of the pre-construction activities described above, final notice to proceed from BLM, and issuance of the CCN. It is estimated that the project would take 12 months to complete. Pre-construction activities, including geotechnical investigation and engineering surveys, would be completed prior to construction. Construction would be conducted in a sequential set of tasks performed by multiple crew types. See Table 2.1 above for projected acreage of disturbance during construction. See the POD for full description of construction activities.

Clearing and Grading

Clearing and grading of the entire substation area would be necessary to prepare the site for construction. The site would be graded to create a level surface with a moderate slope for drainage. Grading would be engineered to provide adequate clearances from energized conductors entering the substation. All topsoil would be segregated and stockpiled away from other excavated soil, which would be used as backfill, berms, or fill for other areas, with the exception of structure holes excavated by an auger.

The surface of the substation would be covered with an insulating layer to protect personnel from high currents and voltages in the event of a fault condition. Approximately 2 to 4 inches of crushed rock would be applied to the finished surface of the substation, which would then be treated with a soil sterilizer to prevent vegetation growth. If necessary, drainage structures such as ditches, culverts, and sumps would be installed.

Grounding

A grounding system consisting of buried copper conductor arranged in a grid system and driven ground rods 8 to 10 feet long would be installed. The ground rods and any equipment and structures would be connected to the grounding conductor. The amount of conductor, length, and number of ground rods required is calculated based on fault current and soil characteristics.

Fencing

Security fence would be installed around the entire perimeter of the substation. The fence would be 8 feet tall and made of chain link topped with barbed wire. Locked gates would be installed at appropriate locations for authorized vehicle and personnel access.

Foundation Installation

Structures being added to the substation would be either directly embedded into the ground or placed on a drilled pier foundation. Equipment foundations for circuit breakers and transformers would be slab-on-grade. These foundations would be installed by excavating the foundation area, placing forms, placing reinforced steel and anchor bolts as necessary, and placing concrete into the forms. After the foundations are poured, the forms would be removed, and the surface of the foundation would be dressed. Reinforced steel and anchor bolts would be transported to each site by truck, either as a prefabricated cage or loose pieces, and would be fabricated into cages on-site. Concrete would be hauled to the site in concrete trucks.

Oil Containment

Some substation equipment such as transformers, reactors, and circuit breakers are filled with an insulating mineral oil. Containment structures would be used to prevent oil from escaping into the ground. The type of containment device varies depending on site requirements, environmental conditions, and regulatory restrictions. The simplest type of oil containment is an excavated pit of a calculated capacity under the oil-filled equipment with an oil impervious liner. The pit may use grates to facilitate access to the equipment. In the event of an oil leak or rupture, the oil captured in the containment pit is pumped into tanks or barrels and transported to a disposal facility. If required, more elaborate oil containment systems can be installed. This may take the form of an on- or off-site storage tank and/or oil-water separator equipment, depending on site requirements. The exact type of containment structure would be determined as part of the final substation design.

Structure and Equipment Installation

Steel structures to support some substation equipment would be affixed to the concrete foundation anchor bolts with a track-mounted crane. Equipment such as transformers, reactors, and circuit breakers can be mounted directly to the foundations without supporting structures. The equipment is then assembled, tested, and connected electrically to the control building through multi-conductor control cables installed in conduits and/or a precast concrete cable trench system.

Cleanup

The substation site would be kept in an orderly condition throughout construction. All refuse and trash would be removed and disposed of appropriately. If landscaping is required by the permitting agency, drought-tolerant and primarily native plant materials would be used.

Operations and Maintenance Phase

Routine maintenance activities are ordinary maintenance tasks that have historically been performed and are regularly carried out on a routine basis, including the replacement of individual structures, components, and other facilities that, due to obsolescence, age, or wear, are in need of replacement or repair. It is expected that these replacements would be required infrequently (every 5 to 10 years) or as determined by inspection. Major maintenance activities may need to occur on an infrequent basis. These activities would require planning and budgeting in advance and agency coordination.

Post-Construction Reclamation

After construction, all disturbed areas, would be returned to pre-construction conditions and a stable vegetative cover would be maintained on the project area. The construction corridor would be restored and revegetated according to the BLM standards. Vegetation, soil, and rocks left as a result of construction would be randomly scattered over the project area and would not be left in rows, piles, or berms unless requested by the BLM. In those areas where erosion control structures are required to stabilize soil conditions, the structures would be installed for the specific soil conditions encountered in the field.

Final Reclamation and Abandonment

At the end of the substation's useful life, estimated to be 30 years from construction, the necessary authorizations would be obtained from the BLM Authorized Officer to decommission the project. Future decommissioning of the substation would include removal of conductors and structures. All materials would be removed from the ROW. Equipment at the substations and unsalvageable materials would be disposed of at authorized sites. Regrading and revegetation of disturbed areas would be completed according to BLM standards. The abandoned ROW would revert to the control of the landowners.

2.2 No Action

BLM NEPA Handbook H-1790-1 states that for EAs on externally generated applications, the No Action Alternative generally means the request for the proposed activity would be denied (BLM 2008b:52). This option is provided in 43 CFR 3162.3-1(h)(2). The No Action Alternative would result in the denial of the proposed application, and the current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

2.3 Alternatives Considered but Eliminated from Further Analysis

Alternatives to the Proposed Action are developed to explore different ways to accomplish the purpose and need while minimizing environmental impacts and resource conflicts and meeting other objectives of the Carlsbad RMP. Consistent with BLM NEPA Handbook H-1790-1, the agency "need only analyze alternatives that would have a lesser effect than the proposed action" (BLM 2008b:80). Those with greater adverse resource impacts or those that are not feasible because of existing physical constraints or infrastructure are not brought forward for detailed analysis in this EA.

No reroutes were considered for the Eddy County Substation expansion; however, due to the nature of the Proposed Action, SPS would need to reroute Southern Union Road and Chase Road to accommodate the expansion, as these roads are within the proposed project area.

Once the Proposed Action was identified, a biological resources survey was conducted. The proposed project location and design would meet the BLM's purpose and need while minimizing environmental impacts to the greatest extent possible because the majority of the proposed project parallels or abuts existing disturbance. Any other proposed project locations that would meet the purpose and need would likely result in greater surface and/or environmental impacts. Internal scoping did not identify an additional unforeseen alternative; therefore, only the No Action and Proposed Action alternatives were brought forward for detailed analysis in this EA.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter is organized by relevant major resources or issues/concerns as presented in Section 1.6 and Table 1.2. On the basis of Council on Environmental Quality guidance and BLM NEPA Handbook H-1790-1, the following discussion is limited to those resources or resource uses that could be impacted to a degree that warrants detailed analysis (40 CFR 1502.15) (BLM 2008b:96) as determined by the BLM interdisciplinary team.

Projects requiring approval from the BLM, such as ROWs, can be denied when the BLM determines that adverse effects to resources (direct or indirect) cannot be mitigated to reach a Finding of No Significant Impact. Under the No Action Alternative, the proposed project would not be constructed and there would be no new impacts to any elements of the human environment from approval of the proposed project. The No Action Alternative would result in the continuation of the current land and resource uses in the project area and is used as the baseline for comparison of environmental effects of the Proposed Action.

3.1 Air Resources

3.1.1 Affected Environment

Air quality and climate are components of air resources that may be affected by the Proposed Action. Therefore, the BLM must consider potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision-making process. Air resource impacts associated with the Proposed Action were evaluated within a designated analysis area defined as the extent of the CFO planning area, which includes Eddy, Lea, and Chaves Counties.

Air Quality

The BLM and BLM-authorized actions are required to comply with the Clean Air Act (CAA) and consider impacts of these actions to air quality on its managed lands.

National Ambient Air Quality Standards

Criteria Pollutants

Under the CAA, the U.S. Environmental Protection Agency (EPA) has the authority to regulate emissions from both stationary and mobile sources. The CAA requires the EPA to establish National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. Per the requirement, the EPA has created national standards for seven common air pollutants, also known as criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), lead (Pb), particulate matter equal to or less than 10 microns in diameter (PM_{10}), and particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$).

The NAAQS include primary standards that provide for the protection of human health and secondary standards that provide for the protection of public welfare (e.g., visibility, the health of vegetation and animals). The NAAQS are defined in terms of threshold ambient concentrations measured as an average for specified periods of time. Pollutants with acute health effects are assigned short-term standards, and those with chronic health effects are assigned long-term standards. The NAAQS undergo periodic revisions to ensure that emerging science and technology result in the most up-to-date and protective standards achievable (see EPA [2016] for current standards).

Attainment

In accordance with the CAA, the EPA must review air quality conditions reported by states to determine whether states are meeting the national standards for air quality. Areas with ambient concentrations of

criteria pollutants within the NAAQS are deemed to be "attainment" areas;[1] conversely, those that do not meet the standards are referred to as "nonattainment" areas.[2] Geographic areas previously designated as nonattainment and subsequently redesignated as attainment as a result of achieving the NAAQS (for a probationary period) are categorized as "maintenance" areas. Areas that cannot be classified on the basis of insufficient data are designated as "unclassifiable." The designation "attainment/unclassifiable" may be assigned to areas that are lacking sufficient monitoring data but that meet the standard or will soon meet the standard.

The General Conformity Rule

The General Conformity Rule, established under Section 176(c)(4) of the CAA, ensures that federal actions comply with the NAAQS, achieving attainment of these standards. Activities or actions that conform to the rule should not, through additional air pollutant emissions, cause or contribute to new violations, increase the frequency or severity of existing violations, or delay timely attainment or interim emission reductions (BLM 2014a). Essentially, air conformity ensures that air pollution emissions associated with federal actions do not contribute to air quality degradation, which would prevent the achievement of state and federal air quality goals.

The General Conformity Rule requires federal agencies to identify, analyze, and quantify emission impacts of a federal action where the total direct and indirect emissions for criteria pollutants in a nonattainment or maintenance area exceed the NAAQS. If the location of the action is in an attainment area, the General Conformity Rule does not apply (BLM 2014a).

Hazardous Air Pollutants

Hazardous air pollutants (HAPs), also known as air toxins, are pollutants that are produced primarily by human-made sources. These pollutants are known or suspected to cause adverse human health effects, including cancer, as well as negative effects on ecosystems. Humans can come into contact with these toxins through several exposure pathways, including inhalation; ingestion of contaminated food, water, and soil; and dermal contact.

The *Air Resources Technical Report for Oil and Gas Development: New Mexico, Oklahoma, Texas and Kansas* (herein referred to as the Air Resources Technical Report) discusses the relevance of HAPs to oil and gas development and infrastructure, as well as the particular HAPs that are regulated in relation to these activities (BLM 2016:14–15). The EPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP impacts by county in the United States. The purpose of the NATA is to identify areas in which HAP emissions result in high health risks and further emissions reduction strategies are necessary. A review of the results of the 2014 NATA shows that cancer, neurological, and respiratory risks in Chaves, Eddy, and Lea Counties are not elevated and match statewide and national levels (EPA 2018a).

Existing Air Quality

EPA's Green Book webpage reports that Eddy, Lea, and Chaves Counties are in attainment for all NAAQS, as defined by the CAA (EPA 2018b). In 2011, the CFO contracted with Applied EnviroSolutions to provide an emissions inventory for the CFO planning area, including Chaves, Eddy, and Lea Counties (Applied EnviroSolutions 2011). This information is more detailed than that available from the EPA and is specific to the CFO planning area. Monitored values for criteria pollutants (except CO)[3] from the 2011 emissions inventory also show that the CFO planning area is in attainment with the NAAQS.

[1] Note: An area may meet the established NAAQS for one or more criteria pollutants but have unacceptable levels for others. Therefore, an area could be in attainment for one criteria pollutant and simultaneously in nonattainment for another (BLM 2014b).

[2] The EPA has set time limits for nonattainment areas to conform to the NAAQS and may further designate nonattainment areas as marginal, moderate, serious, severe, or extreme (BLM 2014b).

[3] There are no monitors for CO in the CFO planning area because CO levels are currently not an issue.

The Analysis of the Management Situation (AMS) for the CFO (BLM 2014b) discusses the sources of and the human health and safety concerns associated with criteria pollutants. The air quality analysis documented in the AMS shows that the criteria pollutant of most concern in the planning area is O_3. One county in the planning area, Eddy County, exceeded the 8-hour O_3 standard once in 2002 and once in 2006; however, it did not violate the 3-year rolling average.[4] No other violations of air quality standards have occurred within the planning area. At present, O_3 levels are close to the regulatory limit (BLM 2014b). Other criteria pollutants of concern include nitrogen oxide(s) (NO_x) (including NO_2), SO_2, and particulate matter (PM_{10} and $PM_{2.5}$). CO and Pb emissions are not considered major criteria pollutants in the CFO planning area (BLM 2014b).

Climate

Existing Climate

The planning area is located in a semiarid climate regime typified by dry, windy conditions, limited rainfall, hot summers, and mild winters. Summertime maximum temperatures are generally around 90 degrees Fahrenheit (°F), with occasional temperatures over 110°F (Western Regional Climate Center 2018a). Winter minimum temperatures are generally between 20°F and 40°F, with extremes remaining above 0°F. Precipitation is mainly in the form of summer thunderstorms associated with the Southwest monsoon, though occasional Pacific storms drop south into New Mexico during the winter. Table 3.1 presents climate averages for Carlsbad using the most current climate data available (1981–2010) from the National Oceanic and Atmospheric Administration.

Table 3.1 Climate Averages for Carlsbad, 1981–2010

Climate Condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (°F)	42.6	47.2	54.0	62.4	71.5	79.3	81.2	79.9	73.2	62.9	51.5	42.8
Maximum temperature (°F)	57.5	62.7	70.2	78.5	86.9	94.4	94.6	93.1	87.0	78.1	67.1	57.5
Minimum temperature (°F)	27.6	31.7	37.9	46.2	56.0	64.3	67.7	66.6	59.4	47.7	35.8	28.0
Precipitation (inches)	0.47	0.54	0.51	0.64	1.17	1.53	2.01	1.83	2.11	1.16	0.81	0.63

Source: National Oceanic and Atmospheric Administration (2011)

There is one wind measurement station near the Proposed Action: Caprock, in the northeast corner of Eddy County, located approximately 24 miles west of the Proposed Action. The data from Caprock indicates that the prevailing winds most frequently arrive from the south-southeast, bearing 157° (Western Regional Climate Center 2018).

Global Climate Change

Climate change is defined as a non-random change in climate that is measured over a period of decades or longer (National Weather Service 2009). Changes may result from natural or human causes. The most useful indicator of climate change is greenhouse gas (GHG) emissions, which include long-lived emissions such as CO, carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4), as well as water vapor and other trace gases (BLM 2014b). The 2013 Intergovernmental Panel on Climate Change (IPCC) fifth assessment report states that the atmospheric concentrations of well-mixed, long-lived GHGs have increased to levels unprecedented in at least the past 800,000 years. Further, human influence has been detected in warming of the atmosphere and the ocean, changes in the global water cycle, reductions in snow and ice, global mean sea level rise, and changes in some climate extremes. It is extremely likely

[4] When assessing annual emissions for criteria pollutants, a 3-year rolling average accounts much of the year-to-year fluctuations in order to assess yearly trends.

(95%–100% probability) that human influence has been the dominant cause of the observed warming since the mid-twentieth century (IPCC 2013).[5]

BLM-authorized activities that produce GHGs include oil and gas production, construction activities, vehicle use, and prescribed fire. These activities generate both CO_2 and CH_4, contributing largely through carbon emissions. The primary source of GHG emissions on BLM-managed land in the planning area is oil and gas production. Some BLM-authorized activities may assist in isolating carbon emissions. For example, vegetation maintenance may help build organic carbon in soils and absorb CO_2 (i.e., a carbon sink) from the atmosphere (BLM 2014b).

3.1.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Air Quality

In 2014, the BLM released an Instruction Memorandum (IM) providing national guidance for the BLM on quantifying air emissions and on the use of air emissions estimating tools (BLM 2014c). The IM stipulates that this may be a useful step, under some circumstances, to estimate air emissions from resource management activities for analysis. However, the IM does not require air emissions to be quantified when preparing NEPA documents for a project in an attainment area, where the emissions would not be estimated to exceed the NAAQS (BLM 2014c).

Criteria for assessing air quality impacts are based on existing regulatory requirements across all applicable jurisdictions. Eddy, Chaves, and Lea Counties satisfy all NAAQS for monitored pollutants and are classified as attainment areas for those pollutants. These counties are unclassified with regard to those pollutants that are not monitored in those counties (BLM 2014c).[6]

Generally, potential impacts to air resources resulting from the Proposed Action include construction emissions (those emissions that are expected to be temporary) and, to a lesser extent, operational emissions (those emissions that are expected to occur annually during operation of the Proposed Action). Typical construction-related emissions are anticipated to result from exhaust from construction vehicles, material movement, and equipment; exhaust from construction worker commuting; and fugitive dust from general construction activities such as ground disturbance during construction and vehicle traffic on dirt roads during construction and operation. Construction emissions would be short-term, lasting only the duration of construction, and would not result in a substantial increase in emissions. These temporary emissions will be negligible and would not cause or contribute to exceedances of the NAAQS; therefore, impacts to air resources would be insignificant from construction of the Proposed Action.

Operational-related emissions likely to be produced from the Proposed Action are attributable to emissions from inspection and maintenance activities (including exhaust from inspection vehicles and aerial inspections, and fugitive dust from vehicular use of unpaved roads and line maintenance equipment). Fugitive dust emissions may also result from annual maintenance of repair of access roads. These emissions would be minimal and would not directly cause exceedances of the NAAQS. Therefore, operation and maintenance of the Proposed Action would not result in significant impacts to air resources.

Mitigation Measures

Measures to minimize or eliminate impacts to air quality are described in COAs (BLM 1997:Appendix 2). No further mitigation measures have been recommended.

[5] The IPCC is currently in its sixth assessment cycle, for which the synthesis report should be finalized in 2022.

[6] As the Proposed Action is not located in a nonattainment or management area, the General Conformity Rule does not apply and a conformity determination, through the identification, analysis, and quantification of emission impacts of the Proposed Action, is not required.

3.2 Watersheds and Drainages

3.2.1 Affected Environment

Surface Hydrology

The surface water supplies in northern Eddy County are transitory and limited to quantities of runoff impounded in short drainageways, shallow lakes, and small depressions, including various playas and lagunas (New Mexico Office of the State Engineer [NMOSE] 2016). The proposed project area crosses one watershed as defined by the 10-digit Hydrologic Unit Code (HUC) (Table 3.2). This watershed is contained within the Roswell Groundwater Basin (NMOSE 2016). There are no New Mexico Outstanding National Resource Waters within the watershed.

Table 3.2. Watersheds Crossed by the Proposed Substation Expansion Area of Disturbance

Watershed Name	HUC-10/ID	Portion of Proposed Project Area within the Watershed (acres)	Total Watershed Size (acres)
Rio Penasco	1306000714	24.5	122,115.9
Total			**122,115.9**

The biological survey of the proposed project area was conducted March 2, 2019, to determine the presence of potential waters of the U.S., as defined by the U.S. Army Corps of Engineers, including streams, wetlands, and other special aquatic sites. Defining elements of potential waters of the U.S. include ordinary high-water marks (OHWMs), defined bed and banks, or the three mandatory wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. The presence of playas and vegetated depressions was also investigated during the biological survey according to the BLM CFO's guidance.

Based on review of the U.S. Geological Survey's (USGS's) National Hydrography Dataset (USGS 2019) and the USFWS's National Wetlands Inventory (USFWS 2018a), there were no potential jurisdictional water features identified within the proposed project area (see Figure A.1in Appendix A). The biological surveys confirmed that there were no water features within the proposed project area. No playas or other special aquatic sites were identified within the proposed project area during the biological surveys.

The proposed project area does not intersect any Zone A mapped floodplains (Federal Emergency Management Agency [FEMA] 2018). Zone A floodplains represent 100-year floodplains that have a 1% chance of being inundated in a given year (FEMA 2018).

Groundwater Hydrology

The Roswell Groundwater Basin is the largest declared basin within in the Pecos Valley. The Pecos River runs through the eastern side of the basin, from north to south. Groundwater in this basin is derived from several geological formations, including the Yeso and San Andres Formations, the Artesia Group, the Glorieta Sandstone, and alluvium (water eroded) and river terrace deposits (Pecos Valley Water Users Organization 2001). The two major aquifers that yield large supplies of water are the Permian artesian aquifer and the shallow-water aquifer found in alluvium and river terrace deposits. These two aquifers provide water for the cities of Roswell, Artesia Lake Arthur, Dexter, and Hagerman. Irrigation wells have been developed throughout the basin as well, with the largest concentration in the Pecos River valley between Roswell and Seven Rivers. The quality of groundwater ranges widely, and chloride and sulfate are the most common elements that degrade quality of the Roswell Basin (Pecos Valley Water Users Organization 2001).

Groundwater-level data are limited for the proposed project vicinity. Based on the New Mexico Water Rights Reporting System, groundwater levels in the Roswell Basin average 144 feet below ground surface, with a minimum depth of 0 feet below ground surface (NMOSE 2016a).

3.2.2 Impacts from the Proposed Action

Direct and Indirect Impacts

No potential waters of the U.S. were identified during the biological survey of the proposed project area. Therefore, no direct impacts to waters of the U.S. would occur from the proposed project. Furthermore, no playas or vegetated depressions, as defined by the BLM CFO, were identified within the survey area during the biological survey; therefore, no direct impacts to these features would occur from the proposed project.

The potential to impact water resources primarily lies with the indirect impacts that could occur due to stormwater runoff from construction activities into downstream aquatic resources. Although indirect impacts from stormwater movement of contaminants or sediment due to ground disturbance could be a possibility, the mitigation measures described below, the standard COAs (BLM 1997:Appendix 2), and post-construction reclamation would likely limit movement of contaminants or sediment and limit indirect impacts.

Similar to potential impacts to surface water, impacts to groundwater could occur if spills or leaks occur during operation of the substation. Mitigation measures that minimize potential risk to groundwater include implementation of a spill response plan.

Mitigation Measures

Measures to minimize or eliminate impacts to water resources are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2). No special mitigation has been identified by the BLM.

- Any water erosion that may occur due to the construction of the access roads and substation during the life of the project would be quickly corrected and proper measures would be taken to prevent future erosion.

3.3 Soils

3.3.1 Affected Environment

According to the Natural Resources Conservation Service (NRCS) (2019a), one soil type is mapped within the 24.5-acres proposed project area. The mapped soil type that intersects the project disturbance area is listed in Table 3.3 below.

Table 3.3. Soils in the Proposed Project Area

Soil Type Name	Soil Type Symbol	Acres in Proposed project area	Percent of Project Area
Reeves-Gypsum land complex	RG	24.5	100.00
Total			**100.0**

Source: NRCS (2019a).

The soil type is considered highly drained and non-hydric. Additionally, this soil unit is not considered a prime farmland soil of statewide importance (NRCS 2019a).

Biological soil crusts are important components of the loamy and sandy soils of southeastern New Mexico. These crusts bind soil particles, thereby stabilizing surfaces and reducing erosion. Biological soil crusts in sandy soils are most commonly dominated by early succession cyanobacteria, which are adapted to disturbed conditions or very erodible soils. Loamy soils contain cyanobacteria but may also be colonized by algae, fungi, mosses, squamulose, crustose, and gelatinous lichens. All soil crust organisms enhance soil stability, capture nutrient-rich dust, impact nutrient cycling, contribute organic matter, and

influence soil moisture dynamics. In addition, cyanobacteria and cyano-lichens fix atmospheric nitrogen, potentially making this nutrient more available for vascular plants. All of these functions are utilized by and important for sustaining grasses, forbs, and other vascular plants in the project area. These crusts have the potential to exist in most areas where soils are exposed (i.e., not covered by rocks or vegetation). During the March 2019 biological survey, no biological soil crusts were observed within the proposed project area; however, an in-depth soil inventory of the proposed project area was not conducted.

3.3.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Any soil removal associated with development of structure foundations and at the substation site would be permanent. The construction of the proposed project would total 15.4 acres and would permanently remove soils from productivity. Direct impacts to soils include increased erosion from the removal of vegetative cover, contamination from accidental spills or leaks, and soil compaction from heavy equipment resulting in the loss of soil structure and porosity. These impacts can lead to increased rainfall runoff and susceptibility to high wind events and consequently increased erosion. These direct impacts could result in the loss of soil structure and porosity. Any soil removal associated with development of structure foundations would be permanent for the life of the proposed project as structure locations would not be recontoured. However, topsoil would be re-spread and the area would be seeded during the reclamation process.

All surface disturbance not needed for operations and maintenance would be stabilized and reclaimed once construction has been completed. Stabilization of soils would be partly dependent upon reestablishing vegetation cover. With sufficient rainfall and proper seeding techniques, vegetation cover by faster-growing plants is expected within 2 years after construction. However, even after the proposed project area is revegetated, it is expected that the vegetation community within the project area would be different than that outside the project area because SPS vegetation management practices for the proposed project require permanent removal of woody vegetation. Therefore, the vegetation community within the project area would be permanently shifted to predominantly grasses and forbs and woody vegetation would not aid in soil stabilization.

Although no biological soil crusts were observed during the 2019 biological survey, the proposed project could impact subsurface biological soil crusts. Indirect impacts to soil resources could include a change in soil productivity due to accidental mixing of topsoil with subsoil during construction.

Mitigation Measures

Measures to minimize impacts to soils are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2). No special mitigation has been identified by the BLM.

3.4 Vegetation and Invasive, Non-Native Species

3.4.1 Affected Environment

The proposed project area is located within the Chihuahuan Deserts: Chihuahuan Basins and Playas ecoregion (Griffith et al. 2006). During the biological survey, biologists identified one general vegetation community type within the proposed project area: Chihuahuan desert grassland with intermixed scrub. The vegetative community is dominated by honey mesquite (*Prosopis glandulosa*) and vine mesquite (*Panicum obtusum*). Vegetative cover within and surrounding the proposed project area is approximately 30% to 40%. At the time of the biological survey, the vegetation communities within and/or surrounding the proposed project area had previous disturbance from existing oil and gas infrastructure, agriculture, and livestock grazing. Plant species recorded during the biological surveys are listed in Table 3.4. Photographs of the vegetation communities within and surrounding the proposed project area are provided in Appendix A.

Table 3.4. Plant Species Observed during the Biological Surveys of the Proposed Project Area

Common Name	Scientific Name
Fourwing saltbush	*Atriplex canescens*
Cane cholla	*Cylindropuntia imbricata*
Broom snakeweed	*Gutierrezia sarothrae*
Creosote bush	*Larrea tridentata*
Pricklypear	*Opuntia* sp.
Vine mesquite*	*Panicum obtusum*
Honey mesquite*	*Prosopis glandulosa*
Silverleaf nightshade	*Solanum elaeagnifolium*
Crinklemat	*Tiquilia plicata*
Plains yucca	*Yucca campestris*

Note: Nomenclature follows the PLANTS Database (NRCS 2019b).
* Refers to dominant species within corresponding vegetative community.

Invasive, Non-Native Species

During the biological survey, no State of New Mexico–listed or federally listed noxious weed species were identified within the proposed project area (New Mexico Department of Agriculture 2016, USDA 2019). The BLM participates in an invasive species monitoring and treatment program in Eddy County. Based on review of the BLM CFO's noxious weed treatment geographic information system (GIS) shapefile, there are four previously mapped noxious weed treatment areas for African rue (*Peganum harmala*) that intersect the construction workspace of the proposed project area (see FigureA.1 in Appendix A). These treatments occurred from 2009 to 2015. During the biological surveys, biologists did not observe any African rue in the proposed project area.

3.4.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Impacts on plant communities and habitats from the construction of the proposed project would include short-term direct impacts from vegetation removal. Long-term, permanent impacts from the construction of the substation, as well as the reroute of the county roads and two access roads, would result in 15.4 acres of vegetation loss. These impacts are expected to change the vegetation species composition, abundance, and distribution in and adjacent to the project area.

Approximately 9.1 acres of short-term impacts would occur during site preparation and would continue until revegetation of the proposed project area by faster-growing plants is achieved, which is estimated to be 2 years after construction (Monsen et al. 2004). In some areas, reclamation would potentially include species that are not locally native. The community composition of replanted areas would likely be influenced by the species that are initially seeded. The colonization of reclaimed areas by species from nearby native communities could be slow. If non-native plant species are planted, this could result in the introduction of those species into nearby natural areas. The establishment of mature, native plant communities may require decades (Monsen et al. 2004). Proposed project impacts would be expected to contribute to the change in vegetation species composition, abundance, and distribution within and adjacent to the proposed project area.

Indirect impacts to vegetation would occur as a result of deposition of fugitive dust generated during clearing and grading activities, the use of access roads, and from wind erosion of exposed soils. This

could reduce photosynthesis and productivity, increase water loss (Eveling and Bataille 1984) in plants near the proposed project area, and result in injury to leaves. Localized fugitive dust could be generated from the large areas of disturbed soil from blading associated with construction. Plant community composition could subsequently be altered, resulting in habitat degradation. Localized impacts on plant populations and communities could occur if seed production in some plant species is reduced.

Any surface disturbance can increase the possibility of establishment of new populations of invasive, non-native species. Noxious weed seed could be carried to and from the proposed project area by construction equipment and transport vehicles.

Mitigation Measures

Measures to minimize impacts to vegetation and noxious weeds are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2). No special mitigation has been identified by the BLM.

- Interim reclamation would be conducted on all disturbed areas not needed for active support of maintenance and operations.
- If noxious weeds become established within the proposed project area, the operator would be responsible for control of these weeds. The operator would consult with the BLM Authorized Officer for acceptable weed control methods, which would include following EPA and BLM requirements and policies.

3.5 Wildlife and Special-Status Species

3.5.1 Affected Environment

The Chihuahuan Deserts: Chihuahuan Basins and Playas ecoregion (Griffith et al. 2006) provides habitat for a variety of wildlife species. SWCA biologists detected one bird species and three mammal species during the biological survey of the proposed project area (Table 3.5).

Table 3.5. Wildlife Detected during the Biological Survey of the Proposed Project Area

Common Name	Scientific Name
Birds	
Mourning dove	*Zenaida macroura*
Mammals	
Domestic cattle	*Bos taurus*
Pocket gopher (mounds)	*Geomyidae* sp.
Black-tailed jackrabbit	*Lepus californicus*

Note: All wildlife detected by direct observation unless otherwise noted.

Most bird species are protected by the MBTA, which implements various treaties and conventions between the United States and other countries for the protection of migratory birds. Suitable nesting habitat for migratory birds is present within the proposed project area as evidenced by inactive passerine nests and the presence of trees and shrubs. During the biological surveys, one bird species was observed or heard, and one inactive passerine nest was identified in the survey area. A map depicting the nest site location and a photograph are provided (see Figure B.1 and Photograph A.3 in Appendix A).

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the MBTA and the Bald and Golden Eagle Protection Act. Bald and golden eagles are unlikely to inhabit the proposed project area due to lack of trees and cliff ledges for nesting and lack of prairie dog (*Cynomys* sp.) colonies within or adjacent to the proposed project area.

Special-Status Species

The special-status species evaluated in this EA consist of 1) all federally protected (i.e., endangered and threatened) species, 2) additional species listed by the USFWS as candidate and proposed and species under review (USFWS 2018b), 3) state-listed endangered and threatened species (Biota Information System of New Mexico 2019; New Mexico Energy, Minerals and Natural Resources Department 2017), and 4) BLM sensitive species, some of which are also listed as candidates or are under review by the USFWS and/or are state-listed. The BLM manages certain sensitive species that are not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. The authority for this policy and guidance is established by the ESA, as amended; Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act; and Department of the Interior Manual 235.1.1A.

Based on the results of the 2019 biological survey of the proposed project area, two special-status species have the potential to occur within the proposed project area (Table 3.6). All special-status species analyzed for the proposed project area are included in the full special-status species table (Appendix C). The proposed project area does not occur within any special-status species' critical habitat.

Table 3.6. Special-Status Species with the Potential to Occur in the Proposed Project Area

Common Name (*Scientific Name*)	**Status**	**Range or Habitat Requirements**	**Potential for Occurrence in Proposed Project Area**
Birds			
Loggerhead shrike (*Lanius ludovicianus*)	BLM Sensitive	The loggerhead shrike is a year-round resident in New Mexico and is found throughout the state, primarily in open country including grasslands, improved pastures, hayfields, shrub steppe, and desert scrub, as well as piñon-juniper woodland and woodland edges.	May occur in the proposed project area due to presence of the marginally suitable Chihuahuan desert grassland with intermixed scrub habitat. No loggerhead shrikes were observed during the 2019 biological survey of the proposed project area.
Reptiles			
Texas horned lizard (*Phrynosoma cornutum*)	BLM Sensitive	Inhabits arid and semiarid areas in the southwestern United States, characterized by open country with little vegetation. These areas often consist of grasses interspersed with cacti, yucca, mesquite, and other assorted woody shrubs and trees. In New Mexico, the species is associated with *Yucca-Prosopis-Ephedra* and *Larrea-Acacia-Fouquieria* habitat associations often in playas or on bajadas and mountain foothills.	May occur in the proposed project area due to presence of Chihuahuan desert grassland with intermixed scrub habitat, with interspersed yucca. No Texas horned lizards were observed during the 2019 biological survey of the proposed project area.

3.5.2 Impacts from the Proposed Action

Direct and Indirect Impacts

General Wildlife

Impacts to wildlife would result from actions that alter wildlife habitats, including changes to habitat and disturbance. Altering wildlife habitat in ways that would be considered adverse may occur directly (through habitat loss from surface disturbance) or indirectly (through the reduction in habitat quality caused by increased noise levels and increased human activity). The proposed project would result in 24.5 acres of new surface disturbance.

Short-term impacts to wildlife and special-status species could include the removal or crushing of existing vegetation, risk of direct mortality of species during construction, loss or degradation of native habitat, and displacement of wildlife species from habitat due to development. Additional potential short-term indirect impacts could include disruption or displacement of species from nesting/birthing and foraging areas, changes in activity patterns due to construction, increased human activity, and noise disturbance. Noise disturbance could impact wildlife by interfering with animals' abilities to detect important sounds or by posing an artificial threat to animals (Clinton and Barber 2013). Construction equipment associated with the proposed project could contribute the highest noise levels. Currently, the noise profile of the surrounding area is influenced by existing oil and gas infrastructure in the immediate vicinity, which would not change as a result of the proposed project. In addition, 8.9 acres of long-term impacts to wildlife and special-status species could include the permanent loss of vegetation, degradation of native habitat, and displacement of wildlife species due to the proposed substation expansion and roads for the life of the proposed project. However, the environmental protection measures within the POD, the mitigation measures outlined below, standard COAs (BLM 1997:Appendix 2), and post-construction reclamation would limit direct impacts to wildlife and special-status species.

If vegetation clearing occurs during the migratory bird breeding/nesting season (March–August), any occupied nests within the proposed project area could be impacted and result in incidental mortality. If nesting bird surveys are conducted prior to any vegetation clearing that would occur between March and August and active nests are avoided during construction, adverse impacts to migratory birds would be avoided. Because the proposed project area lacks suitable nesting habitat for bald and golden eagles, the proposed project would not likely cause take of individual bald or golden eagles, their nests, or eggs. Adult migratory birds likely would not be directly harmed by the proposed project because of their mobility and ability to avoid areas of human activity.

After construction, all surface disturbance not needed for operation and maintenance of the proposed project would be reclaimed with a BLM-prescribed, weed-free seed mixture. Reclamation of disturbed areas is expected to return the affected area to herbaceous production within 2 years after construction, depending on drought conditions. However, the establishment of mature native plant communities may require decades (Monsen et al. 2004). As a result, the change in vegetative species composition could modify cover and foraging opportunities for wildlife, thereby having a long-term impact on wildlife and special-status species.

Special-Status Species

Special-status species known to occur or that have the potential to occur within the proposed project area were evaluated for possible impacts from the proposed project. Two BLM sensitive species—the loggerhead shrike and Texas horned lizard—have the potential to occur within the proposed project area.

Loggerhead Shrike (Lanius ludovicianus)

The loggerhead shrike is designated as a BLM sensitive species and is also protected under the MBTA. No loggerhead shrikes were observed during the 2019 biological survey of the proposed project area (see Figure A.1 in Appendix A). Suitable nesting and foraging habitat is present within the proposed project area for this species due to the presence of scrub-grassland. If vegetation clearing occurs during the migratory bird breeding/nesting season (March–August), occupied loggerhead shrike nests within the

proposed project area could be impacted and result in incidental mortality. If nesting bird surveys are conducted prior to any vegetation clearing that would occur between March and August and active nests are avoided during construction, adverse impacts to loggerhead shrike would be avoided. Adult birds likely would not be directly harmed by the proposed project because of their mobility and ability to avoid areas of human activity.
The proposed project could impact individuals but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Texas Horned Lizard (*Phrynosoma cornutum*)

The Texas horned lizard is a BLM-sensitive species. No Texas horned lizards were observed during the biological survey, although the proposed project area occurs within their habitat range (BLM 2008a). However, no sand dunes of suitable habitat were observed during the survey. If Texas horned lizards are present during construction, they could avoid disturbance by moving to adjacent habitat. In addition, following New Mexico Department of Game and Fish (2003) trenching guidelines would prevent accidental Texas horned lizard mortality resulting from entrapment during construction activities. For example, lizard mortality would be avoided by the inspection of holes left open overnight. The proposed project could impact individuals but would not likely contribute to a trend toward federal listing or cause a loss of viability to the population or species.

Mitigation Measure and Residual Impacts

Measures to minimize impacts to wildlife are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2).

- SPS would instruct personnel working on the construction of the proposed project to avoid harassing all animals.
- For portions of the project being constructed during the nesting season (March 1–August 31), SPS would conduct pre-construction nest surveys up to 2 weeks prior to vegetation removal and establish avoidance buffers around any occupied nest (distances to be specified by the BLM) to ensure nest avoidance.
- The BLM reserves the right to require modifications or additions to substation infrastructure constructed under this authorization should they be necessary to ensure the safety of large perching birds. These modifications and/or additions should be made by the holder without liability or expense to the United States.

3.6 Karst Resources

3.6.1 Affected Environment

The proposed project is located in evaporite karst terrain, a land form that is characterized by underground drainage systems through solutionally enlarged conduits. Evaporite karst terrain may contain sinkholes, sinking streams, caves, fissures, and springs (Stafford 2006). Sinkholes, fissures, and other karst features leading to underground drainages and voids are common, and some karst features within this region are responsible for the rapid recharge of several widespread shallow freshwater aquifers and springs. Subsurface voids with little or no surface expression are also common within this landscape.

Sinkholes and cave entrances may collect water and can subsequently accumulate rich organic materials and soils. This, in conjunction with the stable microclimate near cave entrances, supports a rich diversity and abundance of plant life, which in turn provides habitat and food for a variety of wildlife such as insects, rodents, mammals, and reptiles.

The BLM categorizes all areas within the CFO planning area 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 entire proposed project occurs within a high karst potential

zone; however, no karst features are located within the boundaries of the survey area. A high karst potential zone is defined as an area with known soluble rock types that contain a high frequency of significant caves and karst features such as sinkholes and bedrock fractures that provide rapid recharge of karst aquifers.

A cave and karst resources survey was conducted within the BLM-mapped high karst potential occurrence zone intersected by the proposed project by Southwest Geophysical Consulting, LLC, on March 11, 2019. A 200-meter survey area was inspected, and one pseudokarst feature was observed. However, the pseudokarst feature was found to be related to human activity and not a karst feature. Therefore, no surface karst features were recorded within or immediately adjacent to the survey corridor. A cave and karst resources inventory report for the Proposed Action is on file with the BLM CFO (Decker 2019).

3.6.2 Affected Environment

Cave and karst features provide direct conduits leading to groundwater. These conduits can quickly transport surface and subsurface contaminants directly into underground water systems and freshwater aquifers without filtration or biodegradation. In addition, contaminants (e.g., from construction equipment) that spill or leak into or onto cave/karst zone surfaces and subsurface may lead directly to the disruption, displacement, or extermination of cave species and critical biological processes. In extreme or rare cases, a buildup of hydrocarbons in cave systems due to surface leaks or spills could potentially cause underground ignitions or asphyxiation of wildlife or humans within the cave.

In cave and karst terrains, rainfall and surface runoff are directly channeled into natural underground water systems and aquifers. Changes in geologic formation integrity, runoff quantity/quality, drainage course, rainfall percolation factors, vegetation, surface contour, and other surface factors can negatively impact cave ecosystems and aquifer recharge processes. Blasting, heavy vibrations, and focusing of surface drainages can lead to slow subsidence, sudden collapse of subsurface voids, and/or cave ecosystem damage.

There are no karst features located within the proposed project area; therefore, no adverse impacts would occur to surface karst features. In addition, SPS would conduct geotechnical investigations prior to construction of the substation and associated infrastructure to collect subsurface information necessary to complete the final design of the foundations including direct embedded tangent structures and self-supporting running angle and dead-end structures on concrete piers. The geotechnical investigation would prevent adverse impacts to subsurface karst features and voids, including preventing substation subsidence.

Mitigation Measures

Measures to minimize impacts to karst resources are described in the standard COAs (BLM 1997:Appendix 3). No special mitigation or requirements have been identified by the BLM other than the avoidance measures already incorporated into the project design.

3.7 Cultural Resources

3.7.1 Affected Environment

The project falls within the Southeastern New Mexico Archaeological Region. This region contains the following cultural/temporal periods: Paleoindian (ca. 11,500–7000 B.C.), Archaic (ca. 6000 B.C.–A.D. 500), Ceramic (ca. A.D. 500–1400), Post-Formative Native American (ca. A.D. 1400–present), and Historic Euro-American (ca. A.D. 1865–present). Sites representing any or all of these periods are known to occur within the region. A more complete discussion of the periods and site types is provided in the *Permian Basin Research Design 2016-2026 Volume I: Native American Archaeology and Cultural Resources* (Railey 2016).

Native American Religious Concerns

The BLM conducts Native American consultation regarding traditional cultural properties (TCPs) and sacred sites during land use planning and its associated environmental impact review. In addition, during the oil and gas lease sale process, Native American consultation is conducted to identify TCPs and sacred sites whose management, preservation, or use would be incompatible with oil and gas or other land use authorizations. With regard to TCPs, the BLM has very little knowledge of tribal sacred or traditional use sites, and these sites may not be apparent to archaeologists performing surveys in advance of construction.

3.7.2 Impacts from the Proposed Action

Direct and Indirect Impacts

The project falls within the area covered by the Permian Basin Programmatic Agreement (PA). The Permian Basin PA is an optional method of compliance with Section 106 of the National Historic Preservation Act for energy related projects in a 28 quadrangle area of the Carlsbad Field Office. The PA is a form of off-site mitigation which allows industry to design projects to avoid known NRHP eligible cultural resources and to contribute to a mitigation fund in lieu of paying for additional archaeological inventory in this area that has received adequate previous survey. Funds received from the Permian Basin PA will be utilized to conduct archaeological research and outreach in Southeastern New Mexico. Research will include archaeological excavation of significant sites, predictive modeling, targeted research activities, as well as professional and public presentations on the results of the investigations.

The proponent chose to participate in the Permian Basin PA by planning to avoid all known NRHP eligible and potentially eligible cultural resources. The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM.

Mitigation Measures

Measures to minimize impacts to cultural resources are described in the standard COAs (BLM 1997:Appendix 2), and project specific mitigations are pending BLM review at the time of writing.

3.8 Paleontological Resources

3.8.1 Affected Environment

Paleontological resources are any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Fossil remains may include bones, teeth, tracks, shells, leaves, imprints, and wood. Paleontological resources include not only the actual fossils but also the geological deposits that contain them and are recognized as non-renewable scientific resources protected by federal statutes and policies.

The primary federal legislation for the protection and conservation of paleontological resources occurring on federally administered lands are the Paleontological Resources Preservation Act of 2009, FLPMA, and NEPA. The BLM has also developed policy guidelines for addressing potential impacts to paleontological resources (BLM 1998a, 1998b, 2008c). In addition, paleontological resources on state trust lands are protected by state policy from unauthorized appropriation, damage, removal, or use.

The Potential Fossil Yield Classification (PFYC) is a tool that allows the BLM to predict the likelihood of a geologic unit to contain paleontological resources. The PFYC is based on a numeric system of 1 to 5, with PFYC 1 having little likelihood of containing paleontological resources, whereas a PFYC 5 value is a geologic unit that is known to contain abundant scientifically significant paleontological resources

(BLM 2007). The fossil resources of concern in this area are the remains of vertebrates, which include species of fish, amphibians, and mammals.

3.8.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Direct impacts would result in the immediate physical loss of scientifically significant fossils and their contextual data. Impacts indirectly associated with ground disturbance could subject fossils to damage or destruction from erosion, as well as create improved access to the public and increased visibility, potentially resulting in unauthorized collection or vandalism. However, not all impacts of construction are detrimental to paleontology. Ground disturbance can 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 curated into the museum collection of a qualified repository, making them available for scientific study and education.

The location of the proposed project area is within one geologic unit: Artesia Group, residing in shelf facies forming broad south-southeast trending outcrop. The geologic unit is within PFYC 2, where management concern is negligible because of the low likelihood of encountering fossil remains. A pedestrian survey for paleontological resources was not required, and no impacts to paleontological resources are expected.

Mitigation Measures

Measures to minimize impacts to paleontological resources are described in the standard COAs (BLM 1997:Appendix 2). No special mitigation or requirements have been identified by the BLM.

3.9 Livestock Grazing

3.9.1 Affected Environment

Almost all livestock grazing within the BLM CFO planning area is permitted for year-round use. Permitted livestock numbers for each allotment are set at levels that provide for plant recovery to enhance rangeland health. These levels have been determined by quantitative measurements of forage present. Prolonged drought and rangeland wildfire continue to threaten rangeland health and forage availability within and near the proposed project area.

Livestock grazing is common within the proposed project area and could include grazing of domestic cattle, sheep, goats, and horses. The most common livestock operations in the proposed project area are cattle and calf operations. The proposed project area coincides with one BLM allotment within the CFO planning area (Table 3.7).

Table 3.7. BLM CFO Allotments and Range Improvements in the Proposed Project Area

CFO Allotment Name	Allotment Number	Size of Project Area within Allotment (acres)	Allotment Size (acres)	No. of Fences Crossed by Project Area	No. of Water Lines Crossed by Project Area	No. of Water Troughs within 200 Meters of Project Area
South Turkey Track	77075	24.5	139,710	1	0	0
Total			**139,710**	**1**	**0**	**0**

3.9.2 Impacts from the Proposed Action

Direct and Indirect Impacts

Direct and indirect impacts from the proposed project were assessed by calculating the number of acres and grazing allotments that would incur surface disturbance and the resulting loss of vegetation for forage. Construction associated with the Proposed Action would remove approximately 24.5 acres of vegetation from the active grazing allotments, which represents less than 0.1%, a negligible difference, of the total allotment acreage intersected by the Proposed Action. The resulting loss of vegetation would not affect the animal unit months authorized for livestock use in this area.

Range improvements would also be temporarily impacted by the proposed project. There is one pasture fence intersected by the proposed project. In addition, there are no water lines intersected by the proposed project and no water troughs are located within the proposed construction corridor or within 200 meters (656 feet) of the proposed project area. Prior to construction, the conditions of the fence would be evaluated, and appropriate protections would be put in place to maintain their function during the construction associated with the proposed project.

Short-term impacts could include displacement of permitted livestock during construction activities or exposure of livestock to hazards (e.g., falling into excavations and ingesting plastic). Since the proposed project area is open range, there is also the possibility of injuries to livestock or death due to collisions with vehicles. After construction, livestock should become acclimated to proposed project operation activities.

Mitigation Measures

Measures to minimize impacts to livestock grazing are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2). No special mitigation or requirements have been identified by the BLM.

- The holder should minimize disturbance to existing fences and other improvements on public lands. The holder would be required to promptly repair impacted improvements to at least their former state. The holder should contact the owner of any existing improvements prior to disturbance. When necessary to pass through a fence line, the fence would be braced on both sides of the passageway prior to cutting the fence. No permanent gates would be allowed unless approved by the Authorized Officer.

3.10 Cumulative Impacts

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of which agency (federal or non-federal) or person undertakes such other action. The time frame for the cumulative impact analysis is 30 years, which is the projected life of the transmission line.

3.10.1 Cumulative Impact Analysis for Air Resources

The following analysis of cumulative impacts of the Proposed Action on air resources is limited to the CFO planning area. While specifically prepared for mineral resource development (e.g., oil and gas), the Air Resources Technical Report provides a list of major sources[7] for air pollutants in New Mexico, any of which may contribute to cumulative impacts to air quality within the CFO planning area (BLM 2016:Appendix D). The report also evaluates the cumulative impacts of greenhouse gas (GHG) emissions and their relationship to climate change at national and global levels (BLM 2016:54–60).

Activities that cumulatively contribute to levels of air pollutants and GHG emissions in southeast New Mexico result from a variety of sources, including fossil fuel industries, transportation, industrial construction, mining, and others. For the CFO planning area, activities that have the greatest cumulative impact on air resources are fossil fuel production (e.g., oil and gas exploration and production, crude oil refining, and gas processing) and vehicular travel (BLM 2016:46). The Air Resources Technical Report summarizes the past, present, and reasonably foreseeable impacts to air resources resulting from these activities (BLM 2016:38–51).

Federal oil and gas exploration/production, occurring on CFO-managed mineral estate in Eddy and Lea Counties and part of Chaves County, results in cumulative impacts to air resources in the planning area through air pollutant and GHG emissions. Quantifying emissions of an oil and gas well in the CFO planning area is difficult due to various factors (geology, variation in drilling technique and time, uncertainty of production). The CFO planning area is currently experiencing a rapid expansion of oil and gas development, which is expected to continue into the future.

Factors involving vehicular travel, including number and types of vehicles, miles traveled, and road conditions, all influence emissions in the CFO planning area. These emissions result from both on-road and off-road vehicular travel. While increased vehicle fuel efficiency is expected to reduce emissions associated with vehicular travel, any reduction in emissions may eventually be offset by an increase in the number of vehicles used due to population growth in the area (BLM 2016:51).

Air Quality

The Proposed Action would result in a very small increase in emissions, mainly from exhaust from inspection and construction activities, but also from fugitive dust generated by vehicular use of unpaved roads, road maintenance, and ground-disturbing construction activities. This increase in emissions would not cause or contribute to an exceedance of the NAAQS for any criteria pollutants in the CFO planning area. Additionally, emissions from the Proposed Action, together with all other emissions, are not expected to impact the 8-hour average O_3 standard within the planning area.

Climate Change

Climate change is a global process affected by the total GHG emissions in the atmosphere. The Air Resources Technical Report discusses the relationship of past, present, and future predicted emissions to climate change and the limitations in predicting global and regional impacts related to emissions (BLM 2016:51–53). In general, the Proposed Action, together with all other current and foreseeable emissions-producing actions, would contribute to an incremental increase in GHGs; however, these cumulative emissions would not have a measurable impact to climate. While the Proposed Action may contribute to climate change, the specific impacts to global or regional climate are not quantifiable, and the Proposed Action's contribution, in a localized area, to impacts to global climate change cannot be determined (BLM 2016:53).

[7] Sources emitting more than 100 tons/year of CO, volatile organic compounds, NO_x, SO_2, $PM_{2.5}$, or PM_{10} (BLM 2016:38).

3.10.2 Cumulative Impacts for Watersheds and Drainages, Soils, Vegetation and Invasive Species, Wildlife Including Special-Status Species, Karst Resources, and Livestock Grazing

Impacts to watershed drainages, soils, vegetation and invasive species, wildlife and special-status species, and livestock grazing would depend on the placement and type of surface disturbance, the type of soils and plant species present, and the hydrologic conditions within the individual project site. Generally, soil erosion and sedimentation of local drainages would be expected to occur, especially when storm events occur during construction of the future actions. Cumulative impacts to karst resources are difficult to estimate because, as with the Proposed Action, impacts to underground voids could occur from accidental spills during construction or operation that are caused by permeability.

Further development in the area would potentially result in the loss of vegetation and thereby a loss of forage available to livestock within the grazing allotments. The resulting loss of forage could reduce the animal unit months authorized for livestock use in the area. Reclamation of some disturbed areas and use of best management practices, such as reseeding construction areas, has reduced impacts to vegetation and livestock grazing conditions. In time, the reclaimed and seeded areas would result in stable plant communities with densities that are similar to the pre-disturbance plant densities. Similarly, impacts to visual resources would depend on the success of revegetation to blend the landscape within the individual project site. In time, the reclaimed and seeded areas would minimize impacts to visual resources.

Surface-disturbing activities affect wildlife, migratory birds, and special-status species through decreasing available forage and habitat and causing habitat alteration and fragmentation. Well pads and road density break the available habitat into smaller and smaller pieces, which can lead to displacement and physiological stress in wildlife species. Fragmentation results in indirect habitat loss and degradation. Wildlife species would have to expend an increased amount of energy to avoid disturbed areas or when experiencing alarm due to human presence, traffic, and associated noise.

Watkins et al. (2007) describe quantitative thresholds of fragmentation impact as moderate, high, and extreme, based on the density of well pads per section and cumulative surface disturbance. Moderate impact is defined as 1 to 4 wells and less than 20 acres of disturbance per section. High impact is defined as 5 to 16 wells and 20 to 80 acres of disturbance per section. Extreme impact is defined as more than 16 wells and greater than 80 acres of disturbance per section. Based on the above-described definitions, the density of current development is high within the proposed project area. This indicates that impacts to wildlife are increasingly difficult to mitigate and may not be completely offset by management or habitat treatments (Watkins et al. 2007). The Proposed Action, together with past, present, and reasonably foreseeable cumulative actions, would contribute to the density of development and overall habitat fragmentation of the region.

3.10.3 Cumulative Impact Analysis for Cultural and Historic Resources and Paleontological Resources

The CFO conducts ongoing and frequent consultation with tribal and state entities under Section 106 of the NHPA. Cumulative effects to cultural or historic resource sites or paleontological resources are assessed on a landscape level at the planning stages during resource management planning efforts. See the *Permian Basin Research Design 2016-2026 Volume I: Native American Archaeology and Cultural Resources* (Railey 2016) report for more details on the cultural landscape.

4 SUPPORTING INFORMATION

4.1 List of Preparers

This EA was prepared by a third-party contractor, SWCA, according to the direction of the BLM. The following BLM staff contributed to or reviewed this EA:

- Tessa Cisneros, Realty Specialist, BLM CFO
- Aaron Whaley, Archaeologist, BLM CFO

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APPENDIX A. Natural Resources Map and Project Photographs

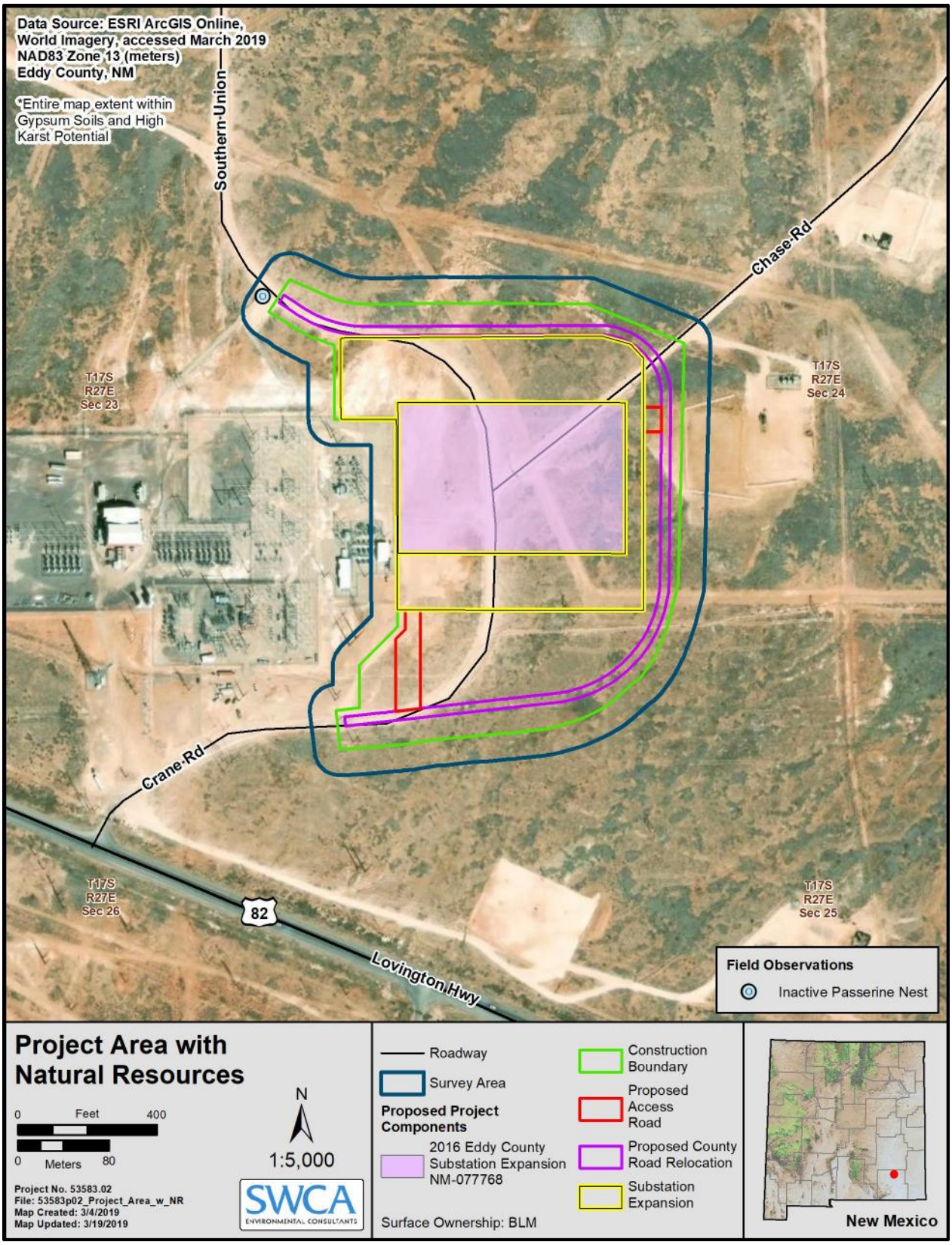


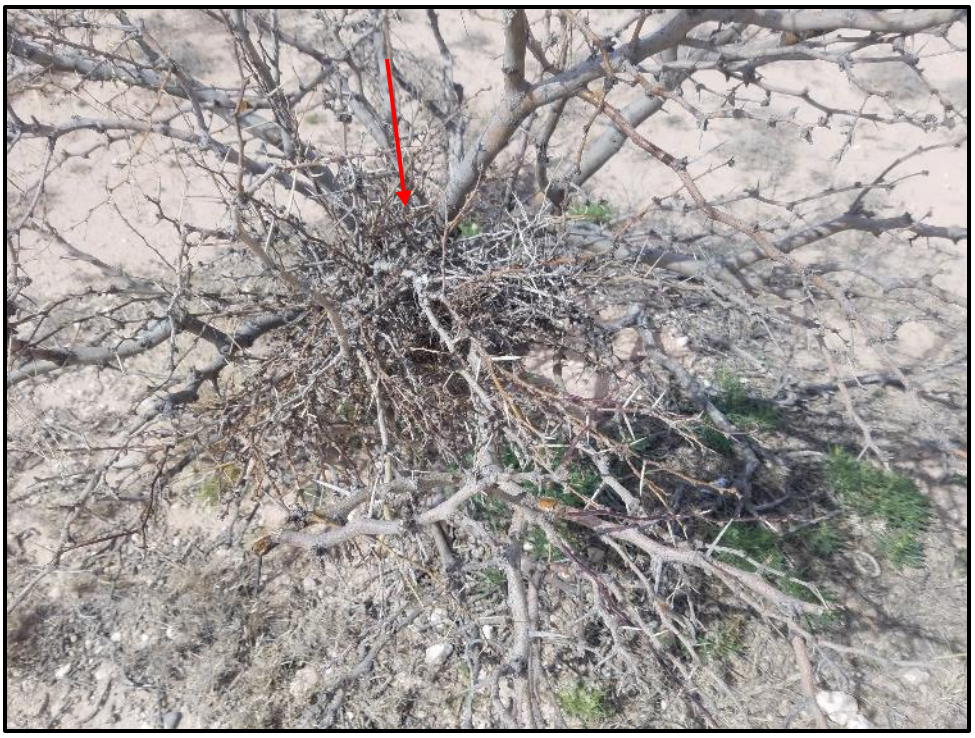
Figure A.1. Project area showing natural resources data.



Photograph A.1. View of Chihuahuan desert grassland with intermixed scrub vegetative community within the proposed project area, facing north.



Photograph A.2. View of Chihuahuan desert grassland with intermixed scrub vegetative community within the proposed project area, facing south.



Photograph A.3. View of an inactive passerine nest in honey mesquite, in poor condition, within the proposed project area, facing northwest.

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APPENDIX B. Special-Status Species List

Table C.1. Special-Status Species for Eddy County, New Mexico

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Plants			
Allred's flax (*Linum allredii*)	BLM Sensitive	Occurs on scarps and hillsides of exposed sandy gypsum of the Permian-aged Castile Formation in Chihuahuan desert scrub at 3,900 feet above mean sea level (amsl). This species' range occurs in the northern Chihuahuan Desert of New Mexico and Texas.	Unlikely to occur in the proposed project area due to lack of sandy gypsum soils. Although there is a gypsum component present, the soil is not considered sandy. Additionally, the highest elevation in the proposed project area is 3,562amsl.
Chapline's columbine (*Aquilegia chaplinei*)	BLM Sensitive	Occurs in Eddy and Otero Counties, New Mexico. Prefers limestone seeps and springs in montane scrub; also riparian canyon bottoms at 5,590–5,600 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone seeps and springs in montane scrub or riparian canyons. Additionally, the highest elevation in the proposed project area is 3,562 feet amsl.
Guadalupe mescalbean (*Dermatophyllum guadalupense*)	BLM Sensitive	Occurs on outcrops of pink, limy, fine-grained sandstone that is 1%–2% gypsum in Chihuahuan desert scrub and juniper savannah from 5,260 to 6,650 feet amsl.	Unlikely to occur in the proposed project area due to lack of pink, limy, fine-grained sandstone soils. Additionally, the highest elevation in the proposed project area is 3,562 feet amsl.
Guadalupe penstemon (*Penstemon cardinalis* ssp. *regalis)*	BLM Sensitive	Prefers limestone slopes and canyon bottoms in montane scrub, piñon-juniper woodland, and lower montane coniferous forest from 4,500 to 6000 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone slopes and canyon bottoms. In addition, the highest elevation in the proposed project area is 3,562 feet amsl.
Gypsum milkvetch (*Astragalus gypsodes*)	BLM Sensitive	Occurs in gypsum flats and low-gullied gypseous hills of the Permian-aged Castile formation from 3,500 to 4,000 feet amsl.	Unlikely to occur in the proposed project area due to a lack of gypsum flats or gypseous hills.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Gypsum wild-buckwheat (*Eriogonum gypsophilum*)	USFWS T NM E	Restricted to almost pure gypsum soil that is sparsely vegetated with other gypsophilous plants, such as Coldenia hispidissima (*Coldenia hispidissima*), gypsum blazingstar (*Mentzelia humilis*), and southwestern ringstem (*Anulocaulis leiosolenus*), along ridges and slopes along gypsum outcrops within semi-arid conditions. Elevation is 3,200–3,600 feet amsl. The species is known to occur in four distinct locations: Ben Slaughter Draw-Hay Hollow, North Seven River, South Seven River, and Threemile Draw-Black River watersheds.	Unlikely to occur in the proposed project area due to a lack of gypsum outcrops. Additionally, the proposed project area is outside of this species' known distribution range (BLM 2019).
Jewelflower (*Streptanthus sparsiflorus*)	BLM Sensitive	Occurs in limestone canyon bottoms and montane scrub from 5,000–7,000 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone canyon bottoms and montane scrub. In addition, the highest elevation in the proposed project area is 3,562 feet amsl.
Kuenzler's hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*)	USFWS E NM E	Primarily on gentle, gravelly to rocky slopes and benches on limestone or limy sandstone in Great Plains grassland, oak woodland, or piñon-juniper woodland. Elevation 2,000–6,500 feet amsl. This species' range is limited to the Vera Cruz Mountains, Tucson Mountains, and the Guadalupe, Sacramento, Capitan, and Jicarilla Mountain ranges.	Unlikely to occur in the proposed project area due to lack of rocky slopes, benches, and preferred vegetation communities.
Lee's pincushion cactus (*Escobaria sneedii* var. *leei*)	USFWS T NM E	Primarily occurs in limestone cracks, breaks, and scree fields ranging between 4,000 and 5,900 feet amsl. This species is endemic to New Mexico within the Guadalupe Mountains and their foothills.	Unlikely to occur in the proposed project area due to the lack of north-facing limestone ledges, slopes, and ridges. Additionally, the highest elevation in the proposed project area is 3,562 feet amsl.
Scheer's beehive cactus (*Coryphantha robustispina* var. *scheeri*)	BLM Sensitive NM E	Typically associated with gravelly or silty soil in desert grassland and Chihuahuan desert scrub communities. May also be found on rocky benches or bajadas on limestone or gypsum soils; elevation range of this cactus is 3,300–3,600 feet amsl.	Unlikely to occur in the proposed project area as it occurs outside of the species' known occupied habitat, as well as potential habitat as delineated by the BLM (BLM 2019).
Shining coralroot (*Hexalectris nitida*)	NM E	Found in leaf litter within oak thicket habitat in deep canyons; elevation 4,300 feet amsl. This species is known to occur in Eddy and Otero Counties, New Mexico, and within the Guadalupe and Cornudas Mountains in Texas. This species is also commonly referred to as Glass Mountain crested coralroot.	Unlikely to occur in the proposed project area due to lack of deep canyons. Additionally, the proposed project is not located in the Cornudas Mountains, and the highest elevation in the proposed project area is 3,562 feet amsl.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Sneed's pincushion cactus (*Coryphantha sneedii* var. *sneedii*)	USFWS E	Primarily cracks in limestone in areas of broken terrain and steep slopes. This subspecies is known to occur in Doña Ana County, New Mexico, and El Paso County, Texas. The elevation range of this cactus is 3,900–7,700 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone outcrops. Additionally, the highest elevation in the proposed project area is 3,562 feet amsl.
Tharp's blue-star (*Amsonia tharpii*)	BLM Sensitive NM E	Species occurs in well-drained gypsum, caliche, and dolomite sedimentary outcrops and alluvium deposits between 3,000 and 3,800 feet amsl. Species range occurs within Eddy County, New Mexico, and Pecos County, Texas.	Unlikely to occur in the proposed project area due to lack of gypsum, caliche, and dolomite sedimentary outcrops. The proposed project is outside of this species' known distribution range (BLM 2019).
Wind Mountain rock-cress (*Boechera zephyra*)	BLM Sensitive	Found on rocky syenite, limestone, or basaltic scoria slopes. Primarily occurs in the upper margins of Chihuahuan desert scrub; occasionally occurs in juniper savannah or oak-juniper woodlands. This species has not been verified within the CFO Planning Area.	Unlikely to occur in the proposed project area due to lack of rock syenite, limestone, or basaltic scoria slopes. Additionally, this species has not been verified within the CFO Planning Area.
Wright's marsh thistle (*Cirsium wrightii*)	USFWS C BLM Sensitive	Wet, alkaline soils in spring seeps and marshy edges of streams and ponds from 3,450 to 8,500 feet amsl. This species occurs in Eddy County, New Mexico, with concentrated populations near Blue Spring.	Unlikely to occur in the proposed project area due to lack of spring seeps, marshes, and streams. Additionally, the proposed project area is outside this species' distribution range.
Wright's water willow (*Justicia wrightii*)	BLM Sensitive	Found on limestone benches in Chihuahuan desert scrub at 3,900 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone benches, spring seeps, and marshes. Additionally, the highest elevation in the proposed project area is 3,562 feet amsl.
Invertebrates			
Monarch butterfly (*Danaus plexippus plexippus*)	BLM Sensitive	Occurs in migratory populations that complete an annual round-trip migration across North America, including New Mexico, from April through October. This species breeds in the northern portions of its range and overwinters in the Mexican highlands or along the Pacific coast. This obligate species' habitat for reproduction includes milkweed plant species (*Asclepias* sp.) since milkweed is required for egg laying and caterpillar development (Cary and Delay 2016). This species is also dependent on habitat with diverse and abundant flowering plants as a food source.	Unlikely to occur in the proposed project area due to the lack of milkweed and abundant flowering plants.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Ovate vertigo snail (*Vertigo ovata*)	NM T	The only known population in New Mexico is at and near Blue Spring south of Carlsbad in Eddy County. It occurs within a few meters of the brook issuing from Blue Spring, on damp soil under the shelter of dead tree branches. The species typically occurs in close proximity to ponds, streams, and spring outflows and on living and dead vegetation, organic debris, and damp or muddy soils.	Unlikely to occur in the proposed project area because the proposed project area is not within or adjacent to Blue Spring.
Pecos springsnail (*Pyrgulopsis pecosensis*)	BLM Sensitive NM T†	This species is endemic to southeastern New Mexico, known historically to occur in Blue Spring and Castle Spring in Eddy County. This species has since been extirpated from Castle Spring. This species is part of the Candidate Conservation Agreement (CCA) implemented by the USFWS, the BLM, and the Center of Excellence for Hazardous Materials Management (CEHMM). It occurs on a mud and pebble substrate in its spring habitat, mainly along the edges of the water. Found on pebbles, gypsum silt, and to a lesser extent mud and submerged vegetation in a high-volume spring and spring run and associated marsh. The water is gypsum rich.	Unlikely to occur in the proposed project area due the lack of suitable habitat within the proposed project area. Additionally, the proposed project area is not within or adjacent to Blue Spring and Castle Spring known occupied habitat.
Texas hornshell (*Popenaias popei*)	USFWS E NM E	Historically, this species occurred in the Pecos–Rio Grande drainage. Currently, this species is found in four distinct locations, including the Black River and Delaware River in New Mexico and the lower Rio Grande and the Devil's River in Texas. This species is part of the CCA. Associated with larger streams and a variety of substrates. Imbeds itself in softer bottoms, but lodges itself in cracks and crevices, where it is probably immobile.	Unlikely to occur in the proposed project area due to the lack of aquatic habitat. Additionally, the proposed project is outside of the species' habitat as mapped by the USFWS and CEHMM (2017).
Fish			
Bigscale logperch (*Percina macrolepida*)	BLM Sensitive NM T	Native to the Pecos River drainage, occurring mainly in and below Sumner Lake in De Baca County and between Lake McMillan (Eddy County) and the Texas state line. Smaller populations are found also near Santa Rosa, the Black River, and Willow Lake in Eddy County. Also introduced in Ute Lake in Quay County. The species' preferred habitat consists of strong, non-turbulent flows, but the species is also found in impoundments. Preferred substrate varies from silt to rubble, on which the species spends much of its time resting.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Blue sucker (*Cycleptus elongatus*)	BLM Sensitive NM E†	Historically, this species occurred in the Pecos River, from which it has likely been extirpated. It is absent in the Rio Grande, where it occurred historically. Whether this species is extant in the Black River is unknown. Its primary habitat consists of deep river channels with runs and riffles. Also found in pools with moderate currents and in deep lakes. This species is part of the CCA.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Gray redhorse (*Moxostoma congestum*)	BLM Sensitive NM E†	Formerly occurred in the Pecos River and the Rio Grande, but is now restricted to the lower Black River from Blue Spring to the Pecos River confluence. This species has been reintroduced into the Delaware River by the New Mexico Department of Game and Fish. This species is part of the CCA. Typical habitat consists of low-gradient streams with warm, usually clear waters. Adults most often occupy medium-sized to large pools with cobble, gravel, silt, or sand bottoms. The young and juveniles tend to seek riffles and gravelly runs and avoid densely vegetated areas.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Greenthroat darter (*Etheostoma lepidum*)	BLM Sensitive NM T	Native to the Pecos River drainage of Chaves and Eddy Counties. Known to occur in particular at Blue Spring and its outflow stream, in the Pecos River between Lake McMillan and Avalon Reservoir, in the Rio Peñasco and Cottonwood Creek, and at Bitter Lake National Wildlife Refuge. Found in swift-flowing streams and springs, especially vegetated riffle areas with gravel and rubble substrates. Also occurs in clear ponded-water habitats including sinkholes and littoral areas of other lentic systems with wave action and aquatic vegetation rooted in a gravel substrate.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Headwater catfish (*Ictalurus lupus*)	BLM Sensitive	Occurs in Texas, New Mexico, and Mexico. It is native to the Pecos drainage downstream of Sumner Reservoir and occurs in the Middle Rio Grande Basin. Its habitat consists of clear temperate waters, generally with a moderate gradient. Despite competition with the channel catfish (*Ictalurus punctatus*), the species has persisted in headwater streams and in fluctuating tailwaters of dams in the Pecos River.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Mexican tetra (*Astyanax mexicanus*)	BLM Sensitive NM T	The species' distribution extends from eastern New Mexico and southern Texas southward along the Atlantic slope drainages of Mexico. In New Mexico, it is restricted largely to Blue Spring and the Delaware River in Eddy County. Also found occasionally in the Pecos River below Lake McMillan. Occupies a variety of habitats, but tends to school in pools and below swift areas in eddies. Found primarily in habitats with stenothermal flows (i.e., springs). Young-of-year are present in shallow water near overhanging bank vegetation.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Pecos bluntnose shiner (*Notropis simus pecosensis*)	USFWS T NM E	Still extant in the Pecos River from Fort Sumner to Artesia, although it has declined considerably in numbers since about 1950. Most common in main channel areas, with low-velocity water, depths of 7–12 inches, and a sandy substrate. Flood inflows from uncontrolled tributaries contribute to favorable river channel conditions.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Pecos gambusia (*Gambusia nobilis*)	USFWS E NM E	Endemic to the Pecos River Basin in southeastern New Mexico and western Texas. Natural populations still occur in New Mexico on the Bitter Lake National Wildlife Refuge and in the Salt Creek Wilderness Area (both in Chaves County), as well as in Blue Spring in Eddy County. Most common in heads and runs of springs, where it uses aquatic vegetation for refuge. Occupies ponds and gypsum sinkholes on Bitter Lake National Wildlife Refuge and in Blue Spring, New Mexico. Associates in loose schools that spend much of the time near the surface. Inhabits shallow areas of alkaline waters with aquatic vegetation for cover.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Pecos pupfish (*Cyprinodon pecosensis*)	BLM Sensitive NM T	Occurs in saline springs and gypsum sinkholes at Bitter Lake National Wildlife Refuge and Bottomless Lakes State Park. Elsewhere, it is present irregularly in the Pecos River south from Bitter Lake and Bottomless Lakes State Park south to the Texas state line and formerly in Laguna Grande in Eddy County. Typical habitat consists of saline springs and gypsum sinkholes; only rare in fresher water habitats, including the main channel of the Pecos River. Found in backwater areas and side pools that lack sunfish or other predators. At Bitter Lake National Wildlife Refuge, numerous individuals were taken from waters in interstices of gravel from a pond drain with no surface flow.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Rio Grande chub (*Gila pandora)*	BLM Sensitive	This species is native to the Rio Grande and Pecos River drainages, and possibly native to the Canadian drainage, although it may have been introduced there (Sublette et al. 1990). Rio Grande chubs occupy perennial mainstream and tributary habitat at higher elevations (Bestgen and Platania 1990).	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Rio Grande shiner (*Notropis jemezanus*)	BLM Sensitive	Occurs in the Rio Grande downstream of the confluence of the Rio Conchos but is extirpated from the Rio Grande in New Mexico. In the Pecos River in New Mexico, it currently persists from Old Fort State Park near Fort Sumner downstream to about Brantley Reservoir, including at Bitter Lake National Wildlife Refuge. Within occupied reaches of the Pecos River, it is generally uncommon to rare. Rio Grande shiners occupy flowing water environments found in large open rivers with laminar flows and a minimum of aquatic vegetation and larger streams with gravel, sand, or rubble bottoms.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Rio Grande sucker (*Catostomus plebeius)*	BLM Sensitive	The native range of the Rio Grande sucker includes the Rio Grande and its tributaries in northern New Mexico and southern Colorado, the Mimbres drainage in southwestern New Mexico, and streams of the Guzman Basin in northwestern Chihuahua (Sublette et al. 1990).	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies. Also, the proposed project is outside of the species' known occupied range.
Speckled chub (*Macrhybopsis aestivalis)*	BLM Sensitive	The distribution and habitat recorded for specimens of this species do not indicate special requirements other than a flowing mainstream environment (Bestgen and Platania 1990). Speckled chub has been noted as widely distributed and exclusive to mainstream habitats in large portions of the New Mexican Rio Grande (Bestgen and Platania 1990). This species has not been verified in the CFO Planning Area.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies. Also, the proposed project is outside of the species' known occupied range.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Birds			
Baird's sparrow (*Ammodramus bairdii*)	BLM Sensitive NM T	This species is a winter resident in New Mexico. It has been found on Otero Mesa and in the Animas Valley and may occur in other areas of suitable winter habitat, particularly in the southeast portion of state. Generally prefers dense, extensive grasslands with few shrubs. Avoids heavily grazed areas.	Although there is marginally suitable grassland habitat, the proposed project area lacks the dense, extensive grassland vegetation that is preferred by this species. Additionally, this area is heavily grazed.
Bald eagle (*Haliaeetus leucocephalus*)	BLM Sensitive NM T	Occurs in New Mexico year-round. Breeding is restricted to a few areas mainly in the northern part of the state along or near lakes. In migration and during winter months, the species is found chiefly along or near rivers and streams and in grasslands associated with large prairie dog (*Cynomys* sp.) colonies. Typically perches in trees.	Unlikely to occur in the proposed project area due to the lack of prairie dog colonies.
Bell's vireo (*Vireo bellii*)	BLM Sensitive NM T	In New Mexico, Bell's vireo occurs in the southern one-third of the state during the breeding season. The *medius* race is found in the Pecos Valley north to drainages west of Roswell and in the Black River and Rattlesnake Springs areas south of Carlsbad. In New Mexico, this species characteristically occurs in dense shrubland or woodland along lowland stream courses, with willows (*Salix* sp.), mesquite (*Prosopis* spp.), and seepwillows (*Baccharis glutinosa*). Its distribution during breeding is typically limited to riparian habitats.	Unlikely to occur in the proposed project area due to the lack of habitat associated with lowland stream courses and dense shrubland or woodland habitat.
Black tern (*Chlidonias niger surinamensis*)	BLM Sensitive	Found in New Mexico only during migration and in association with wetland areas, lakes, and ponds.	Unlikely to occur in the proposed project area due to lack of suitable aquatic habitat.
Broad-billed hummingbird (*Cynanthus latirostris*)	NM T	Occurs in riparian habitat or dense mesquite in canyons in southwestern New Mexico. Found in Guadalupe Canyon in Hidalgo County and rarely found in the Peloncillo Mountains.	Unlikely to occur in the proposed project area due to lack dense mesquite associations in canyons.
Brown pelican (*Pelecanus occidentalis carolinensis*)	NM E	Occurs usually in marine habitats and feeds almost exclusively on fish. Associated with water.	Unlikely to occur in the proposed project area due to lack of marine habitats.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Chestnut-collared longspur (*Calcarius ornatus*)	BLM Sensitive	Chestnut-collared longspurs migrate and winter in the east, westward locally to the vicinity of the Rio Grande valley, and occasionally farther in the southwest, and are considered uncommon to abundant. They are most numerous in the southernmost area and are regular in the Mogollon Plateau (Hubbard 1978). Chestnut-collared longspurs were often seen within, or in association with, open grassland habitats. Those sites that were used most often were dominated by desert saltgrass, with occasional clumps of fourwing saltbush (*Atriplex canescens*) interspersed. Adjacent sites having an even greater shrub component were also occasionally used (Baltosser 1991).	Although there is marginally suitable grassland habitat in the proposed project area, the habitat is dominated by mesquite and saltgrass is not present in the proposed project area. Additionally, the proposed project area is outside of the Mogollon plateau.
Common black hawk (*Buteogallus anthracinus*)	NM T	Occurs in New Mexico almost exclusively during the breeding season and in migration. Breeding populations known chiefly from the Gila River valley in the southwestern portion of the state and from along the Mimbres River and the Rio Hondo watershed. Strongly tied to cottonwood (*Populus* sp.) gallery forests.	Unlikely to occur within the proposed project area as it is outside of the species' known range within New Mexico and does not contain preferred cottonwood galleries.
Common ground-dove (*Columbina passerina pallescens*)	NM E	Associated with shrubby riparian habitat or riparian woodland edges. Also occurs in desert scrub dominated by mesquite and pricklypear (*Opuntia* sp.). Feeds exclusively on the ground, in sparsely vegetated areas.	Unlikely to occur within the proposed project area due to lack of riparian woodland edge habitat.
Ferruginous hawk (*Buteo regalis*)	BLM Sensitive	Occurs year-round in New Mexico. During the breeding season, it is present in grasslands and badlands and along the ecotone between grasslands and piñon-juniper woodlands, especially in the vicinity of prairie dog towns. During the winter, ferruginous hawks are primarily associated with grasslands but may be found in other habitat types, such as ponderosa pine (*Pinus ponderosa*) forest. Prairie dogs are important year-round in the diet of New Mexico's ferruginous hawks.	Unlikely to occur within the proposed project area due to lack of piñon-juniper woodland interface or prairie dog colonies, which provide an obligate food source for this species.
Grasshopper sparrow (*Ammodramus savannarum*)	BLM Sensitive	Found in grasslands and prairies with open patches of ground. This species can also be found in Chihuahuan desert scrub habitats where open stands of creosote and large succulents, such as paloverde, pricklypear, and giant saguaro are present. It nests on the ground in a small cup-nest constructed out of grasses. Avoids areas with extensive stands of shrubs.	Although there is marginally suitable grassland habitat in the proposed project area including creosote, there is a lack of large succulents such as paloverde and giant saguaro that this species prefers. Additionally, the project area is heavily disturbed by oil and gas activity.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Gray vireo (*Vireo vicinior*)	NM T	Strongly associated with piñon-juniper and scrub oak habitats. Distributed mainly across the western two-thirds of the state. Prefers gently sloped canyons, rock outcrops, ridge tops, and moderate scrub cover.	Unlikely to occur within the proposed project area due to lack of canyon habitat and exposed rock outcropping.
Interior least tern (*Sterna antillarum athalassos*)	USFWS E NM E	Migratory species that occurs in North America during the breeding season, when it is associated with water (e.g., lakes, reservoirs, and rivers). In New Mexico, breeding is restricted to the Pecos River basin. It is known to breed primarily at Bitter Lake National Wildlife Refuge in nearby Chaves County.	Unlikely to occur within the proposed project area areas it is outside of the species' known breeding range within the state.
Lesser prairie-chicken (*Tympanuchus pallidicinctus*)	BLM Sensitive	This species occurs in southeastern New Mexico, primarily in Havard oak (*Quercus havardii*) or sand sagebrush (*Artemisia filifolia*) grasslands. Also occurs in Havard oak–bluestem habitats dominated by sand bluestem (*Andropogon hallii*), little bluestem (*Schizachyrium scoparium*), sand dropseed (*Sporobolus cryptandrus*), threeawn (*Aristida* sp.), and blue grama (*Bouteloua gracilis*).	Unlikely to occur within the proposed project area as it is outside of the lesser prairie-chicken's known occupied range within the CFO Planning Area (BLM 2018a).
Loggerhead shrike (*Lanius ludovicianus*)	BLM Sensitive	The loggerhead shrike is a year-round resident in New Mexico and is found throughout the state, primarily in open country, including grasslands, improved pastures, hayfields, shrub steppe, and desert scrub, as well as piñon-juniper woodland and woodland edges.	May occur in the proposed project area due to presence of the marginally suitable Chihuahuan desert grassland with intermixed scrub habitat. No loggerhead shrikes were observed during the 2019 biological survey of the proposed project area.
Lucifer hummingbird (*Calothorax lucifer*)	NM T	Associated with rocky slopes or hillsides and Chihuahuan desert scrub vegetation. Nest sites are selected on slopes above rocky or wooded washes.	Unlikely to occur within the proposed project area due to the lack of rocky slopes or hillsides.
McCown's longspur (*Calcarius mccownii*)	BLM Sensitive	In New Mexico, McCown's longspurs migrate in the northeast and winter in the southeast and extreme southwest and are considered rare to uncommon and local (Hubbard 1978). Found in Sonoran desert scrub, Chihuahuan desert scrub, annual grassland, farms, and mountain and alpine meadows. Open to dense vegetation of shrubs, low trees, and succulents, dominated by paloverde (*Cercidium microphyllum*), prickly pear, and giant saguaro (*Cereus giganteus*) (USDA 1991).	Unlikely to occur within the proposed project area due to the lack of dense vegetation and suitable habitat.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Mexican spotted owl (*Strix occidentalis lucida*)	USFWS T	Occupies mountainous areas and deep canyons incised within flat plateaus. Habitat consists typically of mixed-conifer, ponderosa pine, or ponderosa pine–Gambel oak forest. Prefers mesic, shaded environments such as canyon bottoms and mountainous riparian areas.	Unlikely to occur within the proposed project area due to the lack of mountainous habitat or deep canyons preferred by the species.
Mexican whip-poor-will (*Antrostomus arizonae*)	BLM Sensitive	Whip-poor-wills summer in the mountains of the south (Mogollon and Sacramento highlands southward), north to the Manzano Mountains and are considered rare to fairly common. They are found in the Manzano, Gallinas, and White Mountains. Their northern summer limits appear to be the San Francisco, Datil, Magdalena, Sacramento, Guadalupe, and Sandia Mountains (Hubbard 1978). Occurs in desert riparian, deciduous woodland and marsh. Found in woodlands, especially of cottonwoods, that occur where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins (USDA 1991). This species has not been verified in the CFO Planning Area.	Unlikely to occur within the proposed project area as it occurs outside of the species' known range and does not contain narrow bands of cottonwood habitat.
Neotropic cormorant (*Phalacrocorax brasilianus*)	NM T	Associated with wetlands. Key requirements include areas of deep water for diving and elevated perches in trees, shrubs, and other structures for nesting, roosting, and drying plumage after feeding.	Unlikely to occur within the proposed project area due to the lack of deep water bodies or wetland habitat.
Northern aplomado falcon (*Falco femoralis septentrionalis*)	USFWS ENEP NM E	Associated with semi-desert grasslands with scattered yuccas, mesquite, and cacti. Naturally occurring populations are essentially restricted to the southern tier of New Mexico. Species has also been reintroduced on the Armendaris Ranch in Socorro and Sierra Counties and on lands administered by the BLM, White Sands Missile Range, and the New Mexico State Land Office beginning in 2006.	Although scrub-grassland habitat is present, the project is outside of the known occupied range within the BLM CFO Planning Area (BLM 2018a).
Northern beardless tyrannulet (*Camptostoma imberle ridgwayi*)	NM E	Northern boundary for the distribution of this species is in southern Arizona and southwestern New Mexico. Species breeds only in riparian areas of Guadalupe Canyon in southern Hidalgo County. Mesquite thickets and smaller trees are favored for feeding. Vulnerable to human disturbance, grazing, fire, and drought.	Unlikely to occur within the proposed project area due to the lack of riparian or mesquite thickets. The project is also outside of the species' known range within New Mexico.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Northern goshawk (*Accipiter gentilis atricapillus*)	BLM Sensitive	Strongly associated with montane forests during breeding and in winter. Migrating populations typically follow forested ridges.	Unlikely to occur within the proposed project area due to lack of montane forest habitat.
Painted bunting (*Passerina ciris*)	BLM Sensitive	Painted buntings breed in dense brush, often adjacent to thick, grassy areas or woodland edges. During migration and winter, they favor dense, weedy habitats, as well as the understory of semi-open forest.	Unlikely to occur within the proposed project area due to the lack of dense brush or woodland habitat interface.
Peregrine falcon (*Falco peregrinus; F. p. tundrius*)	NM T	Found in New Mexico year-round. All nests in New Mexico are found on cliffs. In migration and during winter months, New Mexico's peregrine falcons are typically associated with water and large wetlands.	Unlikely to occur within the proposed project area due to the lack of cliff roosting habitat or large wetlands.
Pinyon jay (*Gymnorhinus cyanocephalus*)	BLM Sensitive	Pinyon jays are variable residents in mainly mid-elevation areas containing piñon-juniper woodlands almost statewide and are considered uncommon to locally abundant (Hubbard 1978). This species has not been verified in the CFO Planning Area.	Unlikely to occur within the proposed project area due to the lack of piñon-juniper woodlands.
Piping plover (*Charadrius melodus*)	USFWS T NM T	Rare in New Mexico, where it occurs only during the spring and potentially fall migration. Verified at Springer Lake (Colfax County) and reported at Bosque del Apache National Wildlife Refuge (Socorro County); there was also an unsubstantiated report from Lake Avalon (Eddy County). Associated with water at all times of the year. Occurs on sandflats or along bare shorelines of rivers, lakes, or coastlines.	Unlikely to occur within the proposed project area due to the lack of bare shorelines or aquatic habitat.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	USFWS E NM E	In New Mexico, this species is known to breed only along the Gila River and Rio Grande. Associated with moist riparian areas throughout the year. Breeding habitat requirements vary by region. In migration, may be associated with willows along ditches, cottonwood woodlands, and saltcedar (*Tamarix* sp.) stands.	Unlikely to occur within the proposed project area due to the lack of riparian habitat or associated vegetation species.
Sprague's pipit (*Anthus spragueii*)	BLM Sensitive	Occurs in New Mexico only as a sporadic winter resident. Its distribution in the state is not well known but includes the lower Pecos River valley, Otero Mesa, and Animas Valley. It is associated with southern desert grasslands of the state. Species as a whole prefers dry, open grasslands.	Although scrub-grassland habitat is present, the project area is outside of the species' known habitat.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Thick-billed kingbird (*Tyrannus crassirostris*)	NM E	Summer resident in extreme southwestern New Mexico, where it occupies riparian canyons with cottonwoods and Arizona sycamores (*Platanus wrightii*). Nests 30–65 feet high in Arizona sycamore, usually in a crotch near the tree trunk.	Unlikely to occur within the proposed project area due to lack of riparian canyon and habitat including Arizona sycamores.
Varied bunting (*Passerina versicolor*)	NM T	Characteristic of shrublands, Sonoran desert scrub, Chihuahuan desert scrub, desert riparian deciduous woodlands and marshes, and second growth. Inhabits a large portion of Mexico. In New Mexico, prefers dense stand of mesquite and associated growths of canyon bottoms.	Unlikely to occur within the proposed project area due to lack of preferred dense mesquite vegetation.
Virginia's warbler (*Vermivora virginiae*)	BLM Sensitive	In Hubbard's survey of the Mogollon Mountains (Catron County), this warbler was fairly common in brushy growth in riparian spruce woodland, along with orange-crowned warblers (*Vermivora celata*), and in the pine-fir ecotone, especially where Gambel oak (*Quercus gambelii*) occurred (Hubbard 1965).	Unlikely to occur within the proposed project area due to the lack of riparian spruce forest or shinnery oak vegetation.
Western burrowing owl (*Athene cunicularia hypugaea*)	BLM Sensitive	Present mainly during the breeding season in the north half of the state and present year-round in the south half. Found in grasslands, especially in association with prairie dog colonies, in desert scrub, and in agricultural and semi-urban environments. Depends on prairie dogs, rock squirrels (*Otospermophilus variegatus*), and other fossorial mammals for the availability of nest burrows.	Unlikely to occur within the proposed project area due to the lack or prairie dog colonies to provide suitable burrow habitat.
White-faced ibis (*Plegadis chihi*)	BLM Sensitive	Uncommon in New Mexico, where it is found statewide during migration and as a (typically non-breeding) summer resident. Breeding recorded only at Tucumcari and at Stinking Lake in Rio Arriba County. Found in association with water. Generally seen in association with shoreline and marsh habitats adjacent to open water. Nesting colonies are located in shrubs and low trees or in dense standing reeds and tules near or in marshes. Forages along the water's edge or in fields.	Unlikely to occur within the proposed project area due to the lack of extensive perennial water bodies and associated shoreline habitat including dense standing reeds and tules.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Reptiles and Amphibians			
Arid land ribbon snake (*Thamnophis proximus diabolicus*)	NM T	The arid land ribbon snake is found in west Texas and southeast New Mexico. This snake is found primarily around water sources such as rivers, ponds, and stock tanks. This snake feeds primarily on small frogs.	Unlikely to occur within the proposed project area due to a lack of aquatic habitat.
Desert massasauga (*Sistrurus tergeminus*)	BLM Sensitive	This species was as far west as the Huachuca Mountains bajada in historic times but now is virtually restricted to a few miles of habitat in the San Bernardino Valley above 5,000 feet amsl (Rosen et al. 1996). In the western portion of its range, massasaugas are most abundant on prairie wetlands, but they can also be found on dry shortgrass plains (Fitch 1992).	Unlikely to occur in the proposed project area due to a lack of prairie wetlands or shortgrass plains. Additionally, the highest elevation in the proposed project area is 3,562 feet amsl.
Dunes sagebrush lizard (*Sceloporus arenicolus*)	BLM Sensitive NM E	A habitat specialist native to the Havard oak sand dune habitats extending from San Juan Mesa in northeastern Chaves County, Roosevelt County, and through eastern Eddy and southern Lea Counties. This species has an extremely strong affinity for bowl-shaped depressions in active dune complexes, referred to as sand dune blowouts, with a preference for relatively large blowouts and select microhabitat within a given blowout. Within their geographic range, the presence of this species is also associated with composition of the sand; they only occur at sites with relatively coarse sand.	Unlikely to occur within the proposed project area due to its being outside of the species' known range and lack of active dune complex habitat.
Gray-banded kingsnake (*Lampropeltis alterna*)	NM E	This species is known from Eddy County and may occur in Otero and southwest Chaves Counties. Occurs in typical Chihuahuan desert habitat with abundant limestone outcroppings between 3,510 and 6,693 feet in elevation. Inhabits a variety of habitats but is found primarily in rocky desert hills at mid-elevation. Habitat appears to be restricted to steep to precipitous hills and mountains between approximately 3,937 and 5,741 feet amsl (below the juniper zone). This species could be expected to occur throughout the limestone broken rock-Lozier association in Otero, Eddy, and southwestern Chaves Counties in New Mexico.	Unlikely to occur in the proposed project area due to a lack of limestone outcrops. Additionally, the highest elevation within the proposed project area is 3,562 feet amsl.
Great Plains narrowmouth toad (*Gastrophryne olivacea*)		This species inhabits grassland habitat within portions of the Great Plains in New Mexico. This species occurs primarily in grassland and desert-grassland habitats (Stuart and Painter 1996).	Unlikely to occur as the proposed project area is outside of the Great Plains habitat.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Mottled rock rattlesnake (*Crotalus lepidus lepidus*)	NM T	This subspecies of rattlesnake is known only from the southern Guadalupe Mountains in Eddy County and possibly Otero County. Key habitat areas include Walnut and Gunsight Canyons and Carlsbad Caverns National Park. Rock rattlesnakes usually occur between 3,937 and 8,530 feet amsl in elevation in New Mexico. This snake is found in a variety of habitats, including pine-oak forests, mesquite-grasslands, and rocky desert habitats. This species is primarily a mountain dweller but also occurs in bordering lowlands in some areas. This species favors areas of boulders and rocks, including talus slopes with their abundant hiding places.	Unlikely to occur within the proposed project area as it is outside of the Guadalupe Mountain range where the species is known to occur. Also, the highest elevation within the project area is 3,562 feet amsl.
Plain-bellied water snake (*Nerodia erythrogaster transversa*)	NM E	In New Mexico, this snake is known only from the lower Pecos Valley area (Eddy County), including along the Black River. The plain-bellied water snake is a highly aquatic species, swimming and diving with ease, and seeking prey in water. Normally confined to areas of permanent water, it may wander short distances inland, especially in wet weather. The preferred habitat is ponds and streams, the latter including fairly large rivers. This snake often hides under rocks or other objects during the day and becomes active at night. The young tend to occupy areas of shallower, more dappled water than the adults, including in inlets of small streams.	Unlikely to occur within the proposed project area due to a lack of aquatic habitat.
Rio Grande cooter (*Pseudemys gorzugi*)	BLM Sensitive NM T†	This turtle is confined to the Pecos River drainage, including the Pecos, Black, and Delaware Rivers below Brantley Dam in Eddy County. This species is part of the CCA. All of the rivers listed above constitute key habitat areas for the species. Primarily a stream species occurring from 2,953–3,610 feet amsl, preferring waters with slow to moderate current, firm bottoms, and abundant aquatic vegetation. Also inhabits stock tanks, ponds, large ditches, and even brackish tidal marshes. In New Mexico, most records are from streams with relatively clear water and rocky or sandy bottoms. Nests of this species are located in sandy soil, usually within 100 feet of the water.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Texas horned lizard (*Phrynosoma cornutum*)	BLM Sensitive	Inhabits arid and semiarid areas in the southwestern United States, characterized by open country with little vegetation. These areas often consist of grasses interspersed with cacti, yucca, mesquite, and other assorted woody shrubs and trees. In New Mexico, the species is associated with *Yucca-Prosopis-Ephedra* and *Larrea-Acacia-Fouquieria* habitat associations often in playas or on bajadas and mountain foothills.	May occur in the proposed project area due to presence of Chihuahuan desert grassland with intermixed scrub habitat, with interspersed yucca. No Texas horned lizards were observed during the 2019 biological survey of the proposed project area.
Mammals			
Big free-tailed bat (*Nyctinomops macrotis*)	BLM Sensitive	This species is usually associated with high cliffs and rugged rock outcroppings, but it also roosts in buildings, under lava caves, and sometimes in tree holes. It is found in urban areas, agriculture, barren land, desert scrub, scrub-grassland, swamp and riparian scrub, juniper savannah, oak savannah, shortgrass plains, alkali sacaton (*Sporobolus airoides*) grasslands, montane grassland, montane forest, evergreen forest, and marsh habitat.	May occur within the proposed project area due the presence of grasslands with intermixed scrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.
Black-tailed prairie dog (*Cynomys ludovicianus arizonensis*)	BLM Sensitive	Native to grasslands, including short- and mixed-grass prairie, sagebrush steppe, and desert grasslands. Also known to occur in mesquite-creosote bush, grama-needlegrass, tarbush–creosote bush, and burrograss-cholla type habitats.	Although marginally suitable grassland habitat is present, there is a lack of preferred vegetation such as grama-needlegrass, tarbush-creosote, and burrograss-cholla.
Cave myotis bat (*Myotis velifer*)	BLM Sensitive	This species is found primarily at lower elevations occurring in shortgrass plains, scrub-grassland, Chihuahuan desert scrub, Sonoran desert scrub, Plains and Great Basin swamp and riparian scrub, pine-oak woodlands, and oak savannah. Inhabits caves in the limestone region of southeastern New Mexico, and it has also roosted in barn swallow (*Hirundo rustica*) nests. It is never more than a few miles from a water source, such as canals, tanks, or creeks.	May occur within the proposed project area due to the presence of Chihuahuan desert grassland with intermixed scrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.
Fringed myotis bat (*Myotis thysanodes thysanodes*)	BLM Sensitive	A mid-elevation woodland bat that occurs in montane forest and woodland, mountain meadow, interior chaparral, scrub-grassland, alkali sacaton grassland, Chihuahuan desert scrub, swamp and riparian forests and scrub, Mohave desert scrub, and upland Sonoran desert scrub and occasionally in tundra.	May occur within the proposed project area due to the presence of Chihuahuan desert grassland with intermixed scrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Gray-footed chipmunk (*Neotamias canipes canipes*)	BLM Sensitive	Mostly found in forested habitats, such as piñon-juniper woodlands, but may also occur in shrublands and desert communities. It may occur in downed and dead trees, dense stands of mixed timber and on brushy hillsides, particularly in rock crevices.	Unlikely to occur within the proposed project area due to the lack of forest or piñon-juniper woodland habitat.
Guadalupe pocket gopher (*Thomomys bottae guadalupensis*)	BLM Sensitive	Found in sycamore (*Platanus* sp.), cottonwood, and rabbitbrush (*Chrysothamnus* sp.) riparian communities in the Guadalupe Mountains of southeastern New Mexico and western Texas.	Unlikely to occur within the proposed project area as it is outside of the Guadalupe Mountains.
Long-legged myotis bat (*Myotis volans interior*)	BLM Sensitive	Primarily a forest species occurring in chaparral, alpine and subalpine grassland, coniferous forest, scrub-grassland, Chihuahuan desert scrub, swamp and riparian forests and scrub, saxicoline brush, oak savannah, and woodland, Mohave desert scrub, and upland Sonoran desert scrub. Also occurs along watercourses and in deserts.	May occur within the proposed project area due to the presence of Chihuahuan desert grassland with intermixed scrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.
Mexican long-tongued bat (*Choeronycteris mexicana*)	BLM Sensitive	Mexican long-tongued bats of Arizona are found from the Chiricahua Mountains to the Santa Catalina and Baboquivari Mountains. They may also be bound in southwestern New Mexico and southern California. They winter in Mexico but do not hibernate there. Breeding takes place in the northern parts of the species' range (Monday 1993). They are found in sacaton grasslands, sycamore, cottonwood, and rabbitbrush oak savanna, and coniferous forest (Cook 1986).	Unlikely to occur within the proposed project area due to the lack of coniferous forest, sacaton grasslands, sycamore, or rabbitbrush oak savanna habitat.
Pecos River muskrat (*Ondatra zibethicus ripensia*)	BLM Sensitive	This species inhabits waterways that have a constant and fairly stable source of water with dense aquatic and emergent vegetation surrounded by terrestrial herbaceous vegetation. Common muskrats prefer sloughs, marshes, oxbow lakes, streams, levees, dikes, and small lakes and ponds. Common muskrats build lodges in or near water using marsh vegetation.	Unlikely to occur within the proposed project area due to the lack of dense aquatic an emergent vegetation.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Spotted bat (*Euderma maculatum*)	BLM Sensitive NM T	In New Mexico, spotted bats have been taken in areas near cliffs, including piñon-juniper woodlands and from streams or water holes within ponderosa pine or mixed coniferous forest. It has also taken over cattle tanks in a meadow surrounded by mixed coniferous forest and near a ridge with cliffs and limestone outcroppings. The spotted bat is usually captured around a water source, including desert pools or cattle tanks. It also may use rivers or desert washes as travel corridors.	Unlikely to occur within the proposed project area due to a lack of suitable habitat.
Townsend's pale big-eared bat (*Corynorhinus townsendii pallescens*)	BLM Sensitive	Found in a variety of xeric to mesic habitats: scrub-grassland, desert scrub, semi-desert shrublands, chaparral, saxicoline brush, tundra, open montane forests, spruce-fir, mixed hardwood-conifer, and oak woodlands and forests. This species is strongly correlated with the availability of caves or cave-like habitat, but it also uses abandoned buildings and rock crevices on cliffs for roosting.	May occur within the proposed project area due to the presence of Chihuahuan desert grassland with intermixed scrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.
Western small-footed myotis bat (*Myotis ciliolabrum melanorhinus*)	BLM Sensitive	This species is widely distributed in the western United States and found in many habitat types. Occurs in riparian wooded areas, bare rock/talus/cliffs, grassland and shrublands, and coniferous or mixed woodland areas. Generally inhabits desert, badland, chaparral, western coniferous forests and semiarid habitats, and more mesic habitats in the southern part of its range. In New Mexico, the distribution of this species seems to be in the ponderosa pine zone, although it occurs as low as desert and as high as the lower edges of the spruce-fir zone.	Unlikely to occur within the proposed project area due to the lack of ponderosa pine or edges of spruce-fir vegetation associations.
Yuma myotis bat (*Myotis yumanensis yumanensis*)	BLM Sensitive	Occurs in riparian communities, grasslands, semi-desert shrublands, mountain brush, woodlands, and desert habitats. It also occurs in arid canyon lands and Sonoran desert scrub. The species is associated with riparian areas and watercourses in the western United States. Roosts in caves, mines, cliffs, crevices, buildings, and swallow nests, including cliff swallows (*Petrochelidon pyrrhonota*).	May occur within the proposed project area due to the presence of Chihuahuan desert grassland with intermixed scrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.

Sources: Except where otherwise noted, range or habitat information for wildlife species is taken from Biota Information System of New Mexico (2019), USFWS Information for Planning and Consultation (USFWS 2018b), NatureServe (2017), Cartron (2010), and USFWS and CEHMM (2017).

Federal (USFWS) status: C = Candidate, E = Endangered, T = Threatened, ENEP = Experimental Population, Non-Essential.

New Mexico State status: NM E = Endangered, NM T = Threatened.

United States Department of the Interior
Bureau of Land Management

Environmental Assessment DOI-BLM-NM-P020-2019-0654-EA
IT4RM EA-2019-0692

Southwestern Public Service Company, Inc.
Kiowa Substation Expansion Project,
Eddy County, New Mexico

BLM Serial No. NM-134336 Amendment

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March 2019

Confidentiality Policy
Any comments, including names and street addresses of respondents, you submit may be made available for public review. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AMS	Analysis of the Management Situation
amsl	above mean sea level
BLM	Bureau of Land Management
CAA	Clean Air Act
CCA	Candidate Conservation Agreement
CEHMM	Center of Excellence for Hazardous Materials Management
CFO	Carlsbad Field Office
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
COA	condition of approval
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act
GHG	greenhouse gas
GIS	geographic information system
HAP	hazardous air pollutant
HUC	Hydrologic Unit Code
IM	Instruction Memorandum
IPCC	Intergovernmental Panel on Climate Change
MBTA	Migratory Bird Treaty Act of 1918
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NMAAQS	New Mexico Ambient Air Quality Standards
NMED	New Mexico Environment Department
NMOSE	New Mexico Office of the State Engineer
NMPM	New Mexico Principal Meridian
NO_2	nitrogen dioxide
NO_x	nitrogen oxide(s)
NRCS	Natural Resources Conservation Service
O_3	ozone
OHWM	ordinary high-water mark

Pb	lead
PBPA	Permian Basin Programmatic Agreement
PFYC	Potential Fossil Yield Classification
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
POD	Plan of Development
project	Kiowa Substation Expansion Project
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
ROW	right-of-way
SF-299	Standard Form 299
SO_2	sulfur dioxide
SPS	Southwestern Public Service Company, Inc.
SWCA	SWCA Environmental Consultants
TCP	traditional cultural property
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1 PURPOSE AND NEED FOR ACTION

1.1 Background

Southwestern Public Service Company, Inc. (SPS), a wholly owned subsidiary of Xcel Energy Inc. has submitted a Standard Form 299 (SF-299) Application for an amended right-of-way to the Bureau of Land Management (BLM) Carlsbad Field Office (CFO) for the Kiowa Substation Expansion Project (Proposed Action, proposed project; or project).

The existing Kiowa substation was granted a right-of-way under ROW NM-134336 in 2016. SPS proposes to amended NM-134336 by expanding the substation area an additional 6.3 acres. The project would address drainage issues and provide additional area for the 345 kilovolt (kV) overhead electric line from Eddy County Substation to Kiowa Substation (NM-134370). The proposed project would access existing road infrastructure and would not require new access roads to be constructed. In addition, the staging of equipment would occur within the existing Kiowa substation footprint.

The proposed project is located on approximately 6.3 acres of BLM lands in Eddy County, New Mexico. The BLM CFO would serve as the lead federal agency for the undertaking and has assigned the project a case file number **NM-134336.**

- **The total new permanent acreage on BLM lands is 6.3 acres.**

The proposed project would be located in Eddy County, New Mexico, approximately 16 miles northeast of the city of Carlsbad (Figure 1.1). The legal land description (New Mexico Principal Meridian [NMPM]) for the permanent right-of-way (ROW) is provided below.

1.1.1 *Substation*

BLM Lands

Township 21 South, Range 29 East, NMPM

Section 3: SW¼SE¼;
Section 10: NW¼NE¼.

SWCA Environmental Consultants (SWCA) performed a general biological survey of the proposed project area on March 2, 2019. The results of the biological survey are described in Chapter 3 below. The purpose of the biological survey was to evaluate the potential for special-status species to occur and to identify habitat communities for special-status species regulated by the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act of 1973 (ESA) and migratory bird nests protected by the Migratory Bird Treaty Act (MBTA).

The entire length of the project falls within the Permian Basin Programmatic Agreement (PBPA) area for cultural resources. However, the project does not qualify for enrollment into the PBPA; therefore, all previously unsurveyed space within the area of expansion, as well as a 100-foot cultural buffer, was surveyed for cultural resources. The proposed project area on BLM lands underwent a Class III cultural resources inventory survey (New Mexico Cultural Resource Information System Activity No. 142505) on February 7, 2019 (Williams 2019).

The survey was designed to meet, but not be limited to, the requirements detailed in *BLM Manual Supplement H-8100-1 New Mexico, Oklahoma and Texas: Procedures for Performing Cultural Resource Fieldwork on Public Lands in the Area of New Mexico BLM Responsibilities* (BLM 2002). The authority for these standards comes in part from Section 106 of the National Historic Preservation Act of 1966 (NHPA), the Antiquities Act of 1906, and the Historic Sites Act of 1935, along with all additional federal and state laws for preserving and protecting cultural resources. Results of this survey are on file with the BLM CFO and the New Mexico State Land Office (Williams et al. 2019).

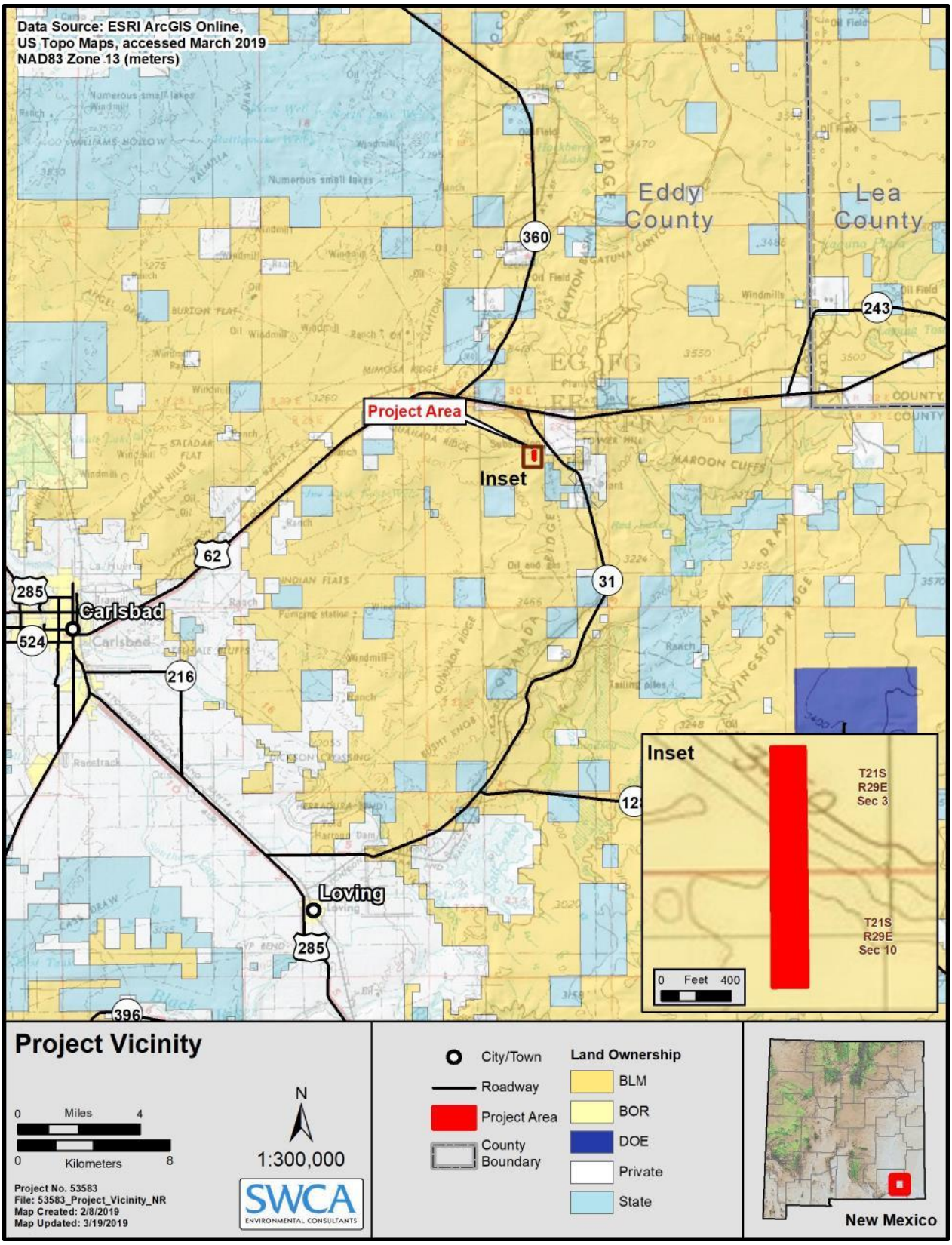


Figure 1.1 Project vicinity.

This EA complies with the requirements of the National Environmental Policy Act of 1969 (NEPA) and federal regulations found in 40 Code of Federal Regulations (CFR) Chapter V. This EA analyzes the site-specific impacts associated with the Proposed Action, identifies mitigation measures to potentially reduce or eliminate those impacts, and provides agency decision makers with detailed information with which to approve or deny the Proposed Action or an alternative. This EA analysis assumes the BLM CFO's standard conditions of approval (COAs) would apply (BLM 1997:Appendix 2).

1.2 Purpose and Need for Action

The BLM's purpose is to respond to SPS's request for legal use of and access across BLM-managed public lands by granting SPS a ROW for the proposed substation expansion. As stated in 43 CFR 2801.9, a BLM ROW grant is required for use of public lands for "systems or facilities over, under, on, or through public lands," including transmission lines. The BLM's mandate for multiple uses of public lands includes development of energy transmission in a manner that conserves the multitude of other resources found on public lands. The need for the BLM's action is established by the Federal Land Policy and Management Act (FLPMA) and is to respond to an application for a ROW grant by evaluating the application for use of federal land for construction of one substation expansion on federal land. The BLM would consider the application in accordance with 43 CFR 2800 (Rights-of-Way under FLPMA) and the Energy Policy Act of 2005.

1.3 Decision to Be Made

The BLM will decide whether to issue the subject ROW grant and, if so, under what terms and conditions.

1.4 Conformance with Applicable Land Use Plan(s)

The Proposed Action is in conformance with the 1988 BLM Carlsbad Resource Management Plan (RMP) (BLM 1988), as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment (RMPA) (BLM 1997). The 1988 RMP, as amended, provides for the integrated multiple use and sustained yield of resources for the planning area. The 1997 RMPA, while not directly applicable as it was designed for fluid mineral development and management, does provide COAs for overhead power lines (BLM 1997:Appendix 2). After review, the BLM has determined that the Proposed Action conforms to the land use plan terms and conditions as required by 43 CFR 1610.5.

Name of Plan: 1988 Carlsbad Resource Management Plan
Date Approved: September 1988

Decision: "…public lands are available for utility and transportation facility development; however, applicants will be encouraged to locate new facilities within the designated ROW corridors. Deviations from designated corridors may be permitted based on the type and need of the proposed facility, and lack of conflicts with other uses" (BLM 1988:9).

Name of Plan: 2008 Special Status Species Record of Decision and Resource Management Plan Amendment—to address management of the lesser prairie-chicken (*Tympanuchus pallidicinctus*) and the dunes sagebrush lizard (*Sceloporus arenicolus*)
Date Approved: April 2008

Decision: "New projects of the type described above [utility corridors for major projects such as interstate electric transmission lines; pipelines; and communications lines for interstate use] that propose to cross the Planning Area would be evaluated based on the impacts to lesser prairie-chicken and sand dune lizard habitats and other resources to meet the overall objectives of this plan. These projects would not be located in ROW avoidance areas if other routes can meet the purposes of the project" (BLM 2008a:2–13).

The proposed project area is not within the management areas identified in the 2008 Special Status Species Resource Management Plan Amendment (BLM 2008a).

The ROW would be granted only after site-specific analysis (BLM 2008a:6). Site-specific impacts associated with the proposed project are analyzed and disclosed in this EA; specifically, impacts on special-status species are discussed below (see Section 3.5 and Appendix A). Appendix 2 of the Carlsbad Approved RMPA and Record of Decision (BLM 1997:Appendix 2:8–9) and the 2008 RMPA and Record of Decision (BLM 2008a:6–7) describe COAs and mitigation measures for overhead transmission lines. The Proposed Action is not located in a ROW avoidance area. Therefore, the Proposed Action is in conformance with the RMP, as amended.

1.5 Relationship to Statutes, Regulations, or Other Plans

Various federal and state agencies regulate different aspects of electric power infrastructure projects. Table 1.1 lists the environmental permits and approvals that could be required for the proposed project.

Table 1.1. Potential Permits, Approvals, and Clearances Needed for Construction, Operation, and Maintenance of the Proposed Project

Permit/Notification	Issuing Agency	Status
Federal Permit, Approval, or Clearance		
Application for Transportation and Utility Systems and Facilities on Federal Lands (ROW grant)	BLM	Subject of the SF-299 and this EA.
Clearance under Section 7 of the ESA	USFWS	A biological survey was conducted in March 2019. Findings are described in Chapter 3. The BLM would determine what form of consultation with the USFWS is warranted for this project.
MBTA (16 United States Code 703–712)	BLM	The BLM has not identified any requirements for MBTA compliance other than the biological survey to document nests and activity. One inactive passerine nest was observed during the March 2019 biological survey of the proposed project area.
Clean Water Act Section 404 Permitting Discharges of Dredge or Fill Material into Waters of the U.S. (including wetlands)	U.S. Environmental Protection Agency and New Mexico Environment Department (NMED)	Section **Error! Reference source not found.** describes water resources. The biological survey was conducted in March 2019 and there were no potentially jurisdictional water bodies (i.e., waters of the U.S.) that would be crossed by the proposed project. Nationwide Permit 12 – Utility Line is not required.
State Permit, Approval, or Clearance		
Clean Water Act Section 401 Water Quality Permit	NMED	Section **Error! Reference source not found.** describes water resources. The biological survey was conducted in March 2019 and there were no potentially jurisdictional water bodies (i.e., waters of the U.S.) that would be crossed by the proposed project. No Section 401 permit is required.

Permit/Notification	Issuing Agency	Status
Clean Air Act New Mexico Air Quality Control Act	NMED	Impacts to air quality are described in Section 3.1. No NMED new source permit or Notice of Intent is required for facilities emitting less than 10 tons per year of any criteria pollutant; therefore, the Proposed Action is in compliance with the No Permit Required regulation (NMED 2019).
Section 106 of the NHPA	State Historic Preservation Office	Any consultation with the State Historic Preservation Office would be managed by the BLM
Tribal communications: consultation to determine if the proposed project would impact receptors of cultural importance	Native American tribes	Any consultation with Native American tribes would be managed by the BLM.

1.6 Scoping, Public Involvement, and Issues

Appropriate scoping helps identify issues, resources, and resource uses that could be impacted, reducing the chances of overlooking a potentially significant issue or reasonable alternative. Scoping takes place internally within the BLM via meetings with resource specialists. Resource issues identified for the proposed project are listed in Table 1.2. No formal public scoping has occurred for the proposed project.

Table 1.2. Resource Issues Identified for the Proposed Project

Resource/Issue	Issue for Detailed Analysis
Air Resources	How would the proposed project impact air quality, especially during construction of the proposed project?
Watersheds and Drainages	How would the proposed project affect surface water resources, including drainages and playas?
Soils	How would the surface disturbance associated with the proposed project affect sensitive soils?
Vegetation and Invasive, Non-Native Species	How would the proposed project affect vegetation? How would the proposed project minimize the spread of invasive, non-native species?
Wildlife and Special-Status Species	How would the proposed project and associated noise impacts affect habitat for wildlife and migratory birds?
Karst Resources	How would the proposed project affect karst resources?
Cultural Resources and Native American Religious Concerns	How would surface-disturbing activities affect cultural resources? Are any traditional cultural properties affected by the proposed project?
Paleontological Resources	How would the proposed project impact paleontological resources, such as fossils?
Livestock Grazing	How would the proposed project impact livestock grazing in the vicinity of the proposed project?

Resource issues considered by the BLM for potential impacts from the proposed project and then dismissed from further analysis in this EA are listed in Table 1.3 with rationale for the dismissal.

Table 1.3. Resource Issues Considered but Not Analyzed in Detail for the Proposed Project

Resource/Issue	Rationale for Dismissal from Detailed Analysis
Mineral Development	SPS would not develop minerals, including excavated material to build the substation structure foundations.
Special Designations	There are no special designations crossed by the proposed project. The Maroon Cliffs Archaeological District Special Management Area is located approximately 2.7 miles east of the proposed project area.
Recreation Areas	The proposed project is located approximately 1.4 miles south of the Hackberry Lake OHV Use Area. This Special Management Area is approximately 55,000 acres (BLM 2019) and is likely to attract off-highway vehicle use, including areas with readily available public access, and sandy dunes areas for motorized recreation (BLM 2014a). Though the project would be visible by recreational users within the Special Management Area, that visibility at 1.4 miles is not expected to deter users, as human-made structures and development are present elsewhere on the landscape.
Visual Resources	The proposed project is within Visual Resource Management Class IV, which allows for major modifications to the landscape. The visual impacts from the substation expansion would be consistent with management objectives outlined within Visual Resource Management IV and with the previously developed nature of the landscape (BLM 2014).
Socioeconomic Conditions	The small number of jobs created and the temporary status of those jobs does not warrant detailed analysis in this EA.
Environmental Justice	No environmental justice population, as defined by Executive Order 12898 (U.S. Environmental Protection Agency 2015), would be affected by the proposed project.
Public Health and Safety	No residential or community infrastructure is present near the vicinity of the Proposed Action. Hazardous materials are typically not used or stored within the proposed ROW. All laws and regulations regarding the handling of any fuels or trash would be adhered to. Therefore, this issue is not analyzed in detail.

2 PROPOSED ACTION AND ALTERNATIVE

2.1 Proposed Action

SPS proposes to amended NM-134336 by expanding the substation area an additional 6.3 acres. The proposed project would access existing road infrastructure and would not require new access roads to be constructed. In addition, the staging of equipment would occur within the existing Kiowa substation footprint.

Approximately 6.3 acres of long-term disturbance would result from the Proposed Action. All surface disturbance not needed for operation or maintenance of the proposed project would be reclaimed following construction (Table 2.1).

Table 2.1. Total Acres of Proposed Action Components by Land Ownership

Project Element	Land Ownership	Length (feet)	Width (feet)	Total Proposed Disturbance (acres)
Kiowa Substation Expansion	BLM	1,379.6	200.0	6.3
Total Acreage of Disturbance		**1,379.6**	**200.0**	**6.3**

SPS would use existing roads to access the proposed project area during construction. The proposed expansion is in the general vicinity of existing roads (see **Error! Reference source not found.**). The location of the proposed project area is provided in Section **Error! Reference source not found.** and **Error! Reference source not found.**. Additional project details are provided in the Standard Form 299 and the approved 2016 plan of development (POD) on file at the BLM CFO.

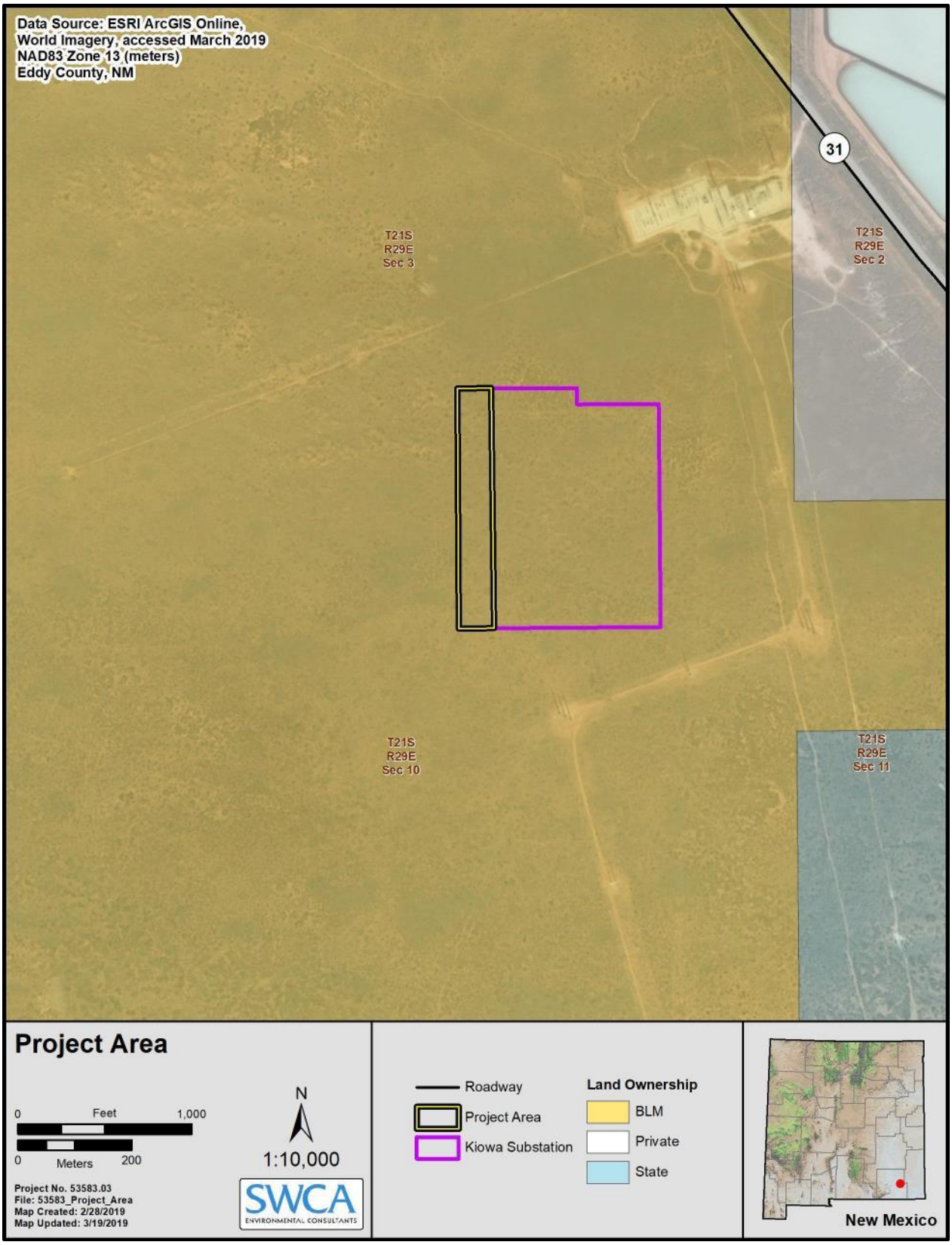


Figure 2.1. Project area map.

2.1.1 *Proposed Project Phases*

Construction of the proposed project is scheduled to begin after applicable required federal, state, and local permits and approvals are obtained. Construction of the proposed project would begin following the issuance of the BLM ROW grant and Certificate of Public Convenience and Necessity (CCN) from the New Mexico Public Regulation Commission. Construction would take approximately 6 months to complete. In general, implementing the Proposed Action would consist of four phases: 1) construction, 2) post-construction reclamation, 3) operation and maintenance, and 4) final reclamation and abandonment. These phases are described below. For a detailed description of construction practices associated with the Proposed Action, refer to the POD on file at the BLM CFO. SPS would follow the stipulations attached to the approved ROW grant and standard COAs (BLM 1997:Appendix 2) during applicable project phases.

During the proposed project phases, vehicles would use developed BLM roads, county roads, and highways. Traffic would include light and heavy vehicles.

Construction Phase

Construction would begin following approval of the Proposed Action, issuance of the BLM ROW grant, completion of the pre-construction activities described above, final notice to proceed from BLM, and issuance of the CCN. It is estimated that the project would take 6 months to complete. Pre-construction activities, including geotechnical investigation and engineering surveys, would be completed prior to construction. Construction would be conducted in a sequential set of tasks performed by multiple crew types. See Table 2.1 above for projected acreage of disturbance during construction. See the approved 2016 POD for full description of construction activities.

Clearing and Grading

Clearing and grading of the entire substation area would be necessary to prepare the site for construction. The site would be graded to create a level surface with a moderate slope for drainage. Grading would be engineered to provide adequate clearances from energized conductors entering the substation. All topsoil would be segregated and stockpiled away from other excavated soil, which would be used as backfill, berms, or fill for other areas, with the exception of structure holes excavated by an auger.

The surface of the substation would be covered with an insulating layer to protect personnel from high currents and voltages in the event of a fault condition. Approximately 2 to 4 inches of crushed rock would be applied to the finished surface of the substation, which would then be treated with a soil sterilizer to prevent vegetation growth. If necessary, drainage structures such as ditches, culverts, and sumps would be installed.

Grounding

A grounding system consisting of buried copper conductor arranged in a grid system and driven ground rods 8 to 10 feet long would be installed. The ground rods and any equipment and structures would be connected to the grounding conductor. The amount of conductor, length, and number of ground rods required is calculated based on fault current and soil characteristics.

Fencing

Security fence would be installed around the entire perimeter of the substation. The fence would be 8 feet tall and made of chain link topped with barbed wire. Locked gates would be installed at appropriate locations for authorized vehicle and personnel access.

Foundation Installation

Structures added to the substation would be either directly embedded into the ground or placed on a drilled pier foundation. Equipment foundations for circuit breakers and transformers would be slab-on-grade. These foundations would be installed by excavating the foundation area, placing forms, placing reinforced steel and anchor bolts as necessary, and placing concrete into the forms. After the foundations are poured, the forms would be removed, and the surface of the foundation would be dressed. Reinforced steel and

anchor bolts would be transported to each site by truck, either as a prefabricated cage or loose pieces, and would be fabricated into cages on-site. Concrete would be hauled to the site in concrete trucks.

Oil Containment

Some substation equipment such as transformers, reactors, and circuit breakers are filled with an insulating mineral oil. Containment structures would be used to prevent oil from escaping into the ground. The type of containment device varies depending on site requirements, environmental conditions, and regulatory restrictions. The simplest type of oil containment is an excavated pit of a calculated capacity under the oil-filled equipment with an oil impervious liner. The pit may use grates to facilitate access to the equipment. In the event of an oil leak or rupture, the oil captured in the containment pit is pumped into tanks or barrels and transported to a disposal facility. If required, more elaborate oil containment systems can be installed. This may take the form of an on- or off-site storage tank and/or oil-water separator equipment, depending on site requirements. The exact type of containment structure would be determined as part of the final substation design.

Structure and Equipment Installation

Steel structures to support some substation equipment would be affixed to the concrete foundation anchor bolts with a track-mounted crane. Equipment such as transformers, reactors, and circuit breakers can be mounted directly to the foundations without supporting structures. The equipment is then assembled, tested, and connected electrically to the control building through multi-conductor control cables installed in conduits and/or a precast concrete cable trench system.

Cleanup

The substation site would be kept in an orderly condition throughout construction. All refuse and trash would be removed and disposed of appropriately. If landscaping is required by the permitting agency, drought-tolerant and primarily native plant materials would be used.

Operations and Maintenance Phase

Routine maintenance activities are ordinary maintenance tasks that have historically been performed and are regularly carried out on a routine basis, including the replacement of individual structures, components, and other facilities that, due to obsolescence, age, or wear, are in need of replacement or repair. It is expected that these replacements would be required infrequently (every 5 to 10 years) or as determined by inspection. Major maintenance activities may need to occur on an infrequent basis. These activities would require planning and budgeting in advance and agency coordination.

Post-Construction Reclamation

After construction, all disturbed areas, would be returned to pre-construction conditions and a stable vegetative cover would be maintained on the project area. The construction corridor would be restored and revegetated according to the BLM standards. Vegetation, soil, and rocks left as a result of construction would be randomly scattered over the project area and would not be left in rows, piles, or berms unless requested by the BLM. In those areas where erosion control structures are required to stabilize soil conditions, the structures would be installed for the specific soil conditions encountered in the field.

Final Reclamation and Abandonment

At the end of the substation's useful life, estimated to be 30 years from construction, the necessary authorizations would be obtained from the BLM Authorized Officer to decommission the project. Future decommissioning of the substation would include removal of conductors and structures. All materials would be removed from the ROW. Equipment at the substations and unsalvageable materials would be disposed of at authorized sites. Regrading and revegetation of disturbed areas would be completed according to BLM standards. The abandoned ROW would revert to the control of the landowners.

2.2 No Action

BLM NEPA Handbook H-1790-1 states that for EAs on externally generated applications, the No Action Alternative generally means the request for the proposed activity would be denied (BLM 2008b:52). This option is provided in 43 CFR 3162.3-1(h)(2). This alternative would deny the approval of the proposed application, and the current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

2.3 Alternatives Considered but Eliminated from Further Analysis

Alternatives to the Proposed Action are developed to explore different ways to accomplish the purpose and need while minimizing environmental impacts and resource conflicts and meeting other objectives of the Carlsbad RMP. Consistent with BLM NEPA Handbook H-1790-1, the agency "need only analyze alternatives that would have a lesser effect than the proposed action" (BLM 2008b:80). Those with greater adverse resource impacts or those that are not feasible because of existing physical constraints or infrastructure are not brought forward for detailed analysis in this EA.

Once the Proposed Action was identified, a biological resources survey was conducted. The proposed project location and design would meet the BLM's purpose and need while minimizing environmental impacts to the greatest extent possible because the majority of the proposed project parallels or abuts existing disturbance. Any other proposed project locations that would meet the purpose and need would likely result in greater surface and/or environmental impacts. Internal scoping did not identify an additional unforeseen alternative; therefore, only the No Action and Proposed Action alternatives were brought forward for detailed analysis in this EA.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter is organized by relevant major resources or issues/concerns as presented in Section 1.6 and Table 1.2. On the basis of Council on Environmental Quality guidance and BLM NEPA Handbook H-1790-1, the following discussion is limited to those resources or resource uses that could be impacted to a degree that warrants detailed analysis (40 CFR 1502.15) (BLM 2008b:96) as determined by the BLM interdisciplinary team.

Projects requiring approval from the BLM such as ROWs can be denied when the BLM determines that adverse effects to resources (direct or indirect) cannot be mitigated to reach a Finding of No Significant Impact. Under the No Action Alternative, the proposed project would not be constructed and there would be no new impacts to any elements of the human environment from approval of the proposed project. The No Action Alternative would result in the continuation of the current land and resource uses in the project area and is used as the baseline for comparison of environmental effects of the Proposed Action.

3.1 Air Resources

3.1.1 *Affected Environment*

Air quality and climate are components of air resources that may be affected by the Proposed Action. Therefore, the BLM must consider potential effects of BLM and BLM-authorized activities on air resources as part of the planning and decision-making process.

Technical information related to air resources and climate change associated with oil and gas development, as well as the methodology and assumptions used for analysis, is summarized in the *Air Resources Technical Report for Oil and Gas Development: New Mexico, Oklahoma, Texas and Kansas* (herein referred to as the Air Resources Technical Report) (BLM 2016). The Air Resources Technical Report lists the National Ambient Air Quality Standards (NAAQS) (BLM 2016:4–5) and describes the types of data used for description of the existing conditions (BLM 2016:6) and how the pollutants are related to the activities involved in oil and gas development (BLM 2016:7–14). A qualitative overview of air quality and climate is provided in this section.

Air Quality

BLM and BLM-authorized actions are required to comply with the Clean Air Act (CAA) and consider the impacts of these actions to air quality on BLM-managed lands.

National Ambient Air Quality Standards

Criteria Pollutants

Under the CAA, the U.S. Environmental Protection Agency (EPA) has the authority to regulate emissions from both stationary and mobile sources. The CAA requires the EPA to establish NAAQS for pollutants considered harmful to public health and the environment. In accordance with the requirement, the EPA has created national standards for seven common air pollutants, also known as criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), lead (Pb), particulate matter equal to or less than 10 microns in diameter (PM_{10}), and particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$).

The NAAQS include primary standards that provide for the protection of human health and secondary standards that provide for the protection of public welfare (e.g., visibility, the health of vegetation and animals). The NAAQS are defined in terms of threshold ambient concentrations measured as an average for specified periods of time. Pollutants with acute health effects are assigned short-term standards, and those with chronic health effects are assigned long-term standards. The NAAQS undergo periodic revisions

to ensure that emerging science and technology result in the most up-to-date and protective standards achievable (see EPA [2016] for current standards).

Under the provisions of the CAA, states can elect to develop their own ambient air quality standards, and New Mexico has adopted its own standards (New Mexico Ambient Air Quality Standards [NMAAQS]) for CO, NO_2, total suspended particulates, SO_2, hydrogen sulfide (H_2S), and total reduced sulfur (see New Mexico Administrative Code 20.2.3 for current state standards).

Attainment

In accordance with the CAA, the EPA must review air quality conditions reported by states to determine whether states are meeting the national standards for air quality. Areas with ambient concentrations of criteria pollutants within the NAAQS are deemed to be "attainment" areas;[1] conversely, those that do not meet the standards are referred to as "nonattainment" areas.[2] Geographic areas previously designated as nonattainment and subsequently redesignated as attainment as a result of achieving the NAAQS (for a probationary period) are categorized as "maintenance" areas. Areas that cannot be classified on the basis of insufficient data are designated as "unclassifiable." The designation "attainment/unclassifiable" may be assigned to areas that are lacking sufficient monitoring data but that meet the standard or will soon meet the standard.

The General Conformity Rule

The General Conformity Rule, established under Section 176(c)(4) of the CAA, ensures that federal actions comply with the NAAQS, achieving attainment of these standards. Activities or actions that conform to the rule should not, through additional air pollutant emissions, cause or contribute to new violations, increase the frequency or severity of existing violations, or delay timely attainment or interim emission reductions (BLM 2014a). Essentially, air conformity ensures that air pollution emissions associated with federal actions do not contribute to air quality degradation, which would prevent the achievement of state and federal air quality goals.

The General Conformity Rule requires federal agencies to identify, analyze, and quantify emission impacts of a federal action where the total direct and indirect emissions for criteria pollutants in a nonattainment or maintenance area exceed the NAAQS. If the location of the action is in an attainment area, the General Conformity Rule does not apply (BLM 2014a).

Hazardous Air Pollutants

Hazardous air pollutants (HAPs), also known as air toxins, are pollutants that are produced primarily by human-made sources. These pollutants are known or suspected to cause adverse human health effects, including cancer, as well as negative effects on ecosystems. Humans can come into contact with these toxins through several exposure pathways, including inhalation; ingestion of contaminated food, water, and soil; and dermal contact.

The Air Resources Technical Report discusses the relevance of HAPs to oil and gas development and infrastructure, as well as the particular HAPs that are regulated in relation to these activities (BLM 2016:14–15). The EPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP impacts by county in the United States. The purpose of the NATA is to identify areas in which HAP emissions result in high health risks and further emissions reduction strategies are necessary. A review of the results of the 2014 NATA shows that cancer, neurological, and respiratory risks in Chaves, Eddy, and Lea Counties are not elevated and match statewide and national levels (EPA 2018a).

[1] Note: An area may meet the established NAAQS for one or more criteria pollutants but have unacceptable levels for others. Therefore, an area could be in attainment for one criteria pollutant and simultaneously in nonattainment for another (BLM 2014b).

[2] The EPA has set time limits for nonattainment areas to conform to the NAAQS, and may further designate nonattainment areas as marginal, moderate, serious, severe, or extreme (BLM 2014b).

Existing Air Quality

EPA's Green Book webpage reports that Eddy, Lea, and Chaves Counties are in attainment for all NAAQS, as defined by the CAA (EPA 2018b). In 2011, the CFO contracted with Applied EnviroSolutions to provide an emissions inventory for the CFO planning area, including Chaves, Eddy, and Lea Counties (Applied EnviroSolutions 2011). This information is more detailed than that available from the EPA and is specific to the CFO planning area. Monitored values for criteria pollutants (except CO)[3] from the 2011 emissions inventory also show that the CFO planning area is in attainment with the NAAQS.

The Analysis of the Management Situation (AMS) for the CFO (BLM 2014b) discusses the sources of and the human health and safety concerns associated with criteria pollutants. The air quality analysis documented in the AMS shows that the criteria pollutant of most concern in the planning area is O_3. One county in the planning area, Eddy County, exceeded the 8-hour O_3 standard once in 2002 and once in 2006; however, it did not violate the 3-year rolling average.[4] No other violations of air quality standards have occurred within the planning area. At present, O_3 levels are close to the regulatory limit (BLM 2014b). Other criteria pollutants of concern include nitrogen oxide(s) (NO_x) (including NO_2), SO_2, and particulate matter (PM_{10} and $PM_{2.5}$). CO and Pb emissions are not considered major criteria pollutants in the CFO planning area (BLM 2014b).

Climate

Existing Climate

The planning area is located in a semiarid climate regime typified by dry, windy conditions, limited rainfall, hot summers, and mild winters. Summertime maximum temperatures are generally around 90 degrees Fahrenheit (°F), with occasional temperatures over 110°F (Western Regional Climate Center 2018). Winter minimum temperatures are generally between 20°F and 40°F, with extremes remaining above 0°F. Precipitation is mainly in the form of summer thunderstorms associated with the Southwest monsoon, though occasional Pacific storms drop south into New Mexico during the winter. Table 3.1 presents climate averages for Carlsbad using the most current climate data available (1981–2010) from the National Oceanic and Atmospheric Administration.

Table 3.1. Climate Averages for Carlsbad, 1981–2010

Climate Condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (°F)	42.6	47.2	54.0	62.4	71.5	79.3	81.2	79.9	73.2	62.9	51.5	42.8
Maximum temperature (°F)	57.5	62.7	70.2	78.5	86.9	94.4	94.6	93.1	87.0	78.1	67.1	57.5
Minimum temperature (°F)	27.6	31.7	37.9	46.2	56.0	64.3	67.7	66.6	59.4	47.7	35.8	28.0
Precipitation (inches)	0.47	0.54	0.51	0.64	1.17	1.53	2.01	1.83	2.11	1.16	0.81	0.63

Source: National Oceanic and Atmospheric Administration (2011)

There is one wind measurement station near the Proposed Action: Caprock, in the northeast corner of Eddy County, located approximately 24 miles west of the Proposed Action. The data from Caprock indicates that the prevailing winds most frequently arrive from the south-southeast, bearing 157° (Western Regional Climate Center 2018).

[3] There are no monitors for CO in the CFO planning area because CO levels are currently not an issue.

[4] When assessing annual emissions for criteria pollutants, a 3-year rolling average accounts much of the year-to-year fluctuations in order to assess yearly trends.

Global Climate Change

Climate change is defined as a non-random change in climate that is measured over a period of decades or longer (National Weather Service 2009). Changes may result from natural or human causes. The most useful indicator of climate change is greenhouse gas (GHG) emissions, which include long-lived emissions such as CO, carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4), as well as water vapor and other trace gases (BLM 2014b). The 2013 Intergovernmental Panel on Climate Change (IPCC) fifth assessment report states that the atmospheric concentrations of well-mixed, long-lived GHGs have increased to levels unprecedented in at least the past 800,000 years. Further, human influence has been detected in warming of the atmosphere and the ocean, changes in the global water cycle, reductions in snow and ice, global mean sea level rise, and changes in some climate extremes. It is extremely likely (95%–100% probability) that human influence has been the dominant cause of the observed warming since the mid-twentieth century (IPCC 2013).[5]

BLM-authorized activities that produce GHGs include oil and gas production, construction activities, vehicle use, and prescribed fire. These activities generate both CO_2 and CH_4, contributing largely through carbon emissions. The primary source of GHG emissions on BLM-managed land in the planning area is oil and gas production. Some BLM-authorized activities may assist in isolating carbon emissions. For example, vegetation maintenance may help build organic carbon in soils and absorb CO_2 (i.e., a carbon sink) from the atmosphere (BLM 2014b).

3.1.2 *Impacts from the Proposed Action*

Direct and Indirect Impacts

Air Quality

In 2014, the BLM released an Instruction Memorandum (IM) providing national guidance for the BLM on quantifying air emissions and on the use of air emissions estimating tools (BLM 2014c). The IM stipulates that it may be a useful step, under some circumstances, to estimate air emissions from resource management activities for analysis. However, the IM does not require air emissions to be quantified when preparing NEPA documents for a project in an attainment area, where the emissions would not be estimated to exceed the NAAQS (BLM 2014c).

Criteria for assessing air quality impacts are based on existing regulatory requirements across all applicable jurisdictions. Eddy, Chavez, and Lea Counties satisfy all NAAQS and NMAAQS for monitored pollutants and are classified as attainment areas for those pollutants. These counties are unclassified with regard to those pollutants that are not monitored in those counties (BLM 2014c).[6]

In 2011, The U.S. Department of Agriculture (USDA), U.S. Department of the Interior, and EPA signed a Memorandum of Understanding (MOU) regarding air quality analyses and mitigation for federal oil and gas decisions made through the NEPA process (USDA et al. 2011). The MOU focuses on analyzing and addressing air quality impacts (direct, indirect, and cumulative) associated with federal actions related to on-shore oil and gas planning, leasing, or field development (including exploration, development, and production). The MOU directs air quality modeling to be conducted if specific criteria are met, such as whether the action will result in a Substantial Increase in Emissions (i.e., emissions resulting from the action may cause or contribute to exceedances of the NAAQS) (see Section V.E.3 of the MOU). The Proposed Action is not anticipated to cause a Substantial Increase in Emissions, as defined by the MOU. See the cumulative impact analysis for more information about the contribution of emissions (Section 3.11.1).

Generally, potential impacts to air resources resulting from the Proposed Action include construction emissions (those emissions that are expected to be temporary) and operations-related emissions (those

[5] The IPCC is currently in its sixth assessment cycle, for which the synthesis report should be finalized in 2022.

[6] As the Proposed Action is not located in a nonattainment or management area, the General Conformity Rule does not apply, and a conformity determination, through the identification, analysis, and quantification of emission impacts of the Proposed Action, is not required.

emissions that are expected to occur annually during operation of the Proposed Action). Typical construction-related emissions likely to be produced by the Proposed Action include GHGs, PM_{10}, NO_x, and CO. These emissions are anticipated to result from exhaust from construction vehicles, material movement, and equipment; exhaust from construction worker commuting; fugitive dust from general construction activities and earthmoving; and pipeline sandblasting and coating. Construction emissions would be short term, lasting only the duration of construction, and would not result in a substantial increase in emissions. These temporary impacts would be negligible and would not cause or contribute to exceedances of the NAAQS.

Operations-related emissions likely to be produced as a result of the Proposed Action include GHGs, CO, volatile organic compounds, and NO_x. These emissions are attributable to aboveground fugitive emissions from operations equipment and to emissions from inspection and maintenance of the equipment (including exhaust from inspection vehicles and aerial inspections, along with fugitive dust from vehicular use of unpaved roads). Fugitive dust emissions may also result from annual maintenance or repair of access roads. Periodic inspection and maintenance activities would occur during the operations phase of the proposed project. Emissions from operations and maintenance associated with the Proposed Action would be minimal and would not result in significant impacts to air resources.

Mitigation Measures

Measures to minimize or eliminate impacts to air quality are described in the standard COAs (BLM 1997:Appendix 2). No further mitigation measures have been recommended.

3.2 Watersheds and Drainages

3.2.1 *Affected Environment*

Surface Hydrology

The surface water supplies in western Eddy County are transitory and limited to quantities of runoff impounded in short drainageways, shallow lakes, and small depressions, including various playas and lagunas (New Mexico Office of the State Engineer [NMOSE] 2016). The proposed project crosses two watersheds as defined by the 10-digit Hydrologic Unit Code (HUC) (Table 3.2). These watersheds are contained within the Lower Pecos Basin (NMOSE 2016). There are no New Mexico Outstanding National Resource Waters within the watersheds.

Table 3.2. Watersheds Crossed by the Proposed Project

Watershed Name	HUC-10/ID	Portion of Proposed Project Area within the Watershed (acres)	Total Watershed Size (acres)
Black River-Pecos River	1306001112	0.6	126,540
Clayton Basin	1306001102	5.7	156,280
Total		**6.3**	**282,820**

The biological survey of the proposed project area was conducted March 2, 2019, to determine the presence of potential waters of the U.S., as defined by the U.S. Army Corps of Engineers, including streams, wetlands, and other special aquatic sites. Defining elements of potential waters of the U.S. include ordinary high-water marks (OHWMs), defined bed and banks, or the three mandatory wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. The presence of playas and vegetated depressions was also investigated during the biological survey in accordance with the BLM CFO's guidance.

Based on review of the U.S. Geological Survey's (USGS's) National Hydrography Dataset (USGS 2019) and the USFWS's National Wetlands Inventory (USFWS 2019a), there were no potential jurisdictional water features identified within the proposed project area (see Figure B.1in Appendix B). The biological surveys

confirmed that there were no water features within the proposed project area. No playas or other special aquatic sites were identified within the proposed project area during the biological surveys.

The proposed project area does not intersect any Zone A mapped floodplains (Federal Emergency Management Agency [FEMA] 2018). Zone A floodplains represent 100-year floodplains that have a 1% chance of being inundated in a given year (FEMA 2018).

Groundwater Hydrology

The project area occurs within two groundwater basins: the Carlsbad Underground Basin and the Capitan Basin (NMOSE 2016; Pecos Valley Water Users Organization 2001).

Carlsbad Underground Basin

The Carlsbad Underground Basin stretches from the Guadalupe Mountains, west of Carlsbad, south to the Texas border, and east into Lea County, New Mexico. Groundwater in this basin is derived from several geological formations, including the Delaware Mountain Group; the Carlsbad and Capitan Limestones; the Castile, Rustler, and Dockum Formations; and alluvium (water-eroded) and river terrace deposits. The two major aquifers that yield large supplies of water are the Capitan Reef and the shallow water aquifer found in the alluvium and river terrace deposits. The city of Carlsbad, the village of Loving, and five other community water systems derive their water supplies from the two major aquifers in the basin. Mineral extraction industries (potash, oil, and gas) also use water from the basin. The groundwater quality within the Carlsbad Underground Basin can vary from good to poor. The major constituents affecting water quality are *E. coli*, turbidity, and DDT (NMOSE 2016).

Capitan Basin

Groundwater use within this basin is relatively limited, with small livestock and domestic uses, and industrial use for potash, oil, and gas development. Groundwater supplies in the Capitan Basin are primarily derived from the Capitan Limestone and also from the Castile, Rustler, and Dockum Formations. Groundwater quality is generally poor and well yields are limited (Pecos Valley Water Users Organization 2001).

Groundwater Levels

Groundwater-level data are limited for the proposed project vicinity. Based on the New Mexico Water Rights Reporting System, groundwater levels in the Carlsbad Underground Basin average 192 feet below ground surface, with a minimum depth of 60 feet below ground surface. Groundwater levels in the Capitan Basin average 235 feet below the ground surface with a minimum depth of 17 feet below ground surface (NMOSE 2016).

3.2.2 *Impacts from the Proposed Action*

Direct and Indirect Impacts

No potential waters of the U.S. were identified during the biological survey of the proposed project area. Therefore, no direct impacts to waters of the U.S. would occur from the proposed project. Furthermore, no playas or vegetated depressions, as defined by the BLM CFO, were identified within the survey area during the biological survey; therefore, no direct impacts to these features would occur from the proposed project.

The potential to impact water resources primarily lies with the indirect impacts that could occur due to stormwater runoff from construction activities into downstream aquatic resources. Although indirect impacts from stormwater movement of contaminants or sediment due to ground disturbance could be a possibility, the mitigation measures described below, the standard COAs (BLM 1997:Appendix 2), and post-construction reclamation would likely limit movement of contaminants or sediment and limit indirect impacts.

Similar to potential impacts to surface water, impacts to groundwater could occur if spills or leaks occur during operation of the substation. Mitigation measures that minimize potential risk to groundwater include implementation of a spill response plan.

Mitigation Measures

Measures to minimize or eliminate impacts to water resources are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2). No special mitigation has been identified by the BLM.

- Any water erosion that may occur due to the construction of the substation would be quickly corrected and proper measures would be taken to prevent future erosion.

3.3 Soils

3.3.1 *Affected Environment*

According to the Natural Resources Conservation Service (NRCS) (2019a), two soil types are mapped within the 6.3-acre area of surface disturbance. Soil types that intersect the project disturbance area are listed in Table 3.3 below.

Table 3.3. Soils in the Proposed Project Area

Soil Type Name	Soil Type Symbol	Acres in Full Project Footprint	Percent of Project Area
Berino complex, 0 to 3 percent slopes, eroded	BB	4.4	66.4%
Kermit-Berino fine sands, 0 to 3 percent slopes	KM	1.9	33.6%
Total		**6.3**	**100.0**

Source: NRCS (2019a)

Both soil types are considered well-drained to excessively drained soils. Neither soil type is classified as hydric or prime farmland soil of statewide importance (NRCS 2019a).

Biological soil crusts are important components of the loamy and sandy soils of southeastern New Mexico. These crusts bind soil particles, thereby stabilizing surfaces and reducing erosion. Biological soil crusts in sandy soils are most commonly dominated by early succession cyanobacteria, which are adapted to disturbed conditions or very erodible soils. Loamy soils contain cyanobacteria but may also be colonized by algae, fungi, mosses, squamulose, crustose, and gelatinous lichens. All soil crust organisms enhance soil stability, capture nutrient-rich dust, impact nutrient cycling, contribute organic matter, and influence soil moisture dynamics. In addition, cyanobacteria and cyano-lichens fix atmospheric nitrogen, potentially making this nutrient more available for vascular plants. All of these functions are utilized by and important for sustaining grasses, forbs, and other vascular plants in the project area. These crusts have the potential to exist in most areas where soils are exposed (i.e., not covered by rocks or vegetation). During the 2019 biological survey, biological soil crusts were not observed in the proposed project area. An in-depth soil inventory of the entire proposed project area was not conducted.

3.3.2 *Impacts from the Proposed Action*

Direct and Indirect Impacts

Any soil removal associated with development of structure foundations and at the substation site would be permanent. The construction of the substation expansions would total 6.3 acres and would permanently remove soils from productivity. Direct impacts to soils include increased erosion from the removal of vegetative cover, contamination from accidental spills or leaks, and soil compaction from heavy equipment resulting in the loss of soil structure and porosity. These impacts can lead to increased rainfall runoff and susceptibility to high wind events and consequently increased erosion. These direct impacts could result in the loss of soil structure and porosity. Any soil removal associated with development of structure foundations would be permanent for the life of the proposed project, as structure locations would not be

recontoured. However, topsoil would be re-spread and the area would be seeded during the reclamation process.

All surface disturbance not needed for operations and maintenance would be stabilized and reclaimed once construction has been completed. Stabilization of soils would be partly dependent upon reestablishing vegetation cover. With sufficient rainfall and proper seeding techniques, vegetation cover by faster-growing plants is expected within 2 years after construction. However, even after the proposed project area is revegetated, it is expected that the vegetation community within the project area would be different than that outside the project area because SPS vegetation management practices for the proposed project require permanent removal of woody vegetation. Therefore, the vegetation community within the project area would be permanently shifted to predominantly grasses and forbs and woody vegetation would not aid in soil stabilization.

Although no biological soil crusts were observed during the 2019 biological survey, the proposed project could impact subsurface biological soil crusts. Indirect impacts to soil resources could include a change in soil productivity due to accidental mixing of topsoil with subsoil during construction.

Mitigation Measures

Measures to minimize impacts to soils are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2). No special mitigation has been identified by the BLM.

3.4 Vegetation and Invasive, Non-Native Species

3.4.1 *Affected Environment*

The proposed project area is located within the EPA Level IV ecoregion Chihuahuan Deserts: Chihuahuan Grasslands (Griffith et al. 2006). During the biological survey, biologists identified one general vegetation community type within the proposed project area: Chihuahuan desertscrub. This vegetative community is dominated by Wooton's threeawn (*Aristida pansa*), grassland croton (*Croton dioicus),* honey mesquite (*Prosopis glandulosa),* plains yucca (*Yucca campestris)*. Vegetative cover within and surrounding the proposed project area is approximately 30% to 60%. At the time of the biological surveys, the vegetation communities within and/or surrounding the proposed project area had previous disturbance from existing transmission lines, the existing Kiowa substation, and livestock grazing. Plant species recorded during the biological surveys are listed in Table 3.4. Photographs of the vegetation communities within and surrounding the proposed project area are provided in Appendix B.

Table 3.4. Plant Species Observed during the Biological Survey of the Proposed Project Area

Common Name	Scientific Name
Wooton's threeawn*	*Aristida pansa*
Coastal sandbur	*Cenchrus spinifex*
Hooded windmill grass	*Chloris cucullata*
Javelina bush	*Condalia ericoides*
Grassland croton*	*Croton dioicus*
Broom snakeweed	*Gutierrezia sarothrae*
Honey mesquite*	*Prosopis glandulosa*
Shinnery oak	*Quercus havardii*
Catclaw acacia	*Senegalia greggii*
Sand dropseed	*Sporobolus cryptandrus*

Common Name	Scientific Name
Plains yucca*	*Yucca campestris*

Note: Nomenclature follows the PLANTS Database (NRCS 2019b).

* Refers to dominant species within corresponding vegetative community.

Invasive, Non-Native Species

During the biological survey, no State of New Mexico–listed or federally listed noxious weed species were identified within the proposed project area. The BLM participates in an invasive species monitoring and treatment program in Eddy County. Based on review of the BLM CFO's noxious weed treatment geographic information system (GIS) shapefile, the closest previously mapped noxious weed treatment area for African rue (*Peganum harmala*) is approximately 100 feet to the northeast of the proposed project area.

3.4.2 *Impacts from the Proposed Action*

Direct and Indirect Impacts

Impacts on plant communities and habitats from the construction of the proposed project would include short-term direct impacts from vegetation removal. Long-term, permanent impacts from the construction of the substation would result in 6.3 acres of vegetation loss. These impacts are expected to change the vegetation species composition, abundance, and distribution in and adjacent to the project area.

The long-term impacts would continue until reclamation of the proposed project area. In some areas, reclamation could potentially include species that are not locally native. The community composition of replanted areas would likely be influenced by the species that are initially seeded. The colonization of reclaimed areas by species from nearby native communities could be slow. If non-native plant species are planted, this could result in the introduction of those species into nearby natural areas. The establishment of mature, native plant communities may require decades (Monsen et al. 2004). Proposed project impacts would be expected to contribute to the change in vegetation species composition, abundance, and distribution within and adjacent to the proposed project area.

Indirect impacts to vegetation would occur as a result of deposition of fugitive dust generated during clearing and grading activities, the use of access roads, and from wind erosion of exposed soils. This could reduce photosynthesis and productivity, increase water loss (Eveling and Bataille 1984) in plants near the proposed project area, and result in injury to leaves. Localized fugitive dust could be generated from the large areas of disturbed soil from blading associated with construction. Plant community composition could subsequently be altered, resulting in habitat degradation. Localized impacts on plant populations and communities could occur if seed production in some plant species is reduced.

Any surface disturbance can increase the possibility of establishment of new populations of invasive, non-native species. Noxious weed seed could be carried to and from the proposed project area by construction equipment and transport vehicles.

Mitigation Measures

Measures to minimize impacts to vegetation and noxious weeds are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2). No special mitigation has been identified by the BLM.

- Interim reclamation would be conducted on all disturbed areas not needed for active support of maintenance and operations.
- If noxious weeds become established within the proposed project area, the operator would be responsible for control of these weeds. The operator would consult with the BLM Authorized Officer for acceptable weed control methods, which would include following EPA and BLM requirements and policies.

3.5 Wildlife and Special-Status Species

3.5.1 *Affected Environment*

The Chihuahuan Deserts: Chihuahuan Desert Grassland ecoregion (Griffith et al. 2006) provides habitat for a variety of wildlife species. SWCA biologists detected three bird species and three mammal species during the biological survey of the proposed project area (Table 3.5).

Table 3.5. Wildlife Detected during the Biological Surveys of the Proposed Project Area

Common Name	Scientific Name
Birds	
Red-tailed hawk	*Buteo jamaicensis*
Scaled quail	*Callipepla squamata*
Western meadowlark	*Sturnella neglecta*
Mammals	
Domestic cattle	*Bos taurus*
Mule deer (tracks)	*Odocoileus hemionus*
Desert cottontail	*Sylvilagus audubonii*

Note: All wildlife detected by direct observation unless otherwise noted.

Most bird species are protected under the MBTA, which implements various treaties and conventions between the United States and other countries for the protection of migratory birds. Suitable nesting habitat for migratory birds may be present within the proposed project area. During the biological survey, three bird species were observed or heard and one inactive passerine nest was identified within the proposed project area. The nest site location is depicted in Figure B.1 and photographs are provided in Appendix B.

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the MBTA and the Bald and Golden Eagle Protection Act. Bald and golden eagles are unlikely to inhabit the proposed project area due to lack of trees and cliff ledges for nesting and lack of prairie dog (*Cynomys* sp.) colonies within or adjacent to the proposed project area.

Special-Status Species

The special-status species evaluated in this EA consist of 1) all federally protected (i.e., endangered and threatened) species, 2) additional species listed by the USFWS as candidate and proposed and species under review (USFWS 2019b), 3) state-listed endangered and threatened species (Biota Information System of New Mexico 2019; New Mexico Energy, Minerals and Natural Resources Department 2019), and 4) BLM sensitive species, some of which are also listed as candidates or are under review by the USFWS and/or are state-listed. The BLM manages certain sensitive species, as well as their habitats, on BLM lands that are not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered in the future. The authority for this policy and guidance is established by Title II of the Sikes Act, as amended; the Federal Land Policy and Management Act; and Department of the Interior Manual 235.1.1A.

Based on the results of the 2019 biological survey of the proposed project area, two special-status species have the potential to occur within the proposed project area (Table 3.6). All special-status species analyzed for the proposed project area are included in the full special-status species table (Appendix B). The proposed project area does not occur within any special-status species' critical habitat.

Table 3.6. Wildlife Detected during the Biological Surveys of the Proposed Project Area

Common Name (*Scientific Name*)	Status	Range or Habitat Requirements	Potential for Occurrence in Proposed Project Area
Birds			
Loggerhead shrike (*Lanius ludovicianus*)	BLM Sensitive	The loggerhead shrike is a year-round resident in New Mexico and is found throughout the state, primarily in open country including grasslands, improved pastures, hayfields, shrub steppe, and desert scrub, as well as piñon-juniper woodland and woodland edges.	May occur in the proposed project area due to presence of the marginally suitable Chihuahuan desert grassland with intermixed scrub habitat. No loggerhead shrikes were observed during the 2019 biological survey of the proposed project area.
Reptiles			
Texas horned lizard (*Phrynosoma cornutum*)	BLM Sensitive	Inhabits arid and semiarid areas in the southwestern United States, characterized by open country with little vegetation. These areas often consist of grasses interspersed with cacti, yucca, mesquite, and other assorted woody shrubs and trees. In New Mexico, the species is associated with *Yucca-Prosopis-Ephedra* and *Larrea-Acacia-Fouquieria* habitat associations often in playas or on bajadas and mountain foothills.	May occur in the proposed project area due to presence of Chihuahuan desert grassland with intermixed scrub habitat and interspersed yucca. No Texas horned lizards were observed during the 2019 biological survey of the proposed project area.

3.5.2 *Impacts from the Proposed Action*

Direct and Indirect Impacts

General Wildlife

Impacts to wildlife would result from actions that alter wildlife habitats, including changes to habitat and disturbance. Altering wildlife habitat in ways that would be considered adverse may occur directly (through habitat loss from surface disturbance) or indirectly (through the reduction in habitat quality caused by increased noise levels and increased human activity). The proposed project would result in 6.3 acres of new surface disturbance.

Long-term impacts to wildlife and special-status species could include the removal or crushing of existing vegetation, risk of direct mortality of species during construction, loss or degradation of native habitat, and displacement of wildlife species from habitat due to development. Additional potential long-term indirect impacts could include disruption or displacement of species from nesting/birthing and foraging areas, changes in activity patterns due to construction, increased human activity, and noise disturbance. Noise disturbance could impact wildlife by interfering with animals' abilities to detect important sounds or by posing an artificial threat to animals (Clinton and Barber 2013). Construction equipment associated with the proposed project could contribute the highest noise levels. Currently, the noise profile of the surrounding area is influenced by existing oil and gas infrastructure in the immediate vicinity, which would not change as a result of the proposed project. However, the environmental protection measures within the POD, the mitigation measures outlined below, and standard COAs (BLM 1997:Appendix 2) would limit direct impacts to wildlife and special-status species.

If vegetation clearing occurs during the migratory bird breeding/nesting season (March–August), any occupied nests within the proposed project area could be impacted and result in incidental mortality. If nesting bird surveys are conducted prior to any vegetation clearing that would occur between March and August and active nests are avoided during construction, adverse impacts to migratory birds would be avoided. Because the proposed project area lacks suitable nesting habitat for bald and golden eagles, the proposed project would not likely cause take of individual bald or golden eagles, their nests, or eggs. Adult migratory birds likely would not be directly harmed by the proposed project because of their mobility and ability to avoid areas of human activity.

After construction, all surface disturbance not needed for operation and maintenance of the proposed project would be reclaimed with a BLM-prescribed, weed-free seed mixture. Reclamation of disturbed areas is expected to return the affected area to herbaceous production within 2 years after construction, depending on drought conditions. However, the establishment of mature native plant communities may require decades (Monsen et al. 2004). As a result, the change in vegetative species composition could modify cover and foraging opportunities for wildlife, thereby having a long-term impact on wildlife and special-status species.

Special-Status Species

Special-status species known to occur or that have the potential to occur within the proposed project area were evaluated for possible impacts from the proposed project. Two BLM sensitive species—the loggerhead shrike and Texas horned lizard—have the potential to occur within the proposed project area.

Loggerhead Shrike (Lanius ludovicianus)

The loggerhead shrike is designated as a BLM sensitive species and is also protected under the MBTA. No loggerhead shrikes were observed during the 2019 biological survey of the proposed project area (see Figure B.1 in Appendix B). Suitable nesting and foraging habitat is present within the proposed project area for this species due to the presence of scrub-grassland. If vegetation clearing occurs during the migratory bird breeding/nesting season (March–August), occupied loggerhead shrike nests within the proposed project area could be impacted and result in incidental mortality. If nesting bird surveys are conducted prior to any vegetation clearing that would occur between March and August and active nests are avoided during construction, adverse impacts to loggerhead shrike would be avoided. Adult birds likely would not be directly harmed by the proposed project because of their mobility and ability to avoid areas of human activity. The proposed project could impact individuals but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Texas Horned Lizard (Phrynosoma cornutum)

The Texas horned lizard is a BLM-sensitive species. No Texas horned lizards were observed during the biological survey; however, the proposed project area occurs within their habitat range (BLM 2008a). However, no sand dunes of suitable habitat were observed during the survey. If Texas horned lizards are present during construction, they could avoid disturbance by moving to adjacent habitat. In addition, following New Mexico Department of Game and Fish (2003) trenching guidelines would prevent accidental Texas horned lizard mortality resulting from entrapment during construction activities. For example, lizard mortality would be avoided by the inspection of holes left open overnight. The proposed project could impact individuals but would not likely contribute to a trend toward federal listing or cause a loss of viability to the population or species.

Mitigation Measure and Residual Impacts

Measures to minimize impacts to wildlife are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2).

- SPS would instruct personnel working on the construction of the proposed project to avoid harassing all animals.

- For portions of the project being constructed during the nesting season (March 1–August 31), SPS would conduct pre-construction nest surveys up to 2 weeks prior to vegetation removal and establish avoidance buffers around any occupied nest (distances to be specified by the BLM) to ensure nest avoidance.
- The BLM reserves the right to require modifications or additions to substation infrastructure constructed under this authorization should they be necessary to ensure the safety of large perching birds. These modifications and/or additions should be made by the holder without liability or expense to the United States.

3.6 Karst Resources

3.6.1 *Affected Environment*

The proposed project area is located in the Carlsbad Basin, an area characterized by older alluvial deposits of upland plains and piedmont areas, and calcic soils and eolian cover sediments of the High Plains region. The proposed project area is also located in gypsum karst terrain, a landform that is characterized by underground drainage through dissolution-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. 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 insects, rodents, mammals, and reptiles. The interior of many caves supports a large variety of troglobitic, or cave environment–dependent, species. These troglobitic species have adapted specifically to the cave environment due to constant temperatures, constant high humidity, and complete darkness. Many of the caves in this area contain fragile cave formations known as speleothems.

The BLM categorizes all areas within the CFO planning area 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 freshwater aquifers. The entire project area occurs within a medium karst potential zone. Medium karst potential zones are defined areas in known soluble rock types that exist at surface level or within 300 feet of the surface but may have a shallow insoluble overburden or soils that mask surface features. 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.

3.6.2 *Affected Environment*

Cave and karst features provide direct conduits leading to groundwater. These conduits can quickly transport surface and subsurface contaminants directly into underground water systems and freshwater aquifers without filtration or biodegradation. In addition, contaminants (e.g., from construction equipment) that spill or leak into or onto cave/karst zone surfaces and subsurface may lead directly to the disruption, displacement, or extermination of cave species and critical biological processes. In extreme or rare cases, a buildup of hydrocarbons in cave systems due to surface leaks or spills could potentially cause underground ignitions or asphyxiation of wildlife or humans within the cave.

In cave and karst terrains, rainfall and surface runoff are directly channeled into natural underground water systems and aquifers. Changes in geologic formation integrity, runoff quantity/quality, drainage course, rainfall percolation factors, vegetation, surface contour, and other surface factors can negatively impact cave ecosystems and aquifer recharge processes. Blasting, heavy vibrations, and focusing of surface drainages can lead to slow subsidence, sudden collapse of subsurface voids, and/or cave ecosystem damage.

Mitigation Measures

Measures to minimize impacts to karst resources are described in the standard COAs (BLM 1997:Appendix 3). No special mitigation or requirements have been identified by the BLM other than the avoidance measures already incorporated into the project design.

3.7 Cultural Resources

3.7.1 *Affected Environment*

The project falls within the Southeastern New Mexico Archaeological Region. This region contains the following cultural/temporal periods: Paleoindian (ca. 11,500–7000 B.C.), Archaic (ca. 6000 B.C.–A.D. 500), Ceramic (ca. A.D. 500–1400), Post-Formative Native American (ca. A.D. 1400–present), and Historic Euro-American (ca. A.D. 1865–present). Sites representing any or all of these periods are known to occur within the region. A more complete discussion of the periods and site types is provided in the *Permian Basin Research Design 2016-2026 Volume I: Native American Archaeology and Cultural Resources* (Railey 2016).

Native American Religious Concerns

The BLM conducts Native American consultation regarding traditional cultural properties (TCPs) and sacred sites during land use planning and its associated environmental impact review. In addition, during the oil and gas lease sale process, Native American consultation is conducted to identify TCPs and sacred sites whose management, preservation, or use would be incompatible with oil and gas or other land use authorizations. With regard to TCPs, the BLM has very little knowledge of tribal sacred or traditional use sites, and these sites may not be apparent to archaeologists performing surveys in advance of construction.

3.7.2 *Impacts from the Proposed Action*

Direct and Indirect Impacts

PERMIAN BASIN PA INSERT FOR DIRECT AND INDIRECT IMPACTS:

The project falls outside of the area covered by the PBPA. The PBPA is an optional method of compliance with Section 106 of the NHPA for energy-related projects in a 28-quadrangle area of the BLM CFO planning area. The PBPA is a form of off-site mitigation that allows industry to design projects to avoid known National Register of Historic Places eligible cultural resources and to contribute to a mitigation fund in lieu of paying for additional archaeological inventory in this area that has received adequate previous survey. Funds received from the PBPA will be used to conduct archaeological research and outreach in southeastern New Mexico. Research will include archaeological excavation of significant sites, predictive modeling, and targeted research activities, as well as professional and public presentations on the results of the investigations.

The proponent chose to participate in the PBPA by planning to avoid all known National Register of Historic Places eligible and potentially eligible cultural resources. The proponent has contributed funds commensurate to the undertaking into an account for off-site mitigation. Participation in the PBPA serves as mitigation for the effects of this project on cultural resources. If any skeletal remains that might be human or funerary objects are discovered by any activities, the project proponent would cease activities in the area of discovery and notify the BLM within 24 hours as required by the PBPA.

NON PERMIAN INSERT FOR DIRECT AND INDIRECT IMPACTS:

Cultural resources on public lands, including archaeological sites and historic properties, are protected by federal law and regulations (Section 106 of the NHPA and NEPA). Class III cultural surveys will be conducted of the area of effect for realty or oil and gas projects proposed on these lands prior to the approval of any ground-disturbing activities to identify any resources eligible for listing on the National Register of Historic Places. Cultural resource inventories minimize impacts to cultural sites and artifacts by avoiding these resources prior to construction of the proposed project. If unanticipated or previously unknown cultural

resources are discovered at any time during construction, all construction activities would halt and the BLM Authorized Officer would be immediately notified. Work would not resume until a Notice to Proceed is issued by the BLM.

Mitigation Measures

Measures to minimize impacts to cultural resources are described in the standard COAs (BLM 1997:Appendix 2), and project-specific mitigations are pending BLM review at the time of writing.

3.8 Paleontological Resources

3.8.1 *Affected Environment*

Paleontological resources are any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Fossil remains may include bones, teeth, tracks, shells, leaves, imprints, and wood. Paleontological resources include not only the actual fossils but also the geological deposits that contain them and are recognized as non-renewable scientific resources protected by federal statutes and policies.

The primary federal legislation for the protection and conservation of paleontological resources occurring on federally administered lands are the Paleontological Resources Preservation Act of 2009, FLPMA, and NEPA. The BLM has also developed policy guidelines for addressing potential impacts to paleontological resources (BLM 1998a, 1998b, 2008c). In addition, paleontological resources on state trust lands are protected by state policy from unauthorized appropriation, damage, removal, or use.

The Potential Fossil Yield Classification (PFYC) is a tool that allows the BLM to predict the likelihood of a geologic unit to contain paleontological resources. The PFYC is based on a numeric system of 1 to 5, with PFYC 1 having little likelihood of containing paleontological resources, whereas a PFYC 5 value is a geologic unit that is known to contain abundant scientifically significant paleontological resources (BLM 2007). The fossil resources of concern in this area are the remains of vertebrates, which include species of fish, amphibians, and mammals.

3.8.2 *Impacts from the Proposed Action*

Direct and Indirect Impacts

Direct impacts would result in the immediate physical loss of scientifically significant fossils and their contextual data. Impacts indirectly associated with ground disturbance could subject fossils to damage or destruction from erosion, as well as create improved access to the public and increased visibility, potentially resulting in unauthorized collection or vandalism. However, not all impacts of construction are detrimental to paleontology. Ground disturbance can 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 curated into the museum collection of a qualified repository, making them available for scientific study and education.

The location of the proposed project is within one geologic unit: Qoa, older alluvial deposits of upland plains and piedmont areas, and calcic soils and eolian cover sediments of the High Plains region. This geologic unit is within PFYC 2, where management concern is negligible because of the low likelihood of encountering fossil remains. A pedestrian survey for paleontological resources was not required, and no impacts to paleontological resources are expected.

Mitigation Measures

Measures to minimize impacts to paleontological resources are described in the standard COAs (BLM 1997:Appendix 2). No special mitigation or requirements have been identified by the BLM.

3.9 Livestock Grazing

3.9.1 *Affected Environment*

Almost all livestock grazing within the BLM CFO planning area is permitted for year-round use. Permitted livestock numbers for each allotment are set at levels that provide for plant recovery to enhance rangeland health. These levels have been determined by quantitative measurements of forage present. Prolonged drought and rangeland wildfire continue to threaten rangeland health and forage availability within and near the proposed project area.

Livestock grazing is common within the proposed project area and could include grazing of domestic cattle, sheep, goats, and horses. The most common livestock operations in the proposed project area are cattle and calf operations. The proposed project area coincides with one BLM allotment within the CFO planning area (Table 3.7).

Table 3.7. BLM CFO Allotments in the Proposed Project Area

CFO Allotment Name	Allotment Number	Size of Project Area within Allotment (acres)	Allotment Size (acres)	No. of Fences Crossed by Project Area	No. of Water Lines Crossed by Project Area	No. of Water Troughs within 200 Meters of Project Area
Mimosa	77049	6.3	26,228.87	0	0	0
Total		**6.3**	**26,228.87**	**0**	**0**	**0**

3.9.2 *Impacts from the Proposed Action*

Direct and Indirect Impacts

Direct and indirect impacts from the proposed project were assessed by calculating the number of acres and grazing allotments that would incur surface disturbance and the resulting loss of vegetation for forage. Construction associated with the Proposed Action would remove approximately 6.3 acres of vegetation from the active grazing allotments, which represents less than 0.1%, a negligible difference, of the total allotment acreage intersected by the Proposed Action. The resulting loss of vegetation would not affect the animal unit months authorized for livestock use in this area.

Range improvements would not be impacted by the proposed project. There are no pasture fences intersected by the proposed project. In addition, there are no water lines intersected by the proposed project and no water troughs are located within the proposed construction corridor or within 200 meters (656 feet) of the proposed project area. Prior to construction, the conditions of the fence would be evaluated, and appropriate protections would be put in place to maintain their function during the construction associated with the proposed project.

Short-term impacts could include displacement of permitted livestock during construction activities or exposure of livestock to hazards (e.g., falling into excavations and ingesting plastic). Since the proposed project area is open range, there is also the possibility of injuries to livestock or death due to collisions with vehicles. After construction, livestock should become acclimated to proposed project operation activities.

Mitigation Measures

Measures to minimize impacts to livestock grazing are described below, in the POD, and in the standard COAs (BLM 1997:Appendix 2). No special mitigation or requirements have been identified by the BLM.

- The holder should minimize disturbance to existing fences and other improvements on public lands. The holder would be required to promptly repair impacted improvements to at least their former state. The holder should contact the owner of any existing improvements prior to disturbance. When

necessary to pass through a fence line, the fence would be braced on both sides of the passageway prior to cutting the fence. No permanent gates would be allowed unless approved by the Authorized Officer.

3.10 Cumulative Impacts

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of which agency (federal or non-federal) or person undertakes such other action. The time frame for the cumulative impact analysis is 30 years, which is the projected life of the substation.

3.10.1 *Cumulative Impact Analysis for Air Resources*

The following analysis of cumulative impacts of the Proposed Action to air resources is limited to the CFO planning area. The Air Resources Technical Report provides a list of major sources[7] for air pollutants in New Mexico, any of which may contribute to cumulative impacts to air quality within the planning area (see BLM 2016:Appendix D). The report also evaluates the cumulative impacts of GHGs emissions and their relationship to climate change at national and global levels (BLM 2016:54–60).

Activities that cumulatively contribute to levels of air pollutants and GHG emissions in southeast New Mexico result from a variety of sources, including fossil fuel industries, transportation, industrial construction, mining, and others. For the CFO planning area, activities that have the greatest impact to air resources are fossil fuel production (e.g., oil and gas exploration and production, crude oil refining, and gas processing) and vehicular travel (BLM 2016:46). The Air Resources Technical Report summarizes the past, present, and reasonably foreseeable impacts to air resources resulting from these activities (BLM 2016:38–51).

The CFO manages federal oil and gas exploration and production on its mineral estate in Eddy and Lea Counties and part of Chaves County. These activities result in cumulative impacts to air resources in the CFO planning area through air pollutant and GHG emissions. There are currently 28,579 oil and gas wells within these counties categorized as active, new, or temporarily abandoned, with 11,746 of these located on federal lands (Petroleum Recovery Research Center 2018). Quantifying emissions of an oil and gas well in the CFO planning area is difficult due to various factors (geology, variation in drilling technique and time, uncertainty of production). However, the BLM has determined that well production typically declines over time, depending on well life and the price of oil and gas. Therefore, it is assumed that declining production would also result in reduced emissions over time (BLM 2016:31).

Factors involving vehicular travel, including number and types of vehicles, miles traveled, and road condition, all influence emissions in the CFO planning area. These emissions result from both on-road and off-road vehicular travel. While increased vehicle fuel efficiency is expected to reduce emissions associated with vehicular travel, any reduction in emissions may eventually be offset by an increase in the number of vehicles used due to population growth in the area (BLM 2016:51).

Air Quality

The Proposed Action would result in a very small increase in emissions and would not cause or contribute to an exceedance of the NAAQS for any criteria pollutants in the CFO planning area. Additionally, emissions from the Proposed Action, together with all other emissions, are not expected to impact the 8-hour average O_3 standard. The applicable regulatory thresholds for HAPs associated with the oil and gas industry are established under the National Emissions Standards for Hazardous Air Pollutants, which are currently under review by the EPA.

Climate Change

Climate change is a global process affected by the total GHG emissions in the atmosphere. The Air Resources Technical Report discusses the relationship of past, present, and future predicted emissions to

[7] Sources emitting more than 100 tons per year of CO, volatile organic compounds, NO_x, SO_2, $PM_{2.5}$, or PM_{10} (BLM 2016:38).

climate change and the limitations in predicting global and regional impacts related to emissions (BLM 2016:51–53). In general, the Proposed Action, together with all other current and foreseeable emissions-producing actions, would contribute to an incremental increase in GHGs; however, these cumulative emissions would not have a measurable impact to climate. While the Proposed Action may contribute to climate change, the specific impacts to global or regional climate are not quantifiable, and the Proposed Action's contribution, in a localized area, to impacts to global climate change cannot be determined (BLM 2016:53).

3.10.2 *Cumulative Impacts for Watersheds and Drainages, Soils, Vegetation and Invasive Species, Wildlife Including Special-Status Species, Karst Resources, and Livestock Grazing*

Impacts to watershed drainages, soils, vegetation and invasive species, wildlife and special-status species, and livestock grazing would depend on the placement and type of surface disturbance, the type of soils and plant species present, and the hydrologic conditions within the individual project site. Generally, soil erosion and sedimentation of local drainages would be expected to occur, especially when storm events occur during construction of the future actions. Cumulative impacts to karst resources are difficult to estimate because, as with the Proposed Action, impacts to underground voids could occur from accidental spill during construction or operation that are caused by permeability.

Generally, native vegetation loss and the spread of noxious weeds would be expected to occur, especially during construction of the future actions. Further development in the area would potentially result in the loss of vegetation and thereby a loss of forage available to livestock within the grazing allotments. The resulting loss of forage could reduce the animal unit months authorized for livestock use in the area. Reclamation of some disturbed areas and use of COAs, such as reseeding construction areas, has reduced impacts to vegetation and livestock grazing conditions. In time, the reclaimed and seeded areas would result in stable plant communities with densities that are similar to the pre-disturbance plant densities.

Surface-disturbing activities affect wildlife, migratory birds, and special-status species through decreasing available forage and habitat and causing habitat alteration and fragmentation. Well pads and road density break the available habitat into smaller and smaller pieces, which can lead to displacement and physiological stress in wildlife species. Fragmentation results in indirect habitat loss and degradation. Wildlife species would have to expend an increased amount of energy to avoid disturbed areas or when experiencing alarm due to human presence, traffic, and associated noise.

Watkins et al. (2007) describe quantitative thresholds of fragmentation impact as moderate, high, and extreme, based on the density of well pads per section and cumulative surface disturbance. Moderate impact is defined as one to four wells and less than 20 acres of disturbance per section. High impact is defined as five to 16 wells and 20 to 80 acres of disturbance per section. Extreme impact is defined as more than 16 wells and greater than 80 acres of disturbance per section. Based on the above-described definitions, the density of current development is high within the proposed project area. This indicates that impacts to wildlife are increasingly difficult to mitigate and may not be completely offset by management or habitat treatments (Watkins et al. 2007). The Proposed Action, together with past, present, and reasonably foreseeable cumulative actions, would contribute to the density of development and overall habitat fragmentation of the region.

3.10.3 *Cumulative Impact Analysis for Cultural and Historic Resources and Paleontological Resources*

The CFO conducts ongoing and frequent consultation with tribal and state entities under Section 106 of the NHPA. Cumulative effects to cultural or historic resource sites or paleontological resources is conducted on a landscape level at the planning stages during resource management planning efforts. See the *Permian Basin Research Design 2016–2026 Volume I: Native American Archaeology and Cultural Resources* (Railey 2016) report for more details on the cultural landscape.

4 SUPPORTING INFORMATION

4.1 List of Preparers

This EA was prepared by a third-party contractor, SWCA, according to the direction of the BLM. The following BLM staff contributed to or reviewed this EA:

- Tessa Cisneros, Realty Specialist, BLM CFO
- Bruce Boeke, Archaeologist, BLM CFO

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APPENDIX A. NATURAL RESOURCES MAP AND PROJECT PHOTOGRAPHS

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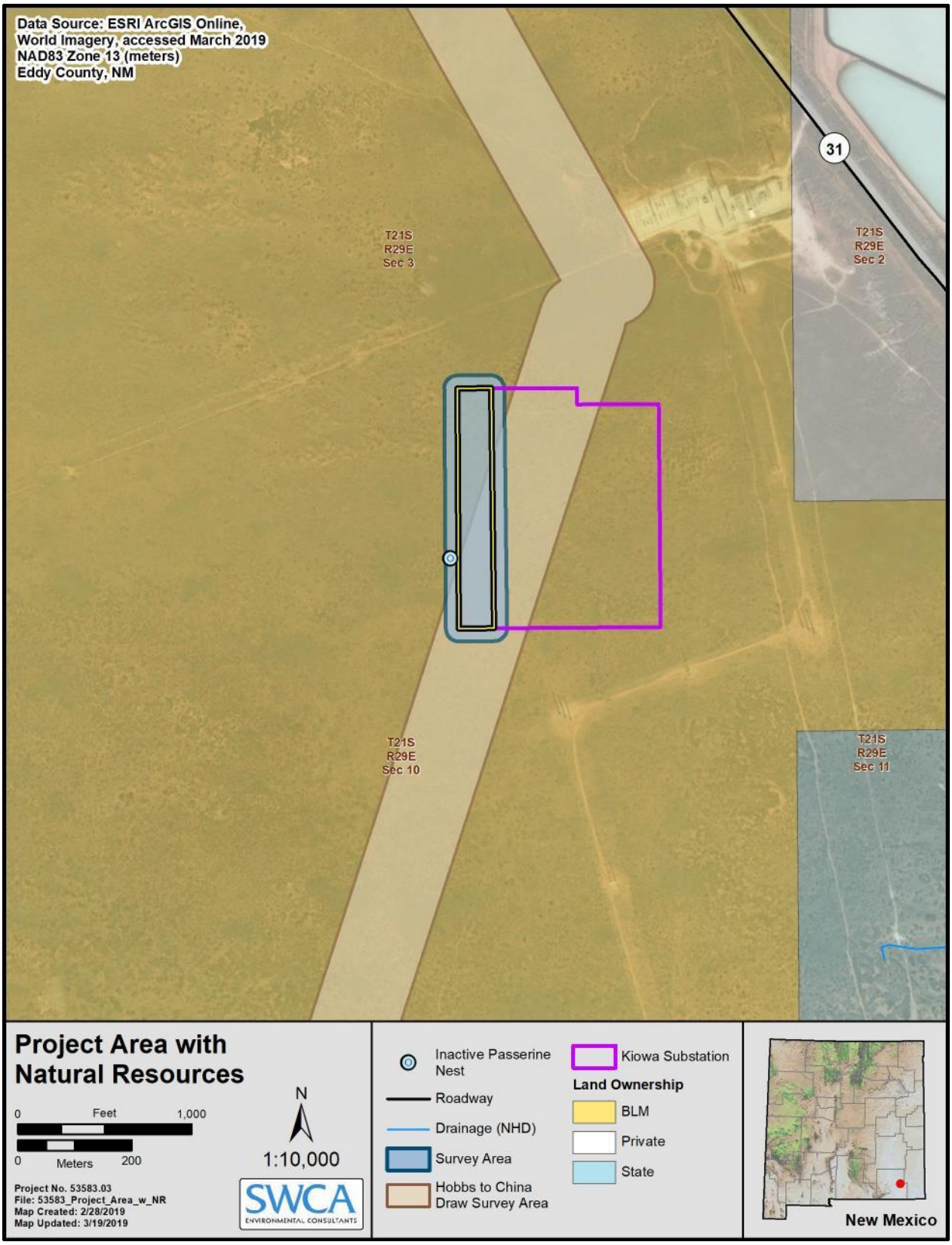


Figure B.1. Project area with natural resources map.



Photograph B.1. View of Chihuahuan desertscrub vegetative community within the proposed project area, facing north.



Photograph B.2. View of Chihuahuan desertscrub vegetative community within the proposed project area, facing south.



Photograph B.3. View of an inactive passerine nest, in catclaw acacia, in poor condition, facing southwest.

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APPENDIX B. SPECIAL-STATUS SPECIES LIST

Table C.1. Special-Status Species for Eddy County, New Mexico

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area
Plants			
Allred's flax (*Linum allredii*)	BLM Sensitive	Occurs on scarps and hillsides of exposed sandy gypsum of the Permian-aged Castile Formation in Chihuahuan desert scrub at 3,900 feet above mean sea level (amsl). This species' range occurs in the northern Chihuahuan desert of New Mexico and Texas.	Unlikely to occur in the proposed project area due to lack of sandy gypsum soils. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Chapline's columbine (*Aquilegia chaplinei*)	BLM Sensitive	Occurs in Eddy and Otero Counties, New Mexico. Prefers limestone seeps and springs in montane scrub; also riparian canyon bottoms at 5,590–5,600 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone seeps and springs in montane scrub or riparian canyons. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Guadalupe mescalbean (*Dermatophyllum guadalupense*)	BLM Sensitive	Occurs on outcrops of pink, limy, fine-grained sandstone that is 1%–2% gypsum in Chihuahuan desert scrub and juniper savannah from 5,260 to 6,650 feet amsl.	Unlikely to occur in the proposed project area due to lack of pink, limy, fine-grained sandstone soils. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Guadalupe penstemon (*Penstemon cardinalis* ssp. *regalis)*	BLM Sensitive	Prefers limestone slopes and canyon bottoms in montane scrub, pinon-juniper woodland, and lower montane coniferous forest from 4,500 to 6000 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone slopes and canyon bottoms. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Gypsum milkvetch (*Astragalus gypsodes*)	BLM Sensitive	Occurs in gypsum flats and low-gullied gypseous hills of the Permian-aged Castile formation from 3,500 to 4,000 feet amsl.	Unlikely to occur in the proposed project area due to a lack of gypsum flats or gypseous hills. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Gypsum wild-buckwheat (*Eriogonum gypsophilum*)	USFWS T NM E	Restricted to almost pure gypsum soil that is sparsely vegetated with other gypsophilous plants, such as Coldenia hispidissima (*Coldenia hispidissima*), gypsum blazingstar (*Mentzelia humilis*), and southwestern ringstem (*Anulocaulis leiosolenus*) along ridges and slopes along gypsum outcrops within semi-arid conditions. Elevation is 3,200–3,600 feet amsl. The species is known to occur in four distinct locations: Ben Slaughter Draw-Hay Hollow, North Seven River, South Seven River, and Threemile Draw-Black River watersheds.	Unlikely to occur in the proposed project area due to a lack of gypsum outcrops. Additionally, the proposed project is outside of this species' known distribution range (BLM 2019).

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Jewelflower (*Streptanthus sparsiflorus*)	BLM Sensitive	Occurs in limestone canyon bottoms and montane scrub from 5,000–7,000 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone canyon bottoms and montane scrub. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Kuenzler's hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*)	USFWS E NM E	Primarily on gentle, gravelly to rocky slopes and benches on limestone or limy sandstone in Great Plains grassland, oak woodland, or piñon-juniper woodland. Elevation 2,000–6,500 feet amsl. This species' range is limited to the Vera Cruz Mountains, Tucson Mountains, and the Guadalupe, Sacramento Captain, and Jicarilla Mountain ranges.	Unlikely to occur in the proposed project area due to lack of rocky slopes, benches, and preferred vegetation communities.
Lee's pincushion cactus (*Escobaria sneedii* var. *leei*)	USFWS T NM E	Primarily occurs in limestone cracks, breaks, and scree fields ranging between 4,000 and 5,900 feet amsl. This species is endemic to New Mexico within the Guadalupe Mountains and their foothills.	Unlikely to occur in the proposed project area due to the lack of north-facing limestone ledges, slopes, and ridges. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Scheer's beehive cactus (*Coryphantha robustispina* var. *scheeri*)	BLM Sensitive NM E	Typically associated with gravelly or silty soil in desert grassland and Chihuahuan desert scrub communities. May also be found on rocky benches or bajadas on limestone or gypsum soils; elevation range of this cactus is 3,300–3,600 feet amsl.	Unlikely to occur in the proposed project area due to a lack of rocky benches or bajadas on limestone or gypsum soils. Additionally, the proposed project area occurs outside of the species' known occupied habitat, as well as potential habitat as delineated by the BLM (BLM, 2019).
Shining coralroot (*Hexalectris nitida*)	NM E	Found in leaf litter within oak thicket habitat in deep canyons; elevation 4,300 feet amsl. This species is known to occur in Eddy and Otero Counties, New Mexico, and within the Guadalupe and Cornudas Mountains in Texas. This species is also commonly referred to as Glass Mountain crested coralroot.	Unlikely to occur in the proposed project area due to lack of deep canyons. Additionally, the proposed project is not located in the Cornudas Mountains. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Sneed's pincushion cactus (*Coryphantha sneedii* var. *sneedii*)	USFWS E	Primarily cracks in limestone in areas of broken terrain and steep slopes. This subspecies is known to occur in Doña Ana County, New Mexico, and El Paso County, Texas. The elevation range of this cactus is 3,900–7,700 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone outcrops. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Tharp's blue-star (*Amsonia tharpii*)	BLM Sensitive NM E	Species occurs in well-drained gypsum, caliche, and dolomite sedimentary outcrops and alluvium deposits between 3,000 and 3,800 feet amsl. Species range occurs within Eddy County, New Mexico, and Pecos County, Texas.	Unlikely to occur in the proposed project area due to lack of gypsum, caliche, and dolomite sedimentary outcrops. The proposed project is outside of this species' known distribution range (BLM 2019).
Wind Mountain rock-cress (*Boechera zephyra*)	BLM Sensitive	Found on rocky syenite, limestone, or basaltic scoria slopes. Primarily occurs in the upper margins of Chihuahuan desert scrub; occasionally occurs in juniper savannah or oak-juniper woodlands. This species has not been verified within the CFO Planning Area.	Unlikely to occur in the proposed project area due to lack of rock syenite, limestone, or basaltic scoria slopes. Additionally, this species has not been verified within the CFO planning area.
Wright's marsh thistle (*Cirsium wrightii*)	USFWS C BLM Sensitive	Wet, alkaline soils in spring seeps and marshy edges of streams and ponds from 3,450 to 8,500 feet amsl. This species occurs in Eddy County, New Mexico, with concentrated populations near Blue Spring.	Unlikely to occur in the proposed project area due to lack of spring seeps, marshes, and streams. Additionally, the proposed project area is not near Blue Spring.
Wright's water willow (*Justicia wrightii*)	BLM Sensitive	Found on limestone benches in Chihuahuan desert scrub at 3,900 feet amsl.	Unlikely to occur in the proposed project area due to lack of limestone benches, spring seeps, and marshes. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Invertebrates			
Monarch butterfly (*Danaus plexippus plexippus*)	BLM Sensitive	Occurs in migratory populations that complete an annual round-trip migration across North America, including New Mexico, from April through October. This species breeds in the northern portions of its range and overwinters in the Mexican highlands or along the Pacific coast. This obligate species' habitat for reproduction includes milkweed plant species (*Asclepias* sp.) since milkweed is required for egg laying and caterpillar development (Cary and Delay 2016). This species is also dependent on habitat with diverse and abundant flowering plants as a food source.	Unlikely to occur in the proposed project area due to the lack of milkweed and abundant flowering plants.
Ovate vertigo snail (*Vertigo ovata*)	NM T	The only known population in New Mexico is at and near Blue Spring south of Carlsbad in Eddy County. It occurs within a few meters of the brook issuing from Blue Spring, on damp soil under the shelter of dead tree branches. The species typically occurs in close proximity to ponds, streams, and spring outflows and on living and dead vegetation, organic debris, and damp or muddy soils.	Unlikely to occur in the proposed project area because the proposed project area is not within or adjacent to Blue Spring.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Pecos springsnail (*Pyrgulopsis pecosensis*)	BLM Sensitive NM T†	This species is endemic to southeastern New Mexico, known historically to occur in Blue Spring and Castle Spring in Eddy County. This species has since been extirpated from Castle Springs. This species is part of the Candidate Conservation Agreement (CCA) implemented by the USFWS, the BLM, and the Center of Excellence for Hazardous Materials Management (CEHMM). It occurs on a mud and pebble substrate in its spring habitat, mainly along the edges of the water. Found on pebbles, gypsum silt, and to a lesser extent mud and submerged vegetation in a high-volume spring and spring run and associated marsh. The water is gypsum rich.	Unlikely to occur in the proposed project area due the lack of suitable habitat within the proposed project area. Additionally, the proposed project area is not within or adjacent to Blue Spring and Castle Spring known occupied habitat.
Texas hornshell (*Popenaias popei*)	USFWS E NM E	Historically, this species occurred in the Pecos–Rio Grande drainage. Currently, this species is found in four distinct locations, including the Black River and Delaware River in New Mexico and the lower Rio Grande and the Devil's River in Texas. This species is part of the CCA. Associated with larger streams and a variety of substrates. Imbeds itself in softer bottoms, but lodges itself in cracks and crevices, where it is probably immobile.	Unlikely to occur in the proposed project area due to the lack of aquatic habitat. Additionally, the proposed project is outside of the species' habitat as mapped by the USFWS and CEHMM (2017).
Fish			
Bigscale logperch (*Percina macrolepida*)	BLM Sensitive NM T	Native to the Pecos River drainage, occurring mainly in and below Sumner Lake in De Baca County and between Lake McMillan (Eddy County) and the Texas state line. Smaller populations are found also near Santa Rosa, the Black River, and Willow Lake in Eddy County. Also introduced in Ute Lake in Quay County. The species' preferred habitat consists of strong, non-turbulent flows, but the species is also found in impoundments. Preferred substrate varies from silt to rubble, on which the species spends much of its time resting.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Blue sucker (*Cycleptus elongatus*)	BLM Sensitive NM E†	Historically, this species occurred in the Pecos River, from which it has likely been extirpated. It is absent in the Rio Grande, where it occurred historically. Whether this species is extant in the Black River is unknown. Its primary habitat consists of deep river channels with runs and riffles. Also found in pools with moderate currents and in deep lakes. This species is part of the CCA.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Gray redhorse (*Moxostoma congestum*)	BLM Sensitive NM E†	Formerly occurred in the Pecos River and the Rio Grande, but is now restricted to the lower Black River from Blue Spring to the Pecos River confluence. This species has been reintroduced into the Delaware River by the New Mexico Department of Game and Fish. This species is part of the CCA. Typical habitat consists of low-gradient streams with warm, usually clear waters. Adults most often occupy medium-sized to large pools with cobble, gravel, silt, or sand bottoms. The young and juveniles tend to seek riffles and gravelly runs and avoid densely vegetated areas.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Greenthroat darter (*Etheostoma lepidum*)	BLM Sensitive NM T	Native to the Pecos River drainage of Chaves and Eddy Counties. Known to occur in particular at Blue Spring and its outflow stream, in the Pecos River between Lake McMillan and Avalon Reservoir, in the Rio Peñasco and Cottonwood Creek, and at Bitter Lake National Wildlife Refuge. Found in swift-flowing streams and springs, especially vegetated riffle areas with gravel and rubble substrates. Also occurs in clear ponded-water habitats including sinkholes and littoral areas of other lentic systems with wave action and aquatic vegetation rooted in a gravel substrate.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Headwater catfish (*Ictalurus lupus*)	BLM Sensitive	Occurs in Texas, New Mexico, and Mexico. It is native to the Pecos drainage downstream of Sumner Reservoir and occurs in the Middle Rio Grande Basin. Its habitat consists of clear temperate waters, generally with a moderate gradient. Despite competition with the channel catfish (*Ictalurus punctatus*), the species has persisted in headwater streams and in fluctuating tailwaters of dams in the Pecos River.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Mexican tetra (*Astyanax mexicanus*)	BLM Sensitive NM T	The species' distribution extends from eastern New Mexico and southern Texas southward along the Atlantic slope drainages of Mexico. In New Mexico, it is restricted largely to Blue Spring and the Delaware River in Eddy County. Also found occasionally in the Pecos River below Lake McMillan. Occupies a variety of habitats, but tends to school in pools and below swift areas in eddies. Found primarily in habitats with stenothermal flows (i.e., springs). Young-of-year are present in shallow water near overhanging bank vegetation.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Pecos bluntnose shiner (*Notropis simus pecosensis*)	USFWS T NM E	Still extant in the Pecos River from Fort Sumner to Artesia, although it has declined considerably in numbers since about 1950. Most common in main channel areas, with low-velocity water, depths of 7–12 inches, and a sandy substrate. Flood inflows from uncontrolled tributaries contribute to favorable river channel conditions.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Pecos gambusia (*Gambusia nobilis*)	USFWS E NM E	Endemic to the Pecos River Basin in southeastern New Mexico and western Texas. Natural populations still occur in New Mexico on the Bitter Lake National Wildlife Refuge and in the Salt Creek Wilderness Area (both in Chaves County) and in Blue Spring in Eddy County. Most common in heads and runs of springs, where it uses aquatic vegetation for refuge. Occupies ponds and gypsum sinkholes on Bitter Lake National Wildlife Refuge and in Blue Spring, New Mexico. Associates in loose schools that spend much of the time near the surface. Inhabits shallow areas of alkaline waters with aquatic vegetation for cover.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Pecos pupfish (*Cyprinodon pecosensis*)	BLM Sensitive NM T	Occurs in saline springs and gypsum sinkholes at Bitter Lake National Wildlife Refuge and Bottomless Lakes State Park. Elsewhere, it is present irregularly in the Pecos River south from Bitter Lake and Bottomless Lakes State Park south to the Texas state line and formerly in Laguna Grande in Eddy County. Typical habitat consists of saline springs and gypsum sinkholes; only rare in fresher water habitats, including the main channel of the Pecos River. Found in backwater areas and side pools that lack sunfish or other predators. At Bitter Lake National Wildlife Refuge, numerous individuals were taken from waters in interstices of gravel from a pond drain with no surface flow.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Rio Grande chub (*Gila pandora)*	BLM Sensitive	This species is native to the Rio Grande and Pecos River drainages, and possibly native to the Canadian drainage, although it may have been introduced there (Sublette et al. 1990). Rio Grande chubs occupy perennial mainstream and tributary habitat at higher elevations (Bestgen and Platania 1990).	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Rio Grande shiner (*Notropis jemezanus*)	BLM Sensitive	Occurs in the Rio Grande downstream of the confluence of the Rio Conchos but is extirpated from the Rio Grande in New Mexico. In the Pecos River in New Mexico, it currently persists from Old Fort State Park near Fort Sumner downstream to about Brantley Reservoir, including at Bitter Lake National Wildlife Refuge. Within occupied reaches of the Pecos River, it is generally uncommon to rare. Rio Grande shiners occupy flowing water environments found in large open rivers with laminar flows and a minimum of aquatic vegetation and larger streams with gravel, sand, or rubble bottoms.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Rio Grande sucker (*Catostomus plebeius)*	BLM Sensitive	The native range of the Rio Grande sucker includes the Rio Grande and its tributaries in northern New Mexico and southern Colorado, the Mimbres drainage in southwestern New Mexico, and streams of the Guzman Basin in northwestern Chihuahua (Sublette et al. 1990).	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies. Also, the proposed project is outside of the species' known occupied range.
Speckled chub (*Macrhybopsis aestivalis)*	BLM Sensitive	The distribution and habitat recorded for specimens of this species do not indicate special requirements other than a flowing mainstream environment (Bestgen and Platania 1990). Speckled chub has been noted as widely distributed and exclusive to mainstream habitats in large portions of the New Mexican Rio Grande (Bestgen and Platania 1990). This species has not been verified in the CFO Planning Area.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies. Also, the proposed project is outside of the species' known occupied range.
Birds			
Baird's sparrow (*Ammodramus bairdii*)	BLM Sensitive NM T	This species is a winter resident in New Mexico. It has been found on Otero Mesa and in the Animas Valley and may occur in other areas of suitable winter habitat, particularly in the southeast portion of state. Generally prefers dense, extensive grasslands with few shrubs. Avoids heavily grazed areas.	Unlikely to occur in the proposed project area due to a lack of dense, extensive grassland vegetation that is preferred by this species. Additionally, this area is heavily grazed.
Bald eagle (*Haliaeetus leucocephalus*)	BLM Sensitive NM T	Occurs in New Mexico year-round. Breeding is restricted to a few areas mainly in the northern part of the state along or near lakes. In migration and during winter months, the species is found chiefly along or near rivers and streams and in grasslands associated with large prairie dog (*Cynomys* sp.) colonies. Typically perches in trees.	Unlikely to occur in the proposed project area due to the lack of prairie dog colonies.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Bell's vireo (*Vireo bellii*)	BLM Sensitive NM T	In New Mexico, Bell's vireo occurs in the southern one-third of the state during the breeding season. The *medius* race is found in the Pecos Valley north to drainages west of Roswell and in the Black River and Rattlesnake Springs areas south of Carlsbad. In New Mexico, this species characteristically occurs in dense shrubland or woodland along lowland stream courses, with willows (*Salix* sp.), mesquite (*Prosopis* spp.), and seepwillows (*Baccharis glutinosa*). Its distribution during breeding is typically limited to riparian habitats.	Unlikely to occur in the proposed project area due to the lack of habitat associated with lowland stream courses and dense shrubland or woodland habitat.
Black tern (*Chlidonias niger surinamensis*)	BLM Sensitive	Found in New Mexico only during migration and in association with wetland areas, lakes, and ponds.	Unlikely to occur in the proposed project area due to lack of suitable aquatic habitat.
Broad-billed hummingbird (*Cynanthus latirostris*)	NM T	Occurs in riparian habitat or dense mesquite in canyons in southwestern New Mexico. Found in Guadalupe Canyon in Hidalgo County and rarely found in the Peloncillo Mountains.	Unlikely to occur in the proposed project area due to lack of dense mesquite associations in canyons.
Brown pelican (*Pelecanus occidentalis carolinensis*)	NM E	Occurs usually in marine habitats and feeds almost exclusively on fish. Associated with water.	Unlikely to occur in the proposed project area due to lack of marine habitats.
Chestnut-collared longspur (*Calcarius ornatus*)	BLM Sensitive	Chestnut-collared longspurs migrate and winter in the east, westward locally to the vicinity of the Rio Grande valley, and occasionally farther in the southwest, and are considered uncommon to abundant. They are most numerous in the southernmost area and are regular in the Mogollon Plateau (Hubbard 1978). Chestnut-collared longspurs were often seen within, or in association with, open grassland habitats. Those sites that were used most often were dominated by desert saltgrass, with occasional clumps of fourwing saltbush (*Atriplex canescens*) interspersed. Adjacent sites having an even greater shrub component were also occasionally used (Baltosser 1991).	Unlikely to occur in the proposed project area due to a lack of suitable grassland habitat in the proposed project area. Additionally, the proposed project area is outside of the Mogollon plateau.
Common black hawk (*Buteogallus anthracinus*)	NM T	Occurs in New Mexico almost exclusively during the breeding season and in migration. Breeding populations known chiefly from the Gila River valley in the southwestern portion of the state and from along the Mimbres River and the Rio Hondo watershed. Strongly tied to cottonwood (*Populus* sp.) gallery forests.	Unlikely to occur within the proposed project area as it is outside of the species' known range within New Mexico and does not contain preferred cottonwood galleries.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Common ground-dove (*Columbina passerina pallescens*)	NM E	Associated with shrubby riparian habitat or riparian woodland edges. Also occurs in desert scrub dominated by mesquite and prickly pear (*Opuntia* sp.). Feeds exclusively on the ground, in sparsely vegetated areas.	Unlikely to occur within the proposed project area due to lack of riparian woodland edge habitat.
Ferruginous hawk (*Buteo regalis*)	BLM Sensitive	Occurs year-round in New Mexico. During the breeding season, it is present in grasslands and badlands and along the ecotone between grasslands and piñon-juniper woodlands, especially in the vicinity of prairie dog towns. During the winter, ferruginous hawks are primarily associated with grasslands but may be found in other habitat types, such as ponderosa pine (*Pinus ponderosa*) forest. Prairie dogs are important year-round in the diet of New Mexico's ferruginous hawks.	Unlikely to occur within the proposed project area due to lack of piñon-juniper woodland interface or prairie dog colonies, which provide an obligate food source for this species.
Grasshopper sparrow (*Ammodramus savannarum*)	BLM Sensitive	Found in grasslands and prairies with open patches of ground. This species can also be found in Chihuahuan desert scrub habitats where open stands of creosote and large succulents, such as paloverde, pricklypear, and giant saguaro are present. It nests on the ground in a small cup-nest constructed out of grasses. Avoids areas with extensive stands of shrubs.	Although there is marginally suitable desertscrub habitat in the proposed project area, there is a lack of large succulents such as paloverde and giant saguaro that this species prefers. Additionally, the project area is heavily disturbed by oil and gas activity.
Gray vireo (*Vireo vicinior*)	NM T	Strongly associated with piñon-juniper and scrub oak habitats. Distributed mainly across the western two-thirds of the state. Prefers gently sloped canyons, rock outcrops, ridge tops, and moderate scrub cover.	Unlikely to occur within the proposed project area due to lack of canyon habitat and exposed rock outcropping.
Interior least tern (*Sterna antillarum athalassos*)	USFWS E NM E	Migratory species that occurs in North America during the breeding season, when it is associated with water (e.g., lakes, reservoirs, and rivers). In New Mexico, breeding is restricted to the Pecos River basin. It is known to breed primarily at Bitter Lake National Wildlife Refuge in nearby Chaves County.	Unlikely to occur within the proposed project area due to the project area is outside of the species' known breeding range within the state.
Lesser prairie-chicken (*Tympanuchus pallidicinctus*)	BLM Sensitive	This species occurs in southeastern New Mexico, primarily in Havard oak (*Quercus havardii*) or sand sagebrush (*Artemisia filifolia*) grasslands. Also occurs in Havard oak–bluestem habitats dominated by sand bluestem (*Andropogon hallii*), little bluestem (*Schizachyrium scoparium*), sand dropseed (*Sporobolus cryptandrus*), threeawn (*Aristida* sp.), and blue grama (*Bouteloua gracilis*).	Unlikely to occur within the proposed project area as it is outside of the lesser prairie-chicken's known occupied range within the CFO planning area (BLM 2018a).

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Loggerhead shrike (*Lanius ludovicianus*)	BLM Sensitive	The loggerhead shrike is a year-round resident in New Mexico and is found throughout the state, primarily in open country, including grasslands, improved pastures, hayfields, shrub steppe, and desert scrub, as well as piñon-juniper woodland and woodland edges.	May occur in the proposed project area due to presence of the marginally suitable Chihuahuan desert grassland with intermixed scrub habitat. No loggerhead shrikes were observed during the 2019 biological survey of the proposed project area.
Lucifer hummingbird (*Calothorax lucifer*)	NM T	Associated with rocky slopes or hillsides and Chihuahuan desert scrub vegetation. Nest sites are selected on slopes above rocky or wooded washes.	Unlikely to occur within the proposed project area due to the lack of rocky slopes or hillsides.
McCown's longspur (*Calcarius mccownii*)	BLM Sensitive	In New Mexico, McCown's longspurs migrate in the northeast and winter in the southeast and extreme southwest and are considered rare to uncommon and local (Hubbard 1978). Found in Sonoran desert scrub, Chihuahuan desert scrub, annual grassland, farms, and mountain and alpine meadows. Open to dense vegetation of shrubs, low trees, and succulents, dominated by paloverde (*Cercidium microphyllum*), prickly pear, and giant saguaro (*Cereus giganteus*) (U.S. Department of Agriculture 1991).	Unlikely to occur within the proposed project area due to the lack of dense vegetation and suitable habitat.
Mexican spotted owl (*Strix occidentalis lucida*)	USFWS T	Occupies mountainous areas and deep canyons incised within flat plateaus. Habitat consists typically of mixed-conifer, ponderosa pine, or ponderosa pine–Gambel oak forest. Prefers mesic, shaded environments such as canyon bottoms and mountainous riparian areas.	Unlikely to occur within the proposed project area due to the lack of mountainous habitat or deep canyons preferred by the species.
Mexican whip-poor-will (*Antrostomus arizonae*)	BLM Sensitive	Whip-poor-wills summer in the mountains of the south (Mogollon and Sacramento highlands southward), north to the Manzano Mountains and are considered rare to fairly common. They are found in the Manzano, Gallinas, and White Mountains. Their northern summer limits appear to be the San Francisco, Datil, Magdalena, Sacramento, Guadalupe, and Sandia Mountains (Hubbard 1978). Occurs in desert riparian, deciduous woodland and marsh. Found in woodlands, especially of cottonwoods, that occur where desert streams provide sufficient moisture for a narrow band of trees and shrubs along the margins (U.S. Department of Agriculture 1991). This species has not been verified in the CFO Planning Area.	Unlikely to occur within the proposed project area as it occurs outside of the species' known range and does not contain narrow bands of cottonwood habitat.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Neotropic cormorant (*Phalacrocorax brasilianus*)	NM T	Associated with wetlands. Key requirements include areas of deep water for diving and elevated perches in trees, shrubs, and other structures for nesting, roosting, and drying plumage after feeding.	Unlikely to occur within the proposed project area due to the lack of deep water bodies or wetland habitat.
Northern aplomado falcon (*Falco femoralis septentrionalis*)	USFWS ENEP NM E	Associated with semi-desert grasslands with scattered yuccas, mesquite, and cacti. Naturally occurring populations are essentially restricted to the southern tier of New Mexico. Species has also been reintroduced on the Armendaris Ranch in Socorro and Sierra Counties and on lands administered by the BLM, White Sands Missile Range, and the New Mexico State Land Office beginning in 2006.	Although scrub-grassland habitat is present, the project is outside of the known occupied range within the BLM CFO planning area (BLM 2018a).
Northern beardless tyrannulet (*Camptostoma imberle ridgwayi*)	NM E	Northern boundary for the distribution of this species is in southern Arizona and southwestern New Mexico. Species breeds only in riparian areas of Guadalupe Canyon in southern Hidalgo County. Mesquite thickets and smaller trees are favored for feeding. Vulnerable to human disturbance, grazing, fire, and drought.	Unlikely to occur within the proposed project area due to the lack of riparian or mesquite thickets. The project is also outside of the species' known range within New Mexico.
Northern goshawk (*Accipiter gentilis atricapillus*)	BLM Sensitive	Strongly associated with montane forests during breeding and in winter. Migrating populations typically follow forested ridges.	Unlikely to occur within the proposed project area due to lack of montane forest habitat.
Painted bunting (*Passerina ciris*)	BLM Sensitive	Painted buntings breed in dense brush, often adjacent to thick, grassy areas or woodland edges. During migration and winter, they favor dense, weedy habitats, as well as the understory of semi-open forest.	Unlikely to occur within the proposed project area due to the lack of dense brush or woodland habitat interface.
Peregrine falcon (*Falco peregrinus; F. p. tundrius*)	NM T	Found in New Mexico year-round. All nests in New Mexico are found on cliffs. In migration and during winter months, New Mexico's peregrine falcons are typically associated with water and large wetlands.	Unlikely to occur within the proposed project area due to the lack of cliff roosting habitat or large wetlands.
Pinyon jay (*Gymnorhinus cyanocephalus*)	BLM Sensitive	Pinyon jays are variable residents in mainly mid-elevation areas containing piñon-juniper woodlands almost statewide and are considered uncommon to locally abundant (Hubbard 1978). This species has not been verified in the CFO Planning Area.	Unlikely to occur within the proposed project area due to the lack of piñon-juniper woodlands.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Piping plover (*Charadrius melodus*)	USFWS T NM T	Rare in New Mexico, where it occurs only during the spring and potentially fall migration. Verified at Springer Lake (Colfax County) and reported at Bosque del Apache National Wildlife Refuge (Socorro County); there was also an unsubstantiated report from Lake Avalon (Eddy County). Associated with water at all times of the year. Occurs on sandflats or along bare shorelines of rivers, lakes, or coastlines.	Unlikely to occur within the proposed project area due to the lack of bare shorelines or aquatic habitat.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	USFWS E NM E	In New Mexico, this species is known to breed only along the Gila River and Rio Grande. Associated with moist riparian areas throughout the year. Breeding habitat requirements vary by region. In migration, may be associated with willows along ditches, cottonwood woodlands, and saltcedar (*Tamarix* sp.) stands.	Unlikely to occur within the proposed project area due to the lack of riparian habitat or associated vegetation species.
Sprague's pipit (*Anthus spragueii*)	BLM Sensitive	Occurs in New Mexico only as a sporadic winter resident. Its distribution in the state is not well known but includes the lower Pecos River valley, Otero Mesa, and Animas Valley. It is associated with southern desert grasslands of the state. Species as a whole prefers dry, open grasslands.	Although scrub-grassland habitat is present, the project area is outside of the species' known habitat.
Thick-billed kingbird (*Tyrannus crassirostris*)	NM E	Summer resident in extreme southwestern New Mexico, where it occupies riparian canyons with cottonwoods and Arizona sycamores (*Platanus wrightii*). Nests 30–65 feet high in Arizona sycamore, usually in a crotch near the tree trunk.	Unlikely to occur within the proposed project area due to lack of riparian canyon and habitat including Arizona sycamores.
Varied bunting (*Passerina versicolor*)	NM T	Characteristic of shrublands, Sonoran desert scrub, Chihuahuan desert scrub, desert riparian deciduous woodlands and marshes, and second growth. Inhabits a large portion of Mexico. In New Mexico, prefers dense stand of mesquite and associated growths of canyon bottoms.	Unlikely to occur within the proposed project area due to lack of preferred dense mesquite vegetation.
Virginia's warbler (*Vermivora virginiae*)	BLM Sensitive	In Hubbard's survey of the Mogollon Mountains (Catron County), this warbler was fairly common in brushy growth in riparian spruce woodland, along with orange-crowned warblers (*Vermivora celata*), and in the pine-fir ecotone, especially where Gambel oak (*Quercus gambelii*) occurred (Hubbard 1965).	Unlikely to occur within the proposed project area due to the lack of riparian spruce forest or shinnery oak vegetation.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Western burrowing owl (*Athene cunicularia hypugaea*)	BLM Sensitive	Present mainly during the breeding season in the north half of the state and present year-round in the south half. Found in grasslands, especially in association with prairie dog colonies, in desert scrub, and in agricultural and semi-urban environments. Depends on prairie dogs, rock squirrels (*Otospermophilus variegatus*), and other fossorial mammals for the availability of nest burrows.	Unlikely to occur within the proposed project area due to the lack or prairie dog colonies to provide suitable burrow habitat.
White-faced ibis (*Plegadis chihi*)	BLM Sensitive	Uncommon in New Mexico, where it is found statewide during migration and as a (typically non-breeding) summer resident. Breeding recorded only at Tucumcari and at Stinking Lake in Rio Arriba County. Found in association with water. Generally seen in association with shoreline and marsh habitats adjacent to open water. Nesting colonies are located in shrubs and low trees or in dense standing reeds and tules near or in marshes. Forages along the water's edge or in fields.	Unlikely to occur within the proposed project area due to the lack of extensive perennial water bodies and associated shoreline habitat including dense standing reeds and tules.
Reptiles and Amphibians			
Arid land ribbon snake (*Thamnophis proximus diabolicus*)	NM T	The arid land ribbon snake is found in west Texas and southeast New Mexico. This snake is found primarily around water sources such as rivers, ponds, and stock tanks. This snake feeds primarily on small frogs.	Unlikely to occur within the proposed project area due to a lack of aquatic habitat.
Desert massasauga (*Sistrurus tergeminus*)	BLM Sensitive	This species was as far west as the Huachuca Mountains bajada in historic times but now is virtually restricted to a few miles of habitat in the San Bernardino Valley above 5,000 feet amsl (Rosen et al. 1996). In the western portion of its range, massasaugas are most abundant on prairie wetlands, but they can also be found on dry shortgrass plains (Fitch 1992).	Unlikely to occur in the proposed project area due to a lack of prairie wetlands or shortgrass plains. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Dunes sagebrush lizard (*Sceloporus arenicolus*)	BLM Sensitive NM E	A habitat specialist native to the Havard oak sand dune habitats extending from San Juan Mesa in northeastern Chaves County, Roosevelt County, and through eastern Eddy and southern Lea Counties. This species has an extremely strong affinity for bowl-shaped depressions in active dune complexes, referred to as sand dune blowouts, with a preference for relatively large blowouts and select microhabitat within a given blowout. Within their geographic range, the presence of this species is also associated with composition of the sand; they only occur at sites with relatively coarse sand.	Unlikely to occur within the proposed project area due to its being outside of the species' known range and lack of active dune complex habitat.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Gray-banded kingsnake (*Lampropeltis alterna*)	NM E	This species is known from Eddy County and may occur in Otero and southwest Chaves Counties. Occurs in typical Chihuahuan desert habitat with abundant limestone outcroppings between 3,510 and 6,693 feet in elevation. Inhabits a variety of habitats but is found primarily in rocky desert hills at mid-elevation. Habitat appears to be restricted to steep to precipitous hills and mountains between approximately 3,937 and 5,741 feet amsl (below the juniper zone). This species could be expected to occur throughout the limestone broken rock-Lozier association in Otero, Eddy, and southwestern Chaves Counties in New Mexico.	Unlikely to occur in the proposed project area due to a lack of limestone outcrops. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Great Plains narrowmouth toad (*Gastrophryne olivacea*)		This species inhabits grassland habitat within portions of the Great Plains in New Mexico. This species occurs primarily in grassland and desert-grassland habitats (Stuart and Painter 1996).	Unlikely to occur as the proposed project area is outside of the Great Plains habitat.
Mottled rock rattlesnake (*Crotalus lepidus lepidus*)	NM T	This subspecies of rattlesnake is known only from the southern Guadalupe Mountains in Eddy County and possibly Otero County. Key habitat areas include Walnut and Gunsight Canyons and Carlsbad Caverns National Park. Rock rattlesnakes usually occur between 3,937 and 8,530 feet amsl in elevation in New Mexico. This snake is found in a variety of habitats, including pine-oak forests, mesquite-grasslands, and rocky desert habitats. This species is primarily a mountain dweller but also occurs in bordering lowlands in some areas. This species favors areas of boulders and rocks, including talus slopes with their abundant hiding places.	Unlikely to occur within the proposed project area as it is outside of the Guadalupe Mountain range where the species is known to occur. Additionally, the highest elevation in the proposed project area is 3,473 feet amsl.
Plain-bellied water snake (*Nerodia erythrogaster transversa*)	NM E	In New Mexico, this snake is known only from the lower Pecos Valley area (Eddy County), including along the Black River. The plain-bellied water snake is a highly aquatic species, swimming and diving with ease, and seeking prey in water. Normally confined to areas of permanent water, it may wander short distances inland, especially in wet weather. The preferred habitat is ponds and streams, the latter including fairly large rivers. This snake often hides under rocks or other objects during the day and becomes active at night. The young tend to occupy areas of shallower, more dappled water than the adults, including in inlets of small streams.	Unlikely to occur within the proposed project area due to a lack of aquatic habitat.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Rio Grande cooter (*Pseudemys gorzugi*)	BLM Sensitive NM T†	This turtle is confined to the Pecos River drainage, including the Pecos, Black, and Delaware Rivers below Brantley Dam in Eddy County. This species is part of the CCA. All of the rivers listed above constitute key habitat areas for the species. Primarily a stream species occurring from 2,953–3,610 feet amsl, preferring waters with slow to moderate current, firm bottoms, and abundant aquatic vegetation. Also inhabits stock tanks, ponds, large ditches, and even brackish tidal marshes. In New Mexico, most records are from streams with relatively clear water and rocky or sandy bottoms. Nests of this species are located in sandy soil, usually within 100 feet of the water.	Unlikely to occur in the proposed project area due to the lack of perennial waterbodies.
Texas horned lizard (*Phrynosoma cornutum*)	BLM Sensitive	Inhabits arid and semiarid areas in the southwestern United States, characterized by open country with little vegetation. These areas often consist of grasses interspersed with cacti, yucca, mesquite, and other assorted woody shrubs and trees. In New Mexico, the species is associated with *Yucca-Prosopis-Ephedra* and *Larrea-Acacia-Fouquieria* habitat associations often in playas or on bajadas and mountain foothills.	May occur in the proposed project area due to presence of Chihuahuan desert grassland with intermixed scrub habitat and interspersed yucca. No Texas horned lizards were observed during the 2019 biological survey of the proposed project area.
Mammals			
Big free-tailed bat (*Nyctinomops macrotis*)	BLM Sensitive	This species is usually associated with high cliffs and rugged rock outcroppings, but it also roosts in buildings, under lava caves, and sometimes in tree holes. It is found in urban areas, agriculture, barren land, desert scrub, scrub-grassland, swamp and riparian scrub, juniper savannah, oak savannah, shortgrass plains, alkali sacaton (*Sporobolus airoides*) grasslands, montane grassland, montane forest, evergreen forest, and marsh habitat.	May occur within the proposed project area due to the presence of desertscrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.
Black-tailed prairie dog (*Cynomys ludovicianus arizonensis*)	BLM Sensitive	Native to grasslands, including short- and mixed-grass prairie, sagebrush steppe, and desert grasslands. Also known to occur in mesquite-creosote bush, grama-needlegrass, tarbush–creosote bush, and burrograss-cholla type habitats.	Unlikely to occur within the proposed project area due to the lack of suitable habitat. Although marginally suitable grassland habitat is present, there is a lack of preferred vegetation such as grama-needlegrass, tarbush-creosote, and burrograss-cholla.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Cave myotis bat (*Myotis velifer*)	BLM Sensitive	This species is found primarily at lower elevations occurring in shortgrass plains, scrub-grassland, Chihuahuan desert scrub, Sonoran desert scrub, Plains and Great Basin swamp and riparian scrub, pine-oak woodlands, and oak savannah. Inhabits caves in the limestone region of southeastern New Mexico, and it has also roosted in barn swallow (*Hirundo rustica*) nests. It is never more than a few miles from a water source, such as canals, tanks, or creeks.	May occur within the proposed project area due to the presence of desertscrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.
Fringed myotis bat (*Myotis thysanodes thysanodes*)	BLM Sensitive	A mid-elevation woodland bat that occurs in montane forest and woodland, mountain meadow, interior chaparral, scrub-grassland, alkali sacaton grassland, Chihuahuan desert scrub, swamp and riparian forests and scrub, Mohave desert scrub, and upland Sonoran desert scrub and occasionally in tundra.	May occur within the proposed project area due to the presence of desertscrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.
Gray-footed chipmunk (*Neotamias canipes canipes*)	BLM Sensitive	Mostly found in forested habitats, such as piñon-juniper woodlands, but may also occur in shrublands and desert communities. It may occur in downed and dead trees, dense stands of mixed timber and on brushy hillsides, particularly in rock crevices.	Unlikely to occur within the proposed project area due to the lack of forest or piñon-juniper woodland habitat.
Guadalupe pocket gopher (*Thomomys bottae guadalupensis*)	BLM Sensitive	Found in sycamore (*Platanus* sp.), cottonwood, and rabbitbrush (*Chrysothamnus* sp.) riparian communities in the Guadalupe Mountains of southeastern New Mexico and western Texas.	Unlikely to occur within the proposed project area as it is outside of the Guadalupe Mountains.
Long-legged myotis bat (*Myotis volans interior*)	BLM Sensitive	Primarily a forest species occurring in chaparral, alpine and subalpine grassland, coniferous forest, scrub-grassland, Chihuahuan desert scrub, swamp and riparian forests and scrub, saxicoline brush, oak savannah, and woodland, Mohave desert scrub, and upland Sonoran desert scrub. Also occurs along watercourses and in deserts.	May occur within the proposed project area due to the presence of desertscrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.

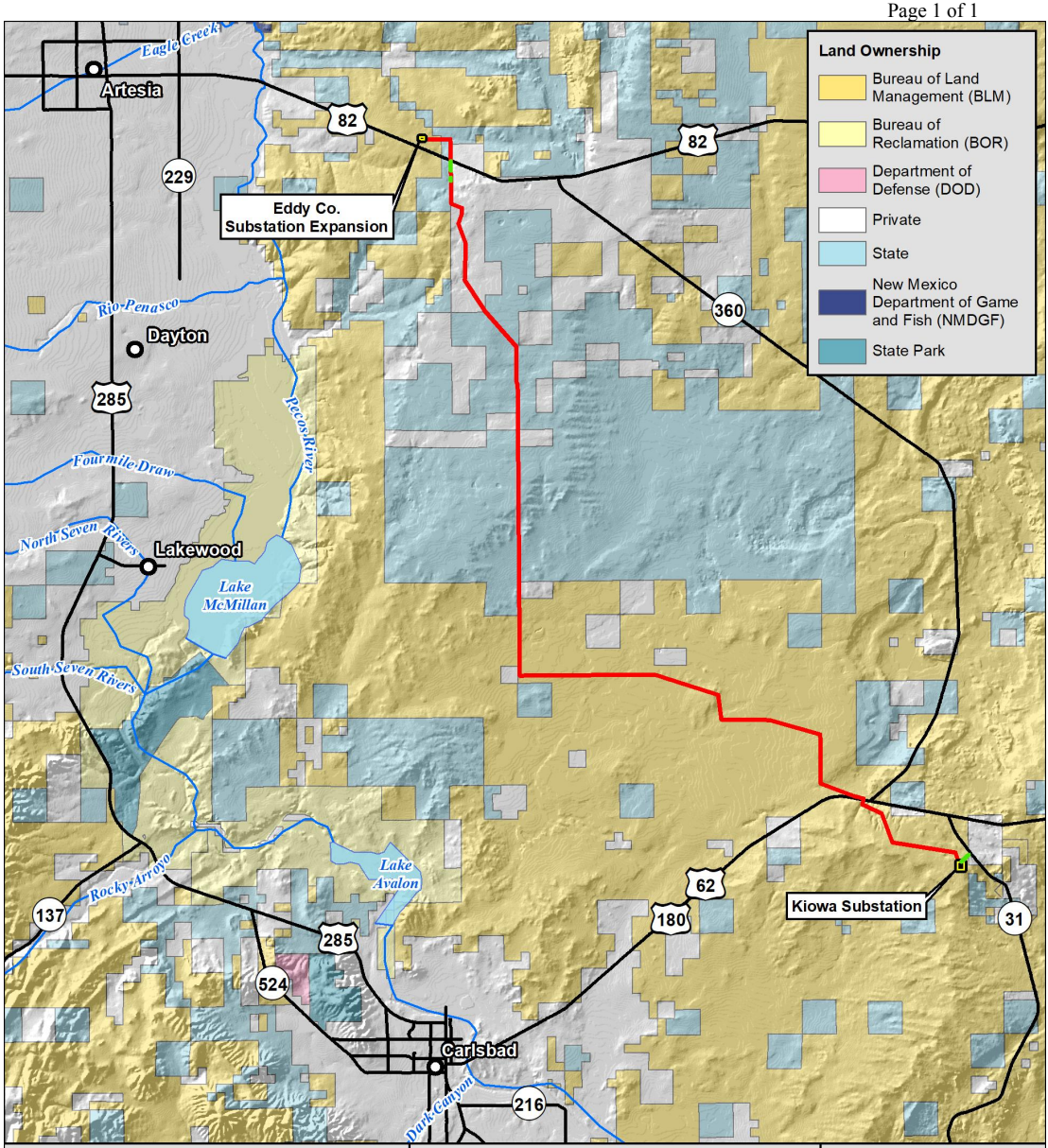
Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Mexican long-tongued bat (*Choeronycteris Mexicana*)	BLM Sensitive	Mexican long-tongued bats of Arizona are found from the Chiricahua Mountains to the Santa Catalina and Baboquivari Mountains. They may also be bound in southwestern New Mexico and southern California. They winter in Mexico but do not hibernate there. Breeding takes place in the northern parts of the species' range (Monday 1993). They are found in sacaton grasslands, sycamore, cottonwood, and rabbitbrush oak savanna, and coniferous forest (Cook 1986).	Unlikely to occur within the proposed project area due to the lack of coniferous forest, sacaton grasslands, sycamore, or rabbitbrush oak savanna habitat.
Pecos River muskrat (*Ondatra zibethicus ripensia*)	BLM Sensitive	This species inhabits waterways that have a constant and fairly stable source of water with dense aquatic and emergent vegetation surrounded by terrestrial herbaceous vegetation. Common muskrats prefer sloughs, marshes, oxbow lakes, streams, levees, dikes, and small lakes and ponds. Common muskrats build lodges in or near water using marsh vegetation.	Unlikely to occur within the proposed project area due to the lack of dense aquatic an emergent vegetation.
Spotted bat (*Euderma maculatum*)	BLM Sensitive NM T	In New Mexico, spotted bats have been taken in areas near cliffs, including piñon-juniper woodlands and from streams or water holes within ponderosa pine or mixed coniferous forest. It has also taken over cattle tanks in a meadow surrounded by mixed coniferous forest and near a ridge with cliffs and limestone outcroppings. The spotted bat is usually captured around a water source, including desert pools or cattle tanks. It also may use rivers or desert washes as travel corridors.	Unlikely to occur within the proposed project area due to a lack of suitable habitat.
Townsend's pale big-eared bat (*Corynorhinus townsendii pallescens*)	BLM Sensitive	Found in a variety of xeric to mesic habitats: scrub-grassland, desert scrub, semi-desert shrublands, chaparral, saxicoline brush, tundra, open montane forests, spruce-fir, mixed hardwood-conifer, and oak woodlands and forests. This species is strongly correlated with the availability of caves or cave-like habitat, but it also uses abandoned buildings and rock crevices on cliffs for roosting.	May occur within the proposed project area due to the presence of desertscrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**
Western small-footed myotis bat (*Myotis ciliolabrum melanorhinus*)	BLM Sensitive	This species is widely distributed in the western United States and found in many habitat types. Occurs in riparian wooded areas, bare rock/talus/cliffs, grassland and shrublands, and coniferous or mixed woodland areas. Generally inhabits desert, badland, chaparral, western coniferous forests and semiarid habitats, and more mesic habitats in the southern part of its range. In New Mexico, the distribution of this species seems to be in the ponderosa pine zone, although it occurs as low as desert and as high as the lower edges of the spruce-fir zone.	Unlikely to occur within the proposed project area due to the lack of ponderosa pine or edges of spruce-fir vegetation associations.
Yuma myotis bat (*Myotis yumanensis yumanensis*)	BLM Sensitive	Occurs in riparian communities, grasslands, semi-desert shrublands, mountain brush, woodlands, and desert habitats. It also occurs in arid canyon lands and Sonoran desert scrub. The species is associated with riparian areas and watercourses in the western United States. Roosts in caves, mines, cliffs, crevices, buildings, and swallow nests, including cliff swallows (*Petrochelidon pyrrhonota*).	May occur within the proposed project area due to the presence of desertscrub habitat. However, the proposed project is unlikely to adversely impact this species as construction would occur outside of crepuscular foraging periods.

Sources: Except where otherwise noted, range or habitat information for wildlife species is taken from Biota Information System of New Mexico (2019), USFWS Information for Planning and Consultation (USFWS 2019b), NatureServe (2017), Cartron (2010), and USFWS and CEHMM (2017).

Federal (USFWS) status: C = Candidate, E = Endangered, T = Threatened, ENEP = Experimental Population, Non-Essential.

New Mexico State status: State E = Endangered, State T = Threatened.



Eddy to Kiowa 345-kV Transmission Line Project

0 Miles 5
0 Kilometers 10

N

1:300,000

Project No. 53583
File: EK_Overview_Map_20190124
Map Created: 1/18/2019
Map Updated: 1/24/2019

SWCA ENVIRONMENTAL CONSULTANTS

City/Town
Major Roadway
Drainage
Water Body
Proposed Line
Proposed Access Road
Substation

New Mexico

CASE NO. 19-00 ___ -UT

IN THE MATTER OF SOUTHWESTERN PUBLIC SERVICE COMPANY'S APPLICATION REQUESTING: (1) ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AUTHORIZING CONSTRUCTION AND OPERATION OF THE EDDY COUNTY TO KIOWA 345-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES; (2) APPROVAL OF THE LOCATION OF THE 345-KV TRANSMISSION LINE AND ASSOCIATED FACILITIES; (3) DETERMINATION OF RIGHT-OF-WAY WIDTH FOR THE TRANSMISSION LINE; AND (4) AUTHORIZATION TO ACCRUE AN ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION FOR THE TRANSMISSION LINE AND ASSOCIATED FACILITIES

Attachment DJB-1(CD)
Attachment DJB-3(CD)

Hobbs – China Draw 345kV Transmission Line Project

NEPA Plan of Development

Submitted to:

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 East Greene Street
Carlsbad, New Mexico 88220

Submitted by:

XCEL ENERGY/SOUTHWESTERN PUBLIC SERVICE COMPANY
600 South Tyler Street
Amarillo, Texas 79101

December 2015

Xcel Energy℠

Hobbs to China Draw 345kV Transmission Line Project

NEPA Plan of Development

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Appendix A Mapbook
Appendix B Variance Plan
Appendix C Heronry Location and Design

LIST OF ACRONYMS

AC	alternating current
BLM	Bureau of Land Management
CFO	Carlsbad Field Office
CFR	Code of Federal Regulations
EA	environmental analysis
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Management Policy Act
HPILS	High Priority Incremental Load Study
ISO	independent system operator
kV	kilovolt(s)
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NTC	Notice to Construct
OPGW	optical ground wire
POD	Plan of Development
ReMI	refraction microtremor
ROW	right-of-way
RTO	regional transmission operators
SHPO	State Historic Preservation Officer
SLO	State Land Office
SPCC	Spill Prevention, Containment, and Countermeasures Plan
SPP	Southwest Power Pool
SPS	Southwestern Public Service Company

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1. INTRODUCTION

Southwestern Public Service Company (SPS), a wholly owned subsidiary of Xcel Energy Inc., has submitted four Applications for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) to the Bureau of Land Management (BLM) Carlsbad Field Office (CFO) for right-of-way (ROW) grants needed to construct, operate, and maintain two 345-kilovolt (kV) transmission lines, a new substation (Kiowa Substation), and four substation expansions (Hobbs Generation and Eddy County Substation) in southeast New Mexico, herein referred to as the "project" or "Proposed Action." Xcel Energy is a registered holding company that owns several electric and natural gas utility operating companies. The project crosses BLM CFO–managed surface lands, New Mexico State Land Office (SLO) lands, and private lands (Figure 1.1). The BLM is serving as the lead federal agency for the undertaking.

This National Environmental Policy Act (NEPA) Plan of Development (POD) updates the Preliminary POD submitted by Xcel Energy as part of its original application in 2014. It provides an overview of the Hobbs to China Draw 345-kV Transmission Line Project based on information presented in an environmental assessment prepared for the project to meet the BLM's requirements under NEPA. It includes a general description of the design, construction, operation, reclamation, and maintenance of the Project. It also provides detailed information on the proposed Project facilities, procedures, and measures that SPS, as the Proponent, will implement during construction, operation, and maintenance of the Project. A mapbook depicting the project and the known environmentally sensitive areas and associated restrictions is included as Appendix A. A variance plan is provided as Appendix B, and a map of the heronry location and the nest platform design and specifications is provided in Appendix C. SPS would construct and operate the Project in conformity with this POD, which will be included as part of the ROW grant design criteria. The design, construction, operation, and maintenance of the Project will meet or exceed the requirements of all applicable regulations.

1.1. Southwestern Public Service Company

SPS is a regulated utility that generates purchases, transmits, distributes, and sells electricity in Texas and New Mexico. SPS provides service to more than 380,000 retail customers, including residential, commercial, industrial, and public customers. As a point of clarification, the utility company name is "branded" as Xcel Energy; however, the legal owner and operator of the utility facilities in New Mexico is SPS. All utility facilities and related land rights, including fee property, easements, permits, etc., are owned by, operated by, and held in the name of Southwestern Public Service Company, a New Mexico Corporation.

1.2. Project Overview

SPS proposes to construct, operate, and maintain approximately 122 miles of single-circuit alternating current (AC), 345kV overhead electric transmission lines from the existing Hobbs Generation Substation in Lea County, New Mexico, to the existing China Draw Substation in Eddy County, New Mexico, which is approximately 11 miles southwest of Malaga, New Mexico. The project would also construct a line to connect the proposed Kiowa Substation in Eddy County, New Mexico, to the existing Eddy County Substation (Figure 1.1).

The Project will require a ROW width of 150 feet. A permanent access road (patrol road) will be located down the ROW to the maximum extent possible. Temporary work areas will mainly be located in the ROW but extend outside in certain locations to ensure safe construction of facilities at structure locations, pulling and tensioning sites at angle structures, and areas of sloped or

difficult terrain (see Section 2.1.3). Construction of the Project will take approximately 24 months to complete and will consist of the following permanent facilities:

- A single-circuit 345kV overhead transmission line between the Hobbs Generation Substation, Kiowa Substation, North Loving Substation, and China Draw Substation
- A single-circuit 345kV overhead transmission line between the Kiowa substation and the Eddy County Substation
- An optical ground wire (OPGW) communication system associated with the transmission line
- Access roads to the transmission line structures
- A new 12.5-acre Kiowa Substation adjacent to the existing Potash Junction Substation
- New substation equipment (expansion) at each aforementioned substation

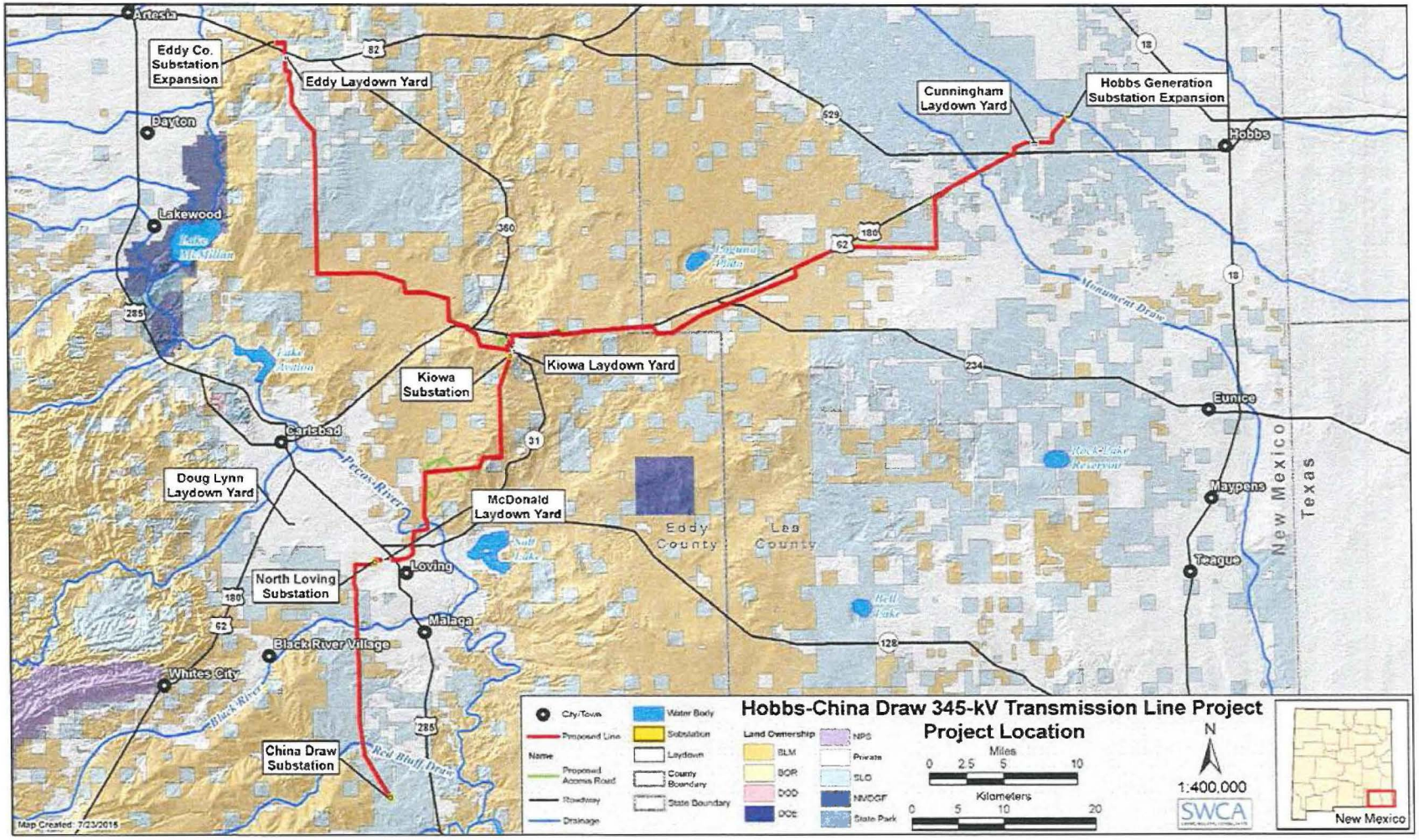


Figure 1.1. Project vicinity map.

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1.3. Need for the Project

As the Proponent, Xcel Energy is seeking an ROW grant on public lands managed by the BLM in southeast New Mexico. Additional ROWs are also being sought across private and New Mexico state lands. The BLM's purpose is to provide Xcel Energy with the legal use of and access across BLM-managed public lands by granting an ROW. As stated in 43 Code of Federal Regulations (CFR) Part 2801.9, a BLM ROW grant is required for use of public lands for "systems or facilities over, under, on, or through public lands," including transmission lines. The BLM's mandate for multiple uses of public lands includes development of energy transmission in a manner that conserves the multitude of other resources found on public lands. The need for the BLM's action is established by the Federal Land Policy and Management Act (FLPMA) and is to respond to an application for an ROW grant by evaluating the proponent's application for use of federal land for construction of a 345kv transmission line.

The BLM will consider the application in accordance with 43 CFR 2800 (Rights-of-way under the Federal Land Policy and Management Act) and the Energy Policy Act of 2005, and will decide whether to issue an ROW grant and, if so, under what terms and conditions.

Xcel Energy serves its customers in New Mexico through the electrical system of its subsidiary, SPS, which is a member of the Southwest Power Pool (SPP), a regional organization that combines the electrical systems of its members to provide reliable, cost-efficient, and equitable electrical service to those member's customers within its service territory. The SPP is one of nine independent system operators/regional transmission organizations (ISOs/RTOs), and one of eight North American Electric Reliability Corporation (NERC) Regional Entities. SPP is mandated by the FERC to ensure reliable supplies of power, adequate transmission infrastructure, and competitive wholesale prices of electricity. ISOs/RTOs are the "air traffic controllers" of the electric power grid. ISOs/RTOs do not own the power grid; they independently operate the grid minute-by-minute to ensure that power gets to customers and to eliminate power shortages. The SPP provides the following services to members in nine states: Arkansas, Kansas, Louisiana, Mississippi, Missouri, Nebraska, New Mexico, Oklahoma, and Texas.[1]

Within its service territory, SPS has recently experienced a substantial increase in electrical demand in southeast New Mexico where development of oil and gas fields has grown tremendously. To meet this urgent demand, SPP conducted several iterations of an in-depth study finalized in May 2014 and referred to as the *High Priority Incremental Load Study* (HPILS). The purpose of the study was to evaluate "transmission needs resulting from significant incremental load growth expectations in certain parts of SPP."[2] In particular, this study responded to "concerns about oil and gas shale play developments, and other future load additions in the region that had not been accounted for in previous planning efforts." In addition to increased electrical demand from oil and gas development, other previously interruptible loads became more predictable and "firm," thereby exacerbating SPP's need to update its load growth assumptions. Ultimately, the study "formed the basis for the development of transmission expansion needs required to address the recent load developments" and the catalyst for SPS transmission expansion plans in southeast New Mexico.[3]

Using the results from the study, SPP issued numerous orders to its members in the form of Notices to Construct (NTCs). These included NTCs to SPS to construct a number of new high-voltage transmission lines in southeast New Mexico. Some of these NTCs have been combined as part of SPS Proposed Action. Therefore, this POD pertains to the components listed below under Section 2.1. The Project cost is estimated to be $128 million, has a construction period of approximately 24 months, and as part of the NTCs, SPP directed SPS to have all of these system additions in service by June 1, 2018.

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[1] Southwestern Power Pool. 2014. About SPP. Available at: http://www.spp.org/section.asp?pageid=1. Accessed August 8, 2014.
[2] Southwest Power Pool. 2014. High Incremental Load Study. April 02, 2014. HPILS Task Force.
[3] Southwest Power Pool. 2014. High Incremental Load Study, April 02, 2014. HPILS Task Force.

1.4. Relationship to Statutes, Regulations, or Other Plans

Various federal and state agencies regulate different aspects of electric power transmission projects. Table 1.1 lists the environmental permits and approvals that could be required for the proposed project.

Table 1.1. Potential Permits, Approvals, and Clearances Needed for Construction, Operation, and Maintenance of Facilities

Permit/Notification	Issuing Agency	Status
Federal Permit, Approval, or Clearance		
Right-of-way (ROW) grant	Bureau of Land Management	Subject of the SF-299 and EA referenced in this POD; being processed under BLM ROW serial numbers NM-133171, NM-134370, NM-134336 and NM-077768.
Clearance under Section 7 of the Endangered Species Act	U.S. Fish and Wildlife Service	Surveys were conducted; findings are described in a Biological Assessment submitted under separate cover in Section 3.6 of the EA associated with this POD (SWCA 2015a)
Clean Water Act Section 404 Permit	U.S. Army Corps of Engineers	Field investigations have been conducted to identify potential waters of the U.S. that would be impacted by the proposed project; findings are described in Section 3.4 of the EA associated with this POD
Clean Water Act Section 402 General Construction (Stormwater) Permit	Environmental Protection Agency (EPA)	The permit would be obtained prior to construction under the EPA's Construction General Permit
State Permit, Approval, or Clearance		
ROW grant	State Land Office	Subject of the EA referenced in this POD
Certificate of Public Convenience and Necessity	New Mexico Public Regulation Commission	Application for approval of location of the transmission lines and substations is underway
Tribal consultation to determine if the proposed project would have any impact on receptors of cultural importance	Native American tribes	Findings are described in Section 3.7 of the EA referenced in this POD and the associated cultural resources reports
Clearance under Section 106 of the National Historic Preservation Act	New Mexico State Historic Preservation District	Cultural resources surveys were conducted; findings are described in Section 3.7 of the EA referenced in this POD and the associated cultural resources reports
Clean Water Act Section 401 Permit	New Mexico Environment Department	Field investigations have been conducted to identify potential waters of the U.S. that would be impacted by the proposed project; findings are described in Section 3.4 of the EA referenced in this POD
Collection permit for the displacement or removal of any state endangered plant species	New Mexico Energy, Minerals, and Natural Resources Department Forestry Division	Biological resource surveys were conducted; findings are described in Section 3.6 of the EA referenced in this POD and in the biological assessment (SWCA 2015a)
Access permit or public highway utility accommodation permit	New Mexico Department of Transportation (NMDOT)	Discussions with the NMDOT regarding the location of the proposed project and access locations are underway

2. PROPOSED ACTION

2.1. Project Components

SPS proposes to construct, operate, and maintain the following SPP projects:

- A 47-mile-long 345kV transmission line between the Hobbs Generation Station and the proposed Kiowa Substation
- A 20-mile-long 345kV transmission line between the Kiowa Substation and an expanded North Loving Substation
- An 18-mile-long 345kV transmission line North Loving Substation to the proposed China Draw Substation
- The 33-mile-long Eddy to Kiowa 345-kV Transmission Line
- Expand the existing Hobbs Generation, North Loving, China Draw, and Eddy County substations
- A new Kiowa Substation

Acreage disturbances associated with the Proposed Action by landowner type are presented in Table 2.1.

Table 2.1. Acreages and Miles of Proposed Right-of-Way and Surface Disturbance by Landownership

Project Component	Land-ownership	Lengths (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Hobbs to China Draw 345kV transmission line (150-foot ROW)	BLM	45	803	803
	SLO	30	549	–
	Private	13	241	–
Subtotal		**88**	**1,593**	**–**
Eddy County to Kiowa 345kV transmission line (150-foot ROW)	BLM	19	347	347
	SLO	9	158	–
	Private	6	109	–
Subtotal		**34**	**614**	**–**
New substation and substation expansions	BLM	–	34	34
	SLO	–	5	–
	Private	–	13	–
Subtotal		**0**	**52**	**–**
Additional temporary workspace (including laydown yards and pull pockets)	BLM	–	76	76
	SLO	–	78	–
	Private	–	136	–
Subtotal		**0**	**290**	**–**
Access roads (60-foot ROW)	BLM	9	67	67
	SLO	7	47	–
	Private	4	24	–
Subtotal		**20**	**138**	**–**
Subtotal (acres)			**2,687**	**1,327**
Overlap of project components (acres)			**-26**	**-3**
Total proposed disturbance (acres)			***2,661***	***1,324***

Notes: BLM = Bureau of Land Management; SLO = State Land Office

2.1.1. Transmission Lines

The 345kV overhead power lines would require a 150-foot-wide ROW throughout the proposed alignments, except in select areas where sensitive resources are actively being avoided through narrowing the ROW, or in select locations where the height of structures are taller to span avoidance areas, requiring a wider ROW between structures. The overhead transmission lines would be supported by either H-frame, three-pole, or monopole structures (Figure 2.1–Figure 2.3). In rural areas, the most common structure would be a single-circuit, tubular steel pole H-frame at tangent locations. Where the line terminates or turns at an angle, a single-circuit three-pole tubular steel structure would be used. Monopole structures would be used as warranted by land use constraints and transmission line design requirements; monopoles would be least used of the three structure types. All transmission structures would be made of self-weathering steel. Substation structures would be made of galvanized, or dull galvanized steel. The top of the structures would be strung with 3/8-inch extra-high-strength shield wire on one side (for protection from lightning) and optical ground wire for communication purposes on the other side.

The average structure heights would vary depending on clearance, topographic conditions, and line design requirements (Table 2.2). The typical structures would range in height between 100 to 150 feet with a few structures that may be as tall as 175 feet. Typical spans between structures would range from 800 to 1,200 feet or four to six structures per mile. In some situations, longer spans may be necessary, which can reduce ground clearances and require additional vegetation clearing to maintain appropriate electrical clearances. In such instances, taller structures and a wider ROW width may be necessary to maintain clearance for "blowout" conditions. During final engineering, conductor clearances may be increased in certain locations to account for site-specific conditions and for safe operation.

Table 2.2. Summary of Major Features for 345-kV Overhead Power Lines

Feature	Description
345kV line length	120 miles
Types of structures	Tangent = H-frame structures Angle/dead-end = three-pole structures Monopole structures as needed
Typical structure height	100–150 feet
Structure foundation area	30–60 square feet for H-frame structures, 75–150 square feet for three-pole structures, and 15–40 square feet for monopole structures
Span length	Typically 800–1,200 feet
Structures per mile	4–6
Right-of-way width	150 feet

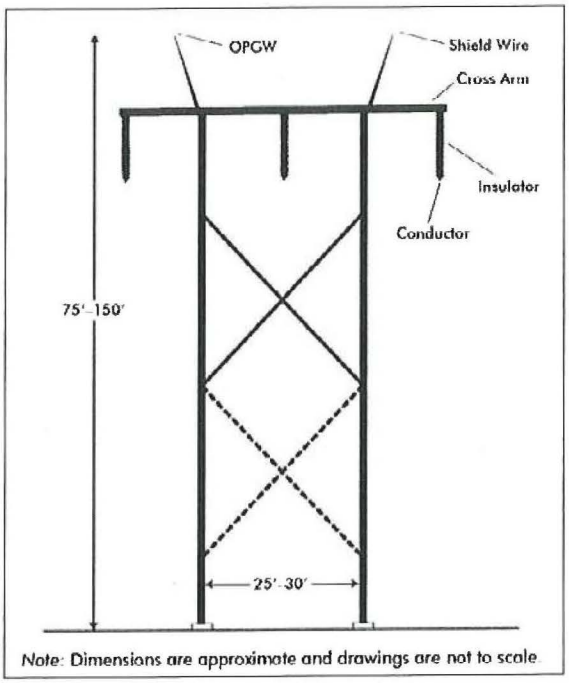


Figure 2.1. Basic H-frame structure design.

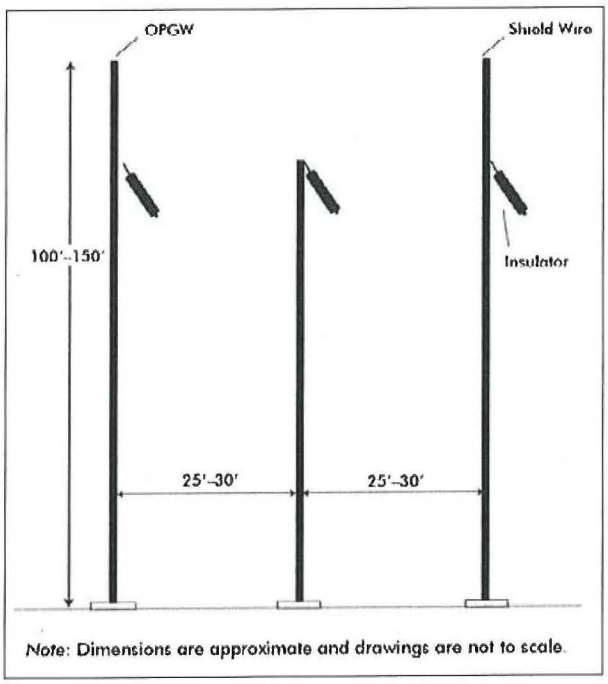


Figure 2.2. Basic three-pole structure design.

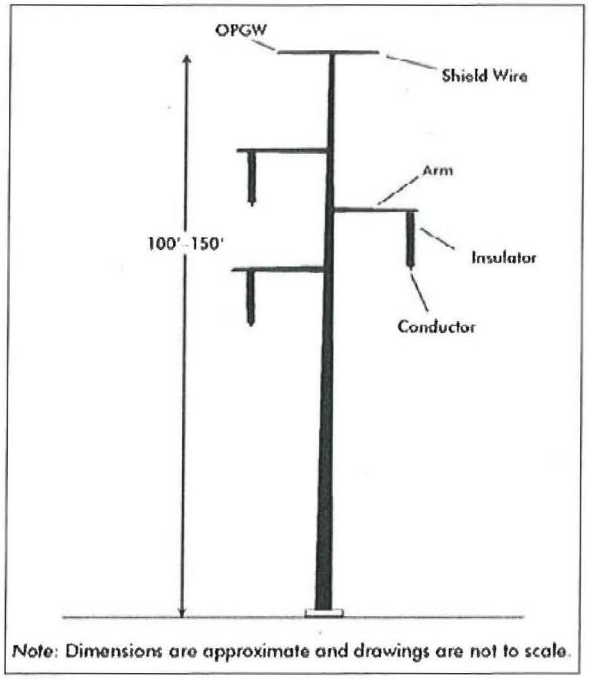


Figure 2.3. Basic monopole structure design.

2.1.2. Substation Details

One new substation would be built and four other substations would be expanded to accommodate the proposed project. The proposed Kiowa Substation would be constructed on approximately 27 acres of BLM land as part of the Proposed Action. The existing Hobbs Generation Substation would be expanded on private lands by 14 acres. The existing North Loving and China Draw Substations would be expanded on private and SLO lands, respectively. The existing Eddy County Substation would be expanded on BLM-managed lands by 7 acres. Table 2.3 provides the proposed acreage for each substation.

Table 2.3. Substation Details

Substation Name	Land Ownership	Proposed Action	Proposed Size Expansion (Acres)
Hobbs Generation Substation	Private	Expand	8
Kiowa Substation (new construction)	BLM	New	27
North Loving Substation	Private	Expand	5
China Draw Substation	SLO	Expand	5
Eddy County Substation	BLM	Expand	7
		Total	***52***

2.1.3. Additional Temporary Workspace

Temporary work areas, including pull pockets and laydown yards, would be required to construct the project. The pull pockets would extend outside the permanent 150-foot ROW to ensure safe construction of structures for pulling and tensioning sites at angled structure locations. Each pull pocket would be approximately 150 × 300–400 feet, extending outward from the centerline in both directions of angles greater than 30 degrees and/or approximately every 3 miles. Details on pull pockets are provided in Table 2.4.

Table 2.4. Pull Pockets Details

Number South to North	Land Status	Acres
Hobbs to China Draw		
1	Private	2.53
2	State	2.26
	Private	0.02
3	State	2.84
4	State	2.74
5	Private	0.14
5	State	2.63
6	State	1.45
	Private	1.25
7	Private	2.84
8	BLM	1.70
9	BLM	2.77
10	BLM	2.78
11	BLM	1.97
12	BLM	2.67
13	BLM	2.71
14	BLM	2.70
15	BLM	2.75
16	BLM	2.84
17	BLM	2.66
18	BLM	2.78
19	BLM	2.13
	State	0.71
20	BLM	2.74
21	BLM	2.69
22	BLM	2.83
23	BLM	2.35
24	BLM	2.27
	State	0.02
25	BLM	2.19
25	Private	0.64
26	BLM	2.64
27	BLM	1.89
28	Private	2.58
29	Private	1.91
30	Private	2.83
31	Private	2.84

Table 2.4. Pull Pockets Details

Number South to North	Land Status	Acres
32	Private	2.84
33	State	2.76
34	State	2.66
35	State	2.84
	Total Hobbs to China Draw	**91.39**
	Eddy to Kiowa	
1	State	2.84
2	State	1.36
	Private	1.38
3	Private	2.74
4	Private	2.32
5	Private	2.11
6	State	2.34
7	BLM	2.64
	Private	0.20
8	BLM	2.72
9	BLM	2.82
10	BLM	2.79
11	BLM	2.76
12	BLM	2.82
13	BLM	2.78
14	BLM	2.43
15	BLM	2.68
16	BLM	1.80
	Total Eddy to Kiowa	**41.53**
	Grand Total	***132.92***

Also proposed are five temporary laydown yards for the staging of materials and equipment and assembly of structures as needed. The laydown yards would require a total of approximately 158 acres of private and SLO lands. The temporary laydown yards would be located close to existing highways or roads within the project area. They would be used to park vehicles, assemble crews, and collect trash for off-site disposal, etc. The laydown yards may also contain a temporary portable construction office trailer, bathroom, and electric power. For this project, the laydown yards either have electrical service already or are located near existing distribution lines from which new service could be attained. The exact alignments of any necessary distribution lines have not been determined at this point. If acquiring new electrical service is impractical, then the laydown yards could use diesel-operated generators. Table 2.5 lists the temporary laydown yards needed to construct the proposed project.

Table 2.5. Laydown Yards

Name	Land Status	Dimensions (north-south)	Acres
Eddy laydown yard	Private	1,167 × 1,112 feet	29.8
Kiowa laydown yard	Private	1,477 × 1,155 feet	19.6
Cunningham laydown yard	SLO	1,208 × 1,843 feet	50.7
Doug Lynn laydown yard	Private	605 × 2,085 feet	29.0
McDonald laydown yard	Private	718 × 1,729 feet	28.5
		Total	***157.6***

2.1.4. Access Roads

Access roads would be needed to facilitate both construction and regular inspection and maintenance activities. Existing roads would be used to access the ROW and individual structures to the maximum extent practical, but in some cases new access roads would need to be developed or existing roads would need to be improved to accommodate construction vehicles. In some cases, the ROW or individual structures may be accessed by constructing short spur roads from existing access roads. Access roads would be temporarily constructed up to 60 feet in width during construction and reduced through reclamation to resemble a two-track road for long-term operation and maintenance (to be located within the ROW to the maximum extent possible) (Figure 2.4).

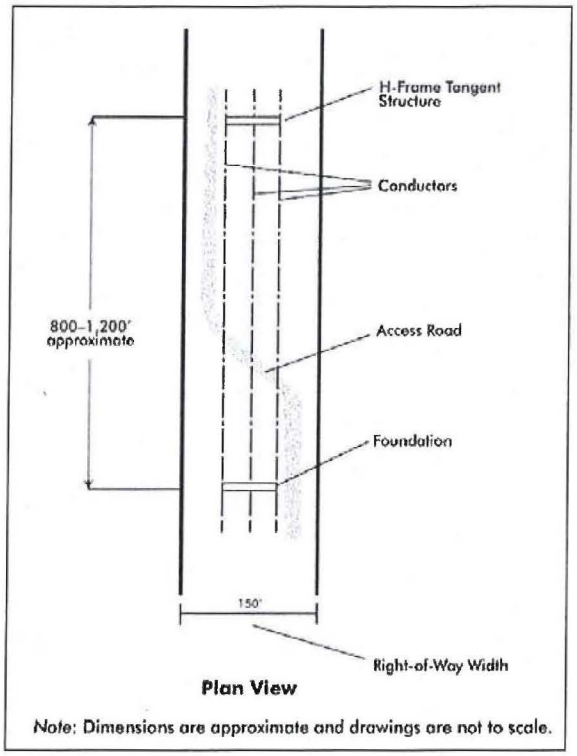


Figure 2.4. Typical access road schematic.

Four types of access to the ROW would be used as described here and listed in Tables 2.6 and 2.7 (separated between access resulting in new disturbance versus access that would not result in new disturbance).

1. New access road (outside ROW): This type of road would include areas that do not have existing access and require new permanent access during construction and operations. This access would typically have a 60-foot-wide ROW during construction and be reclaimed to 30-feet width of permanent traveled surface width. The travel surface road base would be compacted to provide a smooth, uniform surface. An example application of this type of road would be in an area where there are no existing roads available for access to proposed structures, new access cannot be achieved by clear and cut methods, and permanent access would be needed for operation and maintenance. This access type could include cuts in steep slopes and/or soil removal.
2. New access road (within ROW): This type would be contained within the ROW and have an access road up to 60 feet wide constructed between structures following a "least disturbance" path and avoiding straight lines where practical. This road would be fully reclaimed following construction for the majority of the route, and as maintenance vehicles access the ROW over time, it would begin to resemble a two-track in the long term. In some places, it would be surfaced with caliche to deter vehicles from veering off the designated path.
3. Existing access road (to be improved): This category would require widening or blading inside and/or outside the existing roadway. This access road type pertains to access that must be improved to function as permanent access road. An example of this type of road would be an existing 8-foot-wide road (with ruts or a two-track road), improved to meet road surface standards, that is identified as a route in the BLM Transportation Plan, or identified as a county road. The standard for traveled surface road width is 14 feet plus an additional 1 foot on fill slopes to accommodate sloughing. When fills are over 6 feet high at shoulder, 2 feet would be added to the road width.
4. Existing permanent access road (no improvement): This type includes paved highways and other developed roadways, including well-traversed and established dirt roadways (e.g., a well-graded 14-foot-wide or wider road surface with a road base in good condition), which would not be expected to be affected by inclement weather or degradation due to the construction, operation, and maintenance activities. These types of roads are typically maintained by entities other than the applicant. SPS would be a named user on these BLM, SLO, and private roads for the duration of the project (see Table 2.7).

Table 2.6. Proposed New Access Roads and Roads to be Improved

Type	Landownership	Miles	Acres of Disturbance
1. New access road (outside ROW)	BLM	0.5	3.5
	SLO	0.5	3.6
	Private	0.1	0.5
	Subtotal	**1.1**	**7.6**
2. New access road (within ROW)	BLM	0.0	0
	SLO	0.0	0
	Private	0.0	0
	Subtotal	**0.0**	**0***
3. Existing access road (to be improved)	BLM	8.6	62.9
	SLO	6.0	43.8
	Private	3.2	23.2
	Subtotal	**17.8**	**129.9**
	Total	***18.9***	***137.5***

**Disturbance from access within the ROW is already accounted for as part of transmission line disturbance and is therefore not repeated here.*

Table 2.7. Existing Access Roads Utilized with No Improvements

Type	Land Ownership	Miles	Acres of Disturbance
4. Existing permanent access road – (no improvement)	BLM	51	0
	SLO	34	0
	Private	17	0
	Total	***102***	***0***

2.2. Induced Currents

AC transmission lines can potentially induce currents on nearby metallic structures such as railroads, pipelines, fences, or similar facilities. Standard design and construction practices will be used to minimize this effect, which is further explained in Section 3. This condition can occur during regular operations, but more often happens when faults (abnormal electrical currents, such as a "short-circuit") occur, which sometimes results in electrical current flowing from the structure and into the ground. Several factors contribute to the severity of the effects, including the proximity, alignment, and composition of adjacent facilities as well as the amount of current being conducted and the ground's inherent resistivity.

Grounding of existing metallic facilities outside the ROW may be necessary, contingent upon agreement with the appropriate responsible party. Additional studies would need to be performed on a case-by-case basis to determine the appropriate method to mitigate this potential. For pipelines that parallel the Project, installation of gradient control wires, gradient control mats, or cathodic protection may be needed.

SPS seeks to minimize the potential for induced currents by providing a minimum offset from pipelines that parallel the alignment. In these cases, a minimum offset of 100 feet from the outside edge of the structures to the outside edge of the pipeline will be requested. A larger offset may be required in some circumstances; this will be evaluated on a case-by-case basis once adequate information is collected and can be assessed. Design of the Project's characteristics will progress as more information is gathered through landowner and agency coordination, field reviews, and resource studies. The construction contractor will be responsible to complete the detailed design phase of the Project based upon the Project features included in the POD.

2.3. Right-of-Way Acquisition

The width of the ROW and the restrictions within it are determined by the National Electrical Safety Code (NESC) operation considerations and are proportional to the voltage and structure type. The permanent ROW requested for the Project is 150 feet in width. In some localized circumstances, additional easement may need to be acquired for compliance with NERC reliability standards and other engineering criteria.

SPS will acquire ROWs for transmission line facilities on nonfederal land (state, private, or fee-owned) in perpetual easements or fee purchases. Every effort will be made to purchase all of the land rights on private land through reasonable negotiations with the present owners. In the event an agreement with the landowners cannot be reached, SPS may obtain land rights by eminent domain. Land rights will be obtained in the name of Xcel Energy, doing business as SPS.

3. PROJECT CONSTRUCTION, OPERATION, AND MAINTENANCE

The following section describes the activities that are anticipated to occur before and during Project construction and throughout operation and maintenance of the Project. Details regarding construction, operation, and maintenance of the Project are described to the extent necessary to support development of the environmental analysis (EA) for the Project. A variance plan is included as Appendix B in the event conditions warrant changes from what has been described in this document, the EA, or the BLM's ROW grant, and what is necessary to safely construct and operate the Project.

3.1. Preconstruction Activities

3.1.1. Worker Awareness Training

All construction personnel will receive environmental training prior to commencing work on the Project. Training will emphasize compliance with all environmental laws, including the stipulations in the ROW grant and POD. Project-specific requirements and local issues will be addressed as necessary. Topics covered in the training will include terms and conditions of the BLM ROW grant, roles and responsibilities, communication protocols, flagging and signage, limits of disturbance, access and travel restrictions, specific landowner issues, and any resource mitigation plans. Trainings will be conducted at the construction contractor's offices or in the field as needed to address specific and immediate issues that come up during the workday. Remedial training will be given to individuals and crews who are involved in noncompliant activities. A master list of all Project personnel that have completed the training will be kept by the construction contractor and furnished to the BLM and/or SPS upon request. Hardhat stickers demonstrating attendance of the training will be issued to attendees.

3.1.2. Engineering Surveys

Field investigations and surveys will be completed to accurately locate the centerline of the approved ROW. The exact centerline will be chosen to best implement design criteria and to satisfy site-specific mitigation measures that have not been addressed in the EA. Before any construction surveying begins, the required permits to survey on federal lands, state lands, or right-of-entry on private lands will be obtained. All limits of ground disturbance, structure locations, and temporary work areas will be flagged and staked, and the proposed centerline will be flagged and staked where it is necessary.

SPS will file with the BLM a separate Application for Transportation and Utility Systems and Facilities on Federal Land (Standard Form 299) to conduct geotechnical studies for the Project. This will allow SPS to collect subsurface information necessary to complete the final design of the foundations of the transmission line structures and substations. This data will be used to properly site individual structures and confirm their final locations as well as include subsurface data necessary to prepare the commercial request for proposal packages. The BLM will review and process the application in accordance with all applicable federal laws and regulations.

If approved, SPS will conduct geotechnical borings using conventional drilling methods. The geotechnical investigation would consist of drilling boreholes approximately 1 foot in diameter and as deep as 50 feet. Drilling would be conducted with a variety of field equipment, including conventional rubber-tired and/or tracked drilling rigs. The boreholes will be backfilled with auger cuttings and on-site soils.

If drilling is impractical, geophysical exploration techniques such as refraction microtremor (ReMi) may be used. ReMi can identify subsurface soil and rock stratification, but is less accurate than geotechnical borings. The ReMi survey would use a multichannel seismograph and low- and high-frequency geophones laid out from 10-foot to 50-foot intervals. Geophones are typically 3 inches long and can be hand-pushed into the ground and removed after the readings are taken. In hard

ground conditions, hand placement of geophones can be aided by pre-drilling probe holes with a handheld, battery-operated drill and penetrating 2 to 3 inches into the ground.

3.1.3. Preconstruction Resource Surveys

Resource surveys will be conducted prior to the commencement of construction activities. Table 3.1 provides a list of the surveys to be conducted prior to the start of construction, the dates these surveys are anticipated to occur, the location and extent of the surveys, and any associated conditions or restrictions.

Cultural resources surveys will be carried out on the Project route prior to construction to support development of the draft EA. SPS expects this survey effort to focus on federal and state lands where applicable. Following identification of an agency preferred alternative, SPS will conduct a full survey of the route to identify cultural properties. Any cultural property that will be directly or indirectly impacted will be subject to evaluation and determination through BLM Section 106 consultation. Project engineers will work with agency archaeologists to either avoid or minimize impacts on any identified cultural resource, to the extent practicable.

Initial efforts to assess potential biological resources will be conducted using primarily desktop review with field spot checks. The exception to the desktop review would be areas where resource agencies identify the need to conduct species and site-specific surveys to support development of the EA. Required site-specific surveys along the agency-preferred alternative will be conducted as needed or as otherwise directed in the final EA for the Project. Specific mitigation measures for biological resource areas will be developed as part of the Project planning and environmental review processes. As with cultural resources, Project engineers will work with agency staff to avoid or minimize impacts on biological resources, to the extent practicable.

Table 3.1. Preconstruction Resource Surveys

Resource	Timing	Location	Extent	Other
Cultural	2014–2015	ROW plus 175-foot-wide buffer on both sides	Prior to project approval	To Be Determined
Biological including special status species and waters of the U.S./wetland/playa	2014–2015	ROW plus 175-foot-wide buffer on both sides	Prior to project approval	TBD
Avian (Migratory Bird Treaty Act)	Breeding season (March 1–August 31)	Areas planned for vegetation removal	Two weeks prior to vegetation removal	TBD

3.2. Construction Activities

Following preconstruction activities, construction will be conducted in a sequential set of tasks performed by multiple crews. The construction activities will include preliminary engineering surveys, access and site preparation, excavation, foundation construction, foundations, assembling and erecting structures, stringing conductors and shield wires, testing and commissioning, restoration and cleanup, and site reclamation. Due to the length of the Project, there may be several sets of crews engaged in constructing the line. Table 3.2 outlines the typical specifications of vehicles expected to participate in the construction activities. These numbers are estimates; conditions during construction will dictate equipment allocation.

Table 3.2. Anticipated Construction Vehicle/Equipment Roster

Construction Activity	Vehicle/ Equipment Type	Commuting Distance (miles)	Quantity Anticipated	Estimated Activity Schedule (days)	Estimated Usage Time (hours/day)
Site access/ prep/land clearing	Brush hog	N/A	2	40	8
	Bulldozer	N/A	4	120	4
	Pickups	100	8	160	6
Construction of transmission lines	Pickup truck	100	12	480	6
	Water truck	N/A	2	480	8
	Boom truck	N/A	2	240	4
	Tractor trailer	2	4	100	6
	Tracked vehicle	2	8	400	8
	Crane	N/A	2	400	6
	Material truck	N/A	6	400	8
	Concrete truck	N/A	2	320	8
	Helicopter	1	2	120	8
Construction/ expansion of substations	Pickup truck	100	12	360	6
	Bulldozer	N/A	2	80	8
	Boom truck	N/A	2	80	6
	Material truck	N/A	12	120	6
	Tracked vehicle	N/A	12	160	8
	Dump trucks	100	28	160	8
	Concrete trucks	100	12	240	8
Operation and maintenance	Helicopter	N/A			
	Pickup truck	100	2	2/days/week for duration	2
Termination/ rehabilitation	Tracked vehicle	N/A	4	160	4
	Crane	N/A	2	160	4
	Pickup truck	100	12	160	6
	Tractor trailer	100	2	40	6
	Dump trucks	100	4	80	8
	Boom truck	N/A	2	80	8

N/A = not applicable

3.2.1. Site Access and Preparation

Construction of the transmission lines will begin with clearing and grading of unpaved access roads to allow entry to individual structure locations. After the access roads are cleared and/or graded, temporary work areas at each individual structure site will be cleared and/or graded to install the transmission line support structures and prepare for future maintenance.

Individual structure sites will be cleared using the appropriate equipment, which could range from a brush hog flail-type mower to a bulldozer to blade the area required to provide a safe working space for placing equipment, vehicles, and materials for tower assembly and erection. The work area will be cleared of vegetation only to the extent necessary. Any chemical treatments of ROWs will comply with those laws and procedures of federal and state land-managing agencies whose land would be traversed by the Project. Within the work areas, the permanent disturbance associated with the tower footings will be 30 to 60 square feet for H-frame structures, 75 to 150 square feet for 3-pole structures, and 15 to 40 square feet for monopole structures.

The "overland drive-and-crush" method will primarily be used to prepare the work site in areas that are relatively level and that have low-growing grasses and shrubs. This method involves crushing but not cropping vegetation. In similarly level areas where the vegetation is dense, aboveground cutting methods will be used with the intent of leaving the root crown intact. The soil will be compacted, but only excavated for the foundations. Excess soil from foundation hole excavations will be placed around the base of each structure to provide positive drainage away from the structure. When grading must occur to create a safe, level working space for structure installation, the topsoil will be segregated and then spread back over the site to provide a suitable seed bed for reclamation efforts. Excess fill may also be used to create level areas in other locations where needed. After transmission line construction, all work areas identified as temporary disturbance will be reclaimed in accordance with BLM requirements.

3.2.2. Foundation Installation

The excavation and installation of the foundation will require access to the site by a power auger or drill, a crane, material trucks, and concrete trucks using the access roads. Holes for the foundations will typically be excavated using a power auger mounted to a heavy vehicle. In some areas, a drilling rig may be necessary to excavate the foundation holes. If the location is rocky and unsuitable for either an auger or drill rig, blasting may be needed to break up the rock prior to excavation with an auger or drill rig. Excavated spoils will be segregated from topsoil and may be used for backfill or other fill where suitable.

After completion, the foundation hole will be prepared for a cast-in-place concrete footing except for structures that will be directly embedded into the ground. Reinforced steel and anchor bolts will be inserted into the foundation hole and then encased in concrete. Excess concrete or concrete washout will be removed from the work area or temporarily placed on spoil stockpiles. Foundation holes left open or unguarded will be covered to protect the public and wildlife. If practical, temporary safety fencing may be used.

Foundation designs and installation processes will depend on the geotechnical analysis and line design parameters of each particular structure site.

3.2.3. Structure Assembly and Erection

The structure components will be bundled into the components required for each structure and shipped by truck to each site. There, the structures will be assembled on the ground and lifted into place by crane. Generally, structures can be fully assembled in the ROW.

Guard structures will be erected over highways, railroads, power lines, and other similar features. The guard structures will be temporary H-frame designs directly embedded into the ground. It is anticipated that guard structures will be located within the 150-foot ROW.

3.2.4. Grounding

At the base of each structure, copper ground rods will be buried near the structure foundation and connected to the structure with copper cables. Counterpoise, a bare copper-clad or galvanized-steel cable extending from the structure outward to approximately 200 feet within the ROW, will be buried a foot or more deep if resistance to ground warrants its use.

3.2.5. Conductor Stringing

Reels of conductor and shield wire will be delivered to the ROW and loaded onto vehicle-mounted pulling machines. Heavy vehicles will be used to pull the shield wire and conductor bundles into place with powered pulling equipment at one end and powered braking or tensioning equipment at the other end. A pilot wire will be threaded though pulleys suspended from the structure insulators. The pilot wire will then be attached to a stronger pulling wire, which will be used to thread the shield wire and conductor bundles into place without contacting the ground. Once the conductor and shield wire is strung through the pulleys, adjustments will be made to achieve the correct sagging of the lines between structures. Once complete, the pulleys will be removed and the conductors "clipped" to the insulators with clamps. At dead-end structures, the conductors will be clipped to the insulators with compression fittings to secure the conductor to the insulator.

On straight sections of line, conductor stringing activity will be contained within the ROW. At turning points with angles greater than 20 degrees, additional temporary space will be required outside of the ROW for pull-pockets.

3.2.6. Cleanup

All construction sites, staging areas, and access roads will be kept in an orderly condition throughout the construction of the transmission line. All refuse and trash will be removed and disposed of appropriately. A Spill Prevention, Containment, and Countermeasures Plan (SPCC) will be prepared to specify preventive procedural actions to minimize the potential impact of any unanticipated spills or releases of fuel, lubricant, or hazardous materials during construction and refueling activities. There will be no open burning on BLM-administered lands. If a need is determined for any open burning, the BLM will be consulted prior to any burning for the purpose of obtaining a permit as required.

3.2.7. Reclamation

After construction, disturbed areas would be restored using a BLM-approved seed mix and according to BLM, SLO, and private landowner standards. Vegetation, soil, and rocks left as a result of construction would be randomly scattered over the project area and would not be left in rows, piles, or berms unless requested by the BLM. In those areas where erosion control structures would be required to stabilize soil, the structures would be installed for the specific soil conditions encountered in the field and in accordance with industry best management practices (BMPs) and design features identified in Section 2.1.2.

Once construction of the facilities and 345kV lines is complete, all areas not needed for the operations and maintenance phase would be reclaimed (reseeded for optimal vegetation regrowth of species compatible with SPS's vegetation management standards). Reclamation would occur as soon as possible after completion of final construction activities.

Areas Reclaimed

Except for those portions of the ROW necessary for maintenance and operation (such as a permanent patrol access road), the entire 150-foot-wide ROW would be reclaimed, as well as areas of temporary disturbance outside the ROW that are no longer needed, such as temporary access roads, pull pockets, and laydown yards. The 60-foot-wide access road used for construction would be fully reclaimed, and over time converted into a permanent patrol access road similar to a two-track. In some locations, the patrol road would be surfaced with a caliche base to encourage a single travel route and continual avoidance of sensitive resources. A level work area at the base of each structure would be reseeded but not recontoured to facilitate future maintenance activities that may require use of an extended-reach vehicle or crane.

Reclamation Procedures

The steps to reclamation include:

1. **ROW preparation:** Vegetation removed during construction, including trees that measure less than 3 inches in diameter at ground level and slash/brush, would be chipped or mulched and spread across the ROW. All tree and shrub species that are not compatible with SPS's vegetation management standards would be cut to ground level, delimbed, and subsequently treated with herbicides to discourage regrowth.
2. **Soil stockpiling:** Following the removal of vegetation, the top 6 inches of topsoil would be stripped from the ROW where necessary. The topsoil would be free of brush and tree limbs, trunks, and root balls. Except for locations where structure holes would be excavated by an auger, the topsoil would be stockpiled separately from subsoil or other excavated material and stored along the ROW corridor. Topsoil would be labeled as such and protected from erosion and inadvertent use as fill. Topsoil would not be mixed with subsoil. When stockpiled, topsoil would be tackified with water to a 2-inch wetting depth to minimize erosion, and overall handling should be kept to a minimum. Gaps would be made in soil stockpiles (where necessary) to avoid ponding or to divert water during storm events. If present, surface rocks would be stockpiled adjacent to the topsoil stockpile(s). Vehicle and equipment traffic would not be allowed to cross topsoil stockpile(s). An SWPPP would be developed to include BMPs intended to minimize stockpile erosion and prevent topsoil loss.
3. **Recontouring:** Within areas that require recontouring, the surface would be recontoured to match pre-disturbance conditions or to blend with the surrounding landform as closely as possible. Excess subsoil from excavated or graded areas (around structure bases) would be evenly spread over disturbed areas and moistened and compacted to a relative average density comparable to undisturbed adjacent material before respreading topsoil. Subsoils would not be spread outside the approved construction areas.
4. **Soil and seedbed preparation:** Where any compaction exists, the surface would be ripped or scarified to a depth of 6 inches as appropriate (e.g., not applicable to rock faces, severe slopes, or cliff areas), and would retain a 12-inch buffer from existing vegetation or plants designated as preserve in place. Depth and area of compaction relief would depend on site-specific conditions. Decompaction or ripping would be conducted to avoid corn rows. Cross ripping is preferable and care should be taken to prevent inverting the soil layers and preserving any vegetation in place. Deep sandy soils do not need to be decompacted and would not be ripped.
5. **Topsoil replacement:** Topsoil would be replaced without mixing with subsoil to prevent mixing fertile, shallow soils with deeper soils that may be less productive because of rock, gravel, sand, calcareous layers, salinity, or other chemical characteristics that would adversely affect growth of desired vegetation. Stockpiled topsoil would be evenly redistributed prior to final seedbed preparation. Topsoil would not be redistributed when the ground or topsoil is frozen or wet.
6. **Seeding:** During seeding of the reclamation area, a disc-type drill with two boxes for various seed sizes would be used. The drill rows would be 8 to 10 inches apart. Where practicable with the seeding equipment being used, planting depths for smalls seeds would be 0.25 inch, for intermediate seeds would be 0.50 inch, and for large seeds would be 1 to 2 inches. Where these seed depths are impracticable with the seeding equipment being used, planting depths would be no more than 0.25 inch. A drag, packer, or roller would follow the seeder to ensure uniform seed coverage and adequate compaction. Seeding would run perpendicular to slopes in order to minimize runoff and erosion. In areas where the slope is too steep for a seed drill, hand- or broadcast-seeding methods would be used, and the seeds would be covered to the depths described above. BLM-prescribed seed mixes would be used.
7. **BMP installation:** Prior to construction, an SWPPP would be developed to include BMPs according to BLM prescriptions, including erosion control devices such as silt traps, silt fencing, straw rolls, etc.

8. **Weed control**: SPS has enrolled in the county weed programs for both Lea and Eddy Counties. These programs enable the BLM to identify target areas for treatment to prevent the spread of noxious weeds and invasive species. These programs would include annual surveys of the ROW and subsequent treatment of weed infested areas for up to 5 years after construction is complete.
9. **Monitoring:** Monitoring would be conducted after construction activities are complete until reclamation has achieved the success criteria established by the BLM.

3.2.8. Project Safety

SPS places a high value on employee, contractor, and public safety. A Project Safety Plan to address employee, contractor, and public safety risks will be prepared prior to construction.

All construction activities will be carried out in safe and healthful working conditions as outlined by the Occupational Health and Safety Administration's guidelines.

3.3. Substation Construction

The proposed Kiowa Substation will be constructed as part of the Project and the other four substations would be expanded (see Section 2.1.2). The following discussion is an overview of the types of construction activities that will take place at the substation.

3.3.1. Engineering Surveys

Field investigations and surveys will be completed to accurately locate the substation components. All limits of the proposed substation boundary, ground disturbance, structure locations, and temporary work areas will be flagged and staked, where necessary.

SPS will file with the BLM a separate Application for Transportation and Utility Systems and Facilities on Federal Land (Standard Form 299) to conduct geotechnical studies for the Project. This will allow SPS to collect subsurface information necessary to complete the substation's final design. These data will be used to confirm the substation location as well as include subsurface data necessary to prepare the commercial request for proposal packages. The BLM will review and process the application in accordance with all applicable federal laws and regulations.

Geotechnical soil borings will be conducted to collect information regarding subsurface soil stability necessary for the final design of the substation foundation. The geotechnical investigation would consist of drilling boreholes approximately 1 foot in diameter and as deep as 50 feet. Drilling would be conducted using a variety of field equipment, including conventional rubber-tired and/or tracked drilling rigs. The boreholes will be backfilled with auger cuttings and on-site soils.

3.3.2. Clearing and Grading

Clearing and grading of the entire substation area will be necessary to prepare the substation site for construction. The site will be graded to create a level surface with a moderate slope for drainage. Grading will also be engineered to allow for adequate clearances to energized conductors entering the substation. All topsoil will be stockpiled and segregated from other excavated soil, which will be used as backfill, berms, or as fill for other areas nearby.

The surface of the substation will be covered with an insulating layer to protect personnel from high currents and voltages in the event of a fault condition. Approximately 4 to 6 inches of crushed rock will be applied to the finished surface of the substation, which will then be treated with a soil sterilizer to prevent vegetation growth. If necessary, drainage structures such as ditches, culverts, and sumps will be installed.

3.3.3. Grounding

A grounding system typically consisting of buried copper conductor arranged in a grid system and driven ground rods typically 8 to 10 feet long will be installed. The ground rods and any equipment and structures would be connected to the grounding conductor. The amount of conductor and length and number of ground rods required is calculated based on fault current and soil characteristics.

3.3.4. Fencing

Security fencing will be installed around the entire perimeter of the substation. The fence will be 8 feet high and made of chain link topped with barb. Locked gates will be installed at appropriate locations for authorized vehicle and personnel access.

3.3.5. Foundation Installation

Structures entering the substation will be either directly embedded into the ground or placed on a drilled pier foundation as described in Section 3.2.3. For the substation, equipment foundations for circuit breakers and transformers will be slab-on-grade. These foundations will be installed by excavating the foundation area, placing forms, placing reinforced-steel and anchor bolts (if required), and placing concrete into the forms. After the foundations have been poured, the forms will be removed, and the surface of the foundation dressed. Reinforced-steel and anchor bolts will be transported to each site by truck, either as a prefabricated cage or loose pieces, and will be fabricated into cages on the site. Concrete will be hauled to the site in concrete trucks.

3.3.6. Oil Containment

Some substation equipment such as transformers, reactors, and circuit breakers are filled with an insulating mineral oil. Containment structures will be used to prevent oil from escaping into the ground. The exact type of containment structure will be determined as part of the final substation design.

3.3.7. Structure and Equipment Installation

Steel structures to support some substation equipment will be affixed on the concrete foundation anchor bolts with a track-mounted crane. Equipment such as transformers, reactors, and circuit breakers can be mounted directly to the foundations without supporting structures. The equipment will then be assembled, tested, and connected electrically to the control building through multi-conductor control cables installed in conduits and/or a precast concrete cable trench system.

3.3.8. Cleanup

The substation site will be kept in an orderly condition throughout construction. All refuse and trash will be removed and disposed of appropriately. An SPCC will be prepared to specify preventive procedural actions to minimize the potential impact of any unanticipated spills or releases of fuel, lubricant, or hazardous materials during construction and refueling activities. If landscaping is required by the permitting agency, drought-tolerant and primarily native plant materials will be used.

3.4. Operation and Maintenance

The transmission lines constructed as part of the project would become critical infrastructure of the SPS and southeast New Mexico transmission systems. Therefore, limiting the duration of unplanned outages and planning for the use of live-line maintenance techniques to minimize the requirement for any outages are important parts of the design, construction, and operation/maintenance requirements of the project.

3.4.1. Inspections

Regular inspection of transmission lines, vegetation conditions, substations, and support systems is critical for safe, efficient, and economical operation of the project. Responsibly conducted routine maintenance activities are anticipated to have minimal impact and are usually authorized under the transmission line easements and BLM ROW grants.

Aerial inspections would be conducted annually to identify conditions that pose an immediate hazard to the public or employees, or that risk immediate loss of supply or damage to the electrical system. Any conditions identified are to be resolved prior to peak demand in the summer and winter months.

Ground inspections would be done on approved access roads, including the patrol road, or along the transmission line ROWs to each structure as appropriate. The inspector would access each of the structures and would check all equipment and other components that could require repairs. Inspectors performing such inspections would use conventional four-wheel-drive trucks and/or four-wheel-drive all-terrain vehicles, or they may walk the line. The ground inspection would be conducted at a time deemed appropriate based on the weather conditions, results of aerial inspections, and other conditions subject to change on an annual basis. SPS may perform minor repairs during its ground inspections, such as installing new numbers, installing/repairing ground wire, or performing other minor tasks that do not involve long duration, specialized equipment, or large work crews.

Each year aerial inspections would be conducted annually, and ground patrols would be conducted biannually.

3.4.2. Line Maintenance

Routine maintenance activities are ordinary maintenance tasks that have historically been performed and are regularly carried out on a routine basis, including the replacement of individual structures, components, cables, lines, insulators, and other facilities that, due to obsolescence, age, or wear, are in need of replacement or repair. It is expected these replacements would be required infrequently (every 5 to 10 years) or as determined by inspection. The work performed is typically repair or replacement of individual components by relatively small crews using a minimal amount of equipment, and usually is conducted within a period from a few hours up to a few days. The type of equipment used to perform routine maintenance activities varies depending on the extent of the work to be performed. Typical equipment used for these kinds of activities includes four-wheel-drive pickups, man-haul, material flatbeds, line trucks, cranes, tractor trailers, and high-reach bulldozers/caterpillars.

Typically, maintenance vehicles and equipment would access the ROW and individual structures using the patrol roads and would remain within the level work area that surrounds the structure, and no new ground disturbance would be required. If maintenance activities and/or equipment are required beyond the permanent maintenance work area, maintenance crews would coordinate with the BLM Authorized Officer(s) to obtain any required temporary use approval/permits to complete the work, and maintenance activities would be conducted within the previously disturbed temporary work areas from project construction. The ROW and access used for regular maintenance activities would be stabilized and rehabilitated following the procedures laid out in the POD. SPS would coordinate with the BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete. Any berms or boulders that were in place to limit access would also be reclaimed after completion of the maintenance work.

Major maintenance activities may need to occur on an infrequent basis. These activities would require planning and budgeting in advance and agency coordination. They may involve larger work crews than routine maintenance activities and a variety of equipment, including heavy equipment, and usually require several days or longer to complete. SPS would notify the BLM before initiating major maintenance activities to identify what, if any, special notification or additional clearance

approvals would be required. All major maintenance activities would adhere to all standards and guidelines contained in the POD and the terms and conditions of the ROW grant.

In an emergency, SPS must respond as quickly as possible to restore power. As soon as an incident is detected, SPS's control room dispatchers would notify the responsible operations staff in the area(s) affected, and crews and equipment would be organized and dispatched to respond to the incident. In these cases, SPS would immediately deploy the necessary crews to restore power and notify the appropriate land management agency depending on the location of the incident. Examples of emergency maintenance include transmission structure or conductor failure due to natural hazard, fire, or human-caused damages to a line. Such work is required to eliminate a safety hazard, prevent imminent damage to the power line, or restore service if there is an outage. The equipment necessary to carry out emergency repairs is similar to that necessary to conduct routine maintenance, in most cases. Emergency response to outages may require additional equipment to complete the repairs. For example, where the site of the outage is remote, helicopters may be used to respond quickly to emergencies. SPS would adhere to the same constraints identified for routine and major maintenance activities to minimize impacts to resources, when possible.

3.4.3. Vegetation Management

SPS would need to manage vegetation to meet its requirements for conductor clearances at maximum loading (sag) and maximum blowout (sway) locations, and to minimize potential ignition sources and to provide access within the ROW. Within or adjacent to the ROW, mature vegetation would be removed under or near the conductors to provide adequate electrical clearance, as required by the NERC. Typically, woody vegetation would be removed and treated with herbicides. Slash would be left in place or disposed of in accordance with the requirements of the land management agency or landowner. If necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be removed selectively in a manner that protects biological resources as much as possible. Shrubs and other obstructions would be removed regularly within the ROW.

Vegetation treatments to control the growth of woody species along the ROW would be conducted every 4 years. These treatments consist of spraying target species such as creosote and mesquite with herbicides to prevent vegetation encroachment on SPS's conductor clearance requirements, its facilities, patrol road, and/or inhibits future operation and maintenance activities. All herbicide applications would be performed in accordance with federal, state, and local regulations, and in compliance with land management agency and/or landowner requirements. SPS has established guidelines that their contractors are required to follow to protect birds and bird nests during these spraying events.

Vegetation may also be removed using mechanical equipment such as chainsaws, weed trimmers, rakes, shovels, brush hooks, and mowers. Clearing efforts in heavy growth areas would involve equipment such as a masticator, a mounted brush mower, or similar. The duration of activities and the size of crew and equipment required would be dependent on the amount and size of the vegetation to be pruned or removed.

Herbicides will be used to control noxious weeds or incompatible tree and brush species (e.g., mesquite and creosote) that regenerate from the root systems after removal to meet vegetation management objectives. These activities would be performed in coordination with the land management agency or landowner in the case of private property.

3.4.4. Access Road Maintenance

Repairs to the ROW or access roads would be scheduled as a result of line inspections or would occur in response to a significantly degraded condition or an emergency situation. Where access is required for maintenance of the line, SPS would maintain the approved access roads for which it is solely responsible in a safe, useable condition. Access road repairs include grading or repair of existing maintenance access roads and work areas, and spot repair of sites subject to erosion, slumping of side slopes, inadequate drainage, flooding, or scouring. In some cases, cut and/or fill

of foreign material may be required to repair the access roads into suitable condition for safe travel of maintenance repair vehicles, such as high-reach boom trucks. When an approved access road to a structure location needs improvement, heavy equipment appropriate for the required work would be used after notifying the BLM Authorized Officer. Required equipment may include a grader, backhoe, four-wheel-drive pickup truck, and a steel-tracked front-loader or bulldozer. The ROW and access used for regular maintenance activities would be stabilized and rehabilitated following the procedures laid out in the POD. SPS would coordinate with the BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete. Any berms or boulders that were in place to limit access would also be reclaimed after completion of the maintenance work.

3.5. Right-of-Way Renewal or Decommissioning

3.5.1. Right-of-Way Renewal

The proposed project would have a minimum projected operation life of 50 years or longer. A ROW grant issued for 50 years with the option of renewal would be necessary for the operation, maintenance, and decommissioning of the transmission line facilities located on BLM-managed lands. At the end of the ROW grant term (50 years), SPS would have the option to renew the ROW grant past 50 years to continue operation of the line. The terms and conditions in the original ROW grant could be modified for the renewed ROW grant.

3.5.2. Project Decommissioning

At the end of the transmission line's useful life, estimated to be 50 years from construction, the necessary authorizations would be obtained from the BLM Authorized Officer to decommission the project. Future decommissioning of the transmission line would include removal of conductors and structures. All materials would be removed from the ROW. Equipment at the substations and unsalvageable materials would be disposed of at authorized sites. Regrading and revegetation of disturbed areas would be completed according to BLM, SLO, or landowner standards. The abandoned ROW would revert to the control of the landowners.

3.6. Environmental Protection Measures

The following applicant-committed environmental protection measures have been incorporated into the project design of the Proposed Action to lessen or avoid impacts to resources. These design features are organized below under the resource they are designed to protect, although some of these measures are designed to protect or mitigate impacts to multiple resources. The design features incorporate applicable BMPs, which are industry- or agency-recommended construction methods that are routinely implemented to minimize impacts to resources.

3.6.1. General

- All construction vehicle movement outside the ROW would be restricted to predesignated access, contractor-acquired access, or public roads.
- The spatial limits of construction activities would be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents indicating survey or construction limits would be applied to rocks, vegetation, structures, fences, etc.
- Prior to construction, an environmental awareness training would be conducted to instruct all personnel on the protection of cultural, ecological, and other natural resources, including 1) federal and state laws regarding antiquities and plants and wildlife, including collection and removal; 2) the importance of these resources; and 3) the purpose and necessity of protecting them.
- Sensitive resource areas within the ROW or designated temporary work areas would be mapped and avoided by use of an appropriate monitor. Flagging and fencing materials would not be used because they may inadvertently draw attention to the resources being protected.

- The contractor would limit movement of crews, vehicles, and equipment on the ROW and approved access roads to minimize damage to property and disruption of normal land use activity.
- Construction vehicles and equipment would be maintained in proper operating condition, and would be equipped with manufacturers' standard noise control devices or better (e.g., mufflers, engine enclosures, etc.).
- SPS would construct aboveground flowline crossings by pushing adjacent soil up and over the lines (4.5 inches or less in diameter). The BLM would be notified if any larger aboveground lines are encountered.
- SPS would use overburden to place the necessary fill over belowground pipelines, and would leave and reclaim the overburden in place.

3.6.2. Air Quality

- All requirements of those entities having jurisdiction over air quality matters would be adhered to. Any necessary permits for construction activities would be obtained. Open burning of construction trash would not be allowed unless permitted by appropriate authorities.
- Construction-related dust disturbance would be controlled by the periodic application of water to all disturbed areas along the ROW and access roads, when necessary.

3.6.3. Soils and Vegetation

- SPS would reclaim disturbed areas per the POD using a BLM-specified seed mixture, and would work with the BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete.
- All soils compacted by movement of construction vehicles and equipment would be 1) loosened and leveled through harrowing or disking to approximate preconstruction contours, and 2) reseeded with certified weed-free native grasses and mulched (except in cultivated fields). The specific seed mix(es) and rate(s) of application would be determined by the BLM.
- Excavated material not used in the backfilling of poles would be spread around each pole or hauled off-site or transported as fill to other locations where needed.
- In newly disturbed temporary work areas, soil would be salvaged, distributed, and contoured evenly over the surface of the disturbed area after construction completion. The soil surface would be left rough to help reduce potential wind erosion.
- Upon completion of work, all work areas except any permanent access roads/trails would be regraded as required so that all surfaces would drain naturally and blend with the natural terrain, and be left in a condition to facilitate natural revegetation, provide for proper drainage, and prevent erosion.
- SPS has enrolled in the Eddy and Lea County noxious weed control programs. Through these programs, which entail treatment of weeds in target areas identified by BLM, noxious weeds would be sprayed annually through the life of the project. The noxious weed program would apply to the length of the project regardless of landownership.
- Gravel and fill to be used must come from a weed-free source(s). Gravel pits and fill sources would be inspected to identify weed-free sources.
- Compatible vegetation would be preserved and protected from damage by construction operations to the maximum extent practicable.
- In construction areas where recontouring is not required, vegetation would be left in place wherever possible, and original contour would be maintained to avoid excessive root damage and allow for resprouting in accordance with the reclamation plan. Vegetation not consistent with line safety and operation would be removed according to SPS vegetation management practices.
- Vegetation treatments to control the growth of woody species along the ROW would be conducted every 4 years. These treatments consist of spraying target species such as

creosote and mesquite with herbicides to prevent vegetation encroachment on SPS's conductor clearance requirements, its facilities, patrol road, and/or inhibits future operation and maintenance activities. SPS has established guidelines that their contractors are required to follow to protect birds and bird nests during these spraying events.

- If it is necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be removed selectively in a manner that protects biological resources as much as possible.

3.6.3.1. Dunes and Hummocks

- Blading would occur at and between structures that have dunes or hummocks that would otherwise impede construction activities, in an area of up to 150 × 150 feet at or adjacent to those structures.
- Blading up to 60 feet in total width along the line between structures would follow a "least disturbance" path and avoid straight lines where practical.
- SPS would reclaim disturbed linear or crescent-shaped dunes (generally over 6 feet tall with at least one slipface, and being significantly longer than they are tall) to landforms of similar size and orientation in the same general areas to the extent that access can be maintained for periodic SPS patrols and regular/emergency maintenance.
- SPS would reclaim areas with disturbed hummocks (knolls or mounds, generally less than 6 feet tall) to a generally undulating surface to the extent that access can be maintained for periodic SPS patrols and regular/emergency maintenance.
- For aboveground flowlines less than or equal to 4.5 inches, SPS would construct aboveground flowline crossings by pushing adjacent soil up and over the lines, and would leave and reclaim the cover in place. For aboveground flowlines larger than 4.5 inches, SPS will notify the BLM Environmental Protection Specialist and wait for instructions.
- SPS would use overburden to place the necessary fill over belowground pipelines, and would be allowed to leave and reclaim the overburden in place.
- SPS would reclaim disturbed areas per the POD using a BLM-specified lesser prairie-chicken (*Tympanuchus pallidicinctus*; LPC) seed mixture, and would work with the BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete.

3.6.4. Water Resources

- Any chemical treatments of the ROW would comply with the applicable laws and procedures of the land management agencies, the Environmental Protection Agency (EPA), and the New Mexico Environment Department (NMED).
- No wetlands and/or waters of the U.S. would be altered, crossed, filled, or cut unless previously permitted to do so by the U.S. Army Corps of Engineers or the NMED.
- Construction activities would be performed by methods that prevent entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into flowing streams or dry water courses, lakes, and underground water sources. Such pollutants and wastes include but are not restricted to refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.
- Dewatering work for structure foundations or earthwork operations adjacent to or encroaching upon streams or water courses would not be performed without prior approval by the BLM or the applicable land management agency.
- Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other water course perimeters where they can be washed away by high water or storm runoff or could in any way encroach upon the actual water source itself.
- Wastewaters from construction operations would not enter streams, water courses, or other surface waters without use of such turbidity control methods as settling ponds, gravel

filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such wastewaters discharged into surface waters would be essentially free of settleable material. Settleable material is defined as that material that settles from the water by gravity during a 1-hour quiescent period.

- Refueling and storing of potentially hazardous materials would not occur within a 100-foot radius of a waterbody, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water supply wells. Spill preventive and containment measures or practices would be incorporated as needed and included in the POD.
- Where access routes would need to cross aboveground flow lines (4.5 inches or less in diameter), the contractor would push adjacent soil up and over the lines. The BLM would be notified if any larger aboveground lines are encountered. The contractor would use overburden to place the necessary fill over belowground pipelines, and would leave and reclaim the overburden in place.
- Temporary culverts would be installed to cross small drainages. These would be removed after construction.
- Ground disturbance would be avoided within 200 meters of playas.

3.6.5. Wildlife and Special Status Species

- Special status species or other species of particular concern would be considered in accordance with management policies set forth by appropriate land management agencies. This may entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities (e.g., substations, access roads, laydown yards, etc.) as agreed upon by the agencies. In cases where such species are identified, adverse impacts on the species and its habitat would be avoided to the maximum extent practical and in consultation with the agencies.
- SPS designs and constructs all new transmission facilities to raptor-safe design standards as described in its *Avian Protection Plan* (EDM International 2008), which includes avian electrocution and collision minimization practices described in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Edison Electric Institute and Avian Power Line Interaction Committee 2006).
- To the extent possible, construction activities during the migratory bird-nesting season (March–August) in suitable habitat would be avoided. Seasonal dates may vary depending on the species, current environmental conditions, and preconstruction survey results.
- If construction and maintenance activities, including mechanical or herbicide treatments of woody vegetation, cannot be avoided in the primary nesting season for migratory birds (March–August), migratory bird and nest surveys would be performed up to 2 weeks prior to commencing with those activities, and an avoidance buffer around each active nest would be implemented until the young have fledged, the size and timing of which may vary by species, but would be no less than 100 feet. This stipulation would not apply in the event of an emergency as per Xcel's Migratory Bird Special Purpose Utility Permit (USFWS 2015a).
- A 200-meter avoidance buffer would be implemented around any active burrowing owl (*Athene cunicularia*) nest burrow or active raptor nest until the young have fledged.
- The BLM may require a biological monitor near occupied nests and burrowing owl burrows identified during preconstruction surveys.
- Active raptor nests would be monitored for activity until the hatchlings fledge.
- Removal of any unoccupied raptor nests may require replacement by nest platforms.
- Foundation holes left open or unguarded would be covered to protect the public, wildlife, and livestock. If practical, temporary safety fencing may be used.
- During reclamation of disturbed areas, the seed mixture quantity for 1 mile along the Eddy to Kiowa route in Section 12 would be doubled for Sprague's pipit (*Anthus spragueii*) as identified in the POD.

- Bird flight diverters would be installed on the conductors for the crossing of the Pecos River.
- To offset potential impacts to riparian areas at the Pecos River crossing, as well as impacts to freshwater avian species that potentially nest in the vicinity, SPS will install up to 10 poles, some of which will have multiple artificial nesting platforms at locations within Section 30 of Township 22 South, Range 28 East (see the map and diagram in Appendix C). BLM will be responsible to secure all necessary access and land rights as well as associated permitting requirements, if any. Short-term and long-term maintenance of the nesting platforms will be the responsibility of BLM.

3.6.5.1. Dunes Sagebrush Lizard

- SPS would follow excavation BMPs during construction within the dunes sagebrush lizard (*Sceloporus arenicolus*; DSL) habitat boundary, as required by the BLM Resource Management Plan Amendment (2008a) and the BLM Open Trench Wildlife Removal Workshop materials (BLM 2013). This stipulation would apply to the length of the project in DSL habitat regardless of landownership.
- Any holes left open for 8 hours or less are not required to have escape ramps; however, before the hole is backfilled, a BLM-approved monitor would inspect the hole and remove all trapped wildlife and release it at least 300 feet away.
- For holes left open for 8 hours or more, escape ramps would be placed in the hole. The hole would be monitored each day by a BLM-approved monitor during the following three time periods: 1) 5:00 a.m. to 10:00 a.m., 2) 11:00 a.m. to 2:00 p.m., and 3) 3:00 p.m. to sunset. All trapped wildlife would be released at least 300 feet away.
- One BLM-approved monitor would be required for every up to 3-mile segment containing open holes in DSL habitat. A daily report (consolidate if there is more than one monitor) on the wildlife found and removed from the hole would be provided to the BLM (email is acceptable) the following morning.
- SPS and its contractors would instruct personnel working on the construction of the project to avoid intentionally harassing all animals, including the DSL and Texas horned lizard (*Phrynosoma cornutum*).

3.6.5.2. Lesser Prairie-Chicken

- Timing and noise restrictions would be applied to construction and maintenance activities within the LPC Isolated Population Area to prevent disruption of mating and nesting activities. All construction and maintenance activities would be prohibited from 3:00 a.m. to 9:00 a.m. from March 1 to June 15.
- Exceptions to these timing requirements would be considered in emergency situations such as mechanical failures. Exceptions would not be granted after March 15, or during the March 1 to June 15 period if the BLM determines, on the basis of biological data or other relevant facts or circumstances, that the granting of an exception would disrupt LPC booming activity during the breeding season. Requests for exceptions on a non-emergency basis may also be considered for the period of March 1 to June 15, but these exceptions would not be granted if the BLM determines that there is LPC habitat, LPC sightings within 1.5 miles of the proposed location, historic leks, and/or active leks within 1.5 miles of the proposed location, or any combination of the above mentioned criteria.

3.6.5.3. Sheer's Beehive Cactus

- Workers would be instructed not to park off the roads to protect any threatened or endangered species, including Scheer's beehive cactus (*Coryphantha robustispina* ssp. *scheeri*).

3.6.6. Cultural Resources

- In consultation with appropriate land management agencies and the State Historic Preservation Officer (SHPO), specific mitigation measures for cultural resources would be

developed and implemented to mitigate any identified adverse impacts. These may include project modifications to avoid adverse impacts, monitoring of construction activities, and data recovery studies.

- An archaeological construction monitor would be present during ground-disturbing activities in site-specific areas identified in the POD.
- An Unanticipated Discovery Plan would be prepared to specify the protocols to follow in the event of an unanticipated discovery of any previously unknown historic/prehistoric sites or artifacts encountered during construction. The Unanticipated Discovery Plan would identify communication protocols and immediate measures to be used to protect the site until further evaluation can be completed. The Unanticipated Discovery Plan would be prepared in coordination with the SHPO and jurisdictional land management agency.

3.6.7. Cave and Karst Resources

- SPS would notify and coordinate with the BLM Cave/Karst Resource Specialist before performing any blading in the high karst potential areas on both BLM and SLO lands on the Eddy to Kiowa line length.
- In the event that any underground voids, subsurface drainage channels, or cave passages are encountered during construction activities, construction would be halted in the immediate vicinity of the discovery, and the BLM would be notified immediately.
- Pole locations would be adjusted as necessary to avoid cave and karst features.
- The BLM would be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no further construction would be allowed until clearance has been issued by the Authorized Officer. Special restoration stipulations or realignment may be required.
- Roads would be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- Soil bores would be collected at all proposed foundation structures along the centerline prior to construction. Proposed foundation locations will be based on any line angle larger than 2 degrees. The bores would be up to 50 feet deep to ensure the contractor does not drill into voids or karst features to install structures. If a void is encountered, depth of boring may exceed 50 feet to determine the depth of the void.

3.6.8. Paleontological Resources

- In the event that any fossils are encountered during construction activities, construction would be halted in the immediate vicinity, and the BLM would be notified immediately.

3.6.9. Visual Resources

- Self-weathering steel would be used to reduce visual impacts except in substations.
- Reclamation would be implemented to disguise disturbance.
- Vegetation, soil, and rocks left as a result of construction would be randomly scattered over the project area and would not be left in rows, piles, or berms unless requested by the BLM.

3.6.10. Livestock Grazing and Farmland

- All fences and gates would be maintained during the construction period. Fences, gates, and walls would be replaced, repaired, or reclaimed to their original condition as required by the landowner or the land management agency in the event that they are removed, damaged, or destroyed by construction activities. Fences would be braced before cutting. Gates or enclosures would be installed only with the permission of the landowner or the land management agency, and would be removed/reclaimed following construction should it be necessary. Cattle guards would be installed on a case-by-case basis in negotiation with the landowner or land management agency.

- Prior to construction, the conditions of the water lines crossed by the proposed project would be evaluated, and appropriate protections would be put in place to maintain their function during the construction of the proposed project. If necessary, waterlines would be protected either by burying or pushing adjacent soil over the lines within the construction area to shield the lines from damage.
- The contractor would eliminate at the earliest opportunity all construction ruts that are hazardous to agricultural operations and/or movement of vehicles and equipment. Such ruts would be leveled, filled, and graded or otherwise eliminated in an approved manner. Damage to ditches, tile drains, culverts, terraces, local roads, and other similar land use features would be corrected as necessary by the contractor. Land and facilities would be restored as nearly as practicable to their original condition.
- On agricultural land, the ROW would be aligned, insofar as is practical, to reduce the impact to farm operations and agricultural production.
- In cultivated agricultural areas, soil compacted by construction activities would be decompacted except where a permanent two-track access route would be kept for future operation and maintenance activities.

3.6.11. Travel Management

- Where appropriate, signage would be installed on newly installed gates to deter users from circumventing the gates and traversing areas that were formerly inaccessible or harder to access.

3.6.12. Public Health and Safety

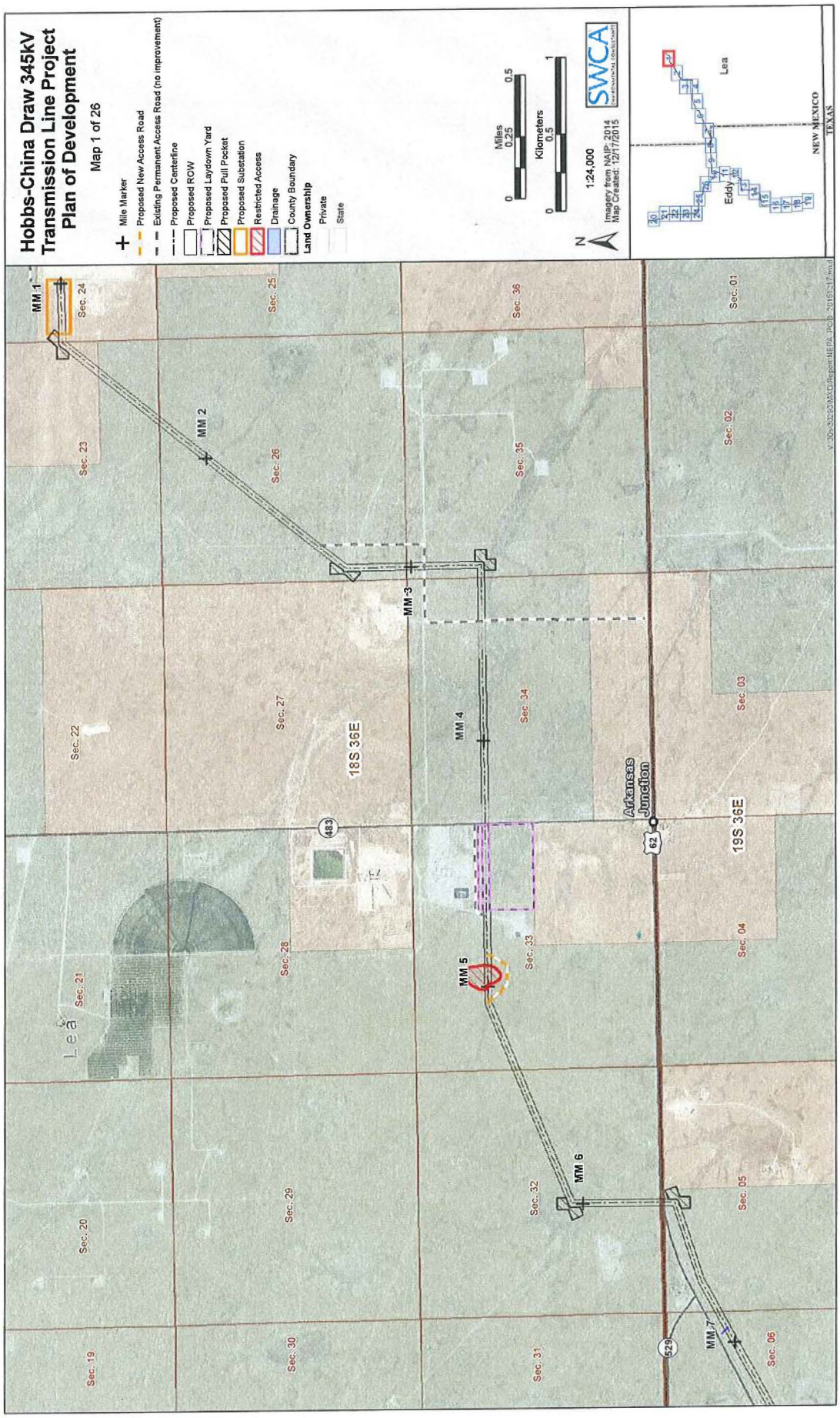
- The contractor would make all necessary provisions for conformance with federal, state, and local traffic safety standards, and would conduct construction operations to minimize obstruction and inconvenience to public traffic.
- During construction of the transmission lines, the ROW would be free of non-biodegradable debris. Slash would be left in place or disposed of in accordance with requirements of the land management agency or landowner.
- Towers and/or conductors and/or shield wires would be marked with high-visibility devices (e.g., marker balls or other marking devices) where required by governmental agencies with jurisdiction (e.g., the Federal Aviation Administration). Tower heights would be less than 200 feet to avoid the need for aircraft obstruction lighting.
- A Fire Protection Plan would be developed.
    - Construction vehicles would be equipped with approved spark arresters.
    - The contractor would maintain in all construction vehicles a current list of local emergency response providers and methods of contact/communication.
- An SPCC would be prepared to specify preventative procedural actions to minimize the potential impact of any unanticipated spills or releases of fuel, lubricant, or hazardous materials during construction.
    - Hazardous material would not be drained onto the ground or into streams or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

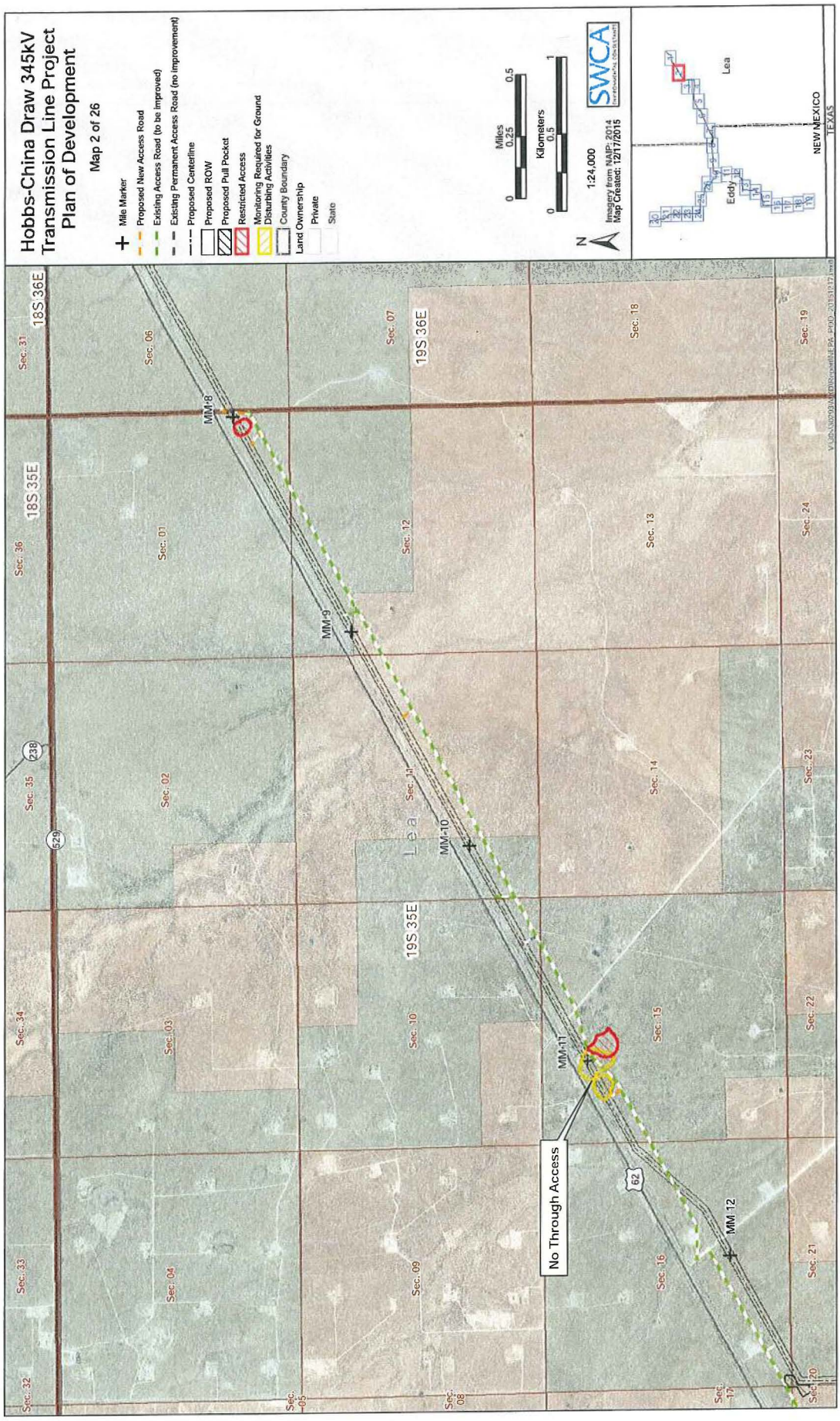
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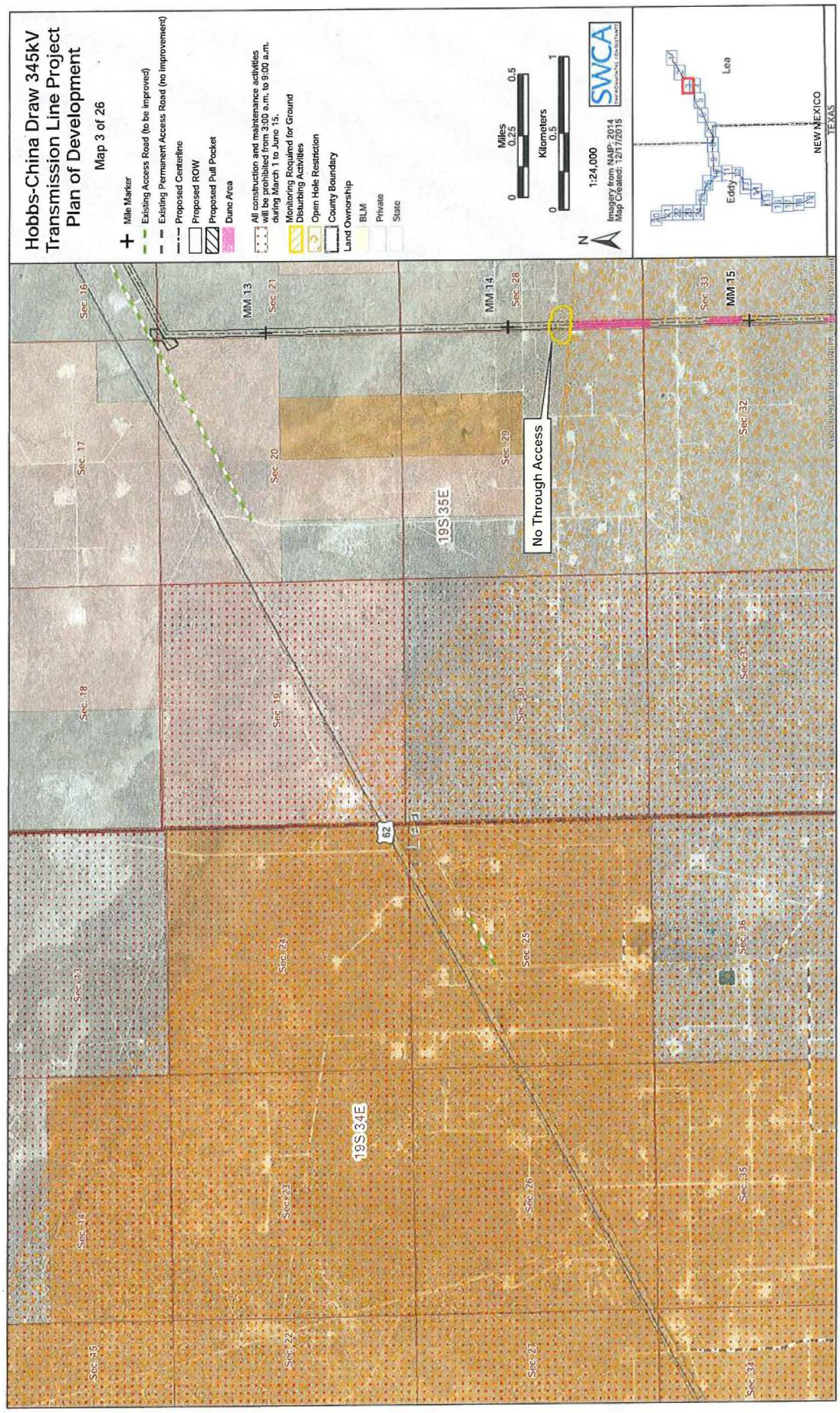
Appendix A

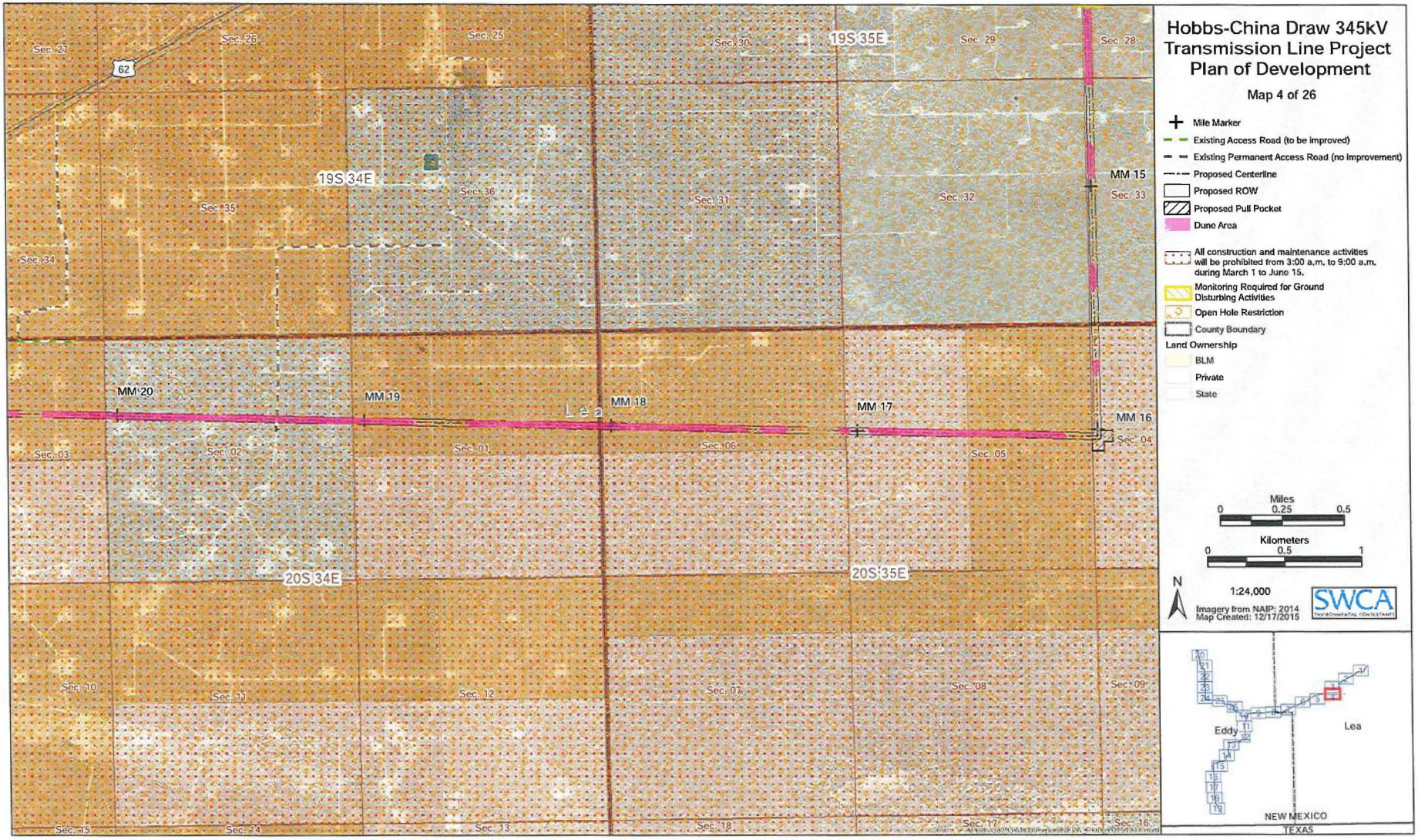
Mapbook

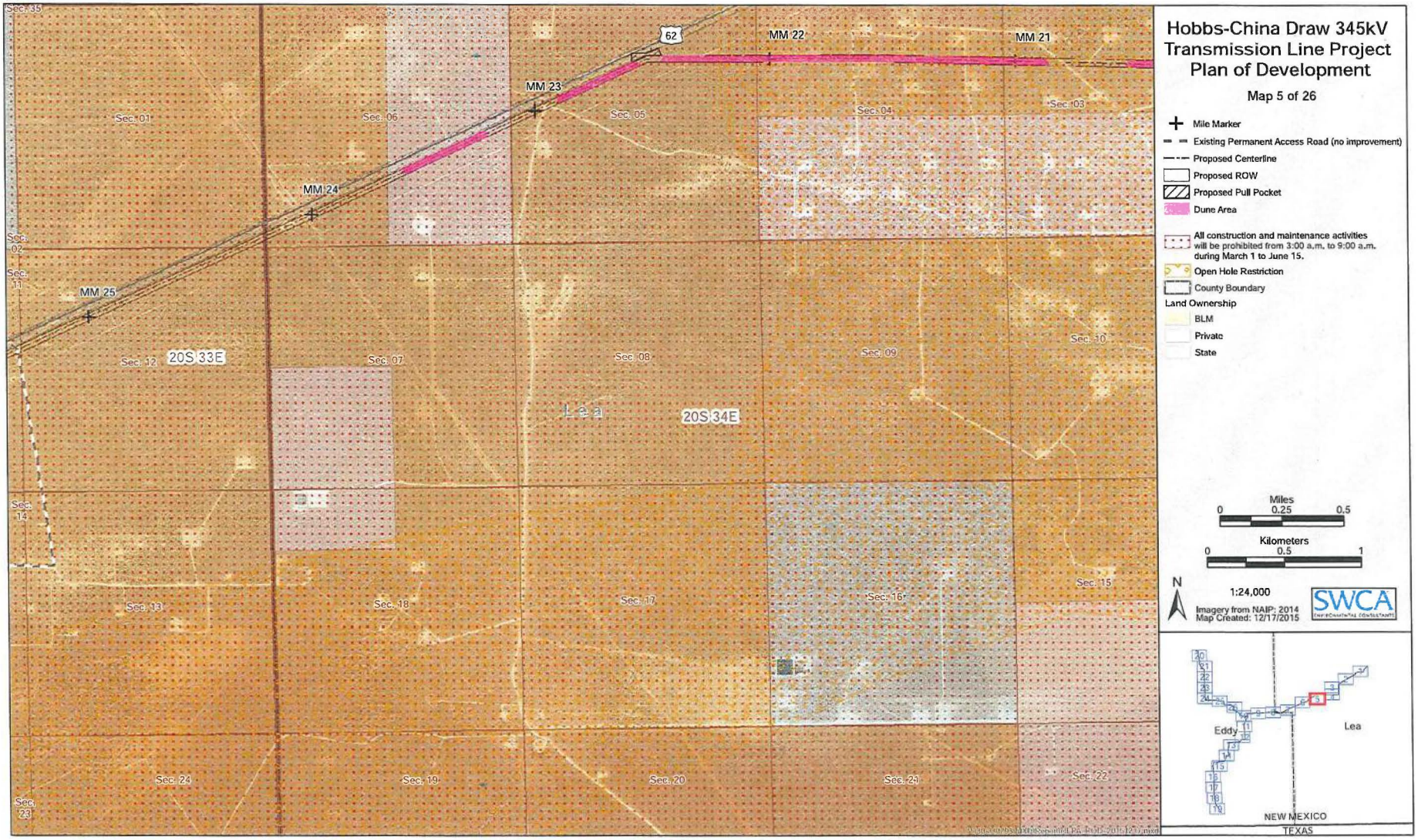
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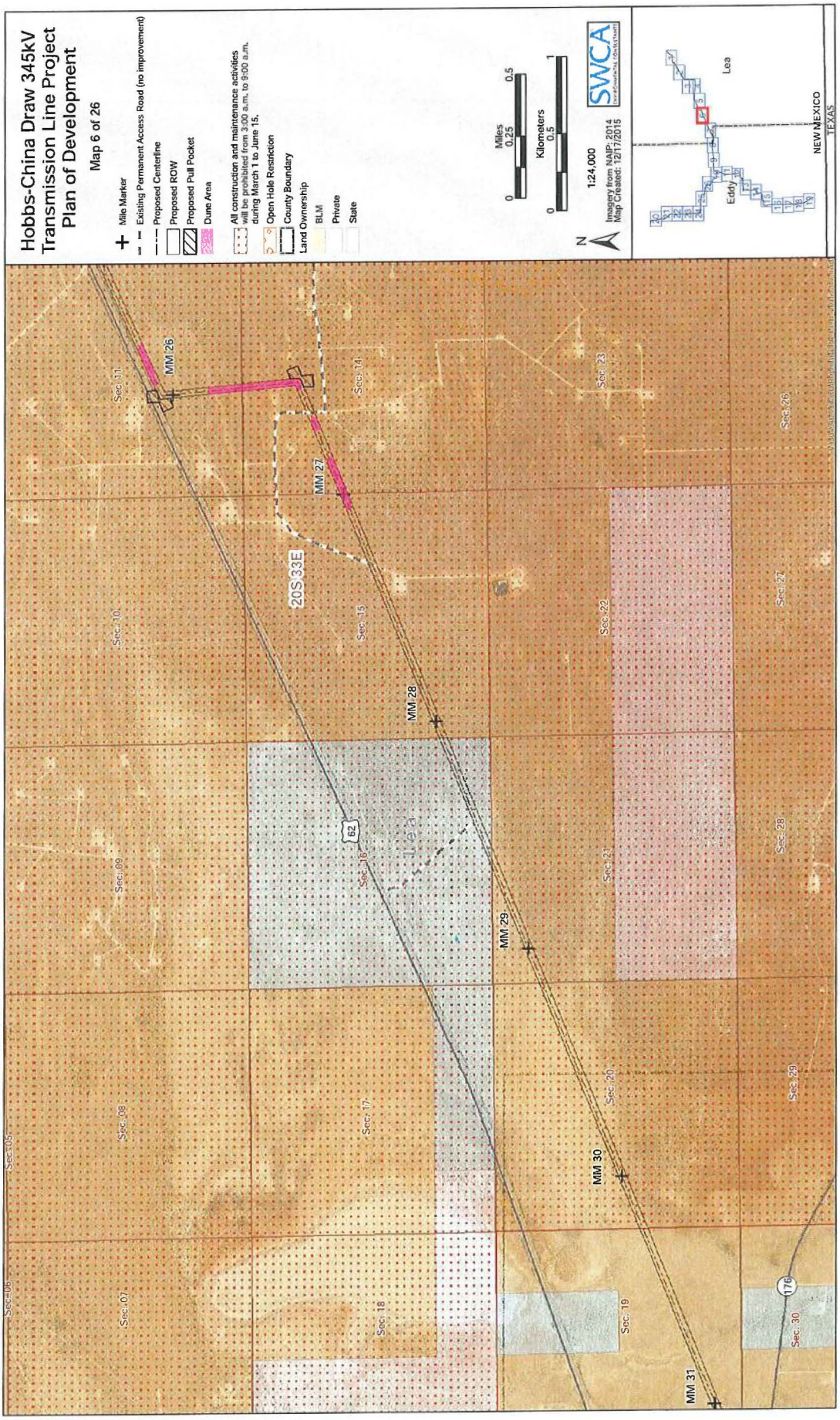

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 1 of 26
Mile Marker
Proposed New Access Road
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Laydown Yard
Proposed Pull Pocket
Proposed Substation
Restricted Access
Drainage
County Boundary
Land Ownership
Private
State
Miles
0 0.25 0.5
Kilometers
0 0.5 1
1:24,000
Imagery from: NAIP 2014
Map Created: 12/17/2015
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Environmental Consultants
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TEXAS
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MM 2
MM 3
MM 4
MM 5
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Sec. 25
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Sec. 35
Sec. 22
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Sec. 34
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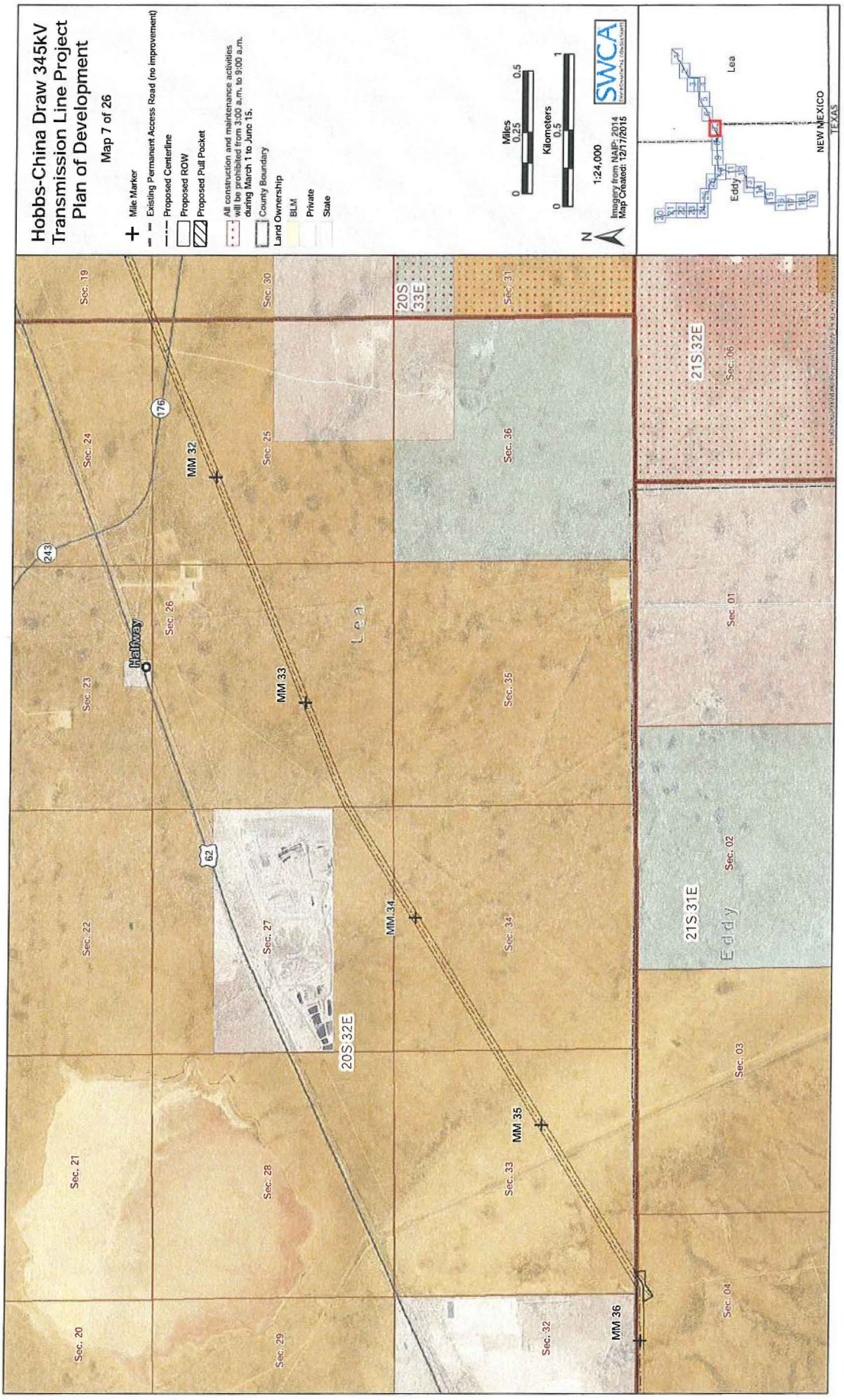

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 2 of 26
Mile Marker
Proposed New Access Road
Existing Access Road (to be Improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Restricted Access
Monitoring Required for Ground Disturbing Activities
County Boundary
Land Ownership
Private
State
Miles
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Imagery from NAIP, 2014
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18S 36E
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Sec. 23
Sec. 22
Sec. 33
Sec. 04
Sec. 09
Sec. 16
Sec. 21
Sec. 32
Sec. 05
Sec. 08
Sec. 17
Sec. 20
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62


Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 3 of 26
Mile Marker
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Dunc Area
All construction and maintenance activities will be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15.
Monitoring Required for Ground Disturbing Activities
Open Hole Restriction
County Boundary
Land Ownership
BLM
Private
State
Miles
0 0.25 0.5
Kilometers
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Imagery from NAIP: 2014
Map Created: 12/17/2015
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NEW MEXICO
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MM 13
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No Through Access
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Sec. 13
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Sec. 36


Hobbs-China Draw 345kV Transmission Line Project Plan of Development
Map 4 of 26
Mile Marker
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Dune Area
All construction and maintenance activities will be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15.
Monitoring Required for Ground Disturbing Activities
Open Hole Restriction
County Boundary
Land Ownership
BLM
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State
Miles
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Kilometers
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Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
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NEW MEXICO
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Sec. 17
Sec. 18

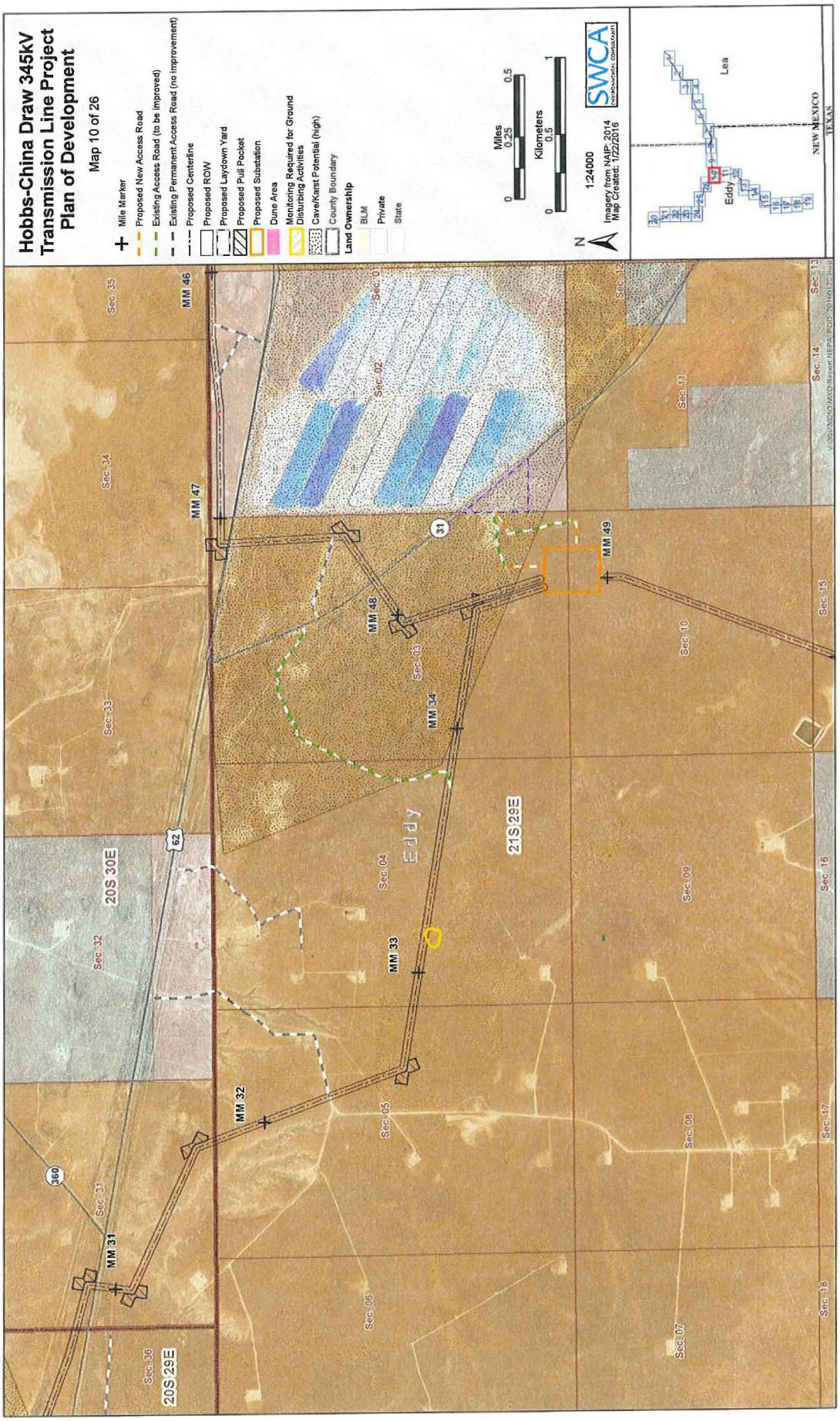

Hobbs-China Draw 345kV Transmission Line Project Plan of Development
Map 5 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Dune Area
All construction and maintenance activities will be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15.
Open Hole Restriction
County Boundary
Land Ownership
BLM
Private
State
Miles
0 0.25 0.5
Kilometers
0 0.5 1
N
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
MM 21
MM 22
MM 23
MM 24
MM 25
62
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 12
Sec. 13
Sec. 14
Sec. 15
Sec. 16
Sec. 17
Sec. 18
Sec. 19
Sec. 20
Sec. 21
Sec. 22
Sec. 23
Sec. 24
20S 33E
20S 34E
Lea
Eddy
Lea
NEW MEXICO
TEXAS


Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 6 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Dune Area
All construction and maintenance activities will be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15.
Open Hole Restriction
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
N
Lea
Eddy
NEW MEXICO
TEXAS
MM 26
MM 27
MM 28
MM 29
MM 30
MM 31
20S 33E
Sec. 11
Sec. 10
Sec. 09
Sec. 08
Sec. 07
Sec. 05
Sec. 06
Sec. 14
Sec. 15
Sec. 16
Sec. 17
Sec. 18
Sec. 19
Sec. 20
Sec. 21
Sec. 22
Sec. 23
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30
62
176


Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 7 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
All construction and maintenance activities will be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15.
County Boundary
Land Ownership
BLM
Private
State
Miles
Kilometers
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Halfway
MM 32
MM 33
MM 34
MM 35
MM 36
Lea
Eddy
20S 32E
20S 33E
21S 31E
21S 32E
Sec. 19
Sec. 20
Sec. 21
Sec. 22
Sec. 23
Sec. 24
Sec. 25
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 06
NEW MEXICO
TEXAS

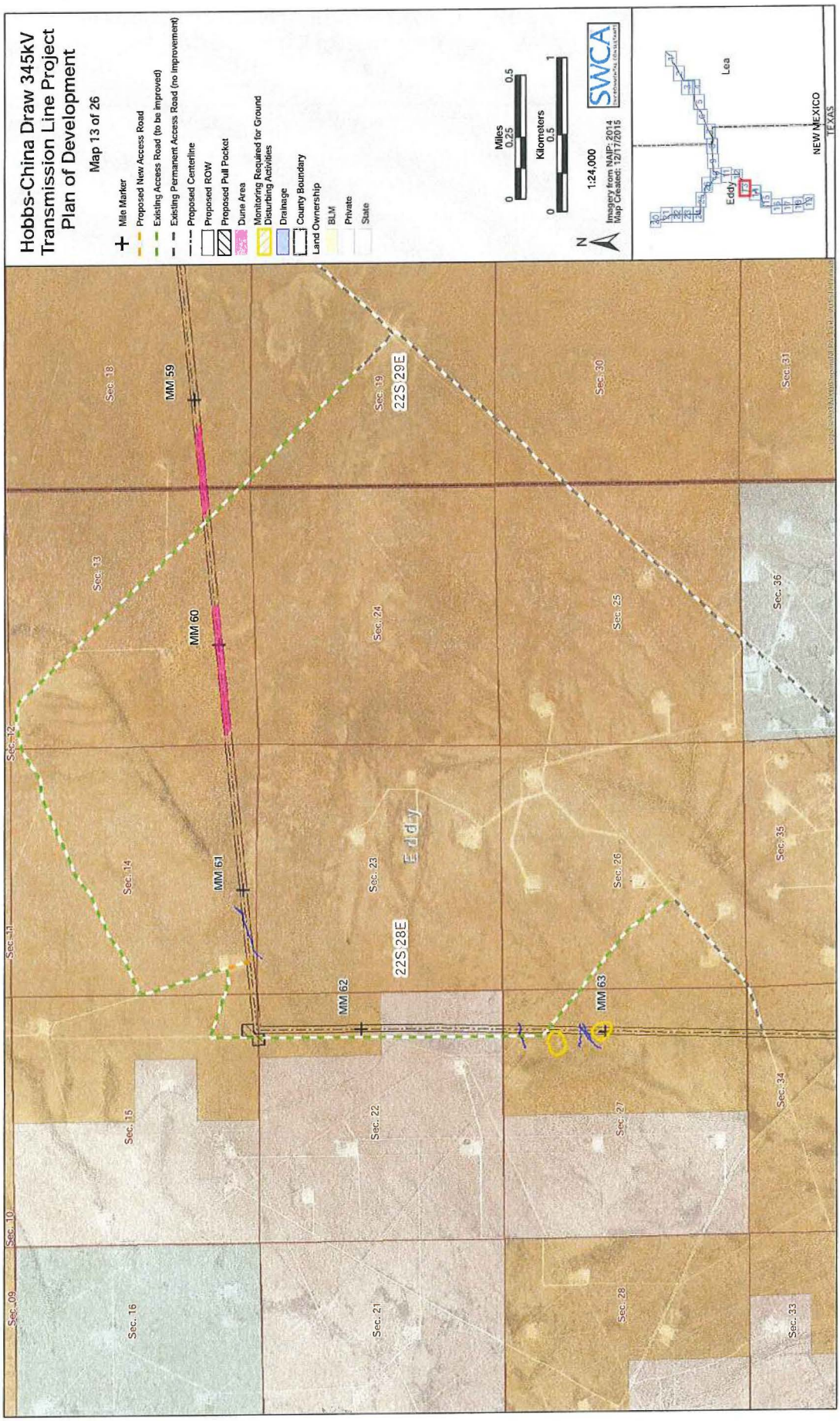

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 8 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Dune Area
Monitoring Required for Ground Disturbing Activities
Cave/Karst Potential (high)
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
1:24,000
Imagery from NAIP: 2014
Map created: 12/17/2015
SWCA
N
Lea
Eddy
NEW MEXICO
TEXAS
Lea
Eddy
20S.32E
20S.31E
21S.31E
21S.30E
Sec. 25
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06
MM 37
MM 38
MM 39
MM 40
MM 41
62
243

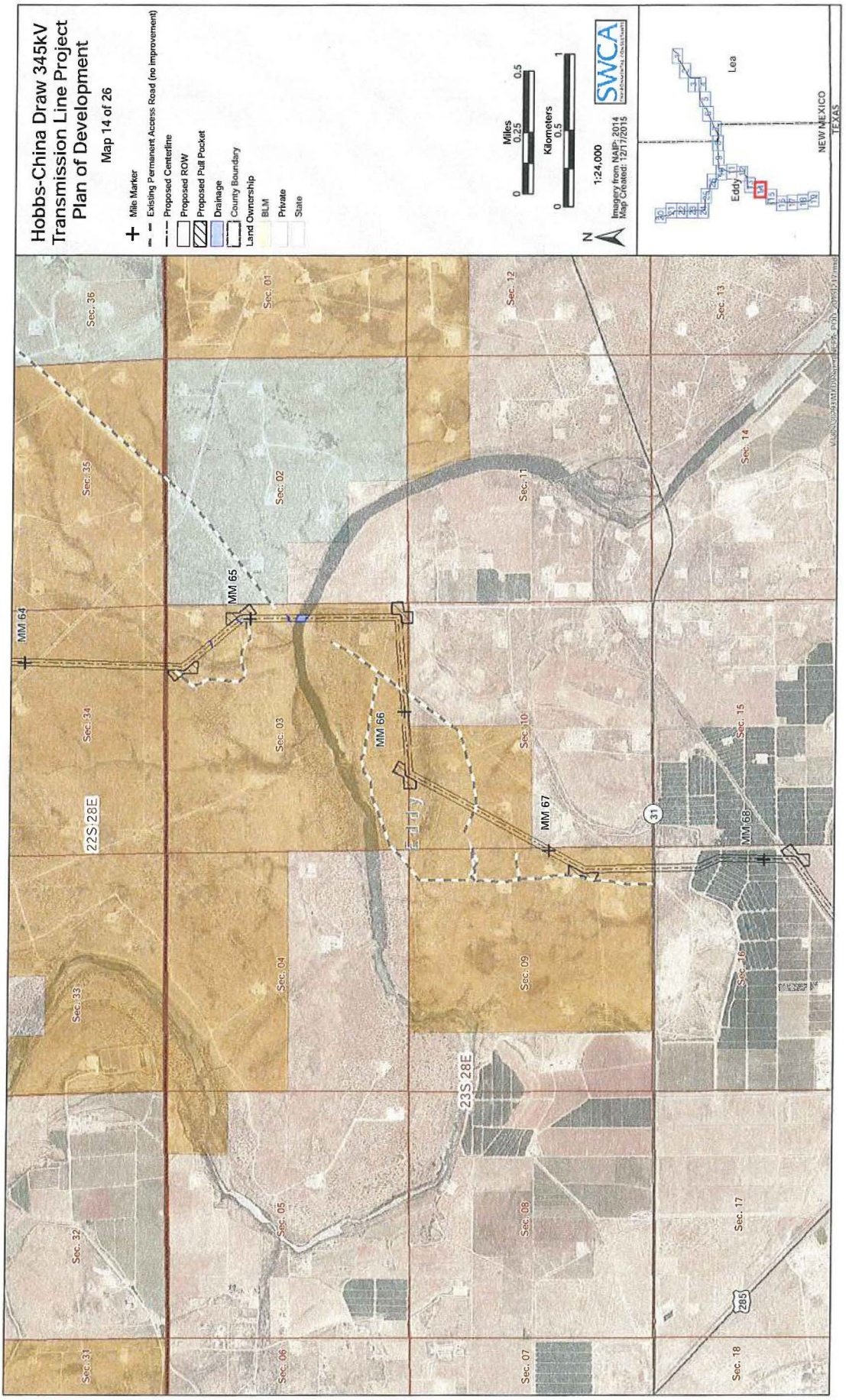

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 9 of 26
Mile Marker
Proposed New Access Road
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Dune Area
Monitoring Required for Ground Disturbing Activities
Cave/Karst Potential (high)
Drainage
County Boundary
Land Ownership
BLM
Private
State
Miles
0 0.25 0.5
Kilometers
0 0.5 1
N
1:24,000
Imagery from NAIP: 2014
Map Created: 12/7/2015
SWCA
Lea
Eddy
NEW MEXICO
TEXAS
MM 42
MM 43
MM 44
MM 45
62
20S 31E
20S 30E
21S 30E
21S 29E
Sec. 25
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 12

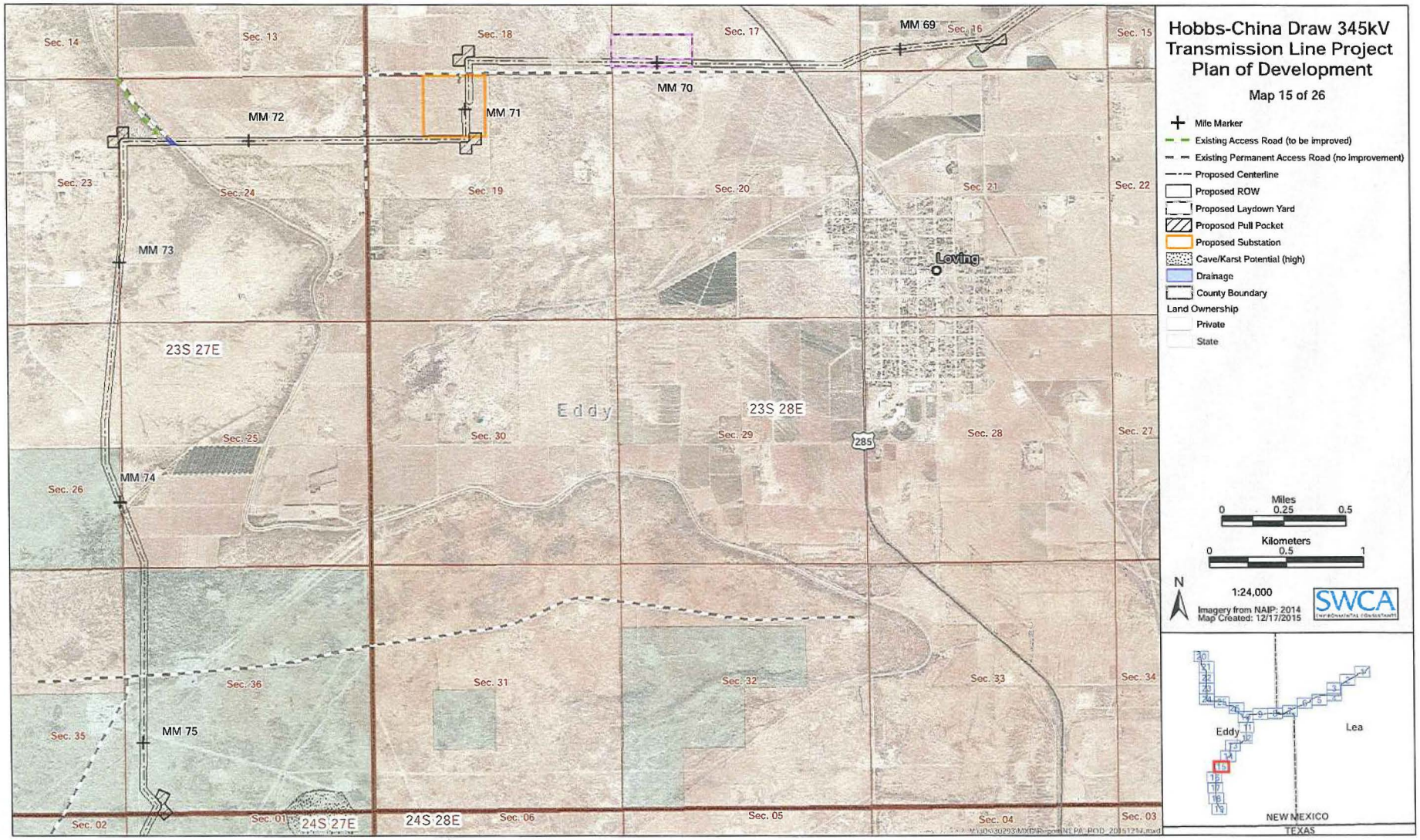

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 10 of 26
Mile Marker
Proposed New Access Road
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Laydown Yard
Proposed Pull Pocket
Proposed Substation
Dune Area
Monitoring Required for Ground Disturbing Activities
Cave/Karst Potential (high)
County Boundary
Land Ownership
BLM
Private
State
Miles
0 0.25 0.5
Kilometers
0 0.5 1
1:24000
Imagery from NAIP 2014
Map Created: 1/22/2016
SWCA
Environmental Consultants
N
Lea
Eddy
NEW MEXICO
TEXAS
MM 31
MM 32
MM 33
MM 34
MM 46
MM 47
MM 48
MM 49
20S 29E
20S 30E
21S 29E
Eddy
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 12
Sec. 13
Sec. 14
Sec. 15
Sec. 16
Sec. 17
Sec. 18
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
360
62
31

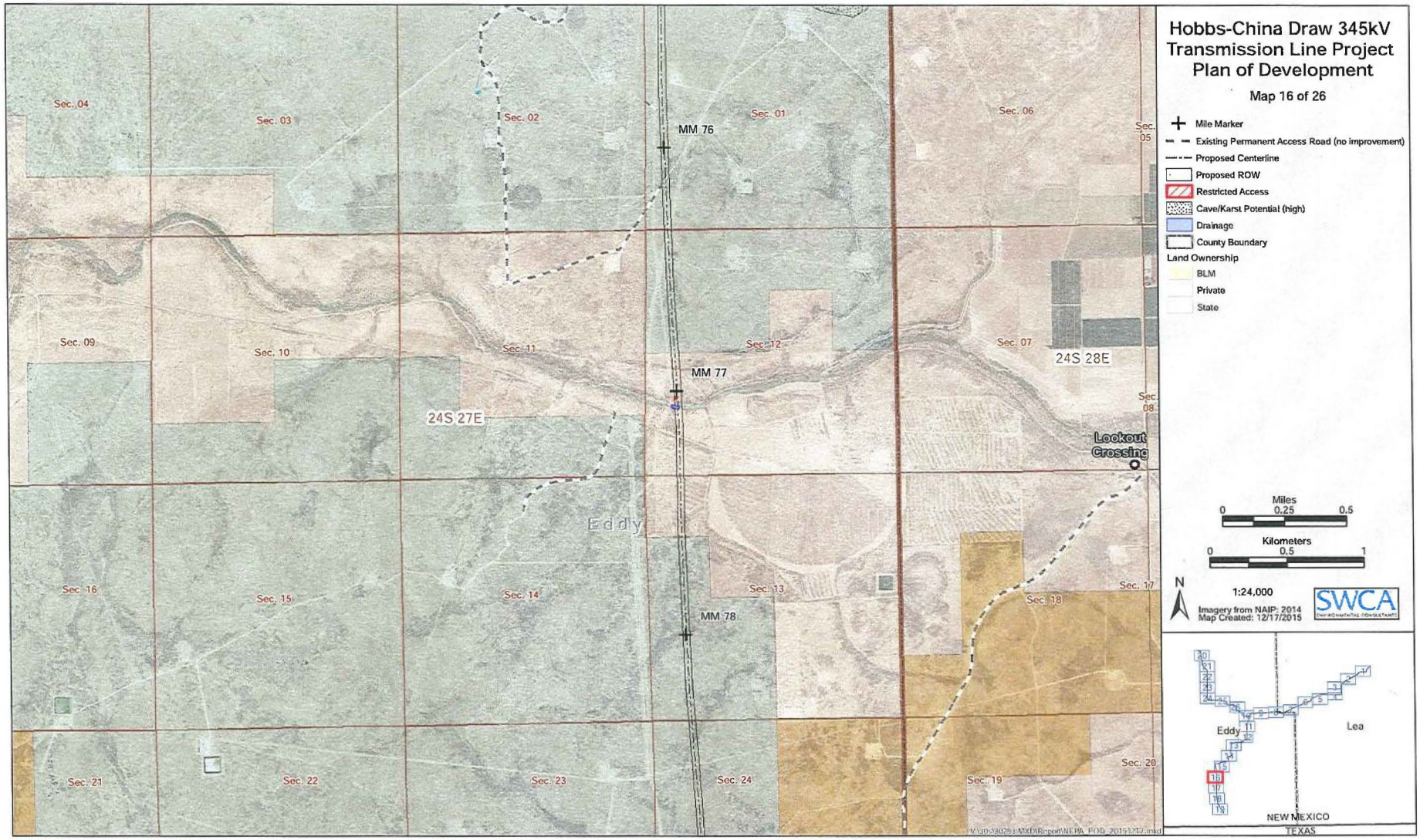

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 11 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Cave/Karst Potential (high)
Drainage
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
1:24,000
Imagery from NAIP 2014
Map Created: 12/17/2015
SWCA
N
Eddy
Lea
NEW MEXICO
TEXAS
MM 50
MM 51
MM 52
MM 53
21S,29E
Sec. 13
Sec. 14
Sec. 15
Sec. 16
Sec. 17
Sec. 18
Sec. 19
Sec. 20
Sec. 21
Sec. 22
Sec. 23
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Sec. 27
Sec. 28
Sec. 29
Sec. 30
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Eddy


Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 12 of 26
Mile Marker
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Dunc Area
Monitoring Required for Ground Disturbing Activities
Cave/Karst Potential (high)
Drainage
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Lea
Eddy
NEW MEXICO
TEXAS
21S 28E
22S 28E
21S 29E
22S 29E
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 06
Sec. 05
Sec. 04
Sec. 03
Sec. 02
Sec. 01
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 12
Sec. 18
Sec. 17
Sec. 16
Sec. 15
Sec. 14
Sec. 13
MM 54
MM 55
MM 56
MM 57
MM 58
MM 59
31

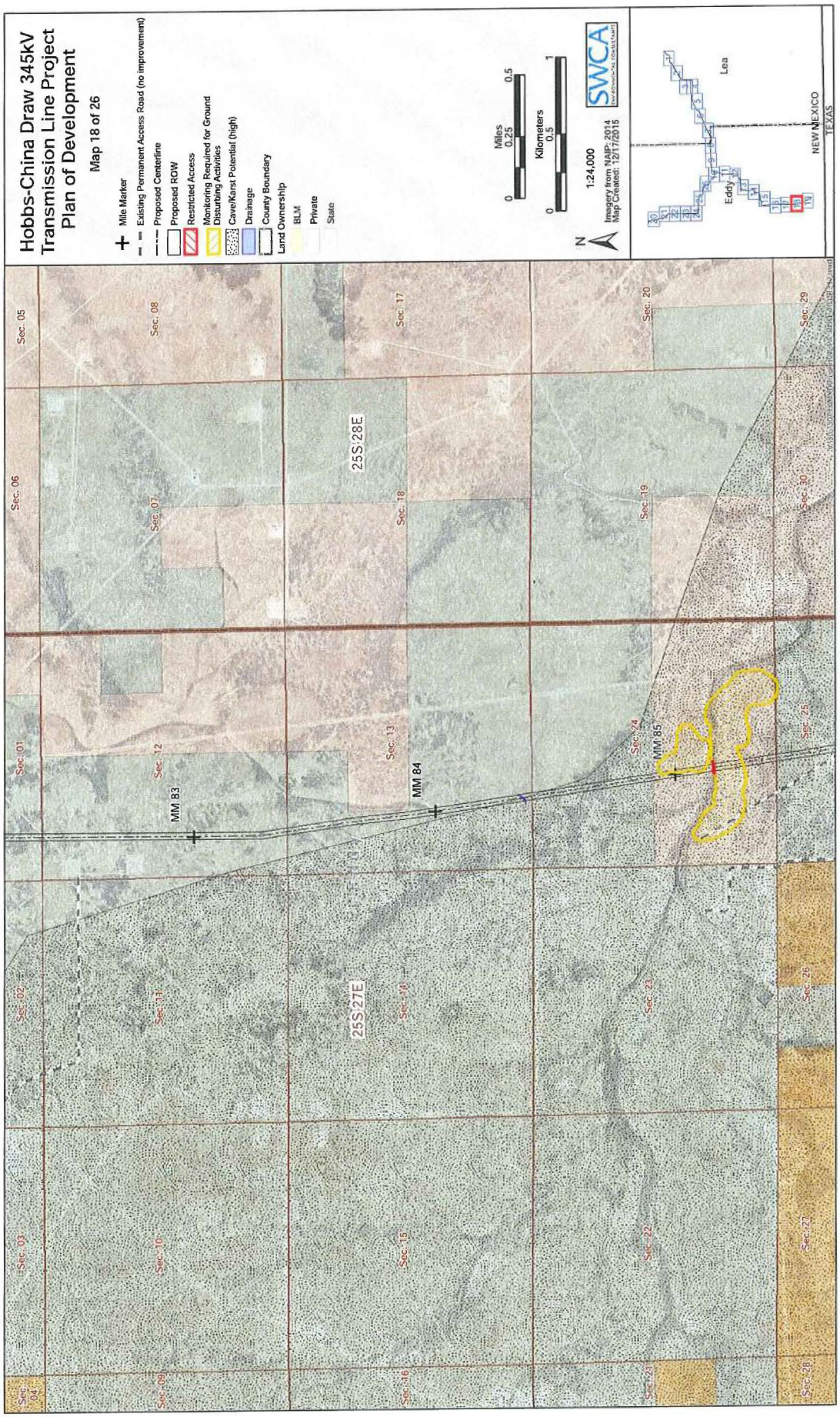

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 13 of 26
Mile Marker
Proposed New Access Road
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Dune Area
Monitoring Required for Ground Disturbing Activities
Drainage
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
1:24,000
Imagery from NAIP 2014
Map Created: 12/17/2015
N
SWCA
Lea
Eddy
NEW MEXICO
TEXAS
MM 59
MM 60
MM 61
MM 62
MM 63
22S 29E
22S 28E
Eddy
Sec. 09
Sec. 10
Sec. 11
Sec. 12
Sec. 13
Sec. 14
Sec. 15
Sec. 16
Sec. 18
Sec. 19
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Sec. 27
Sec. 28
Sec. 30
Sec. 31
Sec. 33
Sec. 34
Sec. 35
Sec. 36


Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 14 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Drainage
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Lea
Eddy
NEW MEXICO
TEXAS
MM 64
MM 65
MM 66
MM 67
MM 68
22S 28E
23S 28E
Eddy
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 12
Sec. 13
Sec. 14
Sec. 15
Sec. 16
Sec. 17
Sec. 18
285
31


Hobbs-China Draw 345kV Transmission Line Project Plan of Development
Map 15 of 26
Mile Marker
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Laydown Yard
Proposed Pull Pocket
Proposed Substation
Cave/Karst Potential (high)
Drainage
County Boundary
Land Ownership
Private
State
Miles
0 0.25 0.5
Kilometers
0 0.5 1
N
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Eddy
Lea
NEW MEXICO
TEXAS
MM 69
MM 70
MM 71
MM 72
MM 73
MM 74
MM 75
Loving
Eddy
285
23S 27E
23S 28E
24S 27E
24S 28E
Sec. 13
Sec. 14
Sec. 15
Sec. 16
Sec. 17
Sec. 18
Sec. 19
Sec. 20
Sec. 21
Sec. 22
Sec. 23
Sec. 24
Sec. 25
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06


Hobbs-China Draw 345kV Transmission Line Project Plan of Development
Map 16 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Restricted Access
Cave/Karst Potential (high)
Drainage
County Boundary
Land Ownership
BLM
Private
State
Sec. 04
Sec. 03
Sec. 02
Sec. 01
Sec. 06
Sec. 05
MM 76
Sec. 09
Sec. 10
Sec. 11
Sec. 12
Sec. 07
24S 28E
MM 77
Sec. 08
24S 27E
Lookout Crossing
Eddy
Sec. 16
Sec. 15
Sec. 14
Sec. 13
Sec. 17
Sec. 18
MM 78
Sec. 21
Sec. 22
Sec. 23
Sec. 24
Sec. 19
Sec. 20
Miles
0
0.25
0.5
Kilometers
0
0.5
1
N
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Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Eddy
Lea
NEW MEXICO
TEXAS

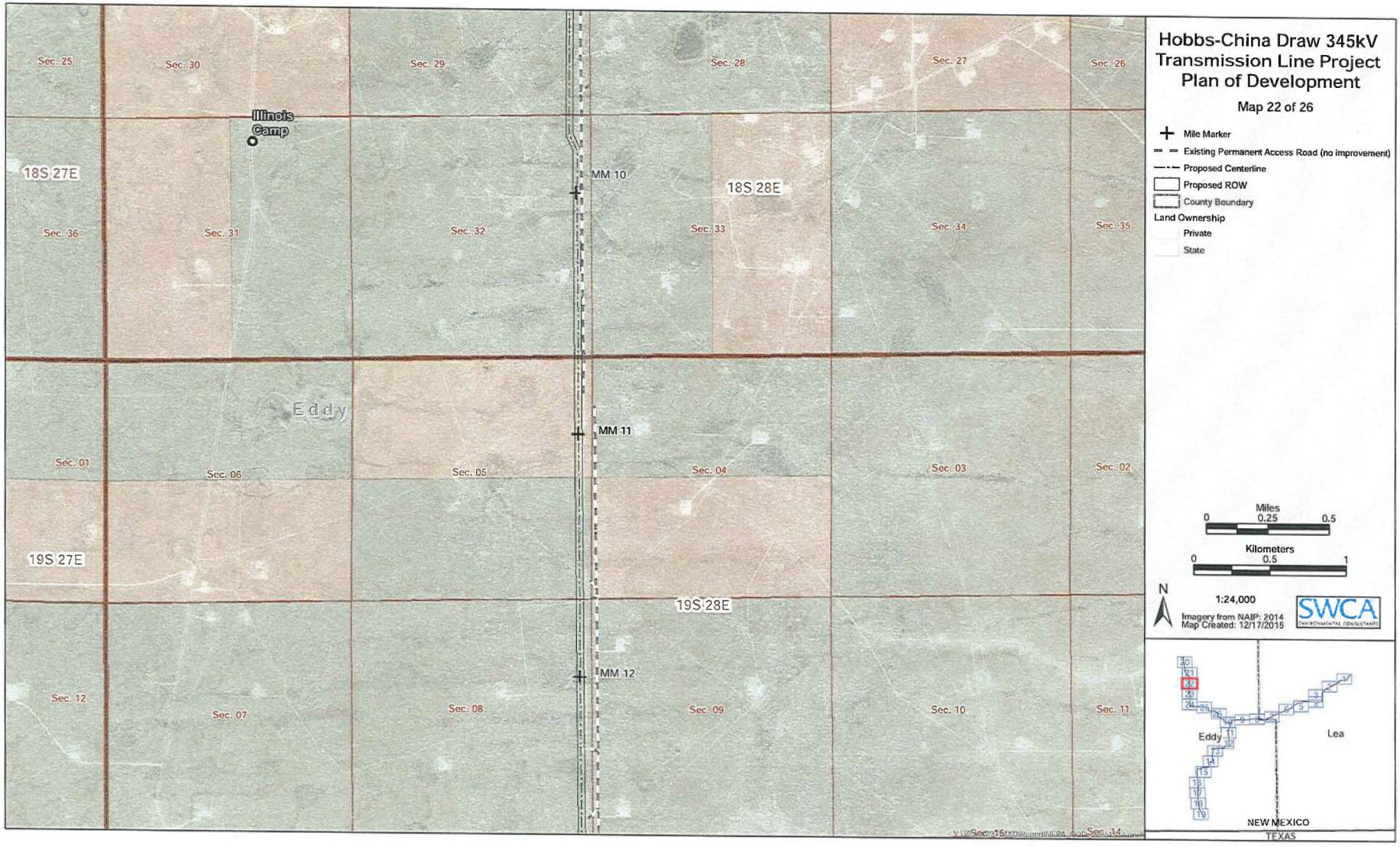

Hobbs-China Draw 345kV Transmission Line Project Plan of Development
Map 17 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Cave/Karst Potential (high)
Drainage
County Boundary
Land Ownership
BLM
Private
State
Sec. 21
Sec. 22
Sec. 23
Sec. 24
Sec. 19
Sec. 20
Sec. 28
Sec. 27
Sec. 26
Sec. 25
Sec. 30
Sec. 29
24S 27E
24S 28E
MM 79
MM 80
MM 81
MM 82
Eddy
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 31
Sec. 32
Sec. 04
Sec. 03
Sec. 02
Sec. 01
Sec. 06
Sec. 05
25S 27E
25S 28E
Miles
0
0.25
0.5
Kilometers
0
0.5
1
N
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Eddy
Lea
NEW MEXICO
TEXAS


Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 18 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Restricted Access
Monitoring Required for Ground Disturbing Activities
Cave/Karst Potential (high)
Drainage
County Boundary
Land Ownership
BLM
Private
State
Miles
0 0.25 0.5
Kilometers
0 0.5 1
1:24,000
Imagery from NAIP 2014
Map Created: 12/17/2015
SWCA
Lea
Eddy
NEW MEXICO
TEXAS
MM 83
MM 84
MM 85
25S/27E
25S/28E
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 12
Sec. 13
Sec. 14
Sec. 15
Sec. 16
Sec. 17
Sec. 18
Sec. 19
Sec. 20
Sec. 21
Sec. 22
Sec. 23
Sec. 24
Sec. 25
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30

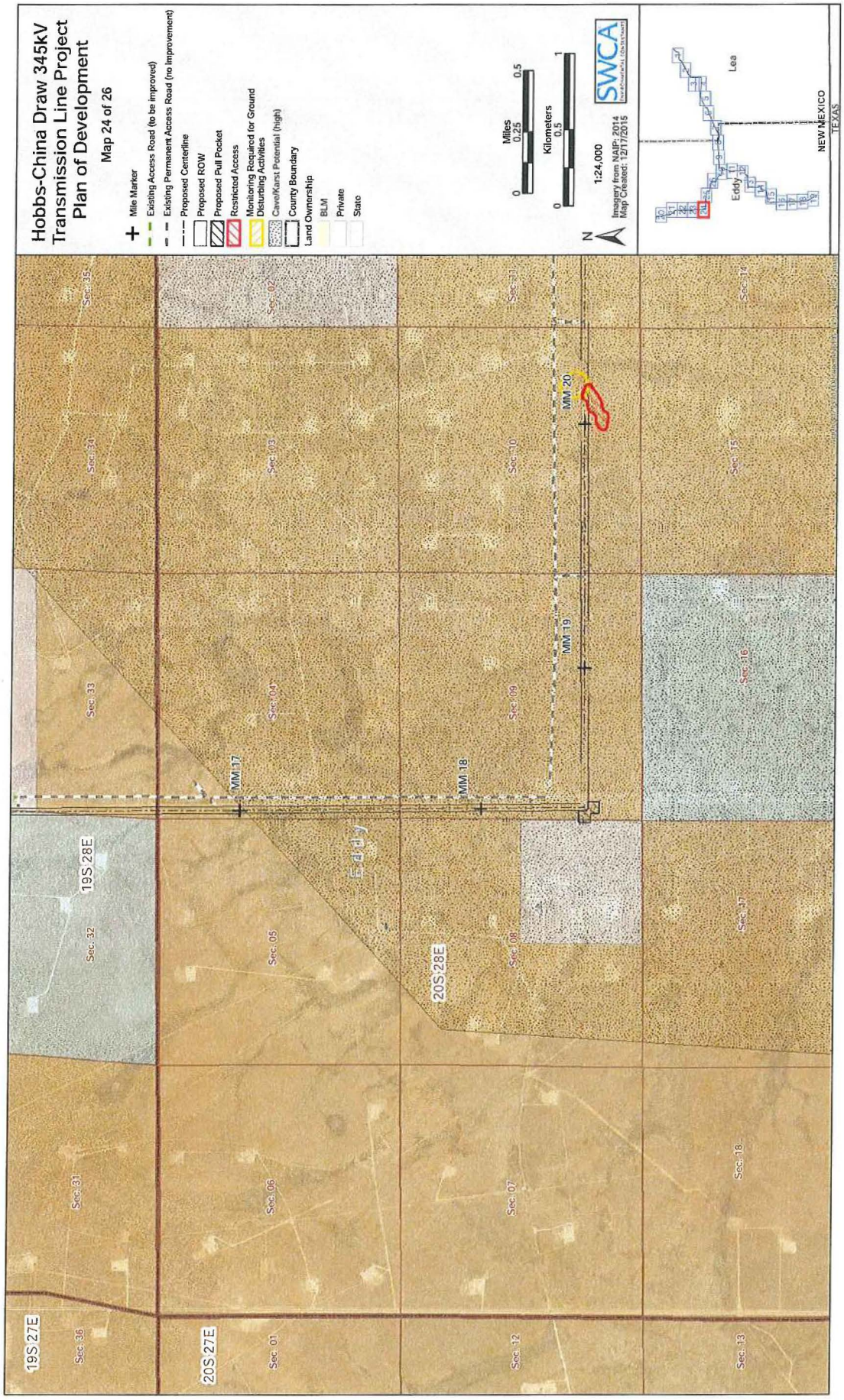

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 19 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Proposed Substation
Cave/Karst Potential (high)
Drainage
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
N
Lea
Eddy
NEW MEXICO
TEXAS
MM 86
MM 87
MM 88
MM 89
25S;27E
25S;28E
26S;27E
26S;28E
Sec. 21
Sec. 22
Sec. 23
Sec. 24
Sec. 25
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 12

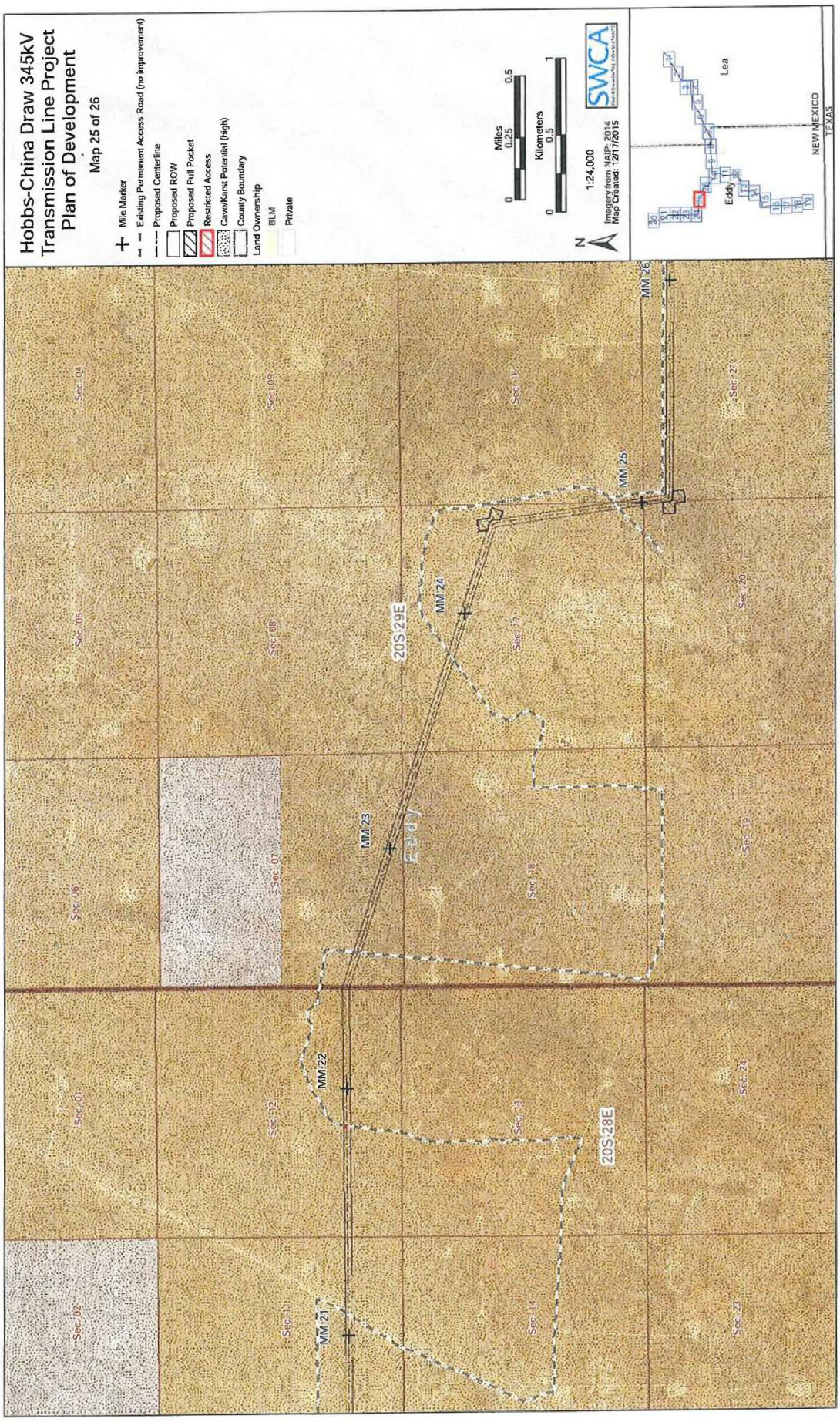

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 20 of 26
Mile Marker
Proposed New Access Road
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Laydown Yard
Proposed Pull Pocket
Proposed Substation
Cave/Karst Potential (high)
County Boundary
Land Ownership
BLM
Private
State
Miles
0 0.25 0.5
Kilometers
0 0.5 1
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Eddy
Lea
NEW MEXICO
TEXAS
Sec. 19
Sec. 20
Sec. 21
Sec. 23
Sec. 24
Sec. 25
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Sec. 36
Sec. 01
Sec. 02
Sec. 03
Sec. 04
Sec. 05
Sec. 06
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 12
17S 27E
17S 28E
18S 27E
18S 28E
MM 1
MM 2
MM 3
MM 4
MM 5
82

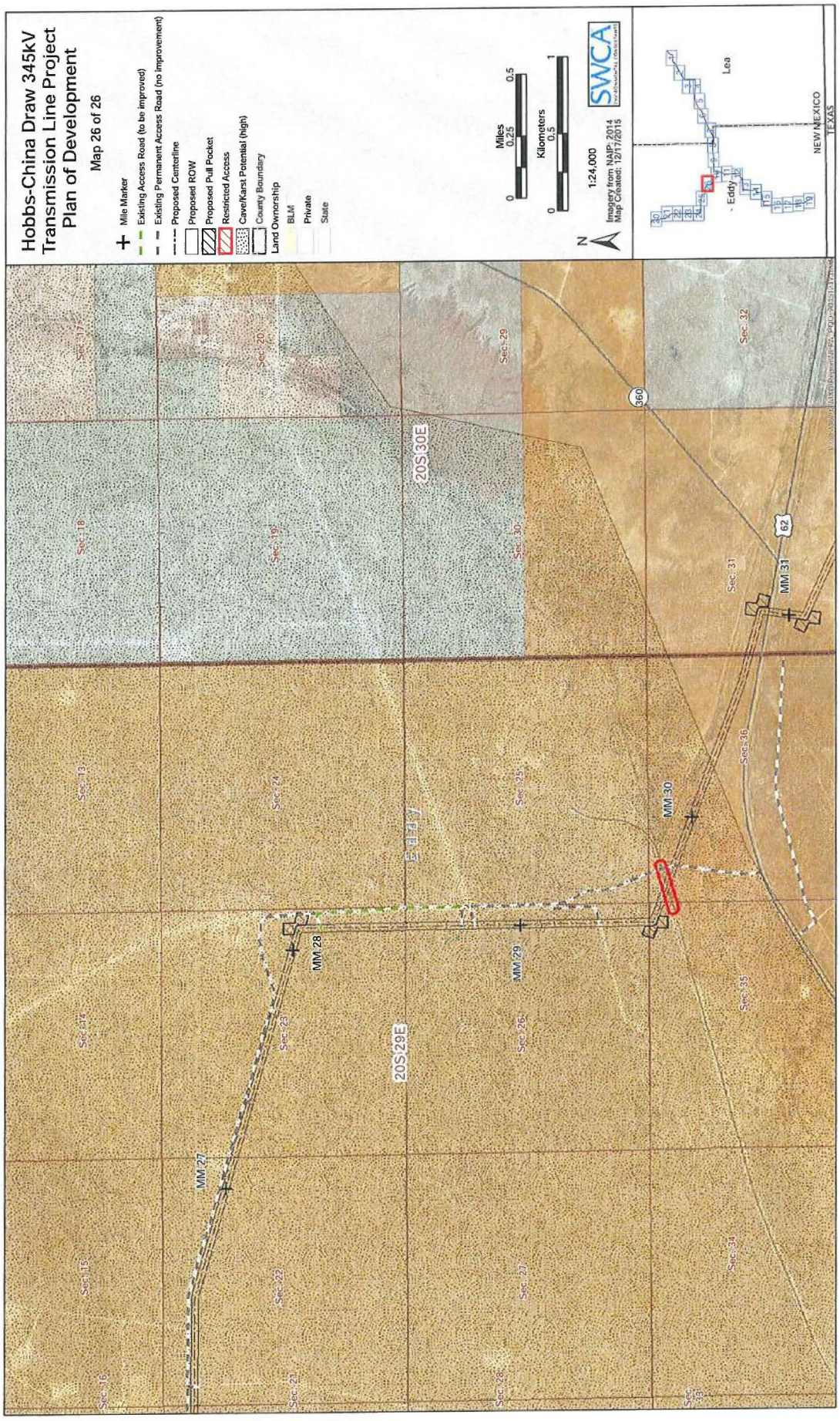

Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 21 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
N
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Environmental Consultants
Lea
Eddy
NEW MEXICO
TEXAS
Sec. 10
Sec. 11
Sec. 12
Sec. 09
Sec. 08
Sec. 07
Sec. 14
Sec. 15
Sec. 16
Sec. 17
Sec. 18
Sec. 13
Sec. 23
Sec. 22
Sec. 21
Sec. 20
Sec. 19
Sec. 24
Sec. 26
Sec. 27
Sec. 28
Sec. 29
Sec. 30
Sec. 25
MM 6
MM 7
MM 8
MM 9
18S 28E
18S 27E
Eddy


Hobbs-China Draw 345kV Transmission Line Project Plan of Development
Map 22 of 26
Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
County Boundary
Land Ownership
Private
State
Sec. 25
Sec. 30
Sec. 29
Sec. 28
Sec. 27
Sec. 26
Illinois Camp
18S 27E
18S 28E
MM 10
Sec. 36
Sec. 31
Sec. 32
Sec. 33
Sec. 34
Sec. 35
Eddy
MM 11
Sec. 01
Sec. 06
Sec. 05
Sec. 04
Sec. 03
Sec. 02
19S 27E
19S 28E
MM 12
Sec. 12
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 11
Sec. 14
Miles
0
0.25
0.5
Kilometers
0
0.5
1
N
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
Eddy
Lea
NEW MEXICO
TEXAS


Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 23 of 26
Mile Marker
Existing Access Road (to be Improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Monitoring Required for Ground Disturbing Activities
Cave/Karst Potential (high)
County Boundary
Land Ownership
BLM
Private
State
Miles
0
0.25
0.5
Kilometers
0
0.5
1
1:24,000
Imagery from NAIP: 2014
Map Created: 12/17/2015
SWCA
N
Eddy
Lea
NEW MEXICO
TEXAS
MM 13
MM 14
MM 15
MM 16
19S.27E
19S.28E
Eddy
Sec. 12
Sec. 07
Sec. 08
Sec. 09
Sec. 10
Sec. 13
Sec. 18
Sec. 17
Sec. 16
Sec. 15
Sec. 14
Sec. 24
Sec. 19
Sec. 20
Sec. 21
Sec. 22
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Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
Map 24 of 26
Mile Marker
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Restricted Access
Monitoring Required for Ground Disturbing Activities
Cave/Karst Potential (high)
County Boundary
Land Ownership
BLM
Private
State
Miles
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0.25
0.5
Kilometers
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Imagery from NAIP: 2014
Map Created: 12/17/2015
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MM 18
MM 19
MM 20
Eddy


Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
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Mile Marker
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Restricted Access
Cavo/Karst Potential (high)
County Boundary
Land Ownership
BLM
Private
Miles
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Hobbs-China Draw 345kV
Transmission Line Project
Plan of Development
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Mile Marker
Existing Access Road (to be improved)
Existing Permanent Access Road (no improvement)
Proposed Centerline
Proposed ROW
Proposed Pull Pocket
Restricted Access
Cave/Karst Potential (high)
County Boundary
Land Ownership
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Imagery from NAIP, 2014
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Appendix B

Variance Plan

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ATTACHMENTS

Attachment A. Variance Request Form

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1. INTRODUCTION

The Bureau of Land Management (BLM) will be responsible for enforcing the terms and conditions of the BLM's right-of-way grant on federal lands during the term of the grant. As the lead federal agency, the BLM will also be responsible for inspecting and monitoring preconstruction and construction activities, on federal lands, as they relate to the grant. On non-federal lands, Xcel Energy, doing business as Southwestern Public Service Company (SPS or Applicant), will be responsible for inspecting and monitoring preconstruction and construction activities of the entire Hobbs China Draw 345-kilovolt (kv) Transmission Project (Project) on all lands analyzed in the Environmental Assessment (EA), and enforcing requirements related to BLM responsibilities under the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA). In addition, the Project will require adherence to any federal, state, and local permits, as well as private landowner agreements (if applicable), that include conditions to construct. The responsibility of compliance monitoring and enforcement of non-federal conditions will be determined between the Applicant and the landowner on a case-by-case basis. This variance plan (VP) describes the standard protocols for variance requests and other deviations from the approved project described in the EA and Plan of Development (POD). The VP is intended to be a controlled document and may be revised as needed throughout the construction process. Authority for implementation of this VP originates from the terms, conditions, and stipulations of the BLM's right-of-way grant, the POD, the EA, the decision document and the findings of no significant impact (FONSI).

2. VARIANCE PROCEDURES (UNFORESEEN CIRCUMSTANCES)

The intent of this section is to inform SPS, BLM, Construction Contractor(s), and other Project personnel of the variance request process to minimize potential costly construction delays. It is understood by the BLM and SPS that unforeseen circumstances will occur during construction. The need for realignments to the proposed route, access roads, and/or work areas not within the permitted Project right-of-way grant and not analyzed in the EA analysis may arise. In addition, the need to make changes to construction procedures, schedule, and/or approved mitigation measures and other specific stipulations and methods may be required. Under these or similar circumstances, a variance will need to be approved by the BLM to stay in compliance. Variance requests will be generated by the Construction Contractor(s) and provided in writing to SPS who will then review the request. SPS will evaluate the variance request and submit it to the BLM to be processed according to the process outlined herein. The variance request form (see Attachment A) will be incorporated into the preconstruction environmental training program. The variance request form will describe the variance request in detail, provide justification and documentation for the variance (including maps and photographs), calculate the proposed permanent or temporary acreage affected, describe the original disturbance acreage analyzed in the EA, and show the difference in acreage between the proposed variance and the original disturbance. It will also describe any potentially impacted resources and identify if additional resource surveys will be required. Depending on the nature of the variance request, it may be implemented in the field as soon as the approved variance is received by SPS or the Construction Contractor(s).

2.1. Level 1 Variance: Variances Accomplished through Field Resolution

A Level 1 variance is a minor field adjustment within the approved BLM right-of-way grant that conforms to the EA and POD. A Level 1 variance must meet the following criteria:

- The area of activity or change lies within the approved right-of-way area, including temporary use areas.
- The area of activity or change was previously identified and analyzed in the EA.
- The area of activity or change does not result in an increase in disturbed acres than is estimated in the EA.
- The variance creates equal to or less impact to resource values than the original location and activity (e.g., does not involve higher density wildlife habitat than the planned site, impacts to populations of sensitive plants, or impacts to cultural sites)

A Level 1 variance request will be initiated by the Construction Contractor(s) and submitted to SPS for review. The variance request form will include all attached supporting documentation. SPS will submit the variance request package to the BLM for their review who may approve these variances in the field. However, the desired adjustments or deviations will be documented in a variance request form for inclusion in the Project record.
Examples of minor field adjustments include the following:

- Relocation of erosion-control devices (note this could also require a modification to the stormwater pollution prevention plan).
- Locating temporary fences inside authorized work areas.
- Permitting water bars to be extended, if applicable, off the area designated for the transmission line, and into native vegetation "one dozer length" (this includes providing permission for construction equipment to work outside designated work areas).
- Allowing rubber-tired vehicles to use additional designated access roads (in addition to those approved in BLM-approval documents) where improvements to the road will not be necessary. *Note*: this is not intended for authorizing additional haul roads for equipment and materials.
- Temporarily (for not more than 7 days) placing parts or other assemblies outside areas designated in the EA or POD but within the authorized Project area. This does not include any surface disturbance associated with temporary storage.

2.1.1.1. Level 1 Variance Approval or Denial

The BLM can approve or deny Level 1 variance requests in the field if the results of implementing the changes are not significant and will occur within the granted right-of-way. A Level 1 variance request can be implemented in the field as soon as it is approved by the BLM. In some cases, a verbal approval can be given and followed up with a written, signed variance document.
If a Level 1 variance is denied, the BLM will inform SPS within 24 hours. SPS may choose to resubmit the request as a Level 2 variance or discontinue pursuit of the request.

2.2. Level 2 Variance: Variances Beyond Field Resolution, Not Requiring an Amendment to the Right-of-Way Grant

Level 2 variances pertain to requests that exceed the field decision authority of the BLM and may require agency resource staff review or field examinations. These alterations generally involve Project changes that will affect an area outside of the granted work area, but within the area previously surveyed and/or analyzed for cultural resources, Section 404 of the Clean Water Act, and biological resources. Such variance requests typically require review of supplemental documents, correspondence, and records to be provided with the request. Examples include the following:

- Shifting extra workspace outside the approved construction corridor a short distance but within the area previously surveyed; here, overall disturbance type and acreage remains approximately the same, and no additional cultural or biological resources could be affected.
- Using additional extra workspace outside of the previously approved work areas (within or outside the Project or off-Project right-of-way).
- Shifting temporary workspace to previously disturbed areas.
- Allowing construction or maintenance activities to be conducted in Project areas when seasonal restrictions are in place.
- Moving proposed culvert location(s) to better accommodate natural drainages. *Note*: this may also require a modification to the stormwater pollution prevention plan.
- Providing extra work space for topsoil and spoil material storage to prevent mixing of soils.
- Moving a range fence a specified distance laterally, and permanently installing it to avoid proposed construction. *Note*: this may also require an amendment to the allotment management plan, if applicable.
- Modifying seed mixes specified in the POD, typically due to unavailability.
- Modifying an access road due to safety hazards.

Variance requests may also be submitted for minor changes that will extend beyond the previously surveyed work area and corridor for sensitive resources. In these situations, additional cultural and/or biological surveys will be required. Documentation of the surveys and other applicable correspondence will need to be submitted with the variance request. If sensitive biological resources are encountered during the additional surveys, documentation of consultation with applicable agencies must be provided with the variance request. All BLM-approved stipulations (and if applicable, the terms and conditions of the biological assessment) must be adhered to for the variance to be approved.

A Level 2 variance request will be initiated by the Construction Contractor(s) and submitted to SPS for review. The variance request form will include all attached supporting documentation. SPS will submit the variance request package to the BLM for review. After consulting with the BLM resource specialists, if necessary, the BLM will provide SPS written approval or denial (including an explanation) of the request by using the spaces provide on the form. The BLM may request additional information, or a modification of the request, before the variance can be approved. In addition, SPS will be informed if an amendment to the BLM right-of-way grant will be required.

2.2.1.1. Level 2 Variance Approval or Denial

The BLM will review the variance request form and any attachments in consultation with the appropriate BLM resource specialists. If additional information or a modification to the request is required, SPS will submit the requested information within 5 business days. The BLM will provide SPS written approval of the request by using the space provided on the form within 5 business days from receipt of a complete request.
If a Level 2 variance is denied, the BLM will provide SPS a written denial (including an explanation) of the request by using the spaces provided on the form within 5 business days from receipt of a complete request. SPS may choose to resubmit the request as a Level 3 variance request, or to discontinue pursuit of the request.

2.3. Level 3 Variance: Variances Requiring an Amendment to the Right-of-Way Grant

The BLM will assist SPS in determining whether a significant proposed change, outside the approved BLM right-of-way grant, will necessitate submittal of an amendment, or whether the change can be handled with a variance request.
If the BLM determines that a proposed construction modification involves substantial deviations from the right-of-way grant, it will require a grant amendment in accordance with 43 CFR 2807.20. A variance requiring an amendment to the right-of-way grant requires completion of an application on a Standard Form 299 and a decision by the BLM Authorized Officer. SPS will prepare the Standard Form 299 with applicable supporting documentation. On approval, the package will be submitted to the appropriate BLM Project Manager. The BLM will process the amendment application pursuant to 43 CFR 2800. The BLM may request additional information, or a modification of the request, before the amendment can be approved.
Grant amendments will be reviewed by BLM staff who will consult with other federal, state, and local agencies as needed. Grant authorization amendment approvals or denials will come directly from the BLM. Approval of the grant amendment also requires issuance of an NTP addressing the amendment, if an NTP is a requirement of the original right-of-way grant. Examples of grant amendment requests include the following:

- Route realignments or facility relocations onto BLM land not analyzed in the EA and included in the right-of-way grant.
- Certain Project-wide changes to mitigation measures or reclamation procedures.
- Expansion of the Project area defined in the right-of-way grant and POD.
- Requests affecting sites potentially eligible for the National Register of Historic Places or involving state or federally protected species or their habitat.

Attachment A

Variance Request Form

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Variance Request Form

(Note: All fields shaded in yellow are to be completed as applicable.)

Variance Request No.:

		Date Submitted to SPS:	
		Date Submitted to BLM:	
Requested by:		BLM Approval Reference No.	
Request prepared by:		**Variance Type:**	
Spread:		**Variance Sequence Number:**	

Location (Use either Station or Milepost)

Station:		**To:**		**Milepost:**		**To:**	
Alignment Sheet Number:				**Tract No.:**			
Landowner:				**Other Agency Jurisdiction:**			
Current Land Use/Vegetative Cover:							

Nearby Features (Waterbody, T&E Habitat, Wetland, Cultural Resource Site [distance], etc.):

☐ Noxious Weed Area	☐ Residence (distance)		**In or within 100 feet of a wetland:** ☐ Yes ☐ No
☐ T/E Species Habitat	☐ Cultural Resource Site (distance)		**In or within 100 feet of a waterbody:** ☐ Yes ☐ No
☐ Raptor Nest	☐ Water Well		**Wetland or Waterbody ID:**
☐ Other (Specify):			

Net acreage affected:

To be Completed by the Construction Contractor

Variance Level: ☐ Level 1 ☐ Level 2 ☐ Level 3

Variance From: ☐ Permit ☐ POD ☐ ROW Grant ☐ EA ☐ Specification ☐ Drawing ☐ Mitigation Measure ☐ Other Describe:

Detailed Description of Variance: Attachments? ☐ Yes ☐ No Photographs? ☐ Yes ☐ No

List Attachments:

Variance Justification:

For SPS Use Only

Additional Surveys Required	Surveyed Corridor Description	Additional Surveys Completed
Cultural Survey ☐ Yes ☐ No		☐ Yes ☐ No
T&E Survey ☐ Yes ☐ No		☐ Yes ☐ No

Proof of Previous Biological and Cultural Survey Clearance

Sign-off (as appropriate)	Name (Print)	Approval Signature	Conditions (See Attached)
SPS			☐ Yes ☐ No
BLM			☐ Yes ☐ No
Construction Contractor			☐ Yes ☐ No

For BLM Use Only				☐ Yes ☐ No	
Variance Approved:		Variance Denied:		Beyond Authority:	
Signature::					
Date:					
Stipulations:					

Variance Conditions					
Name:		Title:		Organization:	
Conditions:					
Name:		Title:		Organization:	
Conditions:					
Name:		Title:		Organization:	
Conditions:					

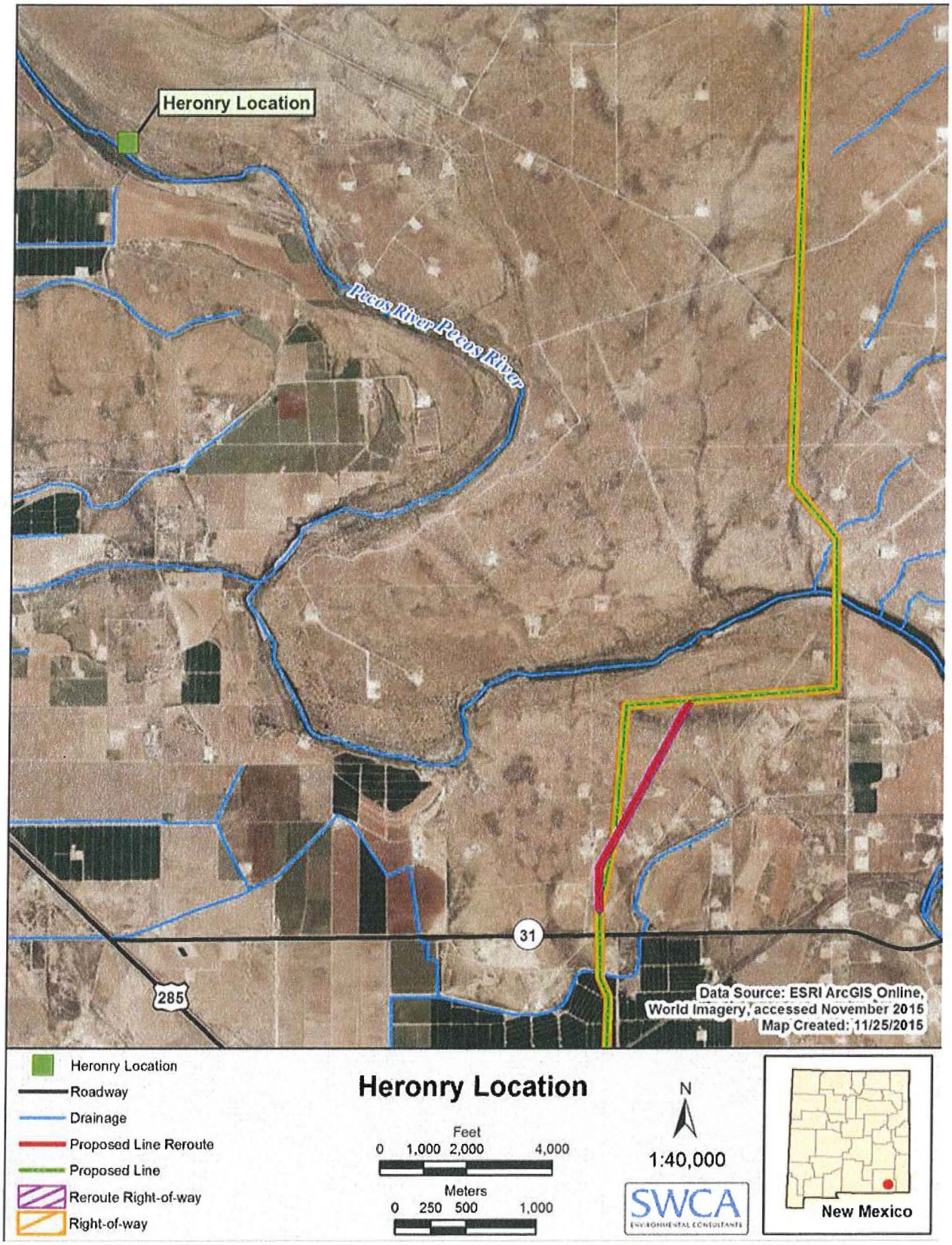
VARIANCE REPORT FORM DEFINITIONS

CODE	TYPE
AR	Request new access road
CM	Request new or different construction
MM	Request new or different mitigation method
PM	Request permit modification
RA	Request new realignment of centerline
RR	Request re-route (outside cleared footprint)
WS	Request additional temporary workspace
CY	Request additional contractor yard
BLM	BLM NEPA requirement
AG	Agency request

Appendix C

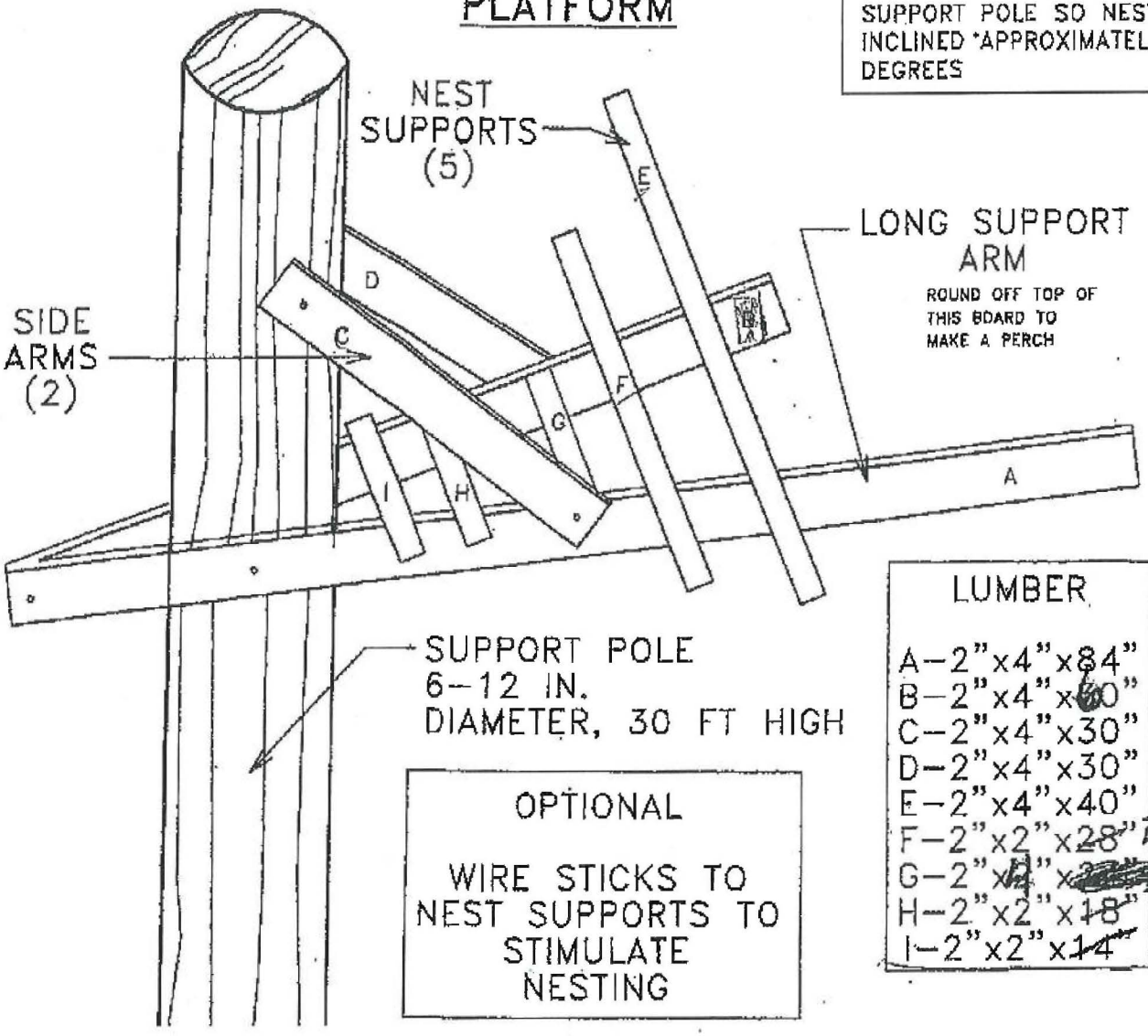
Heronry Location and Design

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Heronry Location
Pecos River
Pecos River
31
285
Data Source: ESRI ArcGIS Online, World Imagery, accessed November 2015
Map Created: 11/25/2015
Heronry Location
Roadway
Drainage
Proposed Line Reroute
Proposed Line
Reroute Right-of-way
Right-of-way
Heronry Location
Feet
0 1,000 2,000 4,000
Meters
0 250 500 1,000
N
1:40,000
SWCA
ENVIRONMENTAL CONSULTANTS
New Mexico

BLUE HERON NEST PLATFORM

POSITION SIDE ARMS TO SUPPORT POLE SO NEST IS INCLINED APPROXIMATELY 7 DEGREES



LUMBER

A-2"x4"x84"
B-2"x4"x~~60~~"
C-2"x4"x30"
D-2"x4"x30"
E-2"x4"x40"
F-2"x2"x~~28~~" 44
G-2"x~~4~~"x~~[illegible]~~ 24
H-2"x2"x~~18~~" 32
I-2"x2"x~~14~~" 28

OPTIONAL

WIRE STICKS TO NEST SUPPORTS TO STIMULATE NESTING

NESTING PLATFORM QUANTITIES

3 - TRIPLE PLATFORMS - MATERIAL & INSTALLATION
3 - DOUBLE PLATFORMS -MATERIAL & INSTALLATION
3 - SINGLE PLATFORMS - MATERIAL & INSTALLATION

3 - TRIPLE PLATFORMS - INSTALLATION ONLY
BLM WILL PROVIDE MATERIAL
3 - DOUBLE PLATFORMS -INSTALLATION ONLY
BLM WILL PROVIDE MATERIAL
3 - SINGLE PLATFORMS - INSTALLATION ONLY
BLM WILL PROVIDE MATERIAL

NO.	DESCRIPTION	DATE	BY
6			
5			
4			
3			
2			
1			

REVISIONS (OR CHANGE NOTICES)

NEW MEXICO DEPARTMENT OF TRANSPORTATION

ENVIRONMENTAL COMMITMENTS

CN G2112

NEW MEXICO PROJECT CONTROL NO. AC-GRIP-(WA)(TPM)-0128(12) SHEET NO. 1-8

BIOLOGICAL ASSESSMENT FOR SOUTHWESTERN PUBLIC SERVICE COMPANY'S HOBBS TO CHINA DRAW 345-KV TRANSMISSION LINE PROJECT, EDDY AND LEA COUNTIES, NEW MEXICO

Prepared for

Bureau of Land Management
Carlsbad Field Office

On behalf of

Southwestern Public Service Company/Xcel Energy

Prepared by

SWCA Environmental Consultants

September 2015

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BIOLOGICAL ASSESSMENT FOR SOUTHWESTERN PUBLIC SERVICE COMPANY'S HOBBS TO CHINA DRAW 345-KV TRANSMISSION LINE PROJECT, EDDY AND LEA COUNTIES, NEW MEXICO

Prepared for

CARLSBAD FIELD OFFICE
BUREAU OF LAND MANAGEMENT
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On behalf of
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SWCA Project No. 30293

September 2015

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1 INTRODUCTION

Xcel Energy, Inc. is a registered holding company that owns several electric and natural gas utility operating companies. Southwestern Public Service Company (SPS), a wholly owned electric utility subsidiary of Xcel Energy Inc., has submitted four Applications for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) to the Bureau of Land Management's (BLM's) Carlsbad Field Office (CFO) for right-of-way (ROW) grants needed to construct, operate, and maintain two 345-kilovolt (kV) transmission lines, a new substation (Kiowa Substation), and two substation expansions (Hobbs Generation and Eddy County Substations) in southeastern New Mexico, herein referred to as the "proposed project." The proposed project crosses BLM CFO–managed surface lands, State of New Mexico lands, and private lands. The BLM would serve as the lead federal agency for the undertaking.

The four applications include distinct project components but are considered to be connected actions. As such, impacts from construction and operation of the proposed project described briefly below are analyzed and disclosed together within this single Biological Assessment (BA).

2 PROJECT DESCRIPTION

SPS is proposing to construct, operate, and maintain two single-circuit alternating current 345-kV overhead electric transmission lines that both interconnect with the proposed Kiowa Substation in Eddy County, New Mexico. The proposed 345-kV transmission lines interconnect with other existing and proposed electrical system facilities owned and operated by SPS, as parts of the larger electrical system grid. In addition, SPS is proposing to build a new substation, tie into two existing substations, and expand two existing substations. The proposed project also includes various associated facilities, such as access roads and temporary work areas that would provide material storage, laydown yards, and serve other construction-related purposes.

One of the transmission lines, referred to as the Hobbs to China Draw Transmission Line, would be approximately 86 miles long, originating from the existing Hobbs Generation Substation in Lea County, New Mexico (approximately 11 miles west of Hobbs, New Mexico), and terminating at the China Draw Substation in Eddy County, New Mexico (approximately 11 miles southwest of Malaga, New Mexico). This line is composed of three segments that interconnect with substations, namely the Hobbs Generation Substation to Kiowa Substation segment (which SPS refers to by the circuit number J-20); the Kiowa Substation to North Loving Substation segment (located in Eddy County and referred to as J-21); and the North Loving Substation to China Draw Substation segment (also located in Eddy County and referred to as J-22). The proposed Kiowa Substation would be located adjacent to the existing Potash Junction Substation, approximately 1 mile from the Hobbs Highway (U.S. Highway 62/180) along Potash Mines Road. The existing North Loving Substation is located approximately 2 miles west of Loving, New Mexico (Figure 2.1).

The other proposed transmission line, referred to as the Eddy County to Kiowa Transmission Line, would be approximately 33 miles long, originating from the existing Eddy County Substation (approximately 10 miles east of Artesia, New Mexico), and terminating at the proposed Kiowa Substation (see Figure 2.1). This transmission line is composed of a single segment.

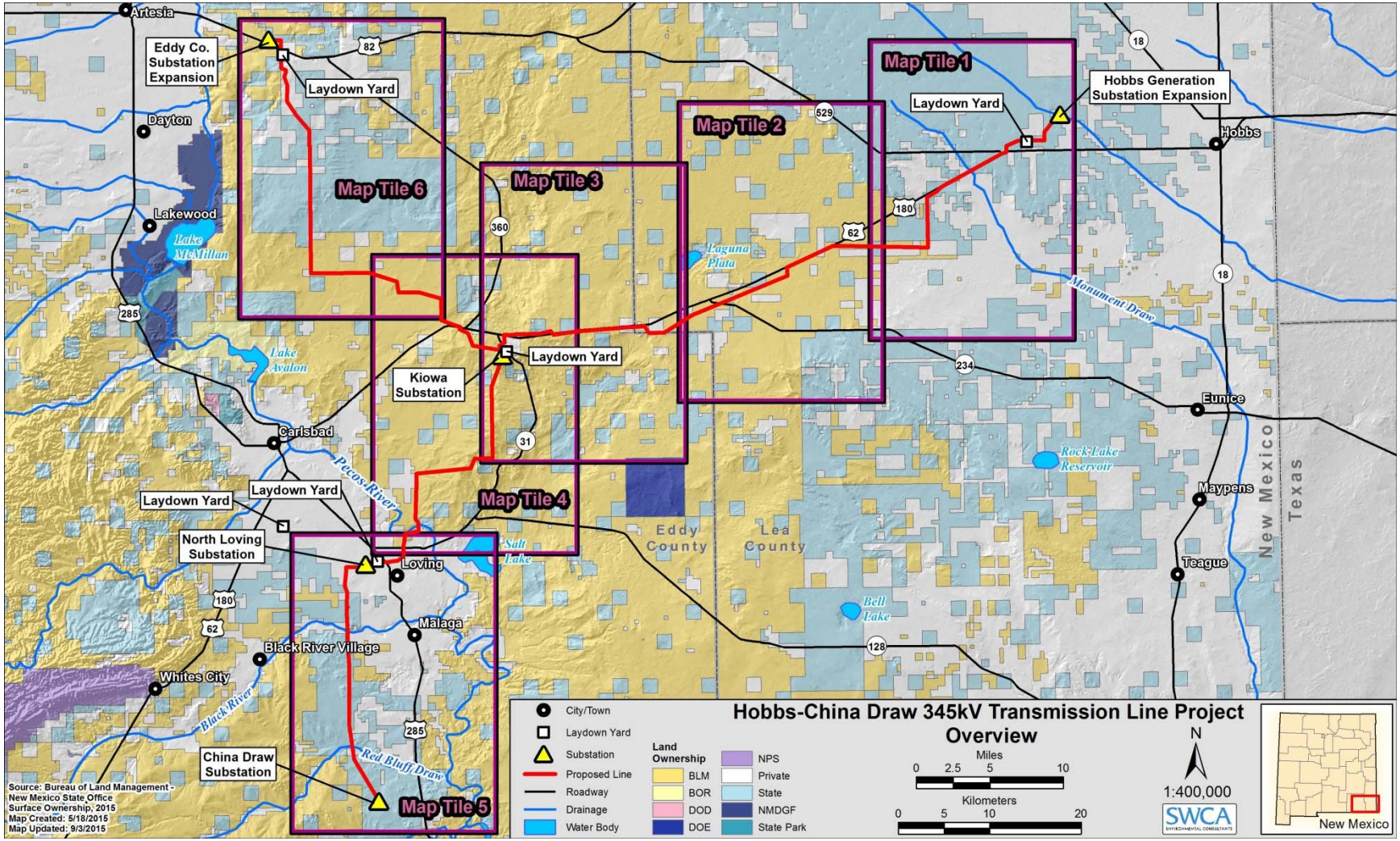


Figure 2.1. Hobbs to China Draw project vicinity.

The proposed project would typically require a 150-foot-wide linear ROW. Access roads would be temporarily constructed up to 60 feet in width during construction and reduced through reclamation to resemble a two-track road, for long-term operation and maintenance (to be located within the ROW to the maximum extent possible). Temporary work areas would be required to construct the project, mostly confined to the 150-foot ROW. Some areas may require extending outside the permanent ROW to ensure safe construction of power poles (structures) for pulling and tensioning sites at angled and dead end structure locations or in areas of sloped or difficult terrain, where a 250 × 250–foot temporary work area may be needed.

One new substation would be built and two other substations would be expanded to accommodate the proposed project. The proposed Kiowa Substation would be constructed on BLM-administered land. The existing Hobbs Generation Substation would be expanded on private land. The existing Eddy County Substation would be expanded on BLM-managed lands. The existing North Loving Substation and China Draw Substation would not need to be expanded, but the proposed project would tie into both substations.

In addition to the proposed transmission line and substations, SPS would require five temporary staging areas on approximately 200 acres of private, New Mexico State Land Office (SLO), and BLM-administered land. The staging areas would generally be located in close proximity to existing highways or roads within the proposed project area.

The proposed project would cross approximately 497 acres of private, 783 acres of state, and 1,180 acres of BLM-managed lands, inclusive of all proposed project components. For a detailed description of the Proposed Action, please refer to the Environmental Assessment (SWCA Environmental Consultants [SWCA] 2015a).

2.1 CONSTRUCTION OF TRANSMISSION LINE

The overhead transmission line would be supported by either H-frame, 3-pole, or monopole structures. In rural areas, the most common structure would be a single-circuit, tubular steel pole H-frame at tangent locations. Where the line terminates or turns at an angle, a single-circuit 3-pole tubular steel structure would be used. Monopole structures would be used as warranted by land use constraints and transmission line design requirements.

The average structure heights would vary depending on clearance, topographic conditions, and line design requirements. The typical structures would range in height between 100 to 150 feet with a few structures that may be as tall as 175 feet. Typical spans between structures would range from 800 to 1,200 feet, or four to six structures per mile. In some situations, longer spans may be necessary to avoid particular sensitive areas, which may create the need for taller structures and a wider ROW width to maintain necessary clearance for "blow-out" (sway) conditions. The structures would be assembled on-site and lifted into place by a crane. Conductor stringing between structures would be performed by heavy vehicles with powered pulling equipment. Wire would not be strung by helicopter.

Access roads would be needed to facilitate both construction and regular inspection and maintenance activities. Existing roads would be used to access the ROW and individual structures

to the maximum extent practical, but in some cases new access roads would need to be developed or existing roads would need to be improved to accommodate construction vehicles. New and improved access roads may require blading and installation of road base or caliche. In some cases, the ROW or individual structures may be accessed by constructing short spur roads from existing access roads. Access roads would be temporarily constructed up to 60 feet in width during construction and reduced through reclamation to resemble a two-track road, for long-term operation and maintenance (to be located within the ROW to the maximum extent possible). In areas with dunes and hummocks and other environmentally sensitive areas, construction traffic would be contained within a temporary access route up to 60 feet in width between structures, following a "least disturbance" path and avoiding straight lines where practical.

2.2 Construction of Kiowa Substation and Other Substation Expansions

Clearing and grading the entire substation area (new and expansion areas) would be necessary to prepare the site for construction. The site would be graded to create a level surface with a moderate slope for drainage. After construction, disturbed areas would be restored using a BLM-approved seed mix and according to BLM, SLO, and private landowner standards. Access roads to facilitate both construction and regular inspection and maintenance activities would consist of existing roads to the extent feasible.

2.3 Post-Construction Reclamation

Once construction of the facilities and 345-kV lines is complete, all areas not needed for the operations and maintenance phase would be reclaimed using a BLM-approved seed mix and according to BLM, SLO, and private landowner standards. Reclamation would occur as soon as possible after completion of final construction activities. Except for those portions of the ROW necessary for maintenance and operation, the entire 150-foot-wide ROW would be reclaimed, as well as areas of temporary disturbance outside the ROW that are no longer needed, such as temporary access roads, pull pockets, and laydown yards. The 60-foot-wide access road used for construction would be fully reclaimed and over time converted into a permanent patrol access road similar to a two-track. In some locations, the patrol road would have an all-weather surface with a caliche base left in place to encourage a single travel route and continual avoidance of sensitive resources. A level work area at the base of each structure would be reseeded but not recontoured to facilitate future maintenance activities that may require use of an extended-reach vehicle or crane.

2.4 Operations and Maintenance

SPS would need to manage vegetation to meet its requirements for conductor clearances at maximum loading (sag) and maximum "blow-out" (sway) locations and to minimize potential ignition sources and to provide access within the ROW. Within or adjacent to the ROW, mature vegetation would be removed under or near the conductors to provide adequate electrical clearance, as required by the National Electric Reliability Corporation (NERC). Typically, woody vegetation would be removed or treated with herbicides. Slash would be left in place or disposed of in accordance with the requirements of the land-management agency or landowner. If necessary

to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be removed selectively in a manner that protects biological resources as much as possible. Shrubs and other obstructions would be removed regularly within the ROW.

Vegetation would be removed using mechanical equipment such as chain saws, weed trimmers, rakes, shovels, brush hooks, and mowers. Clearing efforts in heavy growth areas would use equipment such as a masticator, mounted brush mower, or similar. Vegetation treatments to control the growth of woody species along the ROW would be conducted every 4 years. These treatments consist of spraying target species such as creosote and mesquite with herbicides to prevent vegetation encroachment on SPS's conductor clearance requirements, its facilities, patrol road, and/or inhibits future operation and maintenance activities. All herbicide applications would be performed in accordance with federal, state, and local regulations, and in compliance with land management agency and/or landowner requirements. SPS has established guidelines that its contractors are required to follow to protect birds and bird nests during these spraying events.

Herbicides would be used to control noxious weeds or incompatible tree and brush species that regenerate from the root systems after removal to meet vegetation management objectives. All pesticide and herbicide applications would be performed in accordance with federal, state, and local regulations, and in compliance with land-management agency and/or landowner requirements.

2.5 PROJECT DECOMMISSIONING

At the end of the transmission line's useful life, estimated to be 50 years from construction, the necessary authorizations would be obtained from the BLM Authorized Officer to decommission the project. Future decommissioning of the transmission line would include removal of conductors and structures. All materials would be removed from the ROW. Equipment at the substations and unsalvageable materials would be disposed of at authorized sites. Re-grading and revegetation of disturbed areas would be completed according to BLM, SLO, or landowner standards. The abandoned ROW would revert to the control of the landowners.

3 METHODOLOGY

The assessment and mitigation recommendations contained within this BA are based upon information obtained from several sources: published literature and data, unpublished federal agency data, federal agency input, and SWCA field surveys.

3.1 FIELD SURVEYS

Prior to initiating the field survey, U.S. Geological Survey (USGS) topographic maps were reviewed to determine the location, elevation, soil types, and potential habitat types within the proposed project area. Wetland and drainage data were evaluated using National Hydrography Dataset (NHD) (USGS 2013) and National Wetland Inventory maps (U.S. Fish and Wildlife Service [USFWS] 2015a), as well as geographic information system (GIS) data. SWCA biologists reviewed the USFWS (2015b) Information for Planning and Conservation (IPaC) system, the New Mexico Department of Game and Fish (NMDGF) Biota Information System of New Mexico

(BISON-M 2015), the New Mexico Rare Plants website (New Mexico Rare Plant Technical Council [NMRPTC] 1999), and the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) state endangered plant species list (EMNRD 2015), prior to the biological survey. The BLM CFO list of sensitive species was also consulted.

The biological survey area consisted of a pedestrian survey within a 500-foot-wide corridor following the center line of the proposed project, as well as a new substation, substation expansions, staging areas, pull pockets, and access roads outside the 500-foot corridor, to assess general vegetation and habitat suitability for USFWS-, BLM-, and State of New Mexico–protected native plants and special status species (see Appendix A, Figure A.1–Figure A.6). Presence of active and inactive bird nests and burrows were also recorded. The survey included an assessment of wetlands, surface waters, and other possible waters of the U.S., referred to as a wetland delineation. The wetland delineation included identifying and recording physical features that may be considered waters of the U.S. as defined by the U.S. Army Corps of Engineers (USACE). SWCA biologists conducted surveys from October 20, 2014, to August 19, 2015. The total survey area was approximately 11,174 acres.

At the request of the BLM, SWCA conducted lesser prairie-chicken (*Tympanuchus pallidicinctus*; LPC) lek surveys for a portion of the proposed project traversing through a BLM management area for LPC, the Isolated Population Area (BLM 2008), and occurring more than 0.5 mile from the U.S. Highway 62/180 (Figure A.7 in Appendix A). Survey points were placed by the BLM and provided to SWCA. LPC surveys were performed between March 25 and April 16, 2014.

SWCA followed the USFWS survey protocol for LPC with additional BLM-requested modifications. Surveys began 30 minutes before sunrise and concluded no later than 90 minutes after the local sunrise. The listening period at each survey point lasted 10 minutes. Wind speed and weather were recorded at the beginning and end of each survey day. Surveys were not conducted if the wind speed continuously exceeded a 3 on the Beaufort scale (12 miles per hour), or if rain or snow were falling. Noise source (e.g., pump-jack, compressor, road, power line) and level of disturbance (e.g., none, low, moderate, or high) were rated at each survey point. Following guidance provided by the BLM and USFWS, two surveys were conducted at each listening point with a minimum 1-week interval between survey efforts. Survey results were recorded on data sheets provided by the BLM, and are included in Appendix C.

Any leks detected (visual and/or auditory) were recorded by estimating the distance to the lek, collecting an azimuth from the detection point, and approximating the number of LPC detected. Triangulating exact location of leks was attempted as practicable based on land access constraints. Flush counts were not conducted.

3.2 SPECIAL STATUS SPECIES EVALUATION

The USFWS maintains lists of endangered, threatened, proposed, and candidate species known or thought to occur in each New Mexico county. The USFWS also designates critical habitat in the state for some listed species. Endangered and threatened species are protected under the federal Endangered Species Act (ESA; 16 United States Code [USC] 1531 et seq.). The ESA specifically prohibits "take"—which means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or

collect, or to engage in any such conduct"—of a listed species. Avian species, with the exception of upland game birds and introduced species, also receive legal protection under the federal Migratory Bird Treaty Act (MBTA; 16 USC 703–712).

The special status species evaluated in this report consist of 1) federally protected (endangered and threatened) species; 2) additional species listed by the USFWS as candidate, proposed, or species under review (USFWS 2015b); 3) state-listed endangered and threatened species (BISON-M 2015); and 4) BLM sensitive species, some of which are also listed as candidates or under review by the USFWS and/or are state listed.

The potential for local species occurrence was based on 1) existing information on distribution and 2) qualitative comparisons of the habitat requirements of each species with vegetation communities, landscape features, and/or water quality conditions in the project area. Possible impacts to these species were evaluated based on reasonably foreseeable project-related activities and the local loss of habitat.

All of Eddy and Lea Counties' special status species were first evaluated based on their potential to occur in the project area. The potential for occurrence of a species was identified using the following categories:

- *Known to occur*—the species was documented in the project area either during or prior to the field surveys by a reliable observer.
- *May occur*—the project area is within the species' currently known range, and vegetation communities, soils, water quality conditions, etc., resemble those known to be used by the species.
- *Unlikely to occur*—the project area is within the species' currently known range, but vegetation communities, soils, water quality conditions, etc., do not resemble those known to be used by the species, or the project area is clearly outside the species' currently known range.

Species with the potential to occur in the project area were then further evaluated for possible impacts of the proposed project. However, effect determination categories are spelled out differently based on the exact legal status of a species and the mandates and responsibilities of the agency tasked to manage or protect that species. Federally protected (i.e., threatened or endangered) species were assigned to one of three categories of possible effect, following USFWS guidelines (USFWS 1998a):

- *May affect, is likely to adversely affect*—this effect determination means that the proposed action would have an adverse effect on the species or its critical habitat. Any action that would result in "take" of an endangered or threatened species is considered an adverse effect. A combination of beneficial and adverse effects is still considered "likely to adversely affect," even if the net effect is neutral or positive. Adverse effects are not considered discountable because they are expected to occur. In addition, the probability of occurrence must be extremely small to qualify as discountable effects. Likewise, an effect

that can be detected in any way or that can be meaningfully articulated in a discussion of the results of the analysis is not insignificant; it is an adverse effect.

- *May affect, is not likely to adversely affect*—this effect determination, all effects to the species and its critical habitat are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without adverse effects to the species (for example, there cannot be "balancing," so that the benefits of the action would outweigh the adverse effects). Insignificant effects relate to the size of the impact and should not reach the scale where take occurs. Discountable effects are considered extremely unlikely to occur. Based on best judgment, a person would not: 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur. Determinations of "not likely to adversely affect, due to beneficial, insignificant, or discountable effects" require written concurrence from the USFWS.
- *No effect*—a determination of no effect means there are absolutely no effects to the species and its critical habitat, either positive or negative. It does not include small effects or effects that are unlikely to occur.

The ESA defines "take" to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."

As directed by the USFWS, species proposed for listing were evaluated using the following effect determination categories:

- No effect.
- Not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat.
- Likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of proposed critical habitat.

Jeopardy is defined under the ESA as occurring when "an action is reasonably expected, directly or indirectly, to diminish a species' numbers, reproduction, or distribution so that the likelihood of survival and recovery in the wild is appreciably reduced."

Impact determinations for all other species (USFWS candidate, USFWS species under federal review, BLM sensitive species, and state-listed species that are not federally threatened or endangered) were evaluated for possible impacts as follows:

- *No impact*—the project would have no impact on a species if 1) the species is considered unlikely to occur (range, vegetation, etc., are inappropriate) and 2) the species or its sign was not observed during surveys of the project area.
- *Beneficial impact*—the project is likely to benefit the species, whether it is currently present or not, by creating or enhancing habitat elements known to be used by the species.

- *May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability*—the project is not likely to adversely impact a species if 1) the species may occur but its presence has not been documented and 2) project activities would not result in disturbance to areas or habitat elements known to be used by the species.
- *May impact individuals or habitat and is likely to result in a trend toward federal listing or loss of viability*—the project is likely to adversely impact a species if 1) the species is known to occur in the project area and 2) project activities would disturb areas or habitat elements known to be used by the species or would directly affect an individual.

The distribution of critical habitat was examined using the USFWS online Critical Habitat Portal (USFWS 2015c).

4 ENVIRONMENTAL BASELINE AND SURVEY RESULTS

4.1 GENERAL CHARACTERISTICS

The average elevation of the proposed project area is approximately 2,966 to 3,842 feet above mean sea level (amsl). The climate for this area, based on the climatic records for Carlsbad Airport, NM (COOP Station No. 291475) in Eddy County, has an average annual maximum temperature of 77.8 degrees Fahrenheit (°F), with an average annual minimum temperature of 48.7°F. The average annual precipitation is 12.04 inches with the majority occurring between May and October, while the average annual total snowfall is 6.4 inches, which largely occurs between December and March (Western Regional Climate Center 2015).

4.2 SOILS

According to the Natural Resources Conservation Service ([NRCS] 2015a), 68 mapped soil types are within the proposed project area (Table 4.1). Only one of the soils within the project area meets hydric criteria: MM - Mixed alluvial land. Four soil types (denoted in bold type) contain gypsum components.

Table 4.1. Soils in the Project Area

Map Unit Symbol	Map Unit Name	Acres	Percent of Project Area	Farmland Class
AW	Arvana-Lea association	5.57	0.23%	Farmland of statewide importance
BF	Berino-Cacique fine sandy loams association	9.38	0.38%	Not prime farmland
JA	Jal association	13.65	0.55%	Farmland of statewide importance
KD	Kermit soils and dune land, 0 to 12 percent slopes	22.89	0.93%	Not prime farmland
KM	Kermit-Palomas fine sands, 0 to 12 percent slopes	76.70	3.12%	Not prime farmland
KO	Kimbrough gravelly loam, 0 to 3 percent slopes	109.41	4.45%	Not prime farmland
KU	Kimbrough-Lea complex	135.30	5.50%	Not prime farmland
LP	Largo-Pajarito complex	6.23	0.25%	Farmland of statewide importance
MM	Mixed alluvial land	13.18	0.54%	Farmland of statewide importance

Map Unit Symbol	Map Unit Name	Acres	Percent of Project Area	Farmland Class
MN	Mobeetie-Potter association, 1 to 15 percent slopes	11.18	0.45%	Farmland of statewide importance
MU	Portales loam, 0 to 3 percent slopes	0.77	0.03%	Not prime farmland
MW	Pyote and maljamar fine sands	5.44	0.22%	Not prime farmland
PC	Pyote loamy fine sand	5.86	0.24%	Farmland of statewide importance
PT	Pyote soils and dune land	11.21	0.46%	Farmland of statewide importance
PU	Ratliff loam	83.53	3.40%	Not prime farmland
PY	Ratliff-Wink fine sandy loams	78.43	3.19%	Not prime farmland
RT	Reeves-Cottonwood association	3.28	0.13%	Farmland of statewide importance
SE	Simona fine sandy loam, 0 to 3 percent slopes	47.23	1.92%	Not prime farmland
SR	Simona-Upton association	63.33	2.57%	Not prime farmland
SS	Stegall and slaughter soils	5.50	0.22%	Farmland of statewide importance
TF	Tonuco loamy fine sand	3.94	0.16%	Not prime farmland
Aa	Anthony sandy loam, 0 to 1 percent slopes	4.67	0.19%	Farmland of statewide importance
Ah	Anthony sandy loam, 0 to 1 percent slopes	5.35	0.22%	Not prime farmland
Ak	Arno-Harkey complex, saline, 0 to 1 percent slopes	0.89	0.04%	Not prime farmland
Ao	Atoka loam, 0 to 1 percent slopes	5.31	0.22%	Farmland of statewide importance
At	Atoka loam, 1 to 3 percent slopes	2.30	0.09%	Farmland of statewide importance
BB	Berino complex, 0 to 3 percent slopes, eroded	233.25	9.48%	Not prime farmland
BP	Berino-Pajarito complex, 0 to 3 percent slopes, eroded	9.58	0.39%	Not prime farmland
CA	Cacique loamy sand, 0 to 3 percent slopes, eroded	32.92	1.34%	Not prime farmland
ER	Ector-Reagan association, 0 to 9 percent slopes	53.74	2.18%	Not prime farmland
GA	**Gypsum land**	1.03	0.04%	Not prime farmland
GC	**Gypsum land-Cottonwood complex, 0 to 3 percent slopes**	20.38	0.83%	Not prime farmland
Gs	**Gypsum land-Cottonwood complex, 0 to 3 percent slopes**	34.75	1.41%	Farmland of statewide importance
Hk	Harkey very fine sandy loam, 0 to 1 percent slopes	1.24	0.05%	Prime farmland if irrigated
KM	Karro loam, 0 to 1 percent slopes	111.26	4.52%	Not prime farmland
Kr	Karro loam, 0 to 1 percent slopes	22.69	0.92%	Farmland of statewide importance
KT	Kimbrough-Stegall loams, 0 to 3 percent slopes	162.05	6.59%	Not prime farmland
KU	Karro loam, 1 to 3 percent slopes	6.90	0.28%	Farmland of statewide importance
Kv	Karro loam, saline, 0 to 1 percent slopes	9.15	0.37%	Farmland of statewide importance
LA	Largo loam, 1 to 5 percent slopes	7.17	0.29%	Not prime farmland
LG	Largo silt loam, overflow, 0 to 1 percent slopes	7.72	0.31%	Not prime farmland
LN	Largo-Stony land complex, 0 to 25 percent slopes	1.67	0.07%	Not prime farmland
LS	Likes loamy fine sand, 1 to 5 percent slopes	25.12	1.02%	Not prime farmland
PA	Pajarito loamy fine sand, 0 to 3 percent slopes, eroded	24.07	0.98%	Not prime farmland
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	6.26	0.25%	Not prime farmland
Pe	Pima silt loam, 0 to 1 percent slopes	0.29	0.01%	Prime farmland if irrigated

Map Unit Symbol	Map Unit Name	Acres	Percent of Project Area	Farmland Class
PM	Pima silt loam, 0 to 1 percent slopes	1.46	0.06%	Farmland of statewide importance
PS	Potter-Simona complex, 5 to 25 percent slopes	17.31	0.70%	Not prime farmland
RA	Reagan loam, 0 to 3 percent slopes	57.76	2.35%	Farmland of statewide importance
Rc	Reagan loam, 0 to 1 percent slopes	61.56	2.50%	Farmland of statewide importance
Rd	Reagan loam, 1 to 3 percent slopes	5.39	0.22%	Prime farmland if irrigated
RE	**Reagan-Upton association, 0 to 9 percent slopes**	34.92	1.42%	Farmland of statewide importance
RG	Reeves-Gypsum land complex, 0 to 3 percent slopes	257.48	10.47%	Not prime farmland
RI	Reeves loam, 0 to 1 percent slopes	30.04	1.22%	Farmland of statewide importance
RM	Reeves-Reagan loams, 0 to 3 percent slopes	101.86	4.14%	Not prime farmland
RO	Rock land	9.01	0.37%	Not prime farmland
Rr	Reeves loam, saline, 0 to 1 percent slopes	28.72	1.17%	Not prime farmland
RT	Reeves loam, shallow, 0 to 1 percent slopes	15.37	0.62%	Farmland of statewide importance
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	79.86	3.25%	Not prime farmland
SM	Simona-Bippus complex, 0 to 5 percent slopes	97.86	3.98%	Not prime farmland
SN	Simona and Wink fine sandy loams, 0 to 3 percent slopes, eroded	17.26	0.70%	Not prime farmland
SR	Stony and Rough broken land	25.27	1.03%	Not prime farmland
TF	Tonuco loamy fine sand, 0 to 3 percent slopes	44.34	1.80%	Not prime farmland
TN	Tonuco loamy fine sand, 0 to 3 percent slopes, eroded	25.22	1.03%	Not prime farmland
UG	Upton gravelly loam, 0 to 9 percent slopes	22.19	0.90%	Not prime farmland
Uo	Upton gravelly loam, 0 to 9 percent slopes	19.57	0.80%	Not prime farmland
Ut	Upton soils, 1 to 3 percent slopes	4.75	0.19%	Not prime farmland
W	Water	1.31	0.05%	Not prime farmland

4.3 VEGETATION COMMUNITIES

The project area occurs within four U.S. Environmental Protection Agency (EPA) Level IV ecoregions (Griffith et al. 2006). These ecoregions are the Arid Llano Estacado, Shinnery Sands, Chihuahuan Desert Grasslands, and Chihuahuan Basins and Playas.

4.3.1 ARID LLANO ESTACADO

The Arid Llano Estacado ecoregion is drier than the main Llano Estacado region to the north. This habitat region is found in the eastern extent of the Hobbs to China Draw route (Figure 4.1). The ecoregion is a climate transitional area from the Chihuahuan Desert region to the southwest, and it has somewhat more broken topography and fewer playas than the plain to the north. Yearly precipitation is less due to a lack of winter precipitation and the absence of snow cover. Lack of precipitation in this region often causes a caliche layer closer to the surface, which increases the general drought condition of the soil.

SWCA biologists observed the following dominant species throughout the Arid Llano Estacado ecoregion habitat. The grasses seen include blue, black, and hairy grama (*Bouteloua hirsuta*), buffalograss (*B. dactyloides*), silver bluestem (*Bothriochloa saccharoides*), sand dropseed (*Sporobolus cryptandrus*), threeawn (*Aristida* sp.), Arizona cottontop (*Digitaria californica*), hairy tridens (*Erioneuron pilosum*), muhly (*Muhlenbergia* sp.), bottlebrush (*Callistemon* sp.), and squirreltail (*Elymus elymoides*); burrograss (*Scleropogon* sp.), threeawn, tobosagrass (*Pleuraphis mutica*), and broom snakeweed (*Gutierrezia sarothrae*) increase with grazing activities. The forbs seen include bush sunflower (*Encelia californica*), gray goldaster (*Heterotheca canescens*), dalea (*Dalea* sp.), sand sagebrush (*Artemisia filifolia*), and gayfeather (*Liatris* sp.). Mesquite (*Prosopis* sp.), narrowleaf yucca (*Yucca angustissima*), juniper (*Juniperus* sp.), and ephedra (*Ephedra* sp.) compose invading shrub cover (Griffith et al. 2006). The majority of the land use is dominated by livestock grazing, and oil and gas production activities are widespread throughout the ecoregion.



Figure 4.1. Arid Llano Estacado in the project area, facing north.

4.3.2 Shinnery Sands

The Shinnery Sands ecoregion is present along the Hobbs to China Draw route from mile marker (MM) 11 to MM 27 (Figure 4.2). This area includes sand hills and dunes, as well as flat sandy recharge areas. These sand beds lie at the western edge of the High Plains where rising winds drop heavier sand grains and carry finer material farther east onto the flat expanse of the Llano Estacado. The ecoregion is named for the Havard (shinnery) oak brush (*Quercus havardii*) that stabilizes sandy areas subject to wind erosion. Although shinnery oak rarely grows higher than 4 feet, its extensive root system can reach over 50 feet through dune sand to reach water. The largest area of sand dunes, at the southwestern edge of the Llano Estacado, is composed of sands blown out of the Pecos River Basin against the Mescalero Escarpment of the Llano Estacado by prevailing southwesterly winds. These dunes serve as a major recharge area for the Pecos River.

SWCA biologists observed dominant species in the dune areas such as shinnery oak, fourwing saltbush (*Atriplex canescens*), yucca (*Yucca* sp.), sand verbenas (*Abronia fragrans*), sunflowers (*Helianthus annuus*), fringed sagewort (*Artemisia frigida*), and hoary rosemary-mint (*Poliomintha incana*). Ephemeral ponds and swales between the dunes support rushes (*Juncus* sp.), sedges (*Carex* sp.), and sandbar willow (*Salix interior*) (Griffith et al. 2006). The Shinnery Sands are habitat for the LPC and dunes sagebrush lizard (*Sceloporus arenicolus*; DSL), two species that have exhibited significant population declines. The shrubs offer cover and shade for nesting LPCs, and shinnery oak acorns are a staple food source. The dunes are dominated by oil and gas production in patches throughout the shinnery sands ecoregion.



Figure 4.2. Shinnery sands habitat in the project area, facing west.

4.3.3 Chihuahuan Desert Grasslands

The Chihuahuan Desert Grassland ecoregion occurs in the project area from MM 27 to MM 59 of Hobbs to China Draw and the southern extent of Eddy County to Kiowa near the new Kiowa substation (Figure 4.3). The ecoregion is found in areas of fine-textured soils, such as silts and clays that have a higher water retention capacity than coarse-textured, rocky soil. These grasslands are present in areas of somewhat higher annual precipitation (10–15 inches) than the Chihuahuan Basins and Playas ecoregion, such as elevated basins between mountain ranges, low mountain benches and plateau tops, and north-facing mountain slopes. Chihuahuan Desert Grasslands were once more widespread, but heavy grazing in the late nineteenth and early twentieth centuries was unsustainable, and desert shrubs invaded where the grass cover became fragmented. In grassland areas with lower rainfall, areal coverage of grasses may be sparse, 10% or less. Some areas are now mostly shrubs as grasslands continue to decline due to erosion, drought, and climatic change.

SWCA biologists observed typical grasses of this ecoregion, such as black grama (*Bouteloua eriopoda*), blue grama (*B. gracilis*), sideoats grama (*B. curtipendula*), dropseeds (*Sporobolus* sp.), bush muhly (*Muhlenbergia porteri*), and tobosagrass, with scattered creosotebush (*Larrea tridentata*), prickly pear (*Opuntia* sp.), and cholla (*Cylindropuntia* sp.) (Griffith et al. 2006). Land use is dominated by livestock grazing, and oil and gas production activities are widespread throughout the Chihuahuan Desert Grasslands ecoregion.



Figure 4.3. Representative Chihuahuan Desert Grasslands in the project area.

4.3.4 Chihuahuan Basins and Playas

The Chihuahuan Basins and Playas ecoregion is the dominant habitat region present within the project area (Figure 4.4), occurring along the majority of the Eddy to Kiowa line and the Hobbs to China Draw line from MM 59 to the end (MM 90). Chihuahuan Basins and Playas include alluvial fans, internally drained basins, and river valleys mostly below 4,500 feet amsl. The major Chihuahuan basins formed during tertiary basin and range tectonism when the Earth's crust stretched and fault collapse resulted in sediment-filled basins. These low-elevation areas are some of the hottest and most arid habitats in the state. The playas and basin floors have saline or alkaline soils and areas of salt flats, dunes, and windblown sand.

SWCA biologists observed the following dominant vegetation in this ecoregion: creosotebush, mesquite, tarbush (*Flourensia cernua*), fourwing saltbush, acacias (*Acacia* sp.), blue grama, and alkali sacaton (*Sporobolus airoides*).



Figure 4.4. Representative habitat within the Chihuahuan Basins and Playas ecoregion.

The vegetation observed along the project area primarily comprises mesquite, burrograss, narrowleaf yucca, silver bluestem, blue and black grama grasses, tobosagrass, spectaclepod (*Dimorphocarpa* sp.), and shinnery oak. Plant species recorded during the biological survey are listed in the table below (Table 4.2). One state endangered and BLM sensitive plant species, Scheer's beehive cactus (*Coryphantha robustispina* var. *scheeri*, denoted in bold type in Table 4.2), was found in two locations along the route. No other special status plant species were observed.

New Mexico State Class A or C noxious weeds were not observed at the time of the investigation (New Mexico Department of Agriculture 2009). One Class B noxious weed species, Malta starthistle (*Centaurea melitensis*), was found along the north bank of the Black River near MM 77 (see Appendix B, Figure B.10). This infestation was small, consisting of only several plants. SPS has enrolled in weed programs for both Lea and Eddy Counties. These cooperative programs enable the BLM to identify target areas for treatment to prevent the spread of noxious weeds and invasive species. These programs include annual surveys of the ROW and subsequent treatment of weed infested areas for up to 5 years after construction is complete. Arsenal, Roundup, and Garlon 4 are the herbicides the BLM most commonly uses for treating infestations.

Table 4.2. Plant Species Observed during Biological Surveys

Common Name	Scientific Name
Snowball sand verbena	*Abronia fragrans*
Whitethorn acacia	*Acacia constricta*
Catclaw acacia	*Acacia greggii*
Angel's trumpets	*Acleisanthes longiflora*
Dwarf desertpeony	*Acourtia nana*

Common Name	Scientific Name
Brownfoot	*Acourtia wrightii*
Trailing windmills	*Allionia incarnata*
Geyer's onion	*Allium geyeri*
Washerwoman	*Alternanthera caracasana*
Pigweed	*Amaranthus*
Cuman ragweed	*Ambrosia psilostachya*
Big bluestem	*Andropogon gerardii*
New Mexico silverbush	*Argythamnia neomexicana*
Sixweeks threeawn	*Aristida adscensionis*
Purple threeawn	*Aristida purpurea*
Spidergrass	*Aristida ternipes*
Carruth's sagewort	*Artemisia carruthii*
Sand sagebrush	*Artemisia filifolia*
White sagebrush	*Artemisia ludoviciana*
Broadleaf milkweed	*Asclepias latifolia*
Woolly locoweed	*Astragalus mollissimus*
Hairyseed bahia	*Bahia absinthifolia*
Burningbush	*Bassia scoparia*
Lyreleaf greeneyes	*Berlandiera lyrata*
Cane bluestem	*Bothriochloa barbinodis*
Sixweeks grama	*Bouteloua barbata*
Gypsum grama	*Bouteloua breviseta*
Sideoats grama	*Bouteloua curtipendula*
Buffalograss	*Bouteloua dactyloides*
Black grama	*Bouteloua eriopoda*
Blue grama	*Bouteloua gracilis*
Splitleaf brickellbush	*Brickellia laciniata*
Coastal sandbur	*Cenchrus spinifex*
Malta starthistle	*Centaurea melitensis*
Rose heath	*Chaetopappa ericoides*
Hairy five eyes	*Chamaesaracha sordida*
Whitemargin sandmat	*Chamaesyce albomarginata*
Ribseed sandmat	*Chamaesyce glyptosperma*
Hoary sandmat	*Chamaesyce lata*
Slimleaf goosefoot	*Chenopodium pallescens*
Hooded windmill grass	*Chloris cucullata*
Watermelon	*Citrullus lanatus*
Drummond's clematis	*Clematis drummondii*
Whitemouth dayflower	*Commelina erecta*
Javelina bush	*Condalia ericoides*
Scheer's beehive cacti	***Coryphantha robustispina* var. *scheeri***
Grassland croton	*Croton dioicus*
Leatherweed	*Croton pottsii*
Texas croton	*Croton texensis*
James' cryptantha	*Cryptantha cinerea*
Missouri gourd	*Cucurbita foetidissima*
Dodder	*Cuscuta* L.
Winged pigweed	*Cycloloma atriplicifolium*
Thistle cholla	*Cylindropuntia davisii*
Tree cholla	*Cylindropuntia imbricata*
Christmas cactus	*Cylindropuntia leptocaulis*
Featherplume	*Dalea formosa*
Woolly prairie clover	*Dalea lanata*
Low woollygrass	*Dasyochloa pulchella*
Chinese thorn-apple	*Datura quercifolia*
Touristplant	*Dimorphocarpa wislizeni*
Fetid marigold	*Dyssodia papposa*

Common Name	Scientific Name
Horse crippler	*Echinocactus texensis*
Lace hedgehog cactus	*Echinocereus reichenbachii*
Nylon hedgehog cactus	*Echinocereus viridiflorus* var. *chloranthus*
Engelmann's daisy	*Engelmannia peristenia*
Cory's jointfir	*Ephedra coryi*
Torrey's jointfir	*Ephedra torreyana*
Torrey's jointfir	*Ephedra torreyana*
Lehmann lovegrass	*Eragrostis lehmanniana*
Red lovegrass	*Eragrostis secundiflora*
Western daisy fleabane	*Erigeron bellidiastrum*
Abert's buckwheat	*Eriogonum abertianum*
Annual buckwheat	*Eriogonum annuum*
Roundleaf buckwheat	*Eriogonum rotundifolium*
Shortleaf woollygrass	*Erioneuron avenaceum*
Spurge	*Euphorbia* sp.
American tarwort	*Flourensia cernua*
Red dome blanketflower	*Gaillardia pinnatifida*
Beeblossom	*Gaura*
Dakota mock vervain	*Glandularia bipinnatifida*
Curlytop gumweed	*Grindelia nuda*
Curlycup gumweed	*Grindelia squarrosa*
Small matweed	*Guilleminea densa*
Threadleaf snakeweed	*Gutierrezia microcephala*
Broom snakeweed	*Gutierrezia sarothrae*
Common sunflower	*Helianthus annuus*
Texas blueweed	*Helianthus ciliaris*
Phlox heliotrope	*Heliotropium convolvulaceum*
Fragrant heliotrope	*Heliotropium greggii*
Sicklepod holdback	*Hoffmannseggia drepanocarpa*
Foxtail barley	*Hordeum jubatum*
Matted bluet	*Houstonia humifusa*
Collegeflower	*Hymenopappus flavescens*
Chalk Hill hymenopappus	*Hymenopappus tenuifolius*
Slimlobe globeberry	*Ibervillea tenuisecta*
Southern goldenbush	*Isocoma pluriflora*
Arctic rush	*Juncus arcticus*
Warty caltrop	*Kallstroemia parviflora*
Crown of thorns	*Koeberlinia spinosa*
Littleleaf ratany	*Krameria erecta*
Trailing krameria	*Krameria lanceolata*
Creosote bush	*Larrea tridentata*
Mesa pepperwort	*Lepidium alyssoides*
Fendler's bladderpod	*Lesquerella fendleri*
Woolly marsh elder	*Leuciva dealbata*
Bristle flax	*Linum aristatum*
Narrowleaf stoneseed	*Lithospermum incisum*
Bailey's rabbitbrush	*Lorandersonia baileyi*
Berlandier's wolfberry	*Lycium berlandieri*
Common wolfstail	*Lycurus phleoides*
Hoary tansyaster	*Machaeranthera canescens*
Lacy tansyaster	*Machaeranthera pinnatifida*
Tanseyleaf tansyaster	*Machaeranthera tanacetifolia*
Horehound	*Marrubium vulgare*
Hairy waterclover	*Marsilea vestita*
Rough menodora	*Menodora scabra*
Grassland blazingstar	*Mentzelia strictissima*
Fourvalve mimosa	*Mimosa quadrivalvis*

Common Name	Scientific Name
Smooth four o'clock	*Mirabilis glabra*
Green carpetweed	*Mollugo verticillata*
Bush muhly	*Muhlenbergia porteri*
Sand muhly	*Muhlenbergia arenicola*
False buffalograss	*Munroa squarrosa*
Bicolor fanmustard	*Nerisyrenia camporum*
White Sands fanmustard	*Nerisyrenia linearifolia*
Texas false garlic	*Nothoscordum texanum*
Devil's bouquet	*Nyctaginia capitata*
Evening primrose	*Oenothera* sp.
Tulip pricklypear	*Opuntia phaeacantha*
Plains pricklypear	*Opuntia polyacantha*
Othake	*Palafoxia sphacelata*
Mexican panicgrass	*Panicum hirticaule*
Vine mesquite	*Panicum obtusum*
James' nailwort	*Paronychia jamesii*
Gray's feverfew	*Parthenium confertum*
Mariola	*Parthenium incanum*
Lemonscent	*Pectis angustifolia*
Gilia beardtongue	*Penstemon ambiguus*
Buckley's beardtongue	*Penstemon buckleyi*
Drummond's leaf-flower	*Phyllanthus abnormis*
Ivyleaf groundcherry	*Physalis hederifolia*
James' galleta	*Pleuraphis jamesii*
White milkwort	*Polygala alba*
Bushy knotweed	*Polygonum ramosissimum*
James' holdback	*Pomaria jamesii*
Kiss me quick	*Portulaca pilosa*
Shrubby purslane	*Portulaca suffrutescens*
Sanddune unicorn-plant	*Proboscidea sabulosa*
Honey mesquite	*Prosopis glandulosa*
Woolly paperflower	*Psilostrophe tagetina*
Havard oak	*Quercus havardii*
Chinese lantern	*Quincula lobata*
Upright prairie coneflower	*Ratibida columnifera*
Littleleaf sumac	*Rhus microphylla*
Buffpetal	*Rhynchosida physocalyx*
Canaigre dock	*Rumex hymenosepalus*
Prickly Russian thistle	*Salsola tragus*
Wingleaf soapberry	*Sapindus saponaria*
Threadleaf glowwort	*Sartwellia flaveriae*
Little bluestem	*Schizachyrium scoparium*
Burrograss	*Scleropogon brevifolius*
Spreading moonpod	*Selinocarpus diffusus*
Threadleaf ragwort	*Senecio flaccidus*
Riddell's ragwort	*Senecio riddellii*
Twinleaf senna	*Senna bauhinioides*
Twoleaf senna	*Senna roemeriana*
Streambed bristlegrass	*Setaria leucopila*
Silverleaf nightshade	*Solanum elaeagnifolium*
Melonleaf nightshade	*Solanum heterodoxum*
Copper globemallow	*Sphaeralcea angustifolia*
Scarlet globemallow	*Sphaeralcea coccinea*
Spear globemallow	*Sphaeralcea hastulata*
Alkali sacaton	*Sporobolus airoides*
Sand dropseed	*Sporobolus cryptandrus*
Mesa dropseed	*Sporobolus flexuosus*

Common Name	Scientific Name
Giant dropseed	*Sporobolus giganteus*
Early shaggytuft	*Stenandrium barbatum*
Queen's-delight	*Stillingia sylvatica*
Five-stamen tamarisk	*Tamarix chinensis*
Coulter's wrinklefruit	*Tetraclea coulteri*
Stemmy four-nerve daisy	*Tetraneuris scaposa*
Longstalk greenthread	*Thelesperma longipes*
Hopi tea greenthread	*Thelesperma megapotamicum*
Pricklyleaf dogweed	*Thymophylla acerosa*
Fiveneedle pricklyleaf	*Thymophylla pentachaeta*
Woolly tidestromia	*Tidestromia lanuginosa*
Woody crinklemat	*Tiquilia canescens*
Hairy crinklemat	*Tiquilia hispidissima*
Stemless Townsend daisy	*Townsendia exscapa*
Branched noseburn	*Tragia ramosa*
Slim tridens	*Tridens muticus*
Fanleaf vervain	*Verbena plicata*
Golden crownbeard	*Verbesina encelioides*
Texas sleepydaisy	*Xanthisma texanum*
Rough cocklebur	*Xanthium strumarium*
Plains yucca	*Yucca campestris*
Don Quixote's lace	*Yucca treculeana*
Desert zinnia	*Zinnia acerosa*
Rocky Mountain zinnia	*Zinnia grandiflora*
Lotebush	*Ziziphus obtusifolia*

Note: Nomenclature follows the PLANTS Database (NRCS 2015b).

Prior to construction, woody vegetation would be removed (such as creosote and mesquite) and chipped, except in riparian areas. Vegetation clearing would include mechanical methods and herbicide application. Low-growing shrubs would be cut above ground level at the basal root with the intent of leaving the root crown intact. Following removal of woody vegetation, the full ROW would be mowed, except in dunes and hummocks and other environmentally sensitive locations. Clearing in areas dominated by shinnery oak would not be treated with herbicides to leave as much LPC habitat intact as possible. On BLM lands, blading would not occur without prior approval. When grading must occur to create a safe, level work space for structure installation, the topsoil would be segregated and stored on-site for post-construction reclamation efforts. Appropriate native seed mixes approved by the BLM would be dispensed along the ROW in disturbed areas following construction.

After construction, it is expected that the vegetation community within the ROW would be different than that outside the ROW because SPS vegetation management practices require removal of woody vegetation (such as creosote and mesquite) except in riparian areas. Therefore the vegetation community within the ROW would be predominantly grasses and forbs. Preliminary site monitoring locations would be established along the ROW during pre-construction surveys for reclamation planning. Pre-construction conditions would be documented via photographs taken prior to any construction-related disturbance. Pre-construction photographs would also be taken at each structure location and in areas where dunes and hummocks exist. Maintaining access roads through dunes and hummocks would be minimized to the extent feasible and shall follow a natural "path of least-resistance" in order to minimize habitat impacts.

4.4 WILDLIFE

The Chihuahuan Desert Grasslands, Shinnery Sands, Arid Llano Estacado, and Chihuahuan Basins and Playas ecoregions (Griffith et al. 2006) provide habitat for a variety of wildlife species. SWCA biologists detected the following wildlife species during surveys of the project area from October 20, 2014, to August 19, 2015 (Table 4.3). A few of the species observed are special status species (denoted in bold type), which are further discussed in Section 6.

Table 4.3. Wildlife Detected during Biological Surveys

Common Name	Scientific Name
Birds	
American kestrel[1]	*Falco sparverius*
Ash-throated flycatcher[1]	*Myiarchus cinerascens*
Barn owl[1]	*Tyto alba*
Barn swallow[1]	*Hirundo rustica*
Brewer's blackbird[1]	*Euphagus cyanocephalus*
Brewer's sparrow[1]	*Spizella breweri*
Burrowing owl[1, 2, 3]	***Athene cunicularia***
Cactus wren[1]	*Campylorhynchus brunneicapillus*
Canyon towhee[1]	*Pipilo fuscus*
Chihuahuan raven[1]	*Corvus cryptoleucus*
Chipping sparrow[1]	*Spizella passerina*
Clay colored sparrow[1]	*Spizella pallida*
Common raven[1]	*Corvus corax*
Crissal thrasher[1]	*Toxostoma crissale*
Curve-billed thrasher[1]	*Toxostoma curvirostre*
Eastern meadowlark[1]	*Sturnella magna*
Gadwall[1, 2]	*Anas strepera*
Great-tailed grackle[1]	*Quiscalus mexicanus*
Greater roadrunner[1, 2]	*Geococcyx californianus*
Green-tailed towhee[1]	*Pipilo chlorurus*
Harris's hawk[1]	*Parabuteo unicinctus*
House finch[1]	*Haemorhous mexicanus*
House wren[1]	*Troglodytes aedon*
Ladder-backed woodpecker[1]	*Picoides scalaris*
Lark bunting[1]	*Calamospiza melanocorys*
Lark sparrow[1]	*Chondestes grammacus*
Loggerhead shrike[1, 2]	***Lanius ludovicianus***
Mourning dove[1]	*Zenaida macroura*
Northern bobwhite[1]	*Colinus virginianus*
Northern mockingbird[1]	*Mimus polyglottos*
Pyrrhuloxia[1]	*Cardinalis sinuatus*
Red-tailed hawk[1]	*Buteo jamaicensis*
Sage sparrow[1]	*Amphispiza belli*
Say's phoebe[1]	*Sayornis saya*
Scaled quail[1]	*Callipepla squamata*
Spotted towhee[1]	*Pipilo maculatus*
Sprague's pipit[1]	***Anthus spragueii***
Vesper sparrow[1]	*Pooecetes gramineus*
Western meadowlark[1]	*Sturnella neglecta*
White-crowned sparrow[1]	*Zonotrichia leucophrys*
White-throated sparrow[1]	*Zonotrichia albicollis*
Yellow-rumped warbler[1]	*Setophaga coronata*
Mammals	
Domestic cattle[1]	*Bos* spp.

Common Name	Scientific Name
Cottontail rabbit[1]	*Sylvilagus* sp.
Coyote[1]	*Canis latrans*
Jackrabbit[1]	*Lepus californicus*
Javelina[3]	*Pecari tajacu*
Kangaroo rat[2]	*Dipodomys* sp.
Mule deer[1]	*Odocoileus hemionus*
Pronghorn[1]	*Antilocapra americana*
Wood rat[2]	*Neotoma* sp.
Reptiles	
Common side-blotched lizard[1]	*Uta stansburiana*
Unknown spiny lizard[1]	*Sceloporus* sp.
Ornate box turtle[1]	*Terrapene ornata*
New Mexico whiptail[1]	*Aspidoscelis neomexicana*

Note: [1] Direct observation; [2] mounds and/or nests; [3] tracks and/or scats; [4] carcass/shell.

4.5 MIGRATORY BIRD TREATY ACT AND BALD AND GOLDEN EAGLE PROTECTION ACT

The MBTA provides federal protection to all migratory birds, as well as their nests and eggs. Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act and the MBTA. SPS has developed an avian protection plan as part of their Memorandum of Understanding with the USFWS to outline their procedures for complying with these federal laws (EDM International 2008). The avian protection plan has been developed to identify and minimize injuries or fatalities to raptors and migratory birds. The plan provides a special purpose permit for temporarily possessing carcasses and injured birds. It does not, however, allow the removal or disturbance of active nests unless such nests pose an imminent threat to human health, safety, property, or inability to maintain the line in an emergency situation. In addition, SPS designs and constructs all new transmission facilities to raptor-safe design standards, which include avian electrocution and collision minimization practices described in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006).

Vegetation treatments to control the growth of woody species along the ROW would be conducted every 4 years. These treatments consist of spraying target species such as creosote and mesquite with herbicides to prevent vegetation encroachment on SPS's conductor clearance requirements, its facilities, patrol road, and/or inhibits future operation and maintenance activities. SPS has established guidelines that its contractors are required to follow to protect birds and bird nests during these spraying events.

Suitable nesting habitat for a variety of species is present along the project area. The presence of existing transmission and distribution line structures within proximity of the proposed project area also provides perching habitat for multiple avian species. Numerous bird species in addition to active and inactive passerine, burrowing owl, and raptor nests were observed during SWCA's field surveys (see Table 4.3 and Figure A.1–Figure A.6). The majority of the observed nests were located within shrubs or on the ground. Raptor nests were primarily found on existing transmission and distribution line structures.

Bald eagles are found typically in association with water and nests only at a few undisclosed locations along lakes or streams in the northern and western portions of the state (Stahlecker and Walker 2010). Golden eagles nest primarily on rock ledges or cliffs, less often in large trees at elevations ranging from 4,000 to 10,000 feet amsl, and are typically found in mountainous regions of open country, prairies, arctic and alpine tundra, open wooded areas, and barren areas. Both bald and golden eagles are carnivores. Bald eagles prey on fish but also on mammals, especially prairie dogs (*Cynomys* sp.). Golden eagles feed mainly on small mammals, as well as invertebrates, carrion, and other wildlife (BISON-M 2015; Stahlecker and Walker 2010). No bald or golden eagles were observed during the biological survey. Suitable foraging and marginal nesting habitat for bald eagles is present along the Pecos River. Golden eagles may occur in the project area outside the breeding season when they can perch on utility poles far from cliffs and other rugged terrain. Refer to Section 6.2.6 for additional analysis of potential project effects on bald eagles.

The proposed project is not anticipated to cause take of individual bald or golden eagles, their nests, or eggs. Potential for impacts to migratory birds would vary depending on timing of construction activities relative to the migratory bird breeding season (March–August). If feasible, construction and any associated vegetation removal would be scheduled outside the migratory breeding bird season. Any vegetation removal during the breeding bird season would be preceded by pre-removal nesting surveys to identify any occupied nests and establish avoidance buffers to prevent impacts to species protected under the MBTA.

4.6 WATERS OF THE U.S. AND SPECIAL AQUATIC SITES

The NHD (USGS 2013) depicts 30 drainages crossing the proposed project. SWCA conducted a 100 percent pedestrian survey of the project area investigating the presence of potential waters of the U.S., including wetlands and other special aquatic sites. As part of the surveys, all NHD drainages were field verified. Defining elements of potential waters of the U.S. include ordinary high-water marks, defined bed and banks, or the three mandatory wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology.

Three wetlands, two perennial streams (Pecos and Black Rivers), one intermittent stream (Red Bluff Draw), 22 ephemeral streams, and two playas were recorded within the project area. In SWCA's professional opinion, the perennial, intermittent, and ephemeral streams identified during field surveys may be considered waters of the U.S.; however, this report is not a legal delineation of the boundaries of "waters of the U.S." or a determination of their jurisdictional status. Only the USACE and/or EPA have final and/or legal authority in determining the presence of jurisdictional waters of the U.S. and the extent of their boundaries. Detailed information regarding these drainages is included in the recent wetland delineation report for the proposed project (SWCA 2015b).

Wetland, riparian habitats, and waters of the U.S. would generally be avoided not only to minimize impact to these sensitive areas, but also because these areas are typically unsuitable for the long-term stability of transmission structures. The line would span across all wetlands, playas, the Pecos and Black Rivers, and Red Bluff Draw. In these areas, access roads would be designated in the construction plans to ensure avoidance of these water bodies. If maintenance or construction activities are necessary below the ordinary high-water mark in ephemeral streams, they would

include small culverts or low water crossings that would not exceed 0.10 acre of permanent impact. These crossing would comply with Nationwide Permit 12 (Utility Lines). If the project impacts less than 0.5 acre, but more than 0.10 acre, a Pre-Construction Notification would be required by the USACE. If the activity is less than 0.10 acre, notification is not required by the USACE. Coordination with the USACE has been completed, and no concerns were identified.

5 LIST OF SPECIAL STATUS SPECIES

The special status species evaluated in this report consist of 1) all federally protected (i.e., endangered and threatened) species; 2) additional species listed by the USFWS as candidate, proposed species, or species under review (USFWS 2015b); 3) state-listed endangered and threatened species (BISON-M 2015); and 4) BLM sensitive species, some of which are also listed as candidates or are under review by the USFWS and/or are state listed.

The species federally listed as endangered, threatened, or proposed and being evaluated in this BA are listed in Table 5.1. Five federally threatened, five endangered, and one species with experimental populations have the potential to occur in Eddy and Lea Counties. Of these, the aplomado falcon, a federal experimental, non-essential population, could occur within the project area and is further evaluated in Section 6.1.1. As of September 2, 2015, the lesser prairie-chicken was removed from listing under the ESA (U.S. District Court, Western District of Texas 2015). However, this species is still a BLM sensitive species.

Fifty-seven other special status species are listed to occur in Eddy and Lea Counties (Table 5.2). Of these, 13 species were found to have the potential to occur in the project area and are further evaluated in Section 6.2. The 13 species include one plant (Scheer's pincushion cactus), two reptiles (Texas horned lizard and dunes sagebrush lizard), and 10 birds (Sprague's pipit, LPC, bald eagle, peregrine falcon, varied bunting, neotropic cormorant, common ground dove, ferruginous hawk, burrowing owl, and loggerhead shrike).

Table 5.1. Species Federally Listed as Endangered, Threatened, or Proposed in Lea and Eddy Counties

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Plants				
Lee's pincushion cactus (*Escobaria sneedii* var. *leei*)	USFWS T State E	Found primarily in cracks in limestone and other areas of broken terrain and steep slopes of Chihuahuan desert scrub at elevations of 4,000–5,000 feet amsl.	Unlikely to occur. Project area lacks steep, broken terrain and limestone cliffs. Project area is below the general elevational range of the species.	No effect
Kuenzler's hedgehog cactus (*Echinocereus fendleri* var. *kuenzleri*)	USFWS E State E	Grows primarily on gentle, gravelly to rocky slopes and benches on limestone or limy sandstone, in Great Plains grassland, oak woodland, or piñon-juniper woodland. Elevation 5,200–6,600 feet amsl.	Unlikely to occur. Project area vegetation communities do not consist of Great Plains grassland, oak woodland, or piñon-juniper woodland. Project area is below the general elevational range of the species.	No effect
Sneed's pincushion cactus (*Escobaria sneedii* var. *sneedii*)	USFWS E State E	Known to occur in Luna, Doña Ana, and Eddy Counties, New Mexico. Grows primarily in cracks in limestone in areas of broken terrain and steep slopes usually in Chihuahuan desert scrub.	Unlikely to occur. Project area lacks steep, broken terrain and limestone cliffs.	No effect
Gypsum wild-buckwheat (*Eriogonum gypsophilum*)	USFWS T w/CH State E	Restricted to almost pure gypsum that is sparsely vegetated with other gypsophilous plants such as hairy crinklemat (*Coldenia hispidissima*), gypsum blazingstar (*Mentzelia humilis*), and southwestern ringstem (*Anulocaulis leiosolenus*); elevation 3,280–3,600 feet amsl. The three known locations are north of Carlsbad at Seven River Hills, south of Black River Village, and in the drainages of Ben Slaughter Draw and Hay Hollow.	Unlikely to occur. Gypsophilous vegetation communities not encountered during surveys. Critical habitat is not present in the project area.	No effect
Fish				
Pecos bluntnose shiner (*Notropis simus pecosensis*)	USFWS T w/CH State E	Still extant in the Pecos River from Fort Sumner to Artesia, although it has declined considerably in numbers since about 1950. Most common in main channel areas, with low-velocity water, depths of 7–12 inches, and a sandy substrate.	May occur. The project area crosses the Pecos River. Critical habitat is not present in the project area.	No effect. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Pecos gambusia (*Gambusia nobilis*)	USFWS E State E	Endemic to the Pecos River Basin in southeastern New Mexico and western Texas. Natural populations still occur in New Mexico on the Bitter Lake National Wildlife Refuge and in the Salt Creek Wilderness Area (both in Chaves County), and in Blue Spring in Eddy County. Most common in heads and runs of springs, where it uses aquatic vegetation for refuge. Occupies ponds and gypsum sink holes on Bitter Lake National Wildlife Refuge and in Blue Spring, New Mexico. Associates in loose schools that spend much of the time near the surface. Inhabits shallow areas of alkaline waters with aquatic vegetation for cover.	Unlikely to occur. Project area lacks saline springs and gypsum sinkholes; however, the project crosses the Pecos River.	No effect. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Birds				
Least tern (*Sterna antillarum athalassos*)	USFWS E State E	Migratory species occurring in North America during the breeding season, when it is associated with water (e.g., lakes, reservoirs, rivers). Nests on barren to sparsely vegetated sandbars along rivers, lakes, and reservoir shorelines. In New Mexico, breeding is restricted to the Pecos River Basin. It is known to breed primarily at Bitter Lake National Wildlife Refuge in nearby Chaves County. It occurs in Eddy County mainly as a migrant, but breeding was recorded at Brantley Lake just north of Carlsbad.	May occur along Pecos or Black Rivers as a migrant. Project area lacks suitable breeding habitat.	No effect. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	USFWS E State E	In New Mexico is known to breed only along the Gila River and the Rio Grande. Associated with moist riparian areas throughout the year. Breeding habitat requirements vary by region. In migration may be associated with willows (*Salix* sp.) along ditches, cottonwood (*Populus* sp.) woodland, and saltcedar (*Tamarix* sp.) stands.	Unlikely to occur in the project area. Southwestern willow flycatchers are obligate riparian species and the project area lacks suitable riparian vegetation.	No effect
Mexican spotted owl (*Strix occidentalis lucida*)	USFWS T	Spotted owls are residents in the mountains of New Mexico almost statewide, being most regular in the south. Habitat characteristics highly sought by Mexican spotted owls include high canopy closure, high stand density, a multi-layered canopy, uneven-aged stands, numerous snags, and downed woody matter. These are best expressed in old-growth mixed-conifer forests (usually more than 200 years old).	Not likely to occur in project area due to lack of large canopy, mountainous forest habitat within the project area.	No effect

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Piping plover (*Charadrius melodus circumcictus*)	USFWS T State T	Rare in New Mexico, where it occurs only during spring as a migrant and perhaps also fall migration. Verified at Springer Lake (Colfax County) and reliably reported at Bosque del Apache National Wildlife Refuge (Socorro County); there was also an unsubstantiated report from Lake Avalon (Eddy County) in August. Nests on coastal shorelines, along alkali wetland edges, and sand bar islands of major river systems.	Could occur along Pecos or Black Rivers during migration. Species does not nest in New Mexico.	No effect
Aplomado falcon (*Falco femoralis septentrionalis*)	USFWS ENEP State E	Associated with semi-desert grasslands with scattered yuccas, mesquite, and cactus. Naturally occurring populations are essentially restricted to the southern tier of New Mexico. The species has also been reintroduced on the Armendaris Ranch in Socorro and Sierra Counties and on lands administered by the BLM, White Sands Missile Range, and the New Mexico SLO beginning in 2006.	May occur in the project area. Aplomado falcons occur in open country in southern New Mexico. Utility poles in the project area offer hunting perches.	See Section 6.1.1

* Federal (USFWS) status definitions:
E = **Endangered.** Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.
T = **Threatened.** Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA specifically prohibits the take (see definition above) of a species listed as threatened.
ENEP = Experimental, Non-essential Population. Any reintroduced population established outside the species' current range, but within its historical distribution. For purposes of Section 7 consultation, experimental, non-essential populations are treated as proposed species (species proposed in the *Federal Register* for listing under Section 4 of the ESA), except on national wildlife refuges and national parks, where they are treated instead as threatened.
w/CH = with Critical Habitat. Critical habitat corresponds to specific areas within the geographical area occupied by the species at the time of listing, listing or historically or containing the essential physical or biological features essential to the species' conservation and requiring special management considerations or protection.
BLM Sensitive. The BLM manages certain sensitive species not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered under ESA in the future.
State status definitions:
E = **Endangered.** Any species that is considered by the State of New Mexico (New Mexico Department of Game and Fish for wildlife, Forestry and Resources Conservation Division for plants) as being in jeopardy of extinction or extirpation from the state.
T = **Threatened.** Any species that, in the view of the State of New Mexico, is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico.
Note: A no effect determination is defined based on recommendations by the USFWS.
Except where otherwise noted, range or habitat information for wildlife species is taken from the BISON-M website (2015), the USFWS New Mexico Southwest Region Ecological Services Field Office (USFWS 2015b), Cartron (2010), and the NMRPTC (1999).

Table 5.2. Other Special Status Species, Including New Mexico State-Listed and BLM Sensitive Species in Lea and Eddy Counties

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Plants				
Wright's marsh thistle (*Cirsium wrightii*)	USFWS C	Obligate wetland species that grows on wet, alkaline soils in desert springs and marshy edges of streams and ponds, elevation 3,450–8,500 feet amsl. Only a few known locations in New Mexico. Recorded in the lower Pecos River valley at Rattlesnake Springs (Carlsbad Caverns National Park) and Blue Spring in Eddy County.	Unlikely to occur. Blue Spring and Rattlesnake Springs are not within the project area.	No impact. Project is spanning all waterways.
Tharp's blue-star (*Amsonia tharpii*)	State E BLM Sensitive	Limestone and gypsum hills in Chihuahuan desert scrub communities; elevation 3,100–3,500 feet amsl.	Unlikely to occur due to the lack of limestone and gypsum hills within the project area.	No impact
Scheer's beehive cactus (*Coryphantha robustispina* var. *scheeri*)	State E BLM Sensitive	Typically associated with gravelly or silty soil in desert grassland and Chihuahuan desert scrub. May also be found on rocky benches or bajadas on limestone or gypsum; the elevational range of this cactus is 3,300–3,600 feet amsl.	Individuals of this species were observed during field surveys.	See Section 6.2.1
Shining coralroot (*Hexalectris nitida*)	State E	Occurs among leaf litter in deep canyons of oak thicket habitat in the Cornudas Mountains; elevation 4,300 feet amsl.	Unlikely to occur in the proposed project area due to lack of oak thickets and deep canyons.	No impact
Invertebrates				
Texas hornshell (*Popenaias popeii*)	USFWS C State E	Appears to be confined to the Pecos River near Carlsbad, with former occurrences of this mussel in the North Spring River (Chaves County) and in the Black River (Eddy County). Associated with larger streams and a variety of substrates. Imbeds itself in softer bottoms, but lodges itself in cracks and crevices, where it is probably immobile.	May occur. Project area crosses the Pecos and Black Rivers.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Ovate vertigo snail (*Vertigo ovata*)	State T	The only known population in New Mexico is found at and near Blue Spring south of Carlsbad in Eddy County. It occurs within a few meters of the brook issuing from Blue Spring, on damp soil under the shelter of dead tree branches. The species typically occurs within close proximity of ponds, streams, and spring outflows; on living and dead vegetation, organic debris, and damp or muddy soils.	Unlikely to occur. Blue Spring is not within the project area.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Pecos springsnail (*Pyrgulopsis pecosensis*)	State T BLM Sensitive	The Pecos springsnail is endemic to southeastern New Mexico, known only from Blue and Castle Springs in Eddy County. It occurs on a mud and pebble substrate in its spring habitat, mainly along the edges of the water. Found on pebbles, gypsum silt, and to a lesser extent mud and submerged vegetation in a high-volume spring and spring run and associated marsh. The water is gypsum rich.	Unlikely to occur. Blue and Castle Springs are not within the project area.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Fish				
Pecos pupfish (*Cyprinodon pecosensis*)	State T	Occurs in saline springs and gypsum sinkholes at Bitter Lake National Wildlife Refuge and Bottomless Lakes State Park. Elsewhere, it is present irregularly in the Pecos River south from Bitter Lake and Bottomless Lakes south to the Texas state line and formerly in Laguna Grande in Eddy County. Typical habitat consists of saline springs and gypsum sinkholes; only rare in fresher water habitats including the main channel of the Pecos River. Found in backwater areas and side pools that lack sunfish or other predators.	May occur. Project area lacks saline springs and gypsum sinkholes; however, the project crosses the Pecos River.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Greenthroat darter (*Etheostoma lepidum*)	State T	Native to the Pecos River drainage of Chaves and Eddy Counties. Known to occur in particular at Blue Spring and its outflow stream, in the Pecos River between Lake McMillan and Avalon Reservoir, in the Rio Peñasco and Cottonwood Creek, and at Bitter Lake National Wildlife Refuge. Found in swift-flowing streams and springs, especially vegetated riffle areas with gravel and rubble substrates. Also occurs in clear ponded-water habitats including sinkholes and littoral areas of other lentic systems with wave action and aquatic vegetation rooted in a gravel substrate.	May occur. Project area crosses the Pecos and Black Rivers downstream of Lake McMillan.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Bigscale logperch (*Percina macrolepida*)	State T	Native to the Pecos River drainage, occurring mainly in and below Sumner Lake in De Baca County and between Lake McMillan (Eddy County) and the Texas state line. Smaller populations are found also near Santa Rosa, the Black River, and Willow Lake in Eddy County. Also introduced in Ute Lake in Quay County. The species' preferred habitat consists of strong, non-turbulent flows, but the species is also found in impoundments. Preferred substrate varies from silt to rubble on which the species spends much of its time resting.	May occur. Project area crosses the Pecos and Black Rivers.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Mexican tetra (*Astyanax mexicanus*)	State T	Species' distribution extends from eastern New Mexico and southern Texas southward along the Atlantic slope drainages of Mexico. In New Mexico, restricted largely to Blue Spring and the Delaware River in Eddy County. Also found occasionally in the Pecos River below Lake McMillan. Occupies a variety of habitats but tends to school in pools and below swift areas in eddies. Found primarily in habitats with stenothermal flows (i.e., springs). Young-of-year present in shallow water near overhanging bank vegetation.	May occur. Project area crosses the Pecos and Black Rivers downstream of Lake McMillan.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**	**Determination of Effect**
Gray redhorse (*Moxostoma congestum*)	State E	Formerly occurred in the Rio Grande but now restricted to the Pecos River below Lake McMillan and to the Black River. In the Pecos River it is found mainly in Carlsbad Municipal Reservoir and at the confluence of the Pecos and Black Rivers (without being common at either location). Typical habitat consists of low-gradient streams with warm, usually clear waters. Adults most often occupy medium to large pools with cobble, gravel, silt, or sand bottoms. The young and juveniles tend to seek riffles and gravely runs and avoid densely vegetated areas.	May occur. Project area crosses the Pecos and Black Rivers downstream of Lake McMillan.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Blue sucker (*Cycleptus elongatus*)	State E BLM Sensitive	Found in New Mexico in the Pecos River watershed downstream of Lake McMillan, including the lower Black River. It is absent in the Rio Grande where it occurred historically. Its primary habitat consists of deep river channels with runs and riffles. Also found in pools with moderate currents and in deep lakes.	May occur. Project area crosses the Pecos and Black Rivers downstream of Lake McMillan.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Headwater catfish (*Ictalurus lupus)*	BLM Sensitive	Occurs in Texas, New Mexico, and Mexico. It is native to the Pecos drainage downstream of Sumner Reservoir and also occurs in the Middle Rio Grande Basin. Its habitat consists of clear temperate waters generally with a moderate gradient. Despite competition with the channel catfish (*Ictalurus punctatus*), has persisted in headwater streams and in fluctuating tailwaters of dams in the Pecos River.	May occur. Project area crosses the Pecos and Black Rivers.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Rio Grande shiner (*Notropis jemezanus*)	BLM Sensitive	Occurs in the Rio Grande downstream of the confluence of the Rio Conchos but is extirpated from the Rio Grande in New Mexico. In the Pecos River in New Mexico, it currently persists from Old Fort State Park near Fort Sumner downstream to about Brantley Reservoir, including at Bitter Lake National Wildlife Refuge. Within occupied reaches of the Pecos River it is generally uncommon to rare. Rio Grande shiners occupy flowing water environments found in large open rivers with laminar flows and a minimum of aquatic vegetation, and larger streams with gravel, sand, or rubble bottoms.	Unlikely to occur. The project area crosses the Pecos and Black Rivers in unoccupied reaches south of Brantley Reservoir.	No impact
Reptiles				
Rio Grande cooter (*Pseudemys gorzugi*)	State T	This turtle is confined to the Pecos River drainage, including the Pecos, Black, and Delaware Rivers below Brantley Dam in Eddy County. Primarily a stream species occurring from 2,953–3,610 feet amsl, preferring waters with slow to moderate current, firm bottoms, and abundant aquatic vegetation. Also inhabits stock tanks, ponds, large ditches, and even brackish tidal marshes. In New Mexico, most records are from streams with relatively clear water and rocky or sandy bottoms. This turtle apparently ventures away from water only to nest. Otherwise, it spends much time submerged, whether resting or searching for food. Nests of this species are located in sandy soil, usually within 100 feet of the water.	May occur. Project area crosses the Pecos and Black Rivers.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Mottled rock rattlesnake (*Crotalus lepidus lepidus*)	State T	This subspecies of rattlesnake is known only from the southern Guadalupe Mountains in Eddy and possibly Otero Counties. Key habitat areas include Walnut and Gunsight Canyons and Carlsbad Caverns National Park. Rock rattlesnakes usually occur between 3,937 and 8,530 feet amsl in New Mexico. This snake is found in a variety of habitats, including pine-oak forests, mesquite-grasslands, and rocky desert habitats. Is primarily a mountain dweller, but also occurs in bordering lowlands in some areas. This species favors areas of boulders and rocks including talus slopes with abundant hiding places.	Unlikely to occur. Montane boulder and talus slope habitat is not present within the proposed project area. Project is not located near Carlsbad Caverns National Park.	No impact
Gray-banded kingsnake (*Lampropeltis alterna*)	State E	This species is known from Eddy County and may occur in Otero and southwest Chaves Counties. Occurs in typical Chihuahuan desert habitat with abundant limestone outcroppings between 3,510 and 6,693 feet in elevation. Inhabits a variety of habitats, but found primarily in rocky desert hills at medium elevations. Habitat appears to be restricted to steep to precipitous hills and mountains between approximately 3,937–5,741 feet amsl (below the juniper zone).	Unlikely to occur. Abundant limestone outcroppings and steep, rocky desert hills do not exist within the proposed project area.	No impact

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**	**Determination of Effect**
Arid land ribbonsnake (*Thamnophis proximus diabolicus*)	State T	Known from two disjunct areas in the eastern portion of New Mexico: 1) in the northeast along Ute Creek in Harding and Union Counties, and 2) in the Pecos Valley in Chaves and Eddy Counties north to Roswell. Favored habitats in New Mexico center on streams, ponds, marshes, and even some stock tanks. Vegetation in these areas consists of riparian and emergent aquatic types, including willows, cattails (*Typha* sp.), and bulrushes (*Scirpus* sp.). The species forages in and along the water and on the adjacent land. This snake is a good climber and, when frightened, may be seen dropping into the water from overhanging vegetation.	May occur. Project area crosses the Pecos and Black Rivers.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Plain-bellied watersnake (*Nerodia erythrogaster*)	State E	In New Mexico, this snake is known only from the lower Pecos Valley area (Eddy County), including along the Black River. The plain-bellied water snake is a highly aquatic species, swimming and diving with ease, and seeking prey in water. Normally confined to areas of permanent water, it may wander short distances inland, especially in wet weather. The preferred habitat is ponds and streams, the latter including fairly large rivers. This snake often hides under rocks or other objects during the day and becomes active at night. The young tend to occupy areas of shallower, more dappled water than the adults, including in inlets of small streams.	May occur. Project area crosses the Pecos and Black Rivers.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.
Texas horned lizard (*Phrynosoma cornutum*)	BLM Sensitive	Inhabits arid and semiarid areas in the southwestern United States, characterized by open country with little vegetation. These areas often consist of grasses interspersed with cacti, yucca, mesquite, and other assorted woody shrubs and trees. In New Mexico, the species is associated with *Yucca-Prosopis-Ephedra* and *Larrea-Acacia-Fouquieria* associations, often in playas or on bajadas and mountain foothills.	May occur. Open mesquite associations within the project area represent suitable habitat for the species.	See Section 6.2.2

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Dunes sagebrush lizard (*Sceloporus arenicolus*)	State E BLM Sensitive	A habitat specialist native to the shinnery oak sand dune habitats extending from the San Juan Mesa in northeastern Chaves County, Roosevelt County, and through eastern Eddy and southern Lea Counties. DSLs have an extremely strong affinity for bowl-shaped depressions in active dune complexes, referred to as sand dune blowouts. They prefer relatively large blowouts and select microhabitat within a given blowout. Within their geographic range, the presence of the DSL is also associated with composition of the sand; they only occur at sites with relatively coarse sand.	May occur. Shinnery oak sand dune habitat occurs in the project area. Portions of project are within the known distribution area for the DSL.	See Section 6.2.3
Birds				
Sprague's pipit (*Anthus spragueii*)	USFWS C BLM Sensitive	Occurs in New Mexico only as a sporadic winter resident. Its distribution in the state is not well known, but includes the lower Pecos River valley, Otero Mesa, and the Animas Valley. It is associated with southern desert grasslands of the state. Species as a whole prefers dry, open grasslands.	Observed during surveys and could occur in grasslands of the project area during winter.	See Section 6.2.4
Lesser prairie-chicken (*Tympanuchus pallidicinctus*)	BLM Sensitive	The LPC occurs in southeastern New Mexico primarily in shinnery oak or sand sagebrush grasslands. Also occurs in shinnery oak-bluestem habitats dominated by sand bluestem (*Andropogon hallii*), little bluestem (*Schizachyrium scoparium*), sand dropseed (*Sporobolus cryptandrus*), threeawn (*Aristida* sp.), and blue grama (*Bouteloua gracilis*).	Portions of the project area lie within BLM designated management areas for this species. May occur in grassland and dune habitat within the project area.	See Section 6.2.5
Bell's vireo (*Vireo bellii*)	State T BLM Sensitive	In New Mexico, Bell's vireo occurs in the southern third of the state during the breeding season. The *medius* subspecies is found in the Pecos Valley north to drainages west of Roswell, and in the Black River and Rattlesnake Springs areas south of Carlsbad. Bell's vireo's fundamental requirement is dense shrubby vegetation. Proximity to water may also be important. Nests typically in narrow-leafed riparian shrubs. In southern New Mexico habitats, both saltcedar and mesquite are present but rarely if ever used for nesting.	Unlikely to occur. Habitat within the project area near the Pecos and Black Rivers is not composed of dense riparian shrubs.	No impact
Arctic peregrine falcon (*Falco peregrinus tundrius*)	State T	Migrant throughout New Mexico. Winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands: low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	Unlikely to occur in the project area due to lack of large wetlands, and cliffs.	No impact
Gray vireo (*Vireo vicinior*)	State T	Strongly associated with piñon-juniper and scrub oak habitats. Distributed mainly across the western two-thirds of the state. Prefers gently sloped canyons, rock outcrops, ridgetops, and moderate scrub cover.	Unlikely to occur due to lack of piñon-juniper and scrub oak habitats. No rock outcrops, ridgetops, or sloped canyons occur within the project area.	No impact

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**	**Determination of Effect**
Bald eagle (*Haliaeetus leucocephalus alascanus*)	State T BLM Sensitive	Occurs in New Mexico year-round. Breeding is restricted to a few areas mainly in the northern part of the state along or near lakes. In migration and during winter months the species is found chiefly along or near rivers and streams and in grasslands associated with large prairie dog colonies. Typically perches in trees.	May occur as a migrant along the Pecos and Black Rivers.	See Section 6.2.6
Peregrine falcon (*Falco peregrinus*)	State T	Found in New Mexico year-round. All nests in New Mexico are found on cliffs. In migration and during winter months New Mexico's peregrine falcons are typically associated with water and large wetlands.	May utilize areas along the Pecos and Black Rivers for foraging.	See Section 6.2.7
Broad-billed hummingbird (*Cynanthus latirostris magicus*)	State T	Occurs in riparian habitat or dense mesquite. Occurs in Guadalupe Canyon in Hidalgo County, and rarely found in the Peloncillo Mountains.	Unlikely to occur in the project area, which is not located in southwestern New Mexico. Project area lacks riparian forest and dense mesquite habitat.	No impact
Varied bunting (*Passerina versicolor versicolor*)	State T	This species is associated with desert canyons, thorn-scrub and riparian edge habitats within the extreme southern portion of New Mexico. A small breeding population has been located in canyons of Carlsbad Caverns National Park. Prefers nesting along washes or on slopes of dense shrubby vegetation.	May occur in desert scrub habitat present in the project area.	See Section 6.2.8
Common black-hawk (*Buteogallus anthracinus*)	State T	Occurs in New Mexico almost exclusively during the breeding season and in migration. Breeding populations known chiefly from the Gila River valley in the southwestern portion of the state and from along the Mimbres River and the Rio Hondo watershed. Strongly tied to cottonwood gallery forests.	Unlikely to occur in the project area due to the lack of cottonwood gallery forest habitat.	No impact
Neotropic cormorant (*Phalacrocorax brasilianus*)	State T	Associated with wetlands. Key requirements include areas of deep water for diving and elevated perches in trees, shrubs, and other structures for nesting, roosting, and drying plumage after feeding.	May occur. The Pecos River provides an adequate food source for the species. Project area lacks large, mature trees for roosting and nesting.	See Section 6.2.9
Brown pelican (*Pelecanus occidentalis carolinensis*)	State E	Occurs usually in marine habitats and feeds almost exclusively on fish. Associated with water.	Unlikely to occur. The Pecos River does not provide an adequate food source for the species. Marine habitat is not present in the project area.	No impact
Thick-billed kingbird (*Tyrannus crassirostris*)	State E	Summer resident in extreme southwestern New Mexico, where it occupies riparian canyons with cottonwoods and Arizona sycamores (*Platanus wrightii*). Nests 30–65 feet high in Arizona sycamore, usually in a crotch near the tree trunk.	Unlikely to occur in the project area, which is not located in southwestern New Mexico. The project area also lacks riparian areas with cottonwoods and Arizona sycamores.	No impact

Common Name (*Species Name*)	**Status***	**Range or Habitat Requirements**	**Potential for Occurrence in Project Area**	**Determination of Effect**
Northern beardless tyrannulet (*Camptostoma imberle ridgwayi*)	State E	Northern boundary for the distribution of this species is in southern Arizona and southwestern New Mexico. Species breeds only in riparian areas of Guadalupe Canyon in southern Hidalgo County. Mesquite thickets and smaller trees are favored for feeding. Vulnerable to human disturbance, grazing, fire, and drought.	Unlikely to occur in the project area, which is not located in southwestern New Mexico. The project area also lacks mesquite thicket riparian habitat.	No impact
Lucifer hummingbird (*Calothorax lucifer*)	State E	Associated with rocky slopes or hillsides, and Chihuahuan desert vegetation. Nest sites are selected on slopes above rocky or wooded washes.	Unlikely to occur due to lack of rocky slopes, hillsides, or wooded washes.	No impact
Common ground-dove (*Columbina passerina pallescens*)	State E	Associated with shrubby riparian habitat or riparian woodland edges. Also occurs in desert scrub dominated by mesquite or creosote. Feeds exclusively on the ground, in sparsely vegetated areas.	May occur in the project area due to the presence of mesquite-dominated desert scrub.	See Section 6.2.10
Baird's sparrow (*Ammodramus bairdii*)	State T BLM Sensitive	Baird's sparrow is a winter resident in New Mexico. It has been found on Otero Mesa and in the Animas Valley and may occur in other areas of suitable winter habitat, particularly in the southeastern portion of state. Generally prefers dense, extensive grasslands with few shrubs. Avoids heavily grazed areas.	Unlikely to occur due to heavily grazed areas within project area and lack of dense, extensive grassland habitats.	No impact
Northern goshawk (*Accipiter gentilis atricapillus*)	BLM Sensitive	Strongly associated with montane forests during breeding and in winter. Migrating populations typically follow forested ridges.	Unlikely to occur in the project area due to the lack of montane forests.	No impact
Ferruginous hawk (*Buteo regalis*)	BLM Sensitive	Occurs year-round in New Mexico. During the breeding season it is present in grasslands, badlands, and along the ecotone between grasslands and piñon-juniper woodlands, especially in the vicinity of prairie dog towns. During the winter, ferruginous hawks are primarily associated with grasslands but may be found in other habitat types such as ponderosa pine (*Pinus ponderosa*) forest. Prairie dogs are important year-round in the diet of New Mexico's ferruginous hawks.	May occur in open vegetation habitat in the project area. Utility poles in the project area offer hunting perches.	See Section 6.2.11
White-faced Ibis (*Plegadis chihi*)	BLM Sensitive	Uncommon in New Mexico, where it is found statewide during migration and as (typically non-breeding) summer resident. Breeding recorded only at Tucumcari and at Stinking Lake in Rio Arriba County. Found in association with water. Generally seen in association with shoreline and marsh habitats adjacent to open water. Nesting colonies are located in shrubs and low trees or in dense standing reeds and tules near or in marshes. Forages along the water's edge or in fields.	Unlikely to occur due to lack of shoreline and marsh habitats adjacent to open water within project area.	No impact

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Burrowing owl (*Athene cunicularia hypugaea*)	BLM Sensitive	Present mainly during the breeding season in the northern half of the state and present year-round in the southern half. Found in grasslands especially in association with prairie dog colonies, in desert scrub, and in agricultural and semi-urban environments. Depends on prairie dogs, rock squirrels (*Otospermophilus variegatus*), and other fossorial mammals for the availability of burrows.	May occur due to grassland and desert scrub vegetation in the project area. Species was observed during surveys.	See Section 6.2.11
Loggerhead shrike (*Lanius ludovicianus*)	BLM Sensitive	The loggerhead shrike is a year-round resident in New Mexico and is found throughout the state primarily in open country including grasslands, improved pastures, hayfields, shrub steppe, and desert scrub, as well as piñon-juniper woodland and woodland edges.	May occur. The project area contains thorny desert scrub habitat preferred by the species.	See Section 6.2.12
Black tern (*Chlidonias niger surinamensis*)	BLM Sensitive	Found in New Mexico only during migration and in association with wetland areas, lakes, and ponds. Species breeds outside the state. Nesting occurs on free-floating substrates of matted, dead marsh vegetation, old muskrat houses, or fallen logs.	May migrate through the project area. Free-floating nest habitat is not present in the Pecos River in the project area.	No impact
Mammals				
Spotted bat (*Euderma maculatum*)	State T BLM Sensitive	In New Mexico, spotted bats have been taken in areas near cliffs, including piñon-juniper woodlands and from streams or water holes within ponderosa pine or mixed coniferous forest. It has also taken over cattle tanks in a meadow surrounded by mixed coniferous forest and near a ridge with cliffs and limestone outcroppings. The spotted bat is usually captured around a water source including desert pools or cattle tanks. It also may use rivers or desert washes as travel corridors.	Potential foraging habitat is present, but the project and surrounding areas lack habitat capable of supporting maternity roosting, hibernacula, or bachelor roosting.	No impact
Townsend's pale big-eared bat (*Corynorhinus townsendii pallescens*)	BLM Sensitive	Found in a variety of xeric to mesic habitats: scrub-grassland, desert scrub, semidesert shrublands, chaparral, saxicoline brush, tundra, open montane forests, spruce-fir, mixed hardwood-conifer, and oak woodlands and forests. This species is strongly correlated to the availability of caves or cave-like habitat, but it also uses abandoned buildings and rock crevices on cliffs.	Potential foraging habitat is present, but the project and surrounding areas lack habitat capable of supporting maternity roosting, hibernacula, or bachelor roosting.	No impact
Cave myotis bat (*Myotis velifer*)	BLM Sensitive	This species is found primarily at lower elevations occurring in shortgrass plains, scrub-grassland, Chihuahuan desert scrub, Sonoran desert scrub, Plains and Great Basin swamp and riparian scrub, pine-oak woodlands, and oak savannah. Inhabits caves in the limestone region of southeastern New Mexico, and it has also roosted in barn swallow nests. It is never more than a few miles from a water source, such as canals, tanks, or creeks.	Potential foraging habitat is present, but the project and surrounding areas lack habitat capable of supporting maternity roosting, hibernacula, or bachelor roosting.	No impact

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Big free-tailed bat (*Nyctinomops macrotis*)	BLM Sensitive	This species is usually associated with high cliffs and rugged rock outcroppings, but it also roosts in buildings, under lava, caves, and sometimes tree holes. It is found in urban areas, agriculture, barren land, desert scrub, scrub-grassland, swamp and riparian scrub, juniper savannah, oak savannah, shortgrass plains, alkali sacaton grasslands, montane grassland, montane forest, evergreen forest, and marsh habitat.	Potential foraging habitat is present, but the project and surrounding areas lack habitat capable of supporting maternity roosting, hibernacula, or bachelor roosting.	No impact
Fringed myotis bat (*Myotis thysanodes thysanodes*)	BLM Sensitive	A mid-elevation woodland bat that occurs in montane forest and woodland, mountain meadow, interior chaparral, scrub-grassland, alkali sacaton grassland, Chihuahuan desert scrub, swamp and riparian forests and scrub, Mohave desert scrub, upland Sonoran desert scrub, and occasionally in tundra.	Potential foraging habitat is present, but the project and surrounding areas lack habitat capable of supporting maternity roosting, hibernacula, or bachelor roosting.	No impact
Long-legged myotis bat (*Myotis volans interior*)	BLM Sensitive	Primarily a forest species occurring in chaparral, alpine and subalpine grassland, coniferous forest, scrub-grassland, Chihuahuan desert scrub, swamp and riparian forests and scrub, saxicoline brush, oak savannah, and woodland, Mojave desert scrub, and upland Sonoran desert scrub. Also occurs along watercourses and in deserts.	Potential foraging habitat is present, but the project and surrounding areas lack habitat capable of supporting maternity roosting, hibernacula, or bachelor roosting.	No impact
Western small-footed myotis bat (*Myotis ciliolabrum melanorhinus*)	BLM Sensitive	This species is widely distributed in the western United States, and found in many habitat types. Occurs in riparian wooded areas, bare rock/talus/cliffs, grassland and shrublands, and coniferous or mixed woodland areas. Generally inhabits desert, badland, chaparral, western coniferous forests and semiarid habitats, more mesic habitats in southern part of range. In New Mexico, the distribution of this species seems to be in the ponderosa pine zone, although they occur as low as desert and as high as the lower edges of the spruce-fir zone.	Potential foraging habitat is present, but the project and surrounding areas lack habitat capable of supporting maternity roosting, hibernacula, or bachelor roosting.	No impact
Yuma myotis bat (*Myotis yumanensis yumanensis*)	BLM Sensitive	Occurs in riparian communities, grasslands, semi-desert shrublands, mountain brush, woodlands, and desert habitats. It also occurs in arid canyon lands and Sonoran desert scrub. The species is associated with riparian areas and watercourses in the western United States. Roosts in caves, mines, cliffs, crevices, buildings, and swallow nests, including cliff swallows (*Petrochelidon pyrrhonota*).	Potential foraging habitat is present, but the project and surrounding areas lack habitat capable of supporting maternity roosting, hibernacula, or bachelor roosting.	No impact
Gray-footed chipmunk (*Neotamias canipes canipes*)	BLM Sensitive	Mostly found in forested habitats such as piñon-juniper woodlands, but may also occur in shrublands and desert communities. It may occur in down and dead trees, dense stands of mixed timber, and on brushy hillsides, particularly in rock crevices.	Unlikely to occur in the project area due to lack of trees, dense stands of timber, brushy hillsides, or rock crevices.	No impact

Common Name (*Species Name*)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Black-tailed prairie dog (*Cynomys ludovicianus arizonensis*)	BLM Sensitive	Native to grasslands including short- and mixed-grass prairie, sagebrush steppe, and desert grasslands. Also known to occur in mesquite-creosotebush, grama-needlegrass, tarbush-creosotebush, and burrograss-cholla type habitats.	Unlikely to occur in the project area, which did not harbor any prairie dog colonies at the time of the surveys. The subspecies *arizonensis* is also primarily (perhaps exclusively) restricted to the southwestern part of the state.	No impact
Guadalupe pocket gopher (*Thomomys bottae guadalupensis*)	BLM Sensitive	Found in sycamore, cottonwood, and rabbitbrush riparian communities in the Guadalupe Mountains of southeastern New Mexico and western Texas.	Unlikely to occur in the proposed project area due to lack of sycamore, cottonwood, or rabbitbrush riparian habitat. Project is not located in the Guadalupe Mountains.	No impact
Pecos River muskrat (*Ondatra zibethicus ripensis*)	BLM Sensitive	This species inhabits waterways that have a constant and fairly stable source of water with dense aquatic and emergent vegetation surrounded by terrestrial herbaceous vegetation. Common muskrats prefer sloughs, marshes, oxbow lakes, streams, levees, dikes, and small lakes and ponds. Common muskrats build lodges in or near water using marsh vegetation.	May occur in the project area along the Pecos River, however, dense aquatic and emergent vegetation is not present. Lodges indicative of muskrats were not observed during the survey.	No impact. Project would span (avoid) the Pecos River, Black River, and Red Bluff Draw. Structures would be located outside the 100-year floodplain. Stringing of cables would not involve working within the river.

Federal (USFWS) status definitions:
E = **Endangered.** Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.
T = **Threatened.** Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA specifically prohibits the take (see definition above) of a species listed as threatened.
C = Candidate. Any species (taxon) for which the USFWS has sufficient information to propose that it be added to the list of endangered and threatened species, but the listing action has been precluded by other, higher priority listing activities.
BLM Sensitive. The BLM manages certain sensitive species not federally listed as threatened or endangered in order to prevent or reduce the need to list them as threatened or endangered under ESA in the future.

State status definitions:
E = **Endangered.** Any species that is considered by the State of New Mexico (New Mexico Department of Game and Fish for wildlife, Forestry and Resources Conservation Division for plants) as being in jeopardy of extinction or extirpation from the state.
T = **Threatened.** Any species that, in the view of the State of New Mexico, is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico.
Note: A no effect determination is defined based on recommendations by the USFWS.

Except where otherwise noted, range or habitat information for wildlife species is taken from the Biota Information System of New Mexico (BISON-M) website (BISON-M 2015), the USFWS New Mexico Southwest Region Ecological Services Field Office (USFWS 2015b), Cartron (2010), and the NMRPTC (1999).

6 EFFECTS ANALYSIS

6.1 FEDERALLY THREATENED, ENDANGERED, AND PROPOSED SPECIES

Federally threatened, endangered, and proposed species with the potential to occur in the project area are discussed in detail in this section. Species that are unlikely to occur in the project area are discussed in Table 5.1 and are not evaluated further.

6.1.1 APLOMADO FALCON (FALCO FEMORALIS SEPTENTRIONALIS)

Status and Distribution

Once considered common throughout its range (Bent 1938), the aplomado falcon is currently listed as a state endangered species and a federal experimental, non-essential population in Eddy, Hidalgo, Grant, Luna, Doña Ana, Sierra, Socorro, Otero, and Lea Counties in New Mexico (Cartron 2010). This federal designation authorizes unintentional or incidental take of the falcon pursuant to otherwise legal actions, but still prohibits intentional take.

There are three recognized subspecies in the Western Hemisphere (Cartron 2010). *Falco femoralis pichinchae* occupies areas in western South America, *F. f. femoralis* occupies areas in South and Central America (Keddy-Hector 1990), and the northern aplomado falcon, *F. f. septentrionalis,* resides in grasslands and savannas in the southwestern United States to Central America in Nicaragua (Keddy-Hector 2000). Early records indicate that aplomado falcons were also observed in southern and western Texas, southern New Mexico, and southeastern Arizona (American Ornithologists' Union 1998; Keddy-Hector 2000), and south to Oaxaca, Mexico (Keddy-Hector 2000). Currently, in New Mexico the aplomado falcon is restricted to the southwestern portion of the state (Young and Young 2010) and is a year-round resident.

Habitat Characteristics

In New Mexico's Chihuahuan Desert, aplomado falcons occupy desert grasslands composed mostly of grama grasses (*Bouteloua* sp.) or tobosagrass intermixed with low woody plants such as longleaf ephedra (*Ephedra trifurca*), soaptree yucca (*Yucca elata*), honey mesquite (*Prosopis glandulosa*) (Keddy-Hector 2000; Young and Young 2010), and cholla (Meyer and Williams 2005). Nesting is typically in yuccas, in open grassland adjacent to a shrub land mosaic (Young and Young 2010). Aplomado falcons prey primarily on small birds and insects, as well as small mammals, reptiles, and amphibians on occasion (Keddy-Hector 1990).

Conservation Threats

In its 1986 endangered ruling, the USFWS (1986) cited continued habitat loss and contamination with organochlorine pesticides as the principal threats facing the aplomado falcon. Severe eggshell thinning and pesticide contamination were detected in eggs collected in eastern Mexico between 1957 and 1977 (Kiff et al. 1980). In northern Mexico and the southwestern United States, heavy concentrations of DDE/DDT in potential falcon prey persist within the historical distribution of the falcon (Mora and Anderson 1991). Birds and other organisms collected from Lower Rio Grande, Laguna Madre, and other south Texas water bodies contained heavy loads of

polychlorinated biphenyls, heavy metals, and organochlorine pesticides. Pesticide loads in aplomado falcons may vary with the predominance of insectivorous versus granivorous species in the diet, and with proximity of breeding and foraging locations to agricultural areas (Keddy-Hector 2000).

Extirpation from the Southwest is thought to be the result of brush encroachment, which has reduced the open grasslands with scattered trees preferred as foraging and nesting habitat (USFWS 1986). Loss of habitat to farming has also contributed (Keddy-Hector 1998). Brush encroachment involves the spread of woody vegetation such as mesquite and creosotebush through open grassland or savannah areas, and has been fostered by severe overgrazing, suppression of range fires, and other vegetative disturbances (Keddy-Hector 2000).

In New Mexico, degradation of Chihuahuan Desert grassland habitat due to a combination of drought, overgrazing, and various forms of disturbance, including energy development, presents the greatest threat to species recovery efforts in the state (New Mexico Partners in Flight [NMPIF] 2015a).

Effects Analysis and Effects Determination

The project area is within the known distribution of the species. Project area habitat consists of mesquite shrubs and sparse yuccas with a sparse grass understory, which could provide suitable foraging habitat. The presence of utility poles provides hunting perches for this species. Suitable nesting habitat for the species is not present within the project area. Aplomado falcons were not observed during the biological survey of the project area.

Impacts to any aplomado falcons present in the general area of the project are possible in the form of noise disturbance, but such impacts would be minimal and temporary. No long-term impacts to the aplomado falcon or its habitat are anticipated. Given the analysis of effects above, the proposed project may affect, is not likely to adversely affect the aplomado falcon.

6.2 OTHER CONSERVATION SENSITIVE SPECIES

Other conservation sensitive species with the potential to occur in the project area are discussed below. Species that are unlikely to occur in the project area are discussed in Table 5.2 and are not evaluated in detail in this section.

6.2.1 SCHEER'S BEEHIVE CACTUS (CORYPHANTHA ROBUSTISPINA VAR. SCHEERI)

Status and Distribution

Scheer's beehive cactus is a state endangered plant and a BLM sensitive species. The cactus is found at a limited number of locations in Arizona, New Mexico, Texas, and possibly Mexico (NMRPTC 1999). Distribution of this cactus seems to be restricted to the Pecos River drainage in Chaves and Eddy Counties in southern New Mexico and in counties of nearby western Texas (Center for Plant Conservation 2013; NMRPTC 1999). Elevations for this cactus in Texas, New Mexico, and Mexico range from 3,300 to 3,600 feet amsl (NMRPTC 1999).

Habitat Characteristics

This cactus has been observed on alluvial hillsides on rocky or sandy soils in southeastern Arizona (Roller 1996). In New Mexico, the cactus occurs in desert flats, playas, and lowlands in grasslands (Allred and Ivey 2012), and occasionally on limestone or gypsum benches and bajadas (NMRPTC 1999). Although seemingly limited in range, it has also been observed in association with desert flats, playas, and lowlands in grasslands outside the Pecos River drainage area (Allred and Ivey 2012). Flowering occurs from May to July, and possibly as late as November (NMRPTC 1999).

Conservation Threats

Primary conservation threats include cattle grazing and trampling, and oil and gas development (Center for Plant Conservation 2013). Cattle have caused severe soil erosion, due to trampling and compaction of the soil (Center for Plant Conservation 2013). This action has changed plant species composition and increased competition with non-native species (Center for Plant Conservation 2013).

Effects Analysis and Effects Determination

Scheer's beehive cactus could potentially occur throughout the project area and two were observed during the field surveys (Appendix B, Figure B.2). One Scheer's cactus was found 77 feet from the Eddy County to Kiowa center line at MM 3.67. Another was found 130 feet outside the ROW at MM 66.21 along the Hobbs to China Draw line. The BLM, with assistance from the local native plant society, has transplanted the Scheer's cactus at MM 66.21 to an area outside the ROW.

Vegetation removal and ground-disturbing activities may impact cactus habitat within the ROW or individual cactus undetectable during the survey. Exposed soils would be reclaimed following construction. The status of Scheer's beehive cactus in southern New Mexico is unlikely to be affected by the construction and maintenance of the proposed project, and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

6.2.2 Texas Horned Lizard (Phrynosoma cornutum)

Status and Distribution

The Texas horned lizard is a BLM sensitive species. This species occurs from the south-central United States to northern Mexico. The distribution of this species encompasses most of Texas and Oklahoma, significant portions of Kansas and New Mexico, and southeastern Colorado and southeastern Arizona (Dixon 2013; Sherbrooke 2003; Stebbins 2003).

Habitat Characteristics

The Texas horned lizard inhabits arid and semiarid regions at elevations from sea level to 6,900 feet amsl, characterized by open vegetation communities and a variety of soils ranging from sandy to rocky soils (Degenhardt et al. 1996; Dixon 2013; Sherbrooke 2003; Stebbins 2003). Open vegetation communities occupied by Texas horned lizards typically include grass, cacti, and scattered brush or scrubby trees (BISON-M 2015; Degenhardt et al. 1996; Jones and Lovich 2009). The Texas horned lizard is very cryptic and is usually found in the open, basking in the sun. Texas horned lizards are active throughout the daytime; however, most activity takes place in the morning

or late afternoon. When disturbed, their escape response is frequently to nearby vegetation or they will run away to an open area, stop, and remain motionless (Degenhardt et al. 1996; Jones and Lovich 2009; Stebbins 2003).

Conservation Threats

Threats to the Texas horned lizard include habitat loss from destruction and fragmentation, commercial collection, and chemical spraying of non-native vegetation (Degenhardt et al. 1996; Jones and Lovich 2009; Sherbrooke 2003). Texas horned lizards were once common across much of Texas, but have more recently disappeared from much of eastern half of the state, likely as a result of widespread use of insecticides to control red imported fire ants (*Solenopsis invicta*) (Garrett and Barker 1987; Jones and Lovich 2009).

Effects Analysis and Effects Determination

Texas horned lizards likely occur in the project area, as suitable habitat is present within and adjacent to the project area. However, this species was not observed during the field surveys.

The potential impacts of the proposed project are expected to be minimal and temporary because individual Texas horned lizards could easily avoid active disturbance by moving to adjacent habitat during construction and maintenance activities. Some localized habitat loss would be expected during construction of the proposed project; however, exposed soils would be reclaimed following construction. SPS would maintain the ROW as an open vegetation community. Following best management practices to minimize the duration and extent of open holes would prevent accidental Texas horned lizard mortality resulting from entrapment. No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project may impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability to the population or species.

6.2.3 Dunes Sagebrush Lizard (Sceloporus arenicolus)

Status and Distribution

The DSL is a BLM sensitive species and a state endangered species. The DSL is native to a small area of shinnery oak sand dunes in southeastern New Mexico and adjacent western Texas from approximately 3,400 to 4,600 feet in elevation. The shinnery oak dune habitat extends from the San Juan Mesa in northeastern Chaves and Roosevelt Counties, south through eastern southern Lea County in New Mexico, and the DSL is known from portions of that suitable habitat (Fitzgerald et al. 1997; USFWS 2015d). It is considered to be a habitat specialist because it has adapted to thrive only in a narrow range of environmental conditions that exist within shinnery oak dunes.

Habitat Characteristics

The shinnery oak sand dune habitat where DSL occur consists of scattered patches of open sand called "blowouts" that are present in areas where the sand dunes are well developed (Fitzgerald et al. 1997). The DSL has been found to be closely associated with sand dune blowouts, patches of bare open sand that form from wind erosion along the bases of tall dune crests (Fitzgerald et al. 1997). Sand blowouts provide habitat for thermoregulation, foraging, and predator avoidance

(Degenhardt et al. 1996). Areas without deep sandy soils or dunes consist of shallow sandy loam soils with scattered shrubs and grasses, and few patches of open bare ground.

The DSL survival is directly linked to the quality and quantity of available shinnery oak and associated dune habitat. The landscape created by the shinnery oak dune community is a spatially dynamic system. Shinnery oak and sand dunes form large dune complexes that are separated by flat areas without dunes called shinnery oak flats. It would be feasible to find DSLs in shinnery oak flats that are adjacent to occupied dunes. Suitable habitat is separated by a mosaic of habitat types within or near the range of the DSL. Landforms separating habitat may include mesquite hummocks, grasslands, and tobosa flats that are lacking shinnery oak and dominated by tobosa grass and scattered honey mesquite (USFWS 2015d).

Conservation Threats

The USFWS has identified shinnery oak habitat loss and fragmentation attributable to the creation of roads, well pads, pipelines, and power lines associated with oil and gas development as a measurable factor impacting the species (USFWS 2015d). Fragmentation and further loss of shinnery oak dune habitat is the primary threat to DSL populations. Painter et al. (1999) identified the removal of shinnery oak, alteration of the dominant vegetative structure, and disruption and/or degradation of shinnery oak habitat as the principal threats to DSL populations. Studies by the NMDGF, the USFWS, and others have focused primarily on two types of activity that have affected and continue to affect the status of the DSL: removal of shinnery oak by herbicide application and surface-disturbing activities including those associated with oil and gas development.

Effects Analysis and Effects Determination

Approximately 8 miles of the project traverses through the known distribution area for the DSL (see Figure A.1 and Figure A-2). To minimize potential impacts to occupied DSL habitat, SPS sited the route within 0.5 mile of U.S. Highway 62/180 and other existing ROW easements to the extent feasible. SPS has coordinated with the BLM throughout the planning process to develop a route that avoids dunes known to be occupied by DSL.

Disturbance to dunes and hummocks would be limited to the extent necessary for construction, and reclaimed following construction. Some localized habitat loss may occur during construction of the proposed project. Blading would not be performed without approval from the BLM. The ROW would be maintained with herbicide to control mesquite and creosote growth. Growth of shinnery oak would not be inhibited. Maintaining access roads through dunes and hummocks would be minimized to the extent feasible and shall follow a natural "path of least-resistance" in order to minimize habitat impacts.

No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project may impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability to the population or species. Best management practices for DSL outlined in the BLM's Resource Management Plan Amendment (RMPA) (BLM 2008) are geared toward pipeline trenching and not necessarily transmission structures; however, the BLM would require adhering to those conservation measures when digging foundation holes.

Potential impacts to the DSL would be mitigated by adhering to the following conservation measures:

1. Any hole left open for 8 hours or less is not required to have escape ramps; however, before the hole is backfilled, a BLM-approved monitor would inspect the open hole and remove all trapped wildlife and release them at least 300 feet from the hole.

2. For holes left open for 8 hours or more, earthen escape ramps (built at no more than a 30-degree slope and placed no more than 500 feet apart) would be placed in the hole. The open foundation holes would be monitored each day by a BLM-approved monitor during the following three time periods: 1) 5:00 a.m. to 10:00 a.m., 2) 11:00 a.m. to 2:00 p.m., and 3) 3:00 p.m. to sunset. All trapped wildlife would be released at least 300 feet from the hole.

3. This stipulation would apply to the entire length of the project in DSL habitat regardless of land ownership.

6.2.4 Sprague's Pipit (Anthus spragueii)

Status and Distribution

Sprague's pipit is federally listed as a candidate species as a result of range contraction and population decline since the late nineteenth century. The species is migratory, breeding on the Great Plains but wintering farther south, in Arizona, New Mexico, Texas, Oklahoma, Arkansas, Mississippi, Louisiana, and northern Mexico. Sprague's pipit leaves its wintering grounds in April, arriving on breeding grounds from late April to mid-May (National Audubon Society 2012). It leaves its breeding grounds anywhere from September through November and will arrive on wintering grounds over the same period. A small wintering population occurs in grasslands in southern New Mexico (NMPIF 2015b).

Habitat Characteristics

Sprague's pipit prefers well-drained areas of open grassland with native grasses of intermediate height and thickness with moderate litter depths. Although Sprague's pipits appear to tolerate disturbed grasslands, they are strongly tied to native prairie (land that has never been plowed) throughout their life cycle and are rarely observed in croplands or on land in the Conservation Reserve Program, aimed at converting marginal farmland back to grassland (USFWS 2015e). The species may also occur in alkaline meadows and in wet meadow zones around alkali and freshwater lakes.

Conservation Threats

Most of this species' decline occurred in the late nineteenth and early twentieth centuries as the short- and midgrass plains were converted to agricultural use (National Audubon Society 2012). Agriculture and overgrazing remain the leading causes for decline of Sprague's pipit on both its summer and wintering grounds. The introduction of exotic grasses also degrades summer—and presumably also winter—habitat for the Sprague's pipit, as the species is much more abundant on fields with native grasses. Overgrazing leads to encroachment of woody trees and shrubs on the pipit's wintering grounds rendering the habitat unsuitable. During severe drought, the species distribution is limited by the presence of grass.

Effects Analysis and Effects Determination

This species is known to occur in southern New Mexico during winter and migration, but does not breed in New Mexico. A single Sprague's pipit was observed at MM 13.77 along the Eddy County to Kiowa line (see Figure A.6). Although Sprague's pipit was observed in the project area, the grassland habitat observed during surveys was at best marginally suitable due to grazing and other disturbance related to oil and gas development.

Impacts to Sprague's pipit habitat would occur during pre-construction vegetation clearing and mowing. Noise disturbance during construction and maintenance may impact any Sprague's pipits present in or near the project area by causing temporary avoidance of the area until construction and maintenance is complete. No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project may impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability to the population or species.

To hasten post-construction reclamation of disturbed soils and mitigate for localized Sprague's pipit habitat loss, the BLM would require SPS to double the pounds per acre of seed mix within 1 mile of the pipit detection location.

6.2.5 Lesser Prairie-Chicken (Tympanuchus pallidicinctus)

Status and Distribution

The LPC is a medium-sized grouse that occurs in scattered populations in short-grass and mixed grass prairies, shinnery oak grasslands, and sand sagebrush grasslands of the southern Great Plains (NMPIF 2015c). As of September 2, 2015, the lesser prairie-chicken was removed from listing under the ESA (U.S. District Court, Western District of Texas 2015). However, this species is still a BLM sensitive species. The range of the LPC has been reduced by about 92% over the past century (Crawford 1980; NMPIF 2015c). Current distribution is disjunctive, with a distinct gap between the southeast Colorado, southwest Kansas, western Oklahoma, eastern Texas panhandle population and the eastern New Mexico, western Texas population (NMPIF 2015c). The species is estimated to occupy less than 50% of its historical range in New Mexico (Bailey and Williams 2000). The primary populations occur in north Lea and south Roosevelt Counties. Sparse and scattered populations occur in portions of northeast Chaves, Curry, and north Roosevelt Counties, and small portions of east De Baca and south Quay Counties (NMPIF 2015c). In south Lea County, the species is considered nearly extirpated, and in 2005, a single known lek was reported in this area (NMPIF 2015c). Two additional leks were known to occur in southern Lea County as recently as 2009 (Southern Great Plains Crucial Habitat Assessment Tool [SGP CHAT] 2013).

Habitat Characteristics

LPCs occupy native shrublands of the southern Great Plains. In New Mexico, LPC habitat occurs in vegetation communities dominated by shinnery oak and several species of bluestem (*Andropogon* sp.), grama (*Bouteloua* sp.), and dropseed (*Sporobolus* sp.) grasses. In ungrazed or lightly grazed areas, native tallgrass species such as sand bluestem (*Andropogon hallii*) may grow higher than the relatively low shinnery oak canopy (NMPIF 2015c).

In New Mexico, LPCs have been observed in areas of shinnery oak–tallgrass habitat, with patches containing the most sand bluestem in the 10-foot-diameter area around the nest, and sand bluestem clumps as nesting cover. LPCs avoid nesting in mesquite and shortgrass-dominated areas where sand bluestem is absent (Davis et al. 1979; Davis et al. 2008; Riley et al. 1992). Although tall grasses are crucial for nesting cover, shrub cover is also a crucial component of good nesting habitat in New Mexico (NMPIF 2015c). In general, nesting habitat typically consists of low shrub cover and high grass and forb cover, interspersed with patches of short vegetation. Successful nests in nearby Chaves County were located in patches in which the vegetation was roughly 65% grasses and 30% shinnery oak (NMPIF 2015c).

The LPC's diet consists of insects, seeds, and green leafy material (Bidwell et al. 2002). In spring, LPCs congregate at gobbling grounds or lek sites in open areas where grass is short, where males gather in groups and perform mating displays for females (NMPIF 2015c). Most hens visiting the leks mate with dominant males that hold central territories of the leks. After mating, the hen selects a nest site on the ground in areas with few predators (e.g., away from water), usually within 1 mile of the lek. Clutch size is typically 11 to 14, and incubation lasts 23 to 28 days. The hen moves her brood away from the nest within hours of hatching, into areas of early-stage plant succession, where insects are abundant (NMPIF 2015c). The brood remains with the hen for 8 to 10 weeks, then disperses. LPCs are non-migratory (Bidwell et al. 2002).

Conservation Threats

The main threat to the species consists of habitat loss and fragmentation due to agricultural land conversion, livestock grazing, and oil and gas development (Fuhlendorf et al. 2002; Hunt and Best 2004; USFWS 2010; Woodward et al. 2001).

Livestock grazing is the predominant land use across the species' range in New Mexico and plays a major role in determining habitat quality (NMPIF 2015c). Landscapes in which more than 37% of native rangeland has been lost may be incapable of supporting LPCs, and populations have declined in areas with only 20% rangeland conversion (Taylor and Guthrie 1980; USFWS 1998b). Grazing that results in insufficient residual grass cover for successful nesting or otherwise lowers recruitment by reducing the availability of good nesting and brood-rearing habitat may cause population declines (Bidwell et al. 2002; Jamison et al. 2002; USFWS 1998b). In some areas, the spread of mesquite or other drought-tolerant shrubs has altered or reduced habitats preferred by LPC (NMPIF 2015c). Improper or excessive use of herbicides in LPC habitat used to control shinnery oak and improve livestock forage may result in the loss of an important source of food and protective cover for LPCs (Bidwell et al. 2002; Giesen 1998).

Oil development may play a role in the previous abandonment of a number of historically active lek sites in the Carlsbad area. Preliminary data over 2 years showed that inactive lek sites were

exposed to higher ambient sound levels than active sites (Hunt and Best 2002). The same study also reported a significantly higher number of operating wells within 1 mile of inactive than active lek sites (NMPIF 2015c).

A growing body of evidence suggests that LPCs actively avoid areas of human activity, noise, and proximity to vertical elements (such as trees or power poles), particularly during nesting (NMPIF 2015c; Robel et al. 2004). Predation on nests, chicks, and adult birds is by far the largest source of mortality for this species (NMPIF 2015c). The introduction of trees, power lines, or other vertical structures into prairie habitats provides hunting perches for raptors and may indirectly increase raptor predation on LPCs (Bidwell et al. 2002). Fences and power lines may also be a significant cause of direct mortality by collision (Bidwell et al. 2002).

Effects Analysis and Effects Determination

The project area lies within the Isolated Population Area (IPA), a special status species RMPA zoning area established by the BLM for LPC (BLM 2008). Approximately 23.5 miles of the IPA is crossed by the project. To minimize potential impacts to LPC within the IPA boundary, SPS sited the route within 0.5 mile of U.S. Highway 62/180 to the extent feasible.

Conservation measures and other protective criteria have been developed for energy development activities within the IPA and other RMPA zoning areas, which include following best management practices (e.g., stipulations) for construction, revegetation, and implementation of controlled surface use (BLM 2008). SPS has coordinated with the BLM throughout the planning process to develop a route that minimizes surface disturbance in the project area and avoids crossing through any Habitat Evaluation Areas for LPC.

Stipulations for activities in the LPC management area outlined in the RMPA include:

1. Timing and noise restrictions would be applied to prevent disruption of mating and nesting activities. All energy exploration and development activities would be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15.

2. Exceptions to these timing requirements would be considered in emergency situations such as mechanical failures. Exceptions would not be granted after March 15, or during the March 1 to 15 period if the BLM determines, on the basis of biological data or other relevant facts or circumstances, that the granting of an exception would disrupt LPC booming activity during the breeding season. Requests for exceptions on a non-emergency basis may also be considered, for the period of March 1 to June 15, but these exceptions would not be granted if the BLM determines that there is LPC habitat, LPC sightings, historic leks and or active leks within 1.5 miles of the proposed location, or any combination of the above-mentioned criteria.

At the request of the BLM, SWCA conducted LPC lek surveys in 2015 for a portion of the proposed route within the IPA and occurring more than 0.5 mile from U.S. Highway 62/180 (see Figure A.7). Data sheets accumulated during the lek survey effort are included in Appendix C. SWCA did not observe (visual and/or auditory) any LPC individuals or leks. There are no known historic leks within proximity of the project area.

The project area contains marginal nesting and foraging habitat for the LPC. Surrounding habitat is disturbed by grazing as well as oil and gas, transmission, and distribution development. Shinnery oak in the project area is low-growing and sparse. Some preferred LPC grass species (bluestem, dropseed, and grama) are present.

The effect of increased raptor and raven predation rates would be most pronounced where the proposed project area does not already contain other tall structures, such as trees and existing transmission and distribution lines. Much of the project that is located in LPC habitat is also located adjacent to (within 1–3 miles of) existing transmission and distribution lines that already serve as nesting and perching habitats for raptors. In these areas, the project would cumulatively add to the number of available structures, but not necessarily cause an increase in raptor and raven populations in the general area. The project could create new nesting and perching opportunities in some areas; however, SPS has sited the route along corridors of existing disturbance to the extent feasible.

Noise disturbance during construction may impact LPCs present in the project area by causing temporary avoidance of the area until construction is complete. SPS would adhere to timing restrictions for LPC within the IPA. Given the analysis of effects above, the proposed project may affect, but is not likely to adversely affect the LPC.

6.2.6 Bald Eagle (Haliaeetus leucocephalus alascanus)

Status and Distribution

The bald eagle is listed as threatened by the State of New Mexico and sensitive by the BLM. It was removed from the list of federally threatened and endangered species in the fall of 2007, after a successful recovery. Roughly 11,000 breeding pairs of eagles are known in North America with some 10 pairs that nest in New Mexico. Numbers of breeding pairs of eagles in New Mexico has increased over the last decade (NMPIF 2015d).

Habitat Characteristics

The preferred habitat of the bald eagle is forested areas adjacent to bodies of water away from human disturbance. Habitat required for successful breeding includes mature or old-growth forest with some habitat edge. Forest patches with nests have relatively open canopies with nearby foraging areas with tall, easily accessible trees for perching (NMPIF 2015d).

Conservation Threats

Decline of the bald eagle was mostly due to brood failure caused by thin eggshells resulting from pesticides such as DDT, lead poisoning from the ingestion of wounded waterfowl, and degradation of habitat (USFWS 2007).

Effects Analysis and Effects Determination

Bald eagles could forage along the Pecos River, but are not known to nest in Eddy County. The project area represents marginal foraging habitat with only human-made structures suitable for perching.

Noise disturbance during construction and maintenance may impact any bald eagles present in or near the project area by causing temporary avoidance of the area until construction and maintenance is complete. Some localized loss of marginal foraging habitat may occur during construction; however, such habitat is also present in the surrounding area. Construction during the migratory bird season (March–August) would be preceded by nest surveys to identify the possibility of eagles nesting in or adjacent to the project area. Avoidance buffers around occupied nests would be established until the young have fledged. No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project would not likely contribute to a trend towards federal re-listing or cause a loss of viability to the population or species.

6.2.7 Peregrine Falcon (Falco peregrinus)

Status and Distribution

The peregrine falcon is a State of New Mexico threatened species that has a worldwide distribution, encompassing both northern and southern hemispheres. It has recovered from low populations brought on by organochloride pesticide contaminations that resulted in thin eggshells and low brood success (NMPIF 2015e).

Habitat Characteristics

The preferred habitat of the peregrine falcon is montane and canyon areas, including elevations above 10,000 feet. Nesting is usually located on cliffs 50 to 1500 feet high. However, due to population expansion, suboptimal nesting sites have been selected on manmade structures including towers and tall buildings (NMPIF 2015e).

Conservation Threats

Since the banning of organochloride pesticides, peregrine numbers have rebounded, but migratory birds that have ingested banned substances may be a threat to healthy populations. In New Mexico, the largest threat to the falcon is likely disturbance from human activities.

Effects Analysis and Effects Determination

Peregrine falcons are known to nest in the Guadalupe Mountains in western Eddy County. This species may pass through the project area using the Pecos and Black River valley habitat during migration. The project area represents marginal foraging or wintering habitat for the falcon.

Noise disturbance during construction and maintenance may impact any peregrine falcons present in or near the project area by causing temporary avoidance of the area until construction and maintenance is complete. Some localized loss of marginal foraging or wintering habitat may occur during construction; however, such habitat is also present in the surrounding area. Construction during the migratory bird season (March–August) would be preceded by nest surveys to identify the possibility of falcons nesting in or adjacent to the project area. Avoidance buffers would be established around occupied nests until the young have fledged. No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

6.2.8 VARIED BUNTING (PASSERINA VERSICOLOR VERSICOLOR)

Status and Distribution

The varied bunting is listed as threatened by the State of New Mexico. The species ranges from the Southwest southward to Guatemala, summering in the United States from southern Arizona to southern Texas (BISON-M 2015). The core of the bunting's range is in central Mexico, and the U.S.–Mexican border is the northern limit to the buntings' northern range. In New Mexico, this species is known to occur in canyons along the Guadalupe Mountain range in Eddy County. A small breeding population is also located in canyons of Carlsbad Caverns National Park.

Habitat Characteristics

Varied buntings occur in brushy desert canyons and along washes and riparian edges, and less commonly in open desert with dense vegetation (Groschupf and Thompson 1998; Lockwood 1995). In New Mexico, the species seems to prefer dense stands of mesquite and associated growth in canyon bottoms. Nest shrubs may be located along washes or on slopes of dense, shrubby vegetation (Groschupf and Thompson 1998).

Conservation Threats

Declines are mostly due to loss of quality habitat. Scrub habitat destruction in Mexico, where the bird nests, is thought to be a large factor in the species' downward population trend.

Effects Analysis and Effects Determination

The project area habitat does not contain dense mesquite stands along canyon bottoms, but open desert habitat with areas of dense mesquite is present. The nearest known population is located at Carlsbad Caverns National Park, 40 miles west of the proposed project area. Varied bunting may pass through the project area, but would not nest. This species was not observed during the field surveys.

Noise disturbance during construction and maintenance may impact any varied buntings present in or near the project area by causing temporary avoidance of the area until construction and maintenance are complete. Some mesquite habitat loss would occur as a result of the proposed project; however, such habitat is abundant in the surrounding area. Construction during the migratory bird season (March–August) would be preceded by nest surveys to identify the possibility of buntings nesting in or adjacent to the project area. Avoidance buffers would be established around occupied nests until the young have fledged. No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

6.2.9 NEOTROPIC CORMORANT (PHALACROCORAX BRASILIANUS)

Status and Distribution

Neotropic cormorant is a threatened species in the state of New Mexico. In New Mexico, the species breeds in the Rio Grande valley at Elephant Butte and Caballo Lakes, and most regularly at Bosque del Apache National Wildlife Refuge, all of which are key habitat areas for the species.

The species also occurs occasionally in the middle Rio Grande valley northward to the Bernalillo area and southward to Las Cruces, plus in the Gila Valley; it is a vagrant to southern Hidalgo County, near Alamogordo, and in the lower Pecos Valley (Bitter Lake National Wildlife Refuge southward) (BISON-M 2015).

Habitat Characteristics

Across its range, neotropic cormorant occurs in a variety of wetland habitats and climatic conditions. This species occupies wetlands in fresh, brackish, or salt water, both in coastal and inland areas. Key habitat requirements include deep water for diving and elevated perches in trees, shrubs, and other structures for nesting, roosting, and drying plumage after feeding. This species has a relatively prolonged but variable breeding season in New Mexico, with nesting activities initiated in some years as early as March, and occasionally extending into September. It prefers to nest in small trees, live or dead, emergent or alongside water. In New Mexico, nesting cormorants prefer stands of trees or shrubs, in or near water, that are free from human disturbance (NMPIF 2015f).

Conservation Threats

This species is generally tolerant of most human activities, short of severe disturbance. Local breeding colonies may be threatened by fluctuating water levels, which may result in inundation, erosion, or the creation of land bridges to island areas.

Effects Analysis and Effects Determination

Neotropic cormorants are known to occur along the Pecos River. This species could forage, roost, or nest within the project area; however, human activity in the surrounding area is high. SPS would not remove woody vegetation in riparian areas as part of preparing the ROW for construction. If it is necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be selectively removed. Structures would be located outside the 100-year floodplain, and stringing of cables would not involve working within the river.

Noise disturbance during construction and maintenance may impact any neotropic cormorants present in or near the project area by causing temporary avoidance of the area until construction and maintenance are complete. Construction during the migratory bird season (March–August) would be preceded by nest surveys to identify the possibility of cormorants nesting in or adjacent to the project area. Avoidance buffers would be established around occupied nests until the young have fledged. No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

6.2.10 Common Ground-dove (Columbina passerina)

Status and Distribution

The common ground-dove is listed as an endangered species by the State of New Mexico. The common ground-dove occurs year-round in New Mexico in the southernmost part of the state, including at San Simon Cienega (Hidalgo County) and sparingly in the lowermost Rio Grande and Pecos River valleys. It has also occurred irregularly northward to the lower Gila Valley and the

Socorro area, and as a straggler elsewhere. Recently, this species has declined from being a sparse resident of the southern border region to a population consisting of a few birds in Hidalgo County, plus stragglers elsewhere in the state (NMDGF 1991).

Habitat Characteristics

The species is typically found at elevations below 5,410 feet amsl in agricultural areas and undeveloped habitats consisting of desert scrub dominated by creosote or mesquite and desert riparian woodlands. Much of its time is spent walking on the ground, gleaning seeds and other plant materials that constitute the bulk of the species' diet. When not foraging, common ground-doves generally perch quietly and inconspicuously in shrubs or low in trees, although in the breeding season males call for extended periods of time. This species typically nests in shrubs or low trees, often within 6 feet of the ground.

Conservation Threats

Riparian areas have been reduced in New Mexico, thereby limiting the species' preferred breeding grounds (NMPIF 2015g).

Effects Analysis and Effects Determination

Although the common ground-dove is now mainly restricted to Hidalgo County, it is possible for the species to occur within riparian habitat along the Pecos and Black Rivers and in mesquite-dominated habitat in the project area. Riparian habitat in the project area is sparse and marginally suitable for nesting. SPS would not remove woody vegetation in riparian areas as part of preparing the ROW for construction. If it is necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be selectively removed. Structures would be located outside the 100-year floodplain, and stringing of cables would not involve working within the river. Some mesquite habitat loss would occur as a result of the proposed project; however, such habitat is abundant in the surrounding area.

Noise disturbance during construction and maintenance may impact any common ground-doves present in or near the project area by causing temporary avoidance of the area until construction and maintenance are complete. Construction during the migratory bird season (March–August) would be preceded by nest surveys to identify the possibility of ground-doves nesting in or adjacent to the project area. Avoidance buffers would be established around occupied nests until the young have fledged. No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

6.2.11 Ferruginous Hawk (Buteo regalis)

Status and Distribution

The ferruginous hawk is a BLM sensitive species. The ferruginous hawk's breeding distribution is centered on the Great Basin and Great Plains from southwestern Canada south to Oregon, Nevada, Arizona, New Mexico, and northwestern Texas. The species is migratory except in the southernmost part of its range, and breeding and wintering distributions overlap. In New Mexico, the species is known to breed south to a latitude of 33° 20′ N (Cartron et al. 2010). In the southern

tier of New Mexico, the species is primarily a winter resident, although historical nesting records exist.

Habitat Characteristics

Throughout New Mexico, ferruginous hawks are primarily associated with grasslands and badlands, especially in the vicinity of prairie dog colonies. This species is typically found in areas of large trees, cliffs, plateaus, foothills, shallow canyons, or riparian habitats. The diet of ferruginous hawks consists primarily of mammals, often dominated in terms of biomass by prairie dogs. Ferruginous hawks nest on cliffs and in trees (Cartron et al. 2010). During breeding season these hawks dwell in grassland, sagebrush, and other desert shrub areas. Cultivated areas are avoided, but are sometimes inhabited through the winter.

Conservation Threats

Declines are mostly due to loss of quality habitat. Although flexible in choosing a nest site and exhibiting a high reproductive potential, this bird's restriction to natural grasslands on the breeding grounds and specialized predation on mammals persecuted on rangelands may make conservation a continuous concern.

Effects Analysis and Effects Determination

Ferruginous hawks historically nested in southern Eddy County and have been documented in recent years nesting in northern Eddy County (Cartron et al. 2010). The project area represents marginal foraging or wintering habitat for the ferruginous hawk. In particular, ferruginous hawks present in the general area of the proposed project would not find any concentration of preferred mammalian prey, including prairie dogs. Ferruginous hawks would not be expected to nest within the project area.

Anticipated impacts to ferruginous hawks would be in the form of temporary noise disturbance and ferruginous hawks present in or near the project area would relocate to a nearby area with similar habitat. Some localized loss of marginal foraging or wintering habitat may occur during construction; however, such habitat is also present in the surrounding area. Construction during the migratory bird season (March–August) would be preceded by nest surveys to identify the possibility of ferruginous hawks nesting in or adjacent to the project area. Should occupied nest be found, avoidance buffers around occupied nests would be established until the young have fledged. No long-term impacts to the ferruginous hawk or its habitat are anticipated from the proposed project. The proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

6.2.12 Burrowing Owl (Athene cunicularia)

Status and Distribution

The burrowing owl is a BLM sensitive species. Populations of burrowing owls are declining across much of North America, particularly in the north.

The burrowing owl is a ground-dwelling, burrowing raptor. In New Mexico, burrowing owl breeding populations are distributed throughout the entire state. Breeding pairs vacate their

breeding grounds in the northern part of the state to migrate south, whereas in the central tier of the state overwintering is irregular. In the south, some burrowing owls overwinter on their breeding grounds, their numbers fluctuating annually.

Habitat Characteristics

Burrowing owls are primarily associated with grasslands—the species is thought to have originated on the Great Plains, but other open habitats are used by the owl in New Mexico as elsewhere: desert scrub, savannahs, arroyos, agricultural lands, and urban and disturbed areas. Burrowing owls occupy burrows excavated by other mammals, which in New Mexico typically consist of black-tailed prairie dogs (*Cynomys ludovicianus*), Gunnison's prairie dogs (*C. gunnisoni*), and rock squirrels (*Otospermophilus variegatus*). The arrival time on breeding grounds in New Mexico is typically in mid to late March (Desmond 2010).

Conservation Threats

Primary threats to the species consist chiefly of prairie grassland habitat loss and fragmentation, human-caused mortality on wintering grounds and during migration, and the loss of colonial sciurids such as prairie dogs.

Effects Analysis and Effects Determination

Burrowing owls were observed in the vicinity of the project area during the field investigations. Numerous burrows potentially suitable as nest burrows were observed in the project area, and one active burrowing owl burrow was observed at MM 25.84 along the Hobbs to China Draw line (see Figure A.1–Figure A.6). No prairie dog colonies were identified within the project area.

Noise disturbance during construction and maintenance may impact any burrowing owls present in or near the project area by causing temporary avoidance of the area until construction and maintenance are complete. Localized loss of burrows may occur as a result of vegetation removal and ground-disturbing activities. Construction during the migratory bird season (March–August) would be preceded by nest surveys to identify the possibility of burrowing owls nesting in or adjacent to the project area. A 200-meter (656-foot) avoidance buffer would be established around any active nest burrow until the young have fledged. Occupied nest burrows detected during the 2014–2015 biological surveys would be spot checked for nesting activity if construction occurs during the migratory bird season. The BLM may require a biological monitor during construction near occupied burrows identified during pre-construction surveys. No long-term impacts to the species or its habitat are anticipated from the proposed project. The proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

6.2.13 Loggerhead Shrike (Lanius ludovicianus)

Status and Distribution

The loggerhead shrike is a BLM sensitive species. The species is a year-round resident of the southern half of the United States from California to the Carolinas, south of the Pacific slope and into the interior highlands of Mexico (NMPIF 2015h). Summer breeding populations extend into the northern United States, in the Midwest, and into south-central Canada (NMPIF 2015h).

Habitat Characteristics

The loggerhead shrike is relatively common in lowland habitats of New Mexico, but general species requirements include widely spaced shrubs and low trees, interspersed with grass, forbs, and bare ground (NMPIF 2015h). In New Mexico, loggerhead shrikes are usually associated with open country that contains short vegetation. Breeding territories are often characterized by the presence of isolated trees and large shrubs, and dense, thorny shrubs are preferred for nesting and foraging. In desert areas, tall yucca stems are used as hunting perches. Presence of shrubs is critical to loggerhead shrike habitat where the species has access to thorns or barbed wire on which to impale its prey (NMPIF 2015h).

Conservation Threats

The loggerhead shrike long-term decline is not understood. The lack of knowledge on this species' decline has left it vulnerable and in need of careful monitoring (NMPIF 2015h).

Effects Analysis and Effects Determination

Numerous loggerhead shrikes were observed within the project area and suitable thorny shrub habitat is also present throughout much of the project area (see Figure A.1–Figure A.6). Localized loss of woody vegetation (such as mesquite, acacia, etc.) would occur as a result of the proposed project; however, such habitat is abundant in the surrounding area. Construction during the migratory bird season (March–August) would be preceded by nest surveys to identify the possibility of loggerhead shrike nesting in the project area and establish avoidance buffers around any occupied nests. Disturbance of loggerhead shrikes or their habitat would be temporary. The proposed project may impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

7 CONCLUSION AND MITIGATION RECOMMENDATIONS

The following applicant-committed environmental protection measures are recommended to lessen or avoid impacts to natural resources. These design features are organized below under the resource they are designed to protect, although some of these measures are designed to protect or mitigate impacts to multiple resources. The design features refer to applicable best management practices, which are industry-recommended or agency-required construction methods that are routinely implemented to minimize impacts to resources. If these measures are implemented, no significant impacts to natural resources are anticipated as a result of the proposed project.

7.1 GENERAL

- Prior to construction, an environmental awareness training would be conducted to instruct all personnel on the protection of cultural, ecological, and other natural resources including (a) federal and state laws regarding antiquities and plants and wildlife, including collection and removal, (b) the importance of these resources, and (c) the purpose and necessity of protecting them.
- Sensitive resource areas located within the ROW or designated temporary work areas would be mapped and avoided by use of an appropriate environmental monitor.

7.2 VEGETATION AND SOILS

- Blading at and between structures that have dunes or hummocks that would otherwise impede construction activities, would occur within an area of up to 150 × 150 feet at or adjacent to those structures.
- Blading of up to 60 feet in total width would occur along the line between structures in dunes and hummocks following a "least disturbance" path and avoiding straight lines where practical.
- SPS would reclaim disturbed linear or crescent-shaped dunes (generally over 6 feet tall with at least one slipface, and being significantly longer than they are tall) to landforms of similar size and orientation in the same general areas to the extent that access can be maintained for periodic SPS patrols and regular/emergency maintenance.
- SPS would reclaim areas with disturbed hummocks (knolls or mounds, generally less than 6 feet tall) to a generally undulating surface to the extent that access can be maintained for periodic SPS patrols and regular/emergency maintenance.
- SPS would reclaim disturbed areas per the approved Plan of Development using a BLM specified LPC seed mixture and would work with BLM to take measures to discourage the patrol/maintenance road from being used as a general public access road after restoration work is complete.
- SPS has enrolled in the county weed programs for both Lea and Eddy Counties. These programs enable the BLM to identify target areas for treatment to prevent the spread of noxious weeds and invasive species. These programs would include annual surveys of the ROW and subsequent treatment of weed infested areas for up to 5 years after construction is completed.
- Vegetation treatments to control the growth of woody species along the ROW would be conducted every 4 years. These treatments consist of spraying target species such as creosote and mesquite with herbicides to prevent vegetation encroachment on SPS's conductor clearance requirements, its facilities, patrol road, and/or future operation and maintenance activities. All herbicide applications would be performed in accordance with federal, state, and local regulations, and in compliance with land management agency and/or landowner requirements. SPS has established guidelines that its contractors are required to follow to protect birds and bird nests during these spraying events.

7.3 WATER RESOURCES

- No wetlands, playas, and/or waters of the U.S. would be altered, crossed, filled, or cut unless previously permitted to do so by the USACE and New Mexico Environment Department.
- Ground disturbance would be avoided within 200 meters (656 feet) of playas.
- Construction activities would be performed using methods that prevent entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into flowing streams or dry water courses, lakes, and underground water sources. Such pollutants and wastes include but are not restricted to refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

- Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other water-course perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the actual water source itself.
- Wastewaters from construction operations would not enter streams, water courses, or other surface waters without use of such turbidity-control methods as settling ponds, gravel-filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such wastewaters discharged into surface waters would be essentially free of settleable material. Settleable material is defined as that material that settles from the water by gravity during a 1-hour quiescent period.
- Refueling and storing of potentially hazardous materials would not occur within a 100-foot radius of a water body, a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water supply wells.
- If any road crossings are proposed and a culvert is needed, all culverts would be designed and installed to ensure the continued free flow of water, as well as to allow both the upstream and downstream movement of aquatic organisms. These temporary culverts would be would be removed after construction.

7.4 WILDLIFE AND SPECIAL STATUS SPECIES

7.4.1 MIGRATORY BIRDS

- SPS designs and constructs all new transmission facilities to raptor-safe design standards as described in its Avian Protection Plan (EDM International 2008), which includes avian electrocution and collision minimization practices described in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006).
- To the extent possible, construction activities during the migratory bird-nesting season (March–August) in suitable habitat would be avoided. Seasonal dates may vary depending upon the species, current environmental conditions, and pre-construction survey results.
- If construction and maintenance activities, including mechanical or herbicide treatments of woody vegetation, cannot be avoided in the primary nesting season for migratory birds (March–August), migratory bird and nest surveys would be performed up to 2 weeks prior to commencing with those activities. An avoidance buffer around each active nest would be implemented until the young have fledged, the size and timing of which may vary by species, but would be no less than 100 feet. This stipulation would not apply in the event of an emergency as per Xcel's Migratory Bird Special Purpose Utility Permit (USFWS 2015f).
- Bird flight diverters would be installed on the conductors for the crossing of the Pecos River.

7.4.2 SPECIAL STATUS SPECIES

- A 200-meter (656-foot) avoidance buffer would be implemented around any active burrowing owl nest burrow until the young have fledged.

- The BLM may require a biological monitor near occupied nests and burrowing owl burrows identified during pre-construction surveys.
- Any unoccupied raptor nests that are removed may need to be replaced by nest platforms.
- Foundation holes left open or unguarded would be covered to protect the public, wildlife, and livestock. If practical, temporary safety fencing may be used.
- Any hole left open for 8 hours or less is not required to have escape ramps; however, before the hole is backfilled, a BLM-approved monitor would inspect the hole and remove all trapped wildlife and release them at least 300 feet away.
- For holes left open for 8 hours or more, escape ramps would be placed in the hole. The hole would be monitored each day by a BLM-approved monitor during the following three time periods: 1) 5:00 to 10:00 a.m., 2) 11:00 a.m. to 2:00 p.m., and 3) 3:00 p.m. to sunset. All trapped wildlife would be released at least 300 feet away.
- SPS would follow excavation best management practices during construction within the DSL habitat boundary, as required by the BLM RMPA (2008) and the BLM Open Trench Wildlife Removal Workshop materials (BLM 2013). This stipulation would apply to the length of the project in DSL habitat, regardless of land ownership.
- One BLM-approved monitor would be required for every up-to-3-mile segment that contains open foundation holes in DSL habitat. A daily report on the wildlife found and removed from the hole would be provided to the BLM the following morning (reports can be consolidated if there is more than one monitor, and email is acceptable).
- During reclamation of disturbed areas, the seed-mixture quantity for 1 mile along the Eddy County to Kiowa route in Section 12 would be doubled for Sprague's pipit as identified in the Plan of Development.
- Timing and noise restrictions would be applied to construction and maintenance activities within the LPC IPA to prevent disruption of mating and nesting activities. All construction and maintenance activities would be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15.
- Exceptions to these timing requirements would be considered in emergency situations such as mechanical failures. Exceptions would not be granted after March 15, or during the March 1 to 15 period if the BLM determines, on the basis of biological data or other relevant facts or circumstances, that the granting of an exception would disrupt LPC booming activity during the breeding season. Requests for exceptions on a non-emergency basis may also be considered, for the period of March 1 to June 15, but these exceptions would not be granted if the BLM determines that there is LPC habitat, LPC sightings within 1.5 miles of the proposed location, historic leks, and/or active leks within 1.5 miles of the proposed location, or any combination of the above-mentioned criteria.

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APPENDIX A
PROJECT AREA MAPS WITH WILDLIFE OBSERVATIONS

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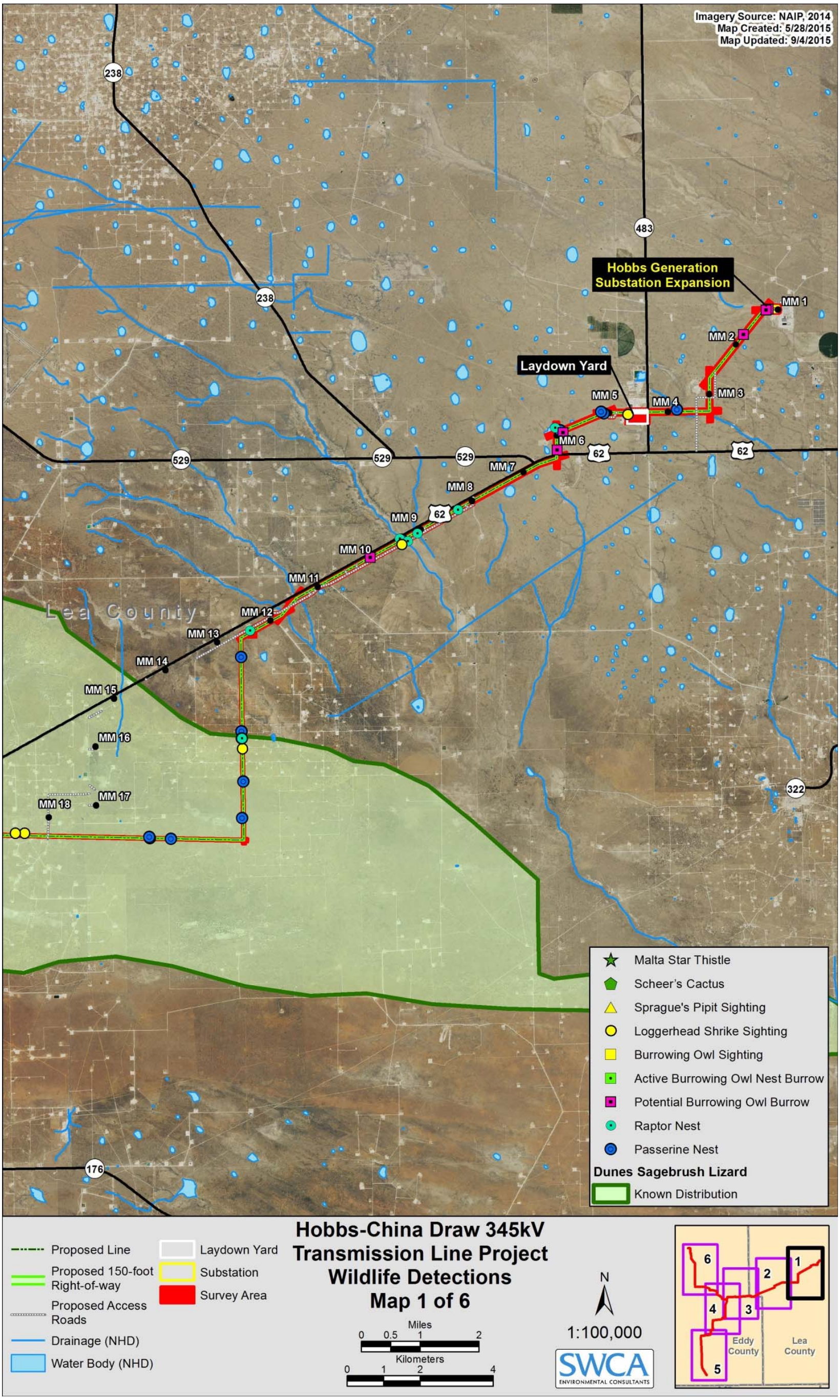


Figure A.1. Wildlife observations in the project area, map 1 of 6.

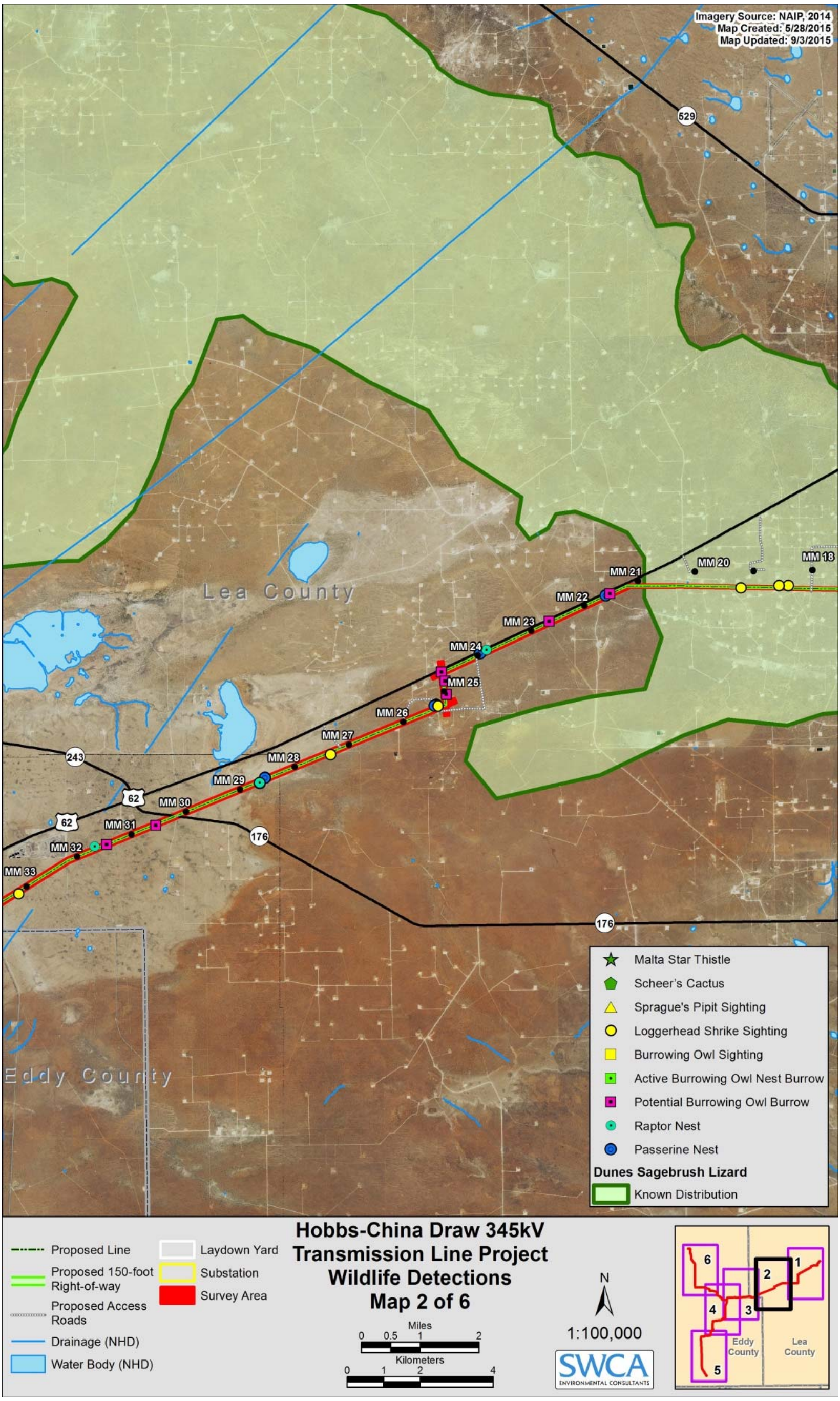


Figure A.2. Wildlife observations in the project area, map 2 of 6.

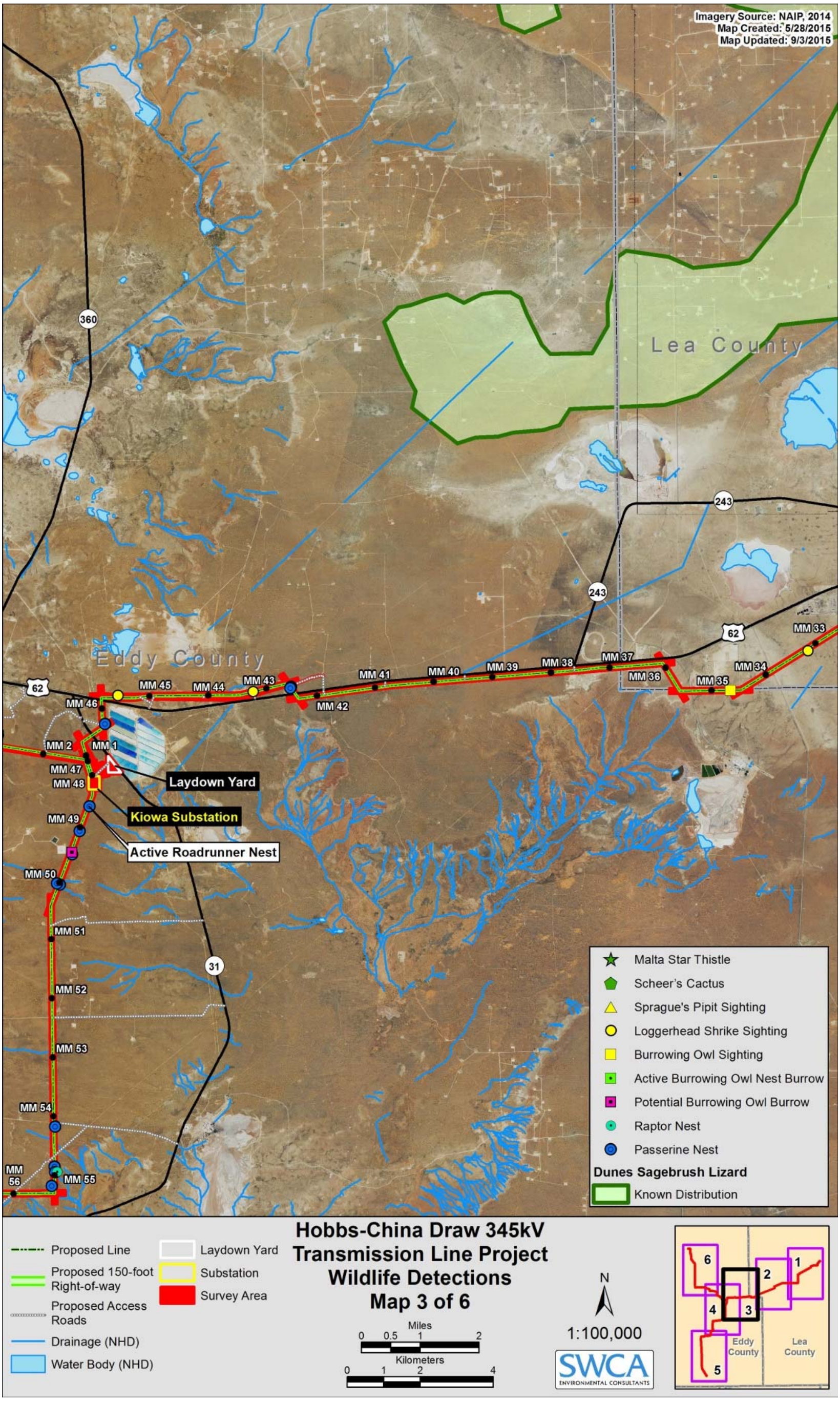


Figure A.3. Wildlife observations in the project area, map 3 of 6.

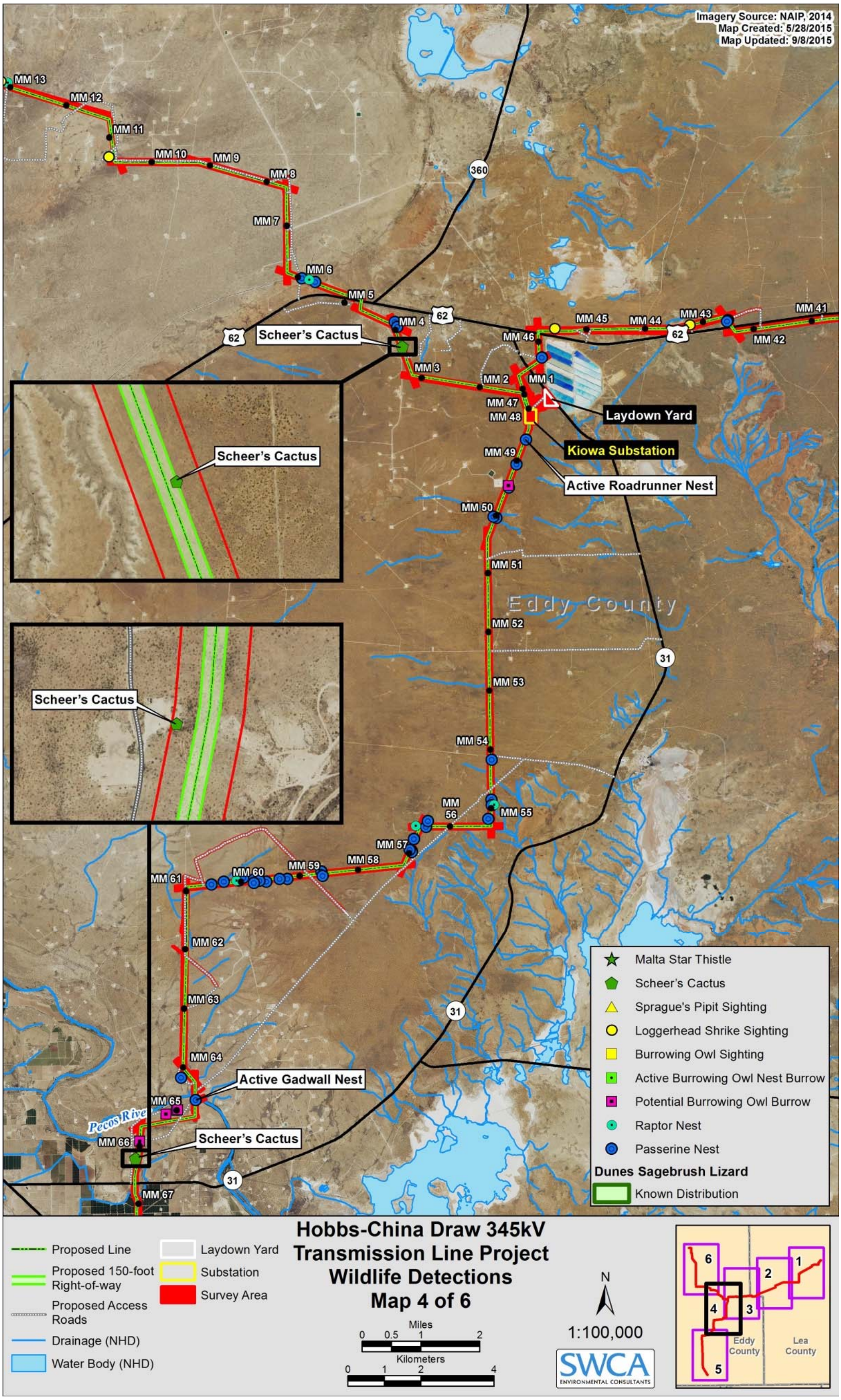


Figure A.4. Wildlife observations in the project area, map 4 of 6.

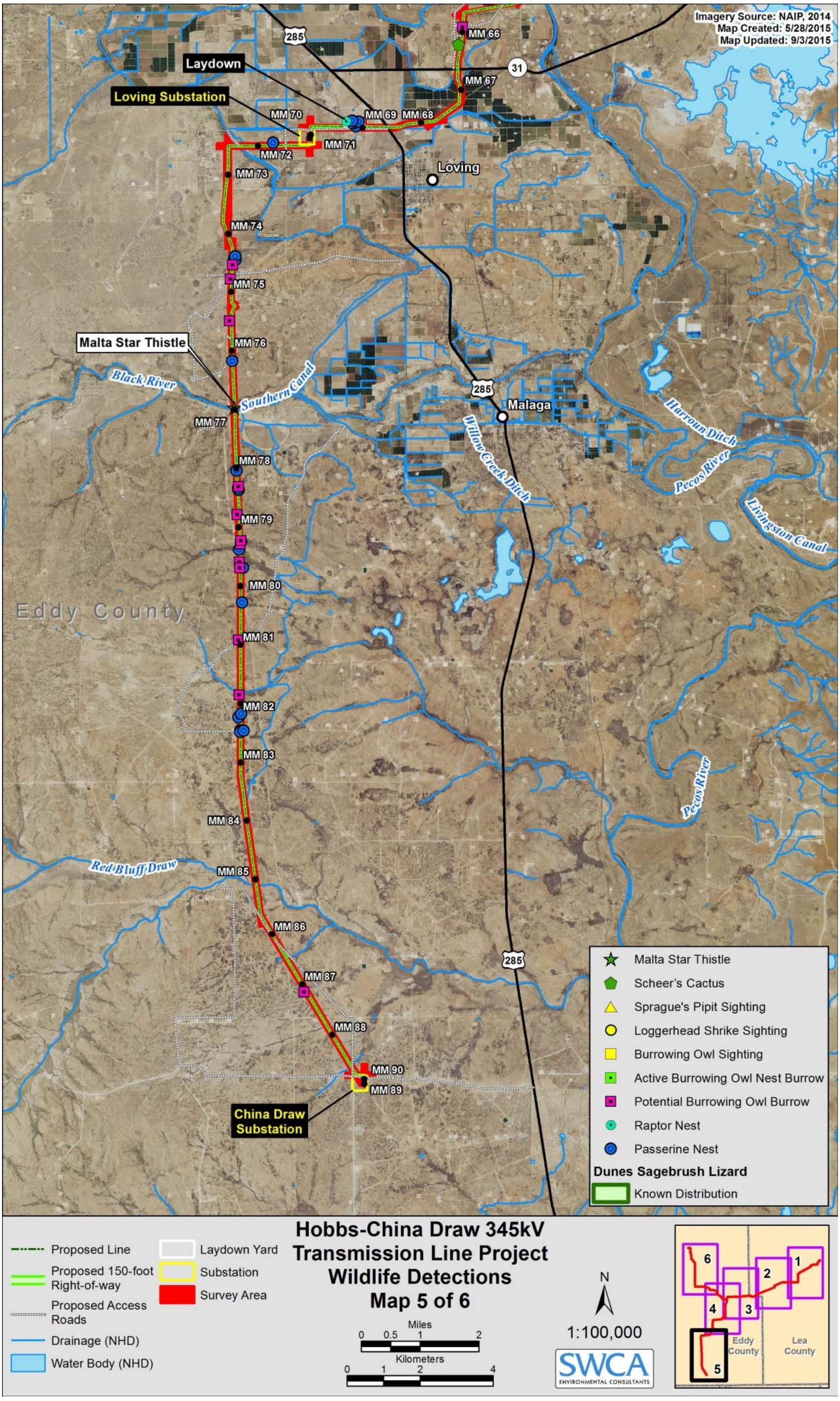


Figure A.5. Wildlife observations in the project area, map 5 of 6.

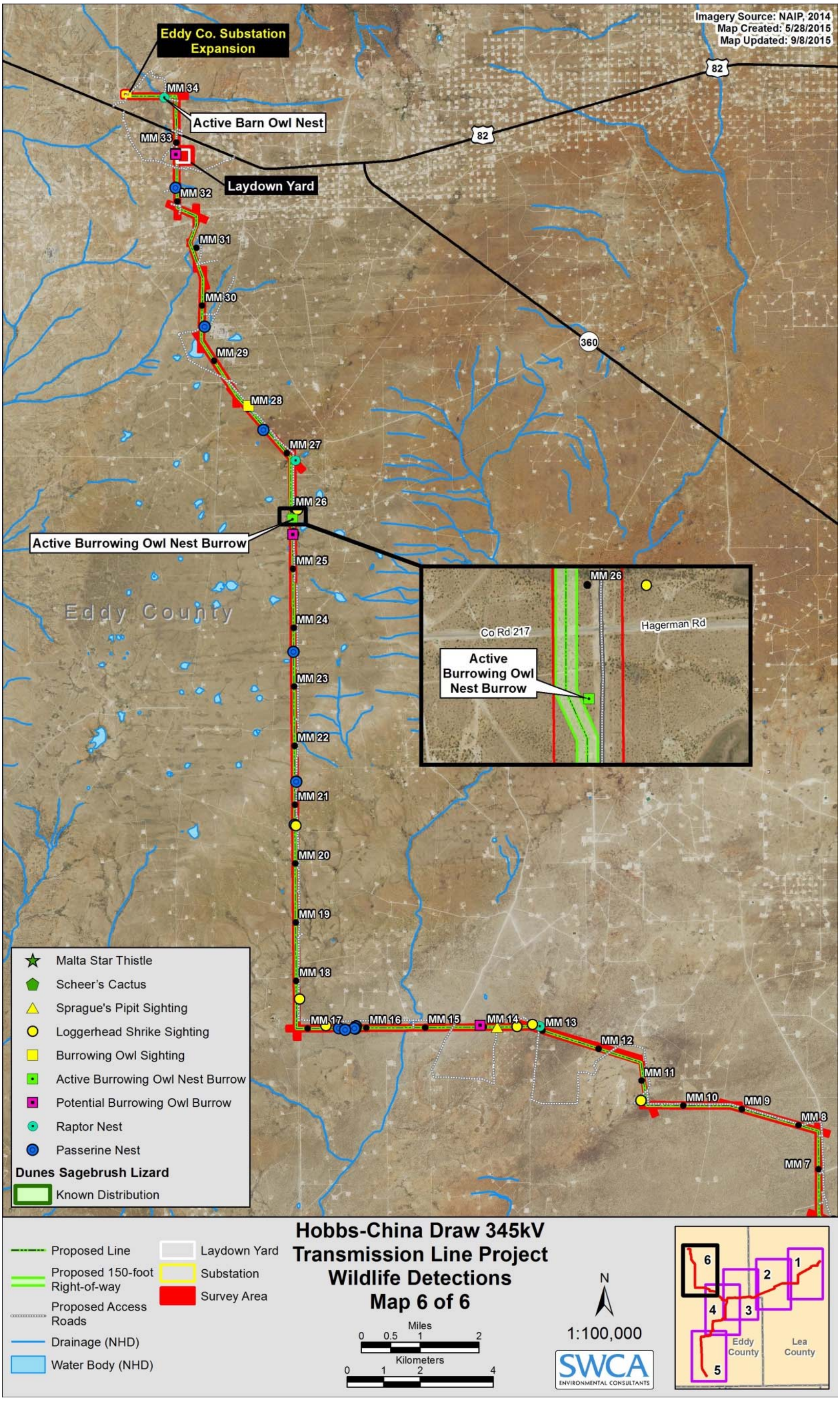


Figure A.6. Wildlife observations in the project area, map 6 of 6.

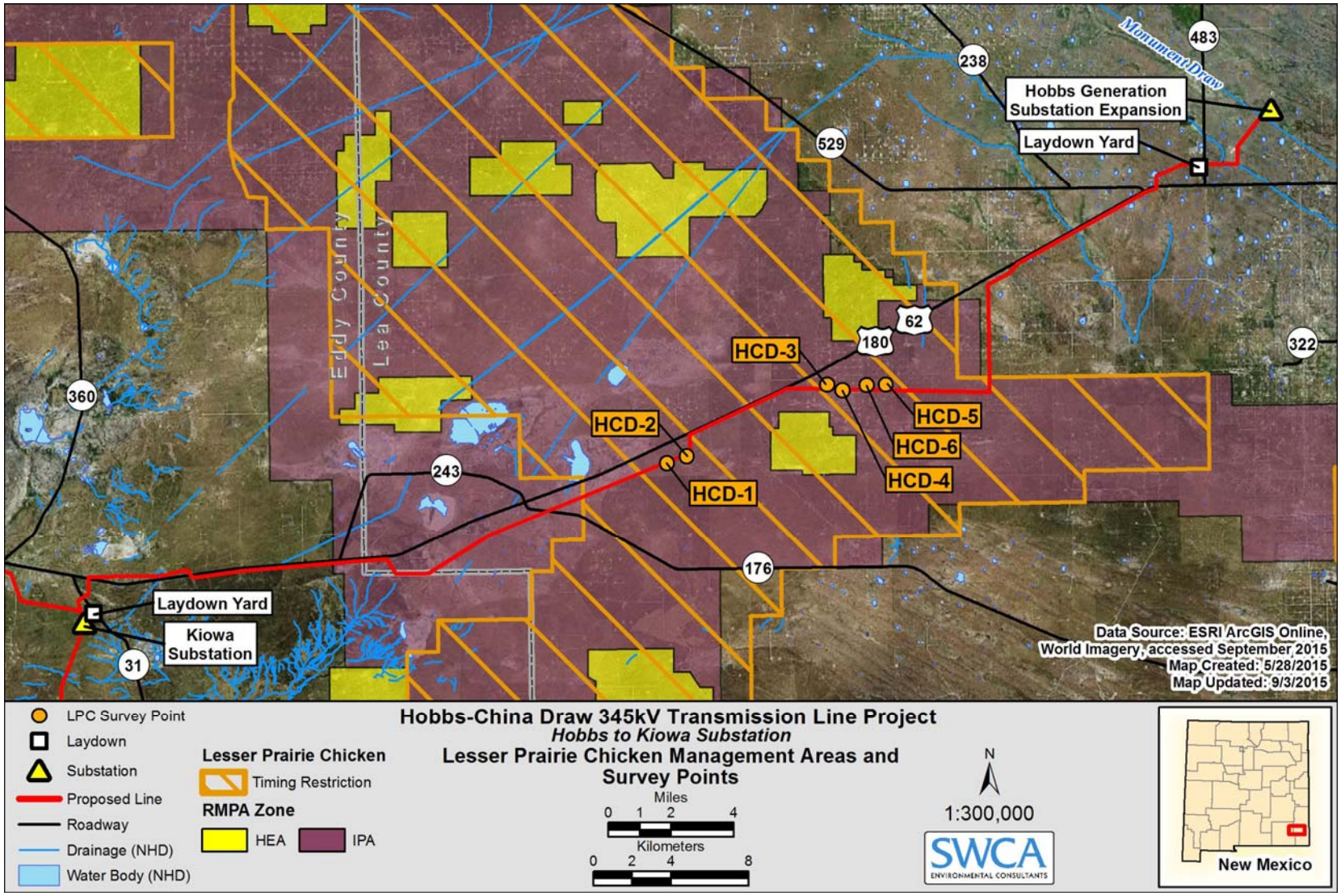


Figure A.7. LPC survey locations in the project area.

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APPENDIX B
PROJECT AREA PHOTOGRAPHS

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Figure B.1. Typical drainage found along project area.



Figure B.2. One of two Scheer's pincushion cacti in the project area.



Figure B.3. Typical cactus wren nest in project area.



Figure B.4. Active burrowing owl nest in project area.



Figure B.5. Roadrunner nest with chicks about to fledge.



Figure B.6. Pecos River crossing, view facing northeast.



Figure B.7. Gadwall nest along the Pecos River.



Figure B.8. Red Bluff Draw crossing, view facing north.



Figure B.9. Black River crossing, view facing north.



Figure B.10. Malta starthistle infestation on the north bank of the Black River.

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APPENDIX C
LESSER PRAIRIE-CHICKEN DATA SHEETS

30293

Lesser Prairie Chicken Listening Route Survey Form

Date: 03/25/2015 GPS Model: Trimble XT Observer: J. Franks

Start Time: 0621 Stop Time: 0759 Total Time: 1HR 38 MINS Total Listening Stops: 6

Survey Area: QP MS LH WIPP BB SS EU Jal (Other:)

Location of Start: Sec- (T-) R- HEA: IMG Zone: —

Overall Weather: (Clear) P/C Cloudy Fog Rain Snow

Overall Wind (mph): (0 to 5) 5 to 10 10 to 15 15+ Steady or Gusts

Average Noise Level: none slight low (moderate) high extreme

Noise Sources: umPJ (ePJ) comp (road) other (explain):

LPC Heard? Yes (No) Total number of stops LPC heard: 0

Wildlife Observed:
N. Mocking bird, night hawk, blue scaled quail
Cactus wren, EAME white crown sparrows

Notes (desc. local veg., potential for reclamation efforts, other issues):
Mesq, sand dropseed, various grasses, Yucca, shin oak, sand sage, grasses,

Stop # DU-30293 Time: 0621 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/(M)/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl (Road)
Topography: Flat/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): Mesquite, Sand drop, various grasses LPC Direction:
Yucca LPC Distance:

Stop # D2-30293 Time: 0635 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/(M)/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl (Road)
Topography: Flat/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): Mesquite, yucca, Shin oak LPC Direction:
LPC Distance:

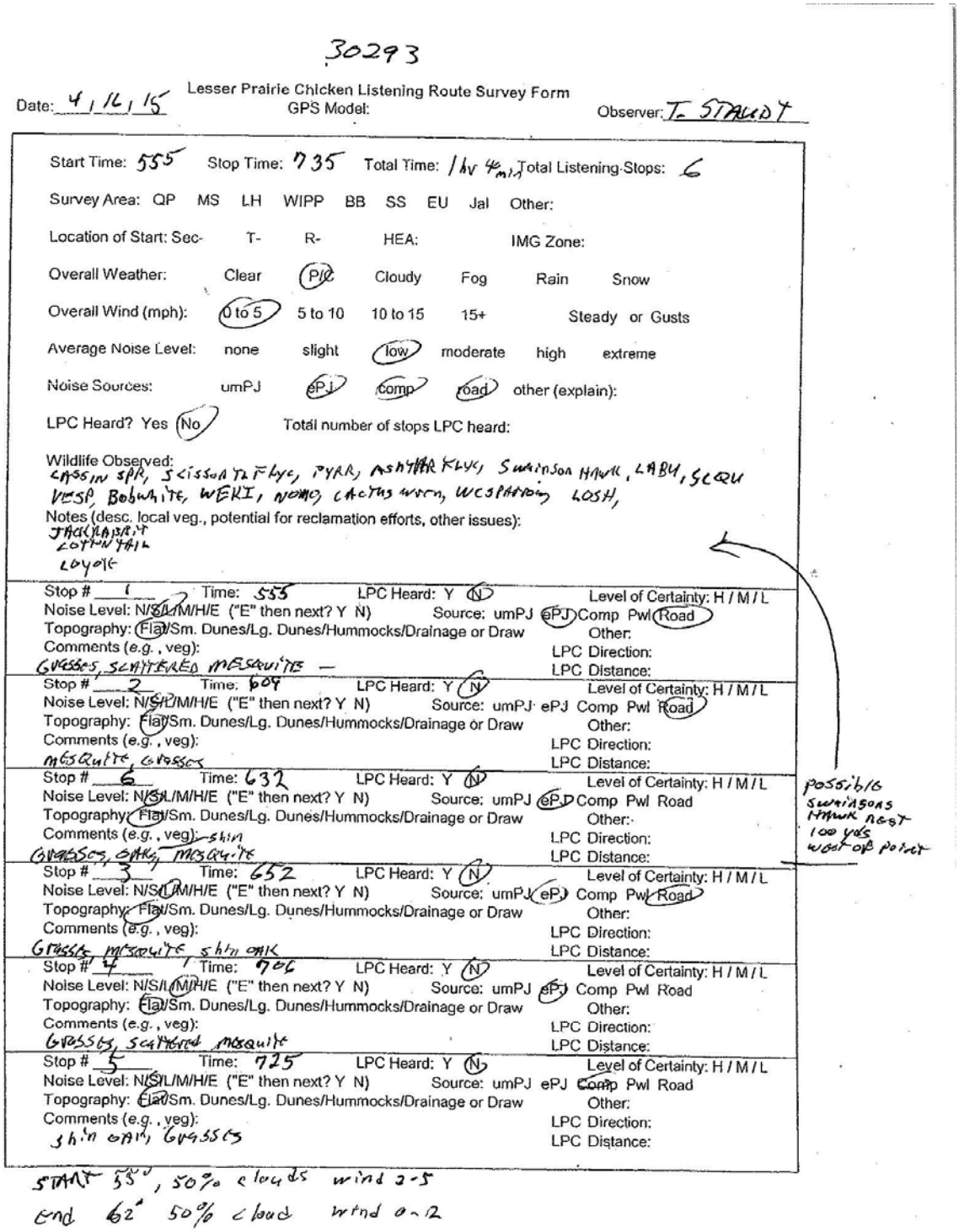
Stop # D3-30293 Time: 0655 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/M/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl (Road)
Topography: Flat/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): LPC Direction:
Mesquite, Shin oak, yucca LPC Distance:

Stop # D4-30293 Time: 0707 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/(S)/L/M/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl (Road)
Topography: Flat/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): LPC Direction:
Mesquite, Sandsage, grasses, shin oak Yucca LPC Distance:

Stop # D5-30293 Time: 0731 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/(S)/L/M/H/E ("E" then next? Y N) Source: umPJ ePJ Comp Pwl (Road)
Topography: Flat/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): LPC Direction:
YUCCA, sand sage, mesquite, grasses LPC Distance:

Stop # D6-30293 Time: 0746 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/M/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl (Road)
Topography: Flat/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): LPC Direction:
LPC Distance:

Shin oak, grasses, Yucca



30293

Lesser Prairie Chicken Listening Route Survey Form

Date: 4/16/15 GPS Model: Observer: T. STALEY

Start Time: 555 Stop Time: 735 Total Time: 1hr 4min Total Listening Stops: 6

Survey Area: QP MS LH WIPP BB SS EU Jal Other:

Location of Start: Sec- T- R- HEA: IMG Zone:

Overall Weather: Clear (PC) Cloudy Fog Rain Snow

Overall Wind (mph): (0 to 5) 5 to 10 10 to 15 15+ Steady or Gusts

Average Noise Level: none slight (low) moderate high extreme

Noise Sources: umPJ (ePJ) (comp) (road) other (explain):

LPC Heard? Yes (No) Total number of stops LPC heard:

Wildlife Observed:
CASSIN SPR, SCISSOR TAIL FLYC, PYRR, ASHTHR FLYC, SWAINSON HAWK, LABU, SCQU VESP, BOBWHITE, WEKI, NOMO, CACTUS WREN, WCSPARROW, LOSH,

Notes (desc. local veg., potential for reclamation efforts, other issues):
JACKRABBIT
COTTONTAIL
COYOTE

Stop # 1 Time: 555 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/M/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl (Road)
Topography: (Flat)/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): GRASSES, SCATTERED MESQUITE — LPC Direction:
LPC Distance:

Stop # 2 Time: 604 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/M/H/E ("E" then next? Y N) Source: umPJ ePJ Comp Pwl (Road)
Topography: (Flat)/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): MESQUITE, GRASSES LPC Direction:
LPC Distance:

Stop # 6 Time: 632 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/M/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl Road
Topography: (Flat)/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): shin LPC Direction:
GRASSES, OAKS, MESQUITE LPC Distance:

possible SWAINSONS HAWK NEST 100 yds WEST OF POINT

Stop # 3 Time: 652 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/M/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl (Road)
Topography: (Flat)/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): LPC Direction:
GRASSES, MESQUITE, shin OAK LPC Distance:

Stop # 4 Time: 706 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/M/H/E ("E" then next? Y N) Source: umPJ (ePJ) Comp Pwl Road
Topography: (Flat)/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): LPC Direction:
GRASSES, SCATTERED MESQUITE LPC Distance:

Stop # 5 Time: 725 LPC Heard: Y (N) Level of Certainty: H / M / L
Noise Level: N/S/L/M/H/E ("E" then next? Y N) Source: umPJ ePJ Comp Pwl Road
Topography: (Flat)/Sm. Dunes/Lg. Dunes/Hummocks/Drainage or Draw Other:
Comments (e.g., veg): LPC Direction:
shin OAK, GRASSES LPC Distance:

START 55°, 50% clouds wind 2-5
END 62° 50% cloud wind 0-12

WETLAND DELINEATION REPORT FOR THE SOUTHWESTERN PUBLIC SERVICE COMPANY'S HOBBS TO CHINA DRAW 345-KV TRANSMISSION LINE PROJECT, EDDY AND LEA COUNTIES, NEW MEXICO

Prepared for

Carlsbad Field Office

Bureau of Land Management

On behalf of

Southwestern Public Service Company/Xcel Energy

Prepared by

SWCA Environmental Consultants

October 2015

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WETLAND DELINEATION REPORT FOR THE SOUTHWESTERN PUBLIC SERVICE COMPNAY'S HOBBS TO CHINA DRAW 345-KV TRANSMISSION LINE PROJECT, EDDY AND LEA COUNTIES, NEW MEXICO

Prepared for

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October 2015

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1.0 INTRODUCTION

Southwestern Public Service Company (SPS), a wholly owned subsidiary of Xcel Energy Inc., proposes to construct, operate, and maintain two single-circuit alternating current, 345-kilovolt (kV) overhead electric transmission lines, a new substation (Kiowa Substation), and two substation expansions (Hobbs Generation and Eddy County Substations) in southeast New Mexico. The proposed project interconnects with other existing and proposed electrical system facilities owned and operated by SPS, as parts of the larger electrical system grid. The proposed project crosses Bureau of Land Management (BLM)-managed surface lands, State of New Mexico lands, and private lands. The BLM Carlsbad Field Office (CFO) is serving as the lead federal agency for the undertaking. SWCA Environmental Consultants (SWCA) was selected to conduct a natural resources assessment for wetlands, surface waters, and other potential waters of the U.S., referred to as a "wetland delineation."

2.0 PROJECT DESCRIPTION

One of the transmission lines, referred to as the Hobbs to China Draw Transmission Line, would be approximately 86 miles long, originating from the existing Hobbs Generation Substation in Lea County, approximately 11 miles west of Hobbs, New Mexico, and terminating at the China Draw Substation in Eddy County, approximately 11 miles southwest of Malaga, New Mexico. This line is composed of three segments that interconnect with substations, namely the Hobbs Generation Substation to Kiowa Substation segment (which SPS refers to by the circuit number J-20), the Kiowa Substation to North Loving Substation segment (located in Eddy County and referred to as J-21), and the North Loving Substation to China Draw Substation segment (also located in Eddy County and referred to as J-22). The proposed Kiowa Substation would be located adjacent to the existing Potash Junction Substation, approximately 1 mile from the Hobbs Highway (U.S. Highway 62/180) along Potash Mines Road. The existing North Loving Substation is located approximately 2 miles west of Loving, New Mexico (Figure 2.1).

The other proposed transmission line, referred to as the Eddy County to Kiowa Transmission Line, would be approximately 33 miles long, originating from the existing Eddy County Substation, which is approximately 10 miles east of Artesia, New Mexico, and terminating at the proposed Kiowa Substation (see Figure 2.1). This transmission line is composed of a single segment.

The proposed project would typically require a 150-foot-wide linear right-of-way (ROW). Access roads would be temporarily constructed up to 60 feet in width during construction and reduced through reclamation to resemble a two-track road for long-term operation and maintenance (to be located within the ROW to the maximum extent possible). Temporary work areas would be required to construct the project, some of which may extend outside the permanent ROW to ensure safe construction of power poles (structures) for pulling and tensioning sites at angled structure locations or in areas of sloped or difficult terrain, where a 250 × 250–foot temporary work area would be needed.

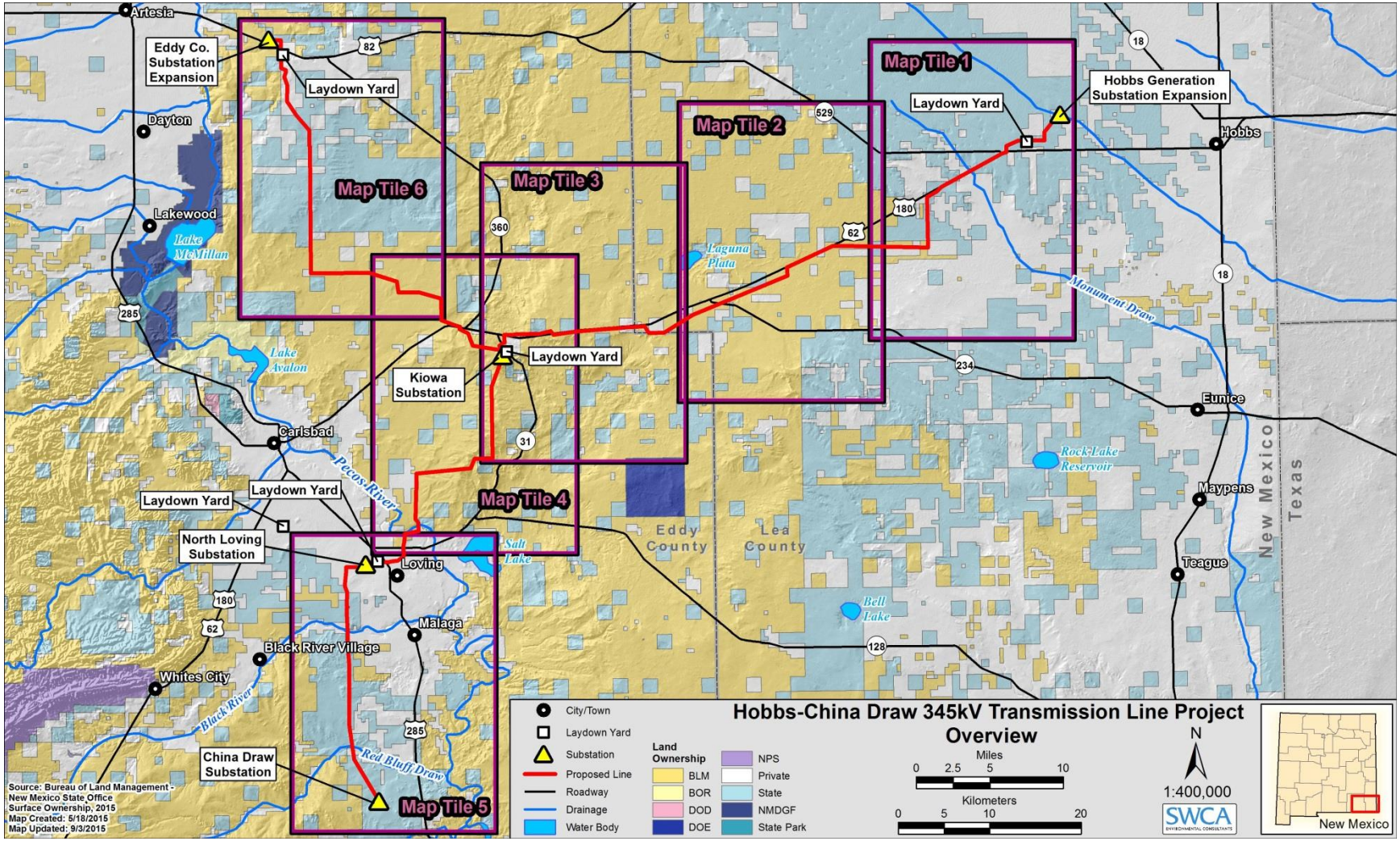


Figure 2.1. Hobbs to China Draw project vicinity.

One new substation would be built and two other substations would be expanded to accommodate the proposed project. The proposed Kiowa Substation would be constructed on BLM land. The existing Hobbs Generation Substation would be expanded on private lands. The existing Eddy County Substation would be expanded on BLM-managed lands. The existing North Loving Substation and China Draw Substation would not need to be expanded.

In addition to the proposed transmission line and substations, SPS would require five temporary staging areas. The staging areas would generally be located in proximity to existing highways or roads within the proposed project area.

The proposed project would cross approximately 497 acres of private, 783 acres of state, and 1,180 acres of BLM-managed lands, inclusive of all proposed project components. For a detailed description of the Proposed Action, please refer to the environmental assessment (SWCA 2015).

2.1 CONSTRUCTION OF TRANSMISSION LINE

The overhead transmission line would be supported by either H-frame, three-pole, or monopole structures. In rural areas, the most common structure would be a single-circuit, tubular steel pole H-frame at tangent locations. Where the line terminates or turns at an angle, a single-circuit three-pole tubular steel structure would be used. Monopole structures would be used as warranted by land use constraints and transmission line design requirements.

The average structure heights would vary depending on clearance, topographic conditions, and line design requirements. The typical structures would range in height between 100 and 150 feet with a few structures that may be as tall as 175 feet. Typical spans between structures would range from 800 to 1,200 feet or four to six structures per mile. In some situations, longer spans may be necessary to avoid particularly sensitive areas, which may create the need for taller structures and a wider ROW width to maintain necessary clearance for "blow-out" (sway) conditions. The structures would be assembled on-site and lifted into place by a crane. Conductor stringing between structures would be performed by heavy vehicles with powered pulling equipment. Wire would not be strung by helicopter.

Access roads would be needed to facilitate both construction and regular inspection and maintenance activities. Existing roads would be used to access the ROW and individual structures to the maximum extent practical, but in some cases new access roads would need to be developed or existing roads would need to be improved to accommodate construction vehicles. New and improved access roads may require blading and installation of road base or caliche. Within the ROW, construction traffic could occur throughout the entire width of the ROW, but would primarily be contained to one or two primary-use tracks. In areas with dunes and hummocks, construction traffic would be contained within an access route up to 60 feet in width between structures, following a "least disturbance" path and avoiding straight lines where practical.

2.2 CONSTRUCTION OF KIOWA SUBSTATION AND OTHER SUBSTATION EXPANSIONS

Clearing and grading the entire substation areas (new and expansion areas) would be necessary to prepare the site for construction. The site would be graded to create a level surface with a moderate slope for drainage. After construction, disturbed areas would be restored using a BLM-approved seed mix and according to BLM, New Mexico State Land Office (SLO), and private landowner standards. Access roads to facilitate both construction and regular inspection and maintenance activities would consist of existing roads to the extent feasible.

2.3 POST-CONSTRUCTION RECLAMATION

Once construction of the facilities and 345-kV lines is complete, all areas not needed for the operations and maintenance phase would be reclaimed using a BLM-approved seed mix and according to BLM, SLO, and private landowner standards. Reclamation would occur as soon as possible after completion of final construction activities. Except for those portions of the ROW necessary for maintenance and operation (such as a permanent patrol access road), the entire 150-foot-wide ROW would be reclaimed, as well as areas of temporary disturbance outside the ROW that are no longer needed, such as temporary access roads, pull pockets, and laydown yards. The 60-foot-wide access road used for construction would be fully reclaimed and over time converted into a permanent patrol access road similar to a two-track road. In some locations, the patrol road would be have an all-weather surface with a caliche base left in place to encourage a single travel route and continual avoidance of sensitive resources. A level work area at the base of each structure would be reseeded but not recontoured to facilitate future maintenance activities that may require use of an extended reach vehicle or crane.

2.4 OPERATIONS AND MAINTENANCE

SPS would need to manage vegetation to meet its requirements for conductor clearances at maximum loading (sag) and maximum "blow-out" (sway) locations and to minimize potential ignition sources and to provide access within the ROW. Within or adjacent to the ROW, mature vegetation would be removed under or near the conductors to provide adequate electrical clearance, as required by the National Electric Reliability Corporation. Typically, woody vegetation would be removed or treated with herbicides. Slash would be left in place or disposed of in accordance with the requirements of the land management agency or landowner. If necessary to remove or prune trees or other vegetation in riparian areas, the riparian vegetation would be removed selectively in a manner that protects biological resources as much as possible. Shrubs and other obstructions would be removed regularly within the ROW.

Vegetation would be removed using mechanical equipment such as chainsaws, weed trimmers, rakes, shovels, brush hooks, and mowers. Clearing efforts in heavy growth areas would use equipment such as a masticator, a mounted brush mower, or similar. Vegetation treatments to control the growth of woody species along the ROW would be conducted every 4 years. These treatments consist of spraying target species such as creosote bush (*Larrea tridentata*) and mesquite (*Prosopis* sp.) with herbicides to prevent vegetation encroachment on SPS's conductor clearance requirements, its facilities, and patrol road, and/or inhibits future operation and maintenance activities. All herbicide applications would be performed in accordance with

federal, state, and local regulations and in compliance with land management agency and/or landowner requirements. SPS has established guidelines that its contractors are required to follow to protect birds and bird nests during these spraying events.

Herbicides would be used to control noxious weeds or incompatible tree and brush species that regenerate from the root systems after removal to meet vegetation management objectives. All pesticide and herbicide applications would be performed in accordance with federal, state, and local regulations and in compliance with land management agency and/or landowner requirements.

2.5 PROJECT DECOMMISSIONING

At the end of the transmission lines' useful life, estimated to be 50 years from construction, the necessary authorizations would be obtained from the BLM Authorized Officer to decommission the project. Future decommissioning of the transmission line would include removal of conductors and structures. All materials would be removed from the ROW. Equipment at the substations and unsalvageable materials would be disposed of at authorized sites. Regrading and revegetation of disturbed areas would be completed according to BLM, SLO, or landowner standards. The abandoned ROW would revert to the control of the landowners.

3.0 METHODS

The methods described herein were used to produce all information contained in Section 4.0. SWCA conducted field surveys within the project area from October 20, 2014, to August 19, 2015.

3.1 PRE-FIELD DATA REVIEW

Prior to field investigations, SWCA reviewed baseline data for the project area, including U.S. Geological Survey (USGS) topographic quadrangle maps, National Hydrography Dataset (NHD) data (USGS 2013), National Wetlands Inventory (NWI) data, and aerial imagery. Natural Resource Conservation Service (NRCS) soil data and maps were reviewed to determine the potential for hydric soils to occur within the project area. Precipitation data for the period before the wetland surveys were gathered to see if normal conditions were present.

3.2 FIELD INVESTIGATION

SWCA conducted a 100% pedestrian survey of a 500-foot-wide corridor following the centerline of the proposed project, as well as a new substation, substation expansions, staging areas, pull pockets, and access roads outside the 500-foot corridor (Appendix A). During field surveys, SWCA searched for indicators of potential waters of the U.S., including features that were identified during the pre-field data review. SWCA used Trimble global positioning system (GPS) units with sub-meter accuracy to determine the spatial extent of features, geographically reference data points, and demarcate wetland and water body boundaries during the field survey. Photographic evidence of potential waters of the U.S. was recorded with digital cameras and representative photographs are included in Appendix B.

3.2.1 WETLANDS/SPECIAL AQUATIC SITES

The presence/absence of wetlands was identified in the field using routine on-site delineation methods as specified in the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (USACE 1987) and the appropriate *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008a). Determination of wetland habitat (type) was based on the classification system developed by Cowardin et al. (1979). Other sources used to identify the presence/absence of wetlands include the *Pocket Guide to Hydric Soil Field Indictors, Version 7.0* (Wetland Training Institute, Inc. 2013). Wetland boundaries were delineated where hydrophytic vegetation, hydric soils, and hydrology were present. An area was determined to be a wetland if it displayed a positive indication of all three wetland criteria. Data at each site verifying a wetland were recorded on a USACE Wetland Determination Data Form for the Arid West region.

The presence/absence of special aquatic sites other than wetlands (sanctuaries, refuges, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes) was determined in the field during the pedestrian survey of the project area.

3.2.2 VEGETATION

The wetland indicator status, as listed in the pertinent National Wetland Plant List (Arid West), was assigned to each plant species observed (Lichvar 2012). Hydrophytic and non-hydrophytic (or upland) plant species were differentiated by their respective indicator status, such as facultative (FAC), facultative wetland (FACW), obligate (OBL), facultative upland (FACU), and upland (UPL). Plant species with an indicator status of FACU, UPL, no indication (NI), or plants not from this region (NO) were determined to be non-hydrophytes. A plant community was determined to meet the USACE criteria of a hydrophytic community if vegetation passed the dominance test or had a prevalence index less than 3.0.

3.2.3 SOILS

Hydric soil determinations were made according to criteria listed in the appropriate wetland delineation manual/supplement and *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 7.0* (NRCS 2010). Soil pits were excavated to a depth of at least 16 inches, unless a restrictive layer was present, and the soil profile was then described by horizon. Each horizon was evaluated for soil color; thickness; the color, abundance, and contrast of redoximorphic features (mottles); and soil texture. Munsell Soil Color Charts were used to determine the color of the soil matrix and redoximorphic features (Kollmorgen Corporation 2000). The "feel" or "ribbon" test was used to determine soil texture. The soil profile was studied for hydric soil indicators listed in the appropriate wetland delineation manual/supplement. If the soil profile displayed one or more hydric soil indicators, a positive hydric soil determination was made.

3.2.4 HYDROLOGY

Wetland hydrology was determined in the field by considering frequency and duration of inundation, visual observation of saturation in the upper 12 inches of the soil profile, and the presence of other primary wetland hydrology indicators, such as oxidized root channels, water-stained leaves, water marks, sediment deposits, or algal matting. Secondary indicators used to determine wetland hydrology include surface soil cracks, crayfish burrows, drift deposits, drainage patterns, saturation signatures on aerial photographs, or the FAC-Neutral test. If the area displayed one or more primary hydrology indicators or two or more secondary hydrology indicators, a positive hydrology determination was made.

3.2.5 STREAMS

The presence/absence of lotic systems (e.g., creeks, rivers, arroyos, human-made ditches; collectively "streams") were identified in the field using the methods outlined in *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States: A Delineation Manual* (USACE 2008b). An ordinary high-water mark (OHWM) is a line on a shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. The OHWM is a defining element for identifying the lateral limits of non-wetland waters. Federal jurisdiction over a non-wetland water of the U.S. typically extends to the OHWM.

Identified streams were characterized by seasonal persistence as perennial, intermittent, or ephemeral based on field observations. Perennial streams typically flow year-round because the water table is located above the stream bed, which causes groundwater to be the primary source of water. By contrast, intermittent streams only flow seasonally when rising groundwater discharges into the stream channel. Ephemeral streams only flow during and shortly after precipitation events. Ephemeral stream beds are geologically higher than the water table throughout the year and, therefore, rainfall is the primary source of water for stream flow.

3.2.6 OTHER WATER BODIES

The presence/absence of lentic systems (e.g., ponds, lakes, oxbows, playas) and other open-water areas (e.g., earthen stock tanks) were identified in the project area by the presence of an OHWM defining the extent of each water body. Additionally, water bodies were classified as natural or human-made.

The presence of playas and vegetated depressions were identified in the field according to the CFO's guidance. The CFO defines a playa as a "shallow, nearly level, often saline, dry lake bed. Playas vary considerably in materials, salinity, and hydrologic regime. In general, playas: (1) collect surface runoff in closed basins; (2) are poorly vegetated; (3) are ephemerally flooded; and (4) have a thin surface of non-gravelly, fine-textured sediment" (Daly 2014).

4.0 RESULTS

4.1 CLIMATE

The weather station located at the Waste Isolation Pilot Plant (299569) was used to determine regional rainfall measurements during the time of the field survey. This location was selected due to its proximity to the project area. According to national preliminary climatological data, 12.88 inches of rain was recorded as the average total precipitation at the weather station from November 1, 1986, to February 28, 2013 (Western Regional Climate Center 2015). Table 4.1 illustrates the recorded and normal precipitation amounts for this time period.

Table 4.1 Average Precipitation near the Project Area

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Average total precipitation (inches)	0.41	0.50	0.49	0.58	1.29	1.55	2.13	1.80	2.12	1.01	0.28	0.70	12.88
Average total snowfall (inches)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.9

Source: Western Regional Climate Center (2015).

4.2 VEGETATION

The project area occurs within four U.S. Environmental Protection Agency (EPA) Level IV ecoregions: Arid Llano Estacado, Shinnery Sands, Chihuahuan Desert Grasslands, and Chihuahuan Basin and Playas (Griffith et al. 2006).

Arid Llano Estacado

The Arid Llano Estacado ecoregion is drier than the main Llano Estacado region to the north. This habitat region is found in the eastern extent of the Hobbs to China Draw route. The ecoregion is a climate transitional area from the Chihuahuan Desert region to the southwest, and it has somewhat more broken topography and fewer playas than the plain to the north. Yearly precipitation is less due to a lack of winter precipitation and the absence of snow cover. Lack of precipitation in this region often causes a caliche layer closer to the surface, which increases the general drought condition of the soil.

SWCA biologists observed the following dominant species throughout the Arid Llano Estacado ecoregion habitat. The grasses seen include blue grama (*Bouteloua gracilis*), black grama (*B. eriopoda*), hairy grama (*B. hirsuta*), buffalograss (*B. dactyloides*), silver bluestem (*Bothriochloa saccharoides*), sand dropseed (*Sporobolus cryptandrus*), threeawn (*Aristida* sp.), Arizona cottontop (*Digitaria californica*), hairy tridens (*Erioneuron pilosum*), muhly (*Muhlenbergia* sp.), bottlebrush (*Callistemon* sp.), and squirreltail (*Elymus elymoides*). Burrograss (*Scleropogon* sp.), threeawns, tobosagrass (*Pleuraphis mutica*), and broom snakeweed (*Gutierrezia sarothrae*) increase with grazing activities. The forbs seen include bush sunflower (*Encelia californica*), gray goldaster (*Heterotheca canescens*), dalea (*Dalea* sp.), sand sagebrush (*Artemisia filifolia*),

and gayfeather (Liatris sp.). Mesquite, narrowleaf yucca (*Yucca angustissima*), juniper (*Juniperus* sp.), and ephedra (*Ephedra* sp.) compose invading shrub cover (Griffith et al. 2006). The majority of the land use is dominated by livestock grazing and oil and gas production activities are widespread throughout the ecoregion.

Shinnery Sands

The Shinnery Sands ecoregion is present along the Hobbs to China Draw route from mile marker (MM) 11 to MM 27. This area includes sand hills and dunes, as well as flat sandy recharge areas. These sand beds lie at the western edge of the High Plains where rising winds drop heavier sand grains and carry finer material farther east onto the flat expanse of the Llano Estacado. The ecoregion is named for the Havard (shinnery) oak (*Quercus havardii*) brush that stabilizes sandy areas subject to wind erosion. Although shinnery oak rarely grows higher than 4 feet, its extensive root system can reach over 50 feet through dune sand to reach water. The largest area of sand dunes, at the southwestern edge of the Llano Estacado, is composed of sands blown out of the Pecos River Basin against the Mescalero Escarpment of the Llano Estacado by prevailing southwesterly winds. These dunes serve as a major recharge area for the Pecos River.

SWCA biologists observed dominant species in the dune areas such as, shinnery oak, fourwing saltbush (*Atriplex canescens*), yucca (*Yucca* sp.), sand verbenas (*Abronia fragrans*), sunflowers (*Helianthus annuus*), fringed sagewort (*Artemisia frigida*), and hoary rosemary-mint (*Poliomintha incana*). Ephemeral ponds and swales between the dunes support rushes (*Juncus* sp.), sedges (*Carex* sp.), and sandbar willow (*Salix interior*) (Griffith et al. 2006). The Shinnery Sands are habitat for the lesser prairie-chicken (*Tympanuchus pallidicinctus*) and dunes sagebrush lizard (*Sceloporus arenicolus*), two species that have exhibited significant population declines. The shrubs offer cover and shade for nesting lesser prairie-chickens, and shinnery oak acorns are a staple food source. The dunes are dominated by oil and gas production in patches throughout the shinnery sands ecoregion.

Chihuahuan Desert Grasslands

The Chihuahuan Desert Grassland ecoregion occurs in the project area from MM 27 to MM 59 of Hobbs to China Draw and the southern extent of the Eddy to Kiowa segment near the new Kiowa Substation. The ecoregion is found in areas of fine-textured soils, such as silts and clays that have a higher water retention capacity than coarse-textured, rocky soil. These grasslands are present in areas of somewhat higher annual precipitation (10–15 inches) than the Chihuahuan Basins and Playas ecoregion, such as elevated basins between mountain ranges, low mountain benches and plateau tops, and north-facing mountain slopes. Chihuahuan Desert Grasslands were once more widespread, but heavy grazing in the late nineteenth and early twentieth centuries was unsustainable, and desert shrubs invaded where the grass cover became fragmented. In grassland areas with lower rainfall, areal coverage of grasses may be sparse, 10% or less. Some areas are now mostly shrubs as grasslands continue to decline due to erosion, drought, and climatic change.

SWCA biologists observed typical grasses of this ecoregion, such as black grama, blue grama, sideoats grama, dropseeds (*Sporobolus* sp.), bush muhly (*Muhlenbergia porteri*), and tobosagrass, with scattered creosote bush, prickly pear (*Opuntia* sp.), and cholla (*Cylindropuntia*

sp.) (Griffith et al. 2006). Land use is dominated by livestock grazing, and oil and gas production activities are widespread throughout the Chihuahuan Desert Grasslands ecoregion.

Chihuahuan Basins and Playas

The Chihuahuan Basins and Playas ecoregion is the dominant habitat region present within the project area, occurring along the majority of the Eddy to Kiowa line and the Hobbs to China Draw line from MM 59 to the end (MM 90). Chihuahuan Basins and Playas include alluvial fans, internally drained basins, and river valleys mostly below 4,500 feet. The major Chihuahuan basins formed during tertiary basin and range tectonism when the Earth's crust stretched and fault collapse resulted in sediment-filled basins. These low-elevation areas are some of the hottest and most arid habitats in the state. The playas and basin floors have saline or alkaline soils and areas of salt flats, dunes, and windblown sand.

SWCA biologists observed the following dominant vegetation in this ecoregion: creosote bush, mesquite, tarbush (*Flourensia cernua*), fourwing saltbush, acacias (*Acacia* sp.), blue grama, and alkali sacaton (*Sporobolus airoides*).

4.3 SOILS

According to the NRCS (2015), 68 mapped soil types are found within the project area (Table 4.2). Only one of the soils within the project area meets hydric criteria, MM - Mixed alluvial land. Four soil types (denoted in bold type) contain gypsum components. Soil descriptions can be found in Appendix C.

Table 4.2. Soil Types Present in the Project Area

Map Unit Symbol	Map Unit Name	Acres	Percent of Project Area
AW	Arvana-Lea association	5.57	0.23%
BF	Berino-Cacique fine sandy loams association	9.38	0.38%
JA	Jal association	13.65	0.55%
KD	Kermit soils and dune land, 0 to 12 percent slopes	22.89	0.93%
KM	Kermit-Palomas fine sands, 0 to 12 percent slopes	76.70	3.12%
KO	Kimbrough gravelly loam, 0 to 3 percent slopes	109.41	4.45%
KU	Kimbrough-Lea complex	135.30	5.50%
LP	Largo-Pajarito complex	6.23	0.25%
MM	Mixed alluvial land	13.18	0.54%
MN	Mobeetie-Potter association, 1 to 15 percent slopes	11.18	0.45%
MU	Portales loam, 0 to 3 percent slopes	0.77	0.03%
MW	Pyote and maljamar fine sands	5.44	0.22%
PC	Pyote loamy fine sand	5.86	0.24%
PT	Pyote soils and dune land	11.21	0.46%
PU	Ratliff loam	83.53	3.40%
PY	Ratliff-Wink fine sandy loams	78.43	3.19%
RT	Reeves-Cottonwood association	3.28	0.13%
SE	Simona fine sandy loam, 0 to 3 percent slopes	47.23	1.92%
SR	Simona-Upton association	63.33	2.57%
SS	Stegall and slaughter soils	5.50	0.22%
TF	Tonuco loamy fine sand	3.94	0.16%
Aa	Anthony sandy loam, 0 to 1 percent slopes	4.67	0.19%
Ah	Anthony sandy loam, 0 to 1 percent slopes	5.35	0.22%
Ak	Arno-Harkey complex, saline, 0 to 1 percent slopes	0.89	0.04%

Map Unit Symbol	Map Unit Name	Acres	Percent of Project Area
Ao	Atoka loam, 0 to 1 percent slopes	5.31	0.22%
At	Atoka loam, 1 to 3 percent slopes	2.30	0.09%
BB	Berino complex, 0 to 3 percent slopes, eroded	233.25	9.48%
BP	Berino-Pajarito complex, 0 to 3 percent slopes, eroded	9.58	0.39%
CA	Cacique loamy sand, 0 to 3 percent slopes, eroded	32.92	1.34%
ER	Ector-Reagan association, 0 to 9 percent slopes	53.74	2.18%
GA	Gypsum land	1.03	0.04%
GC	Gypsum land-Cottonwood complex, 0 to 3 percent slopes	20.38	0.83%
Gs	Gypsum land-Cottonwood complex, 0 to 3 percent slopes	34.75	1.41%
Hk	Harkey very fine sandy loam, 0 to 1 percent slopes	1.24	0.05%
KM	Karro loam, 0 to 1 percent slopes	111.26	4.52%
Kr	Karro loam, 0 to 1 percent slopes	22.69	0.92%
KT	Kimbrough-Stegall loams, 0 to 3 percent slopes	162.05	6.59%
KU	Karro loam, 1 to 3 percent slopes	6.90	0.28%
Kv	Karro loam, saline, 0 to 1 percent slopes	9.15	0.37%
LA	Largo loam, 1 to 5 percent slopes	7.17	0.29%
LG	Largo silt loam, overflow, 0 to 1 percent slopes	7.72	0.31%
LN	Largo-Stony land complex, 0 to 25 percent slopes	1.67	0.07%
LS	Likes loamy fine sand, 1 to 5 percent slopes	25.12	1.02%
PA	Pajarito loamy fine sand, 0 to 3 percent slopes, eroded	24.07	0.98%
PD	Pajarito-Dune land complex, 0 to 3 percent slopes	6.26	0.25%
Pe	Pima silt loam, 0 to 1 percent slopes	0.29	0.01%
PM	Pima silt loam, 0 to 1 percent slopes	1.46	0.06%
PS	Potter-Simona complex, 5 to 25 percent slopes	17.31	0.70%
RA	Reagan loam, 0 to 3 percent slopes	57.76	2.35%
Rc	Reagan loam, 0 to 1 percent slopes	61.56	2.50%
Rd	Reagan loam, 1 to 3 percent slopes	5.39	0.22%
RE	Reagan-Upton association, 0 to 9 percent slopes	34.92	1.42%
RG	Reeves-Gypsum land complex, 0 to 3 percent slopes	257.48	10.47%
Rl	Reeves loam, 0 to 1 percent slopes	30.04	1.22%
RM	Reeves-Reagan loams, 0 to 3 percent slopes	101.86	4.14%
RO	Rock land	9.01	0.37%
Rr	Reeves loam, saline, 0 to 1 percent slopes	28.72	1.17%
RT	Reeves loam, shallow, 0 to 1 percent slopes	15.37	0.62%
SG	Simona gravelly fine sandy loam, 0 to 3 percent slopes	79.86	3.25%
SM	Simona-Bippus complex, 0 to 5 percent slopes	97.86	3.98%
SN	Simona and Wink fine sandy loams, 0 to 3 percent slopes, eroded	17.26	0.70%
SR	Stony and Rough broken land	25.27	1.03%
TF	Tonuco loamy fine sand, 0 to 3 percent slopes	44.34	1.80%
TN	Tonuco loamy fine sand, 0 to 3 percent slopes, eroded	25.22	1.03%
UG	Upton gravelly loam, 0 to 9 percent slopes	22.19	0.90%
Uo	Upton gravelly loam, 0 to 9 percent slopes	19.57	0.80%
Ut	Upton soils, 1 to 3 percent slopes	4.75	0.19%
W	Water	1.31	0.05%

4.4 WETLANDS/SPECIAL AQUATIC SITES

Wetland communities observed during the delineation effort displayed at least one primary or two secondary indicators of wetland hydrology, as defined by the USACE (2008a). Upland communities either failed to display hydrology indicators or failed to meet one or more of the other two wetland criteria, as defined by the USACE (2008a). Three NWI wetlands were observed during the field surveys (see Appendices A and B). Table 4.4 summarizes the type and acreages for each wetland within the proposed project ROW. Wetland data sheets are included in Appendix D. Other special aquatic sites were not observed within the project area.

Table 4.3. Wetlands Present in the Project Area

Feature ID	Wetland Type	Acres within 150-foot Permanent ROW	Hectares within 150-foot Permanent ROW
WL1	Palustrine emergent	1.537	0.622
WL2	Palustrine emergent	0.959	0.388
WL3	Palustrine emergent	0.030	0.012
TOTAL		**2.526**	**1.022**

4.5 STREAMS AND OTHER WATER BODIES

Eleven NHD drainages were verified during field investigations as potential jurisdictional waters of the U.S., as well as 14 other drainages that were found during the field surveys. The Pecos River and the Black River are perennial streams, and Red Bluff Draw is an intermittent/ephemeral stream. The proposed project ROW crosses approximately 0.8 acre of the Pecos River 2 miles north of New Mexico Highway 31. The crossing location lacks dense aquatic and emergent vegetation. The proposed project ROW crosses an estimated 0.2 acre of Red Bluff Draw and an estimated 0.2 acre of the Black River approximately 8 to 9 miles upstream from the confluence with the Pecos River, respectively. A narrow band of wetland is present adjacent to Red Bluff Draw, but the Black River crossing lacks dense aquatic and emergent vegetation. The remaining drainages are ephemeral streams that only flow when sufficient rain or snow events occur.

One playa was identified within the ROW and another was located immediately adjacent to the ROW boundary (see Appendix A). Both playas were relatively small with obvious changes in vegetation composition from the surrounding habitat, and neither appeared to hold water for more than a few days at a time.

Table 4.3 summarizes the type and area for each drainage and water body within the project area. Refer to Appendix B for representative photographs of the drainages and water bodies observed.

Table 4.4. Streams and Other Water Bodies Present in the Project Area

Feature ID	Flow Type	Acres within 150-foot Permanent ROW	Hectares within 150-foot Permanent ROW
DR01	Ephemeral stream	0.019	0.008
DR02	Ephemeral stream	0.107	0.043
DR03	Ephemeral stream	0.035	0.014
DR04*	Ephemeral stream	0.040	0.016
DR05	Ephemeral stream	0.052	0.021
DR06	Ephemeral stream	0.007	0.003
DR07*	Ephemeral stream	0.175	0.071
DR08	Ephemeral stream	0.057	0.023
DR09	Ephemeral stream	0.017	0.007
DR10	Ephemeral stream	0.068	0.028
DR11	Ephemeral stream	0.026	0.010
DR12*	Ephemeral stream	0.047	0.019
DR13	Ephemeral stream	0.042	0.017
DR14*	Perennial stream - Pecos River	0.774	0.313
DR15	Ephemeral stream	0.145	0.059
DR16*	Ephemeral stream	0.046	0.019
DR17*	Ephemeral stream	0.065	0.026
DR18*	Ephemeral stream	0.109	0.044
DR19*	Perennial stream - Black River	0.205	0.083
DR20	Ephemeral stream	0.040	0.016
DR21	Ephemeral stream	0.037	0.015
DR22*	Ephemeral stream	0.024	0.010
DR23	Ephemeral stream	0.064	0.026
DR24*	Intermittent stream - Red Bluff Draw	0.203	0.082
DR25*	Ephemeral stream	0.063	0.026
PL01	Playa	0	0
PL02	Playa	0.800	0.324
TOTAL		**3.267**	**1.323**

*Denotes an NHD drainage

5.0 SUMMARY

Three wetlands, two perennial streams, one intermittent stream, 22 ephemeral streams, and two playas were recorded within the project area. In SWCA's professional opinion, all of these water bodies may be considered waters of the U.S.; however, this report is not a legal delineation of the boundaries of "waters of the U.S." or a determination of their jurisdictional status. Only the USACE and/or the EPA have final and/or legal authority in determining the presence of jurisdictional waters of the U.S. and the extent of their boundaries.

All of the potential waters of the U.S., including the Pecos and Black Rivers and Red Bluff Draw, as well as wetlands and playas, would be avoided by the proposed project transmission lines and structures by either spanning the water bodies or designating the areas as avoidance zones in the Plan of Development. Any impact to the drainages from proposed access road use or

construction would be in accordance with the USACE's Nationwide Permit 12 for Utility Line Activities. No activities are planned to occur below the OHWM. However, if maintenance or construction activities are required below the OHWM, they would be small culverts or low water crossings that will not exceed 0.10 acre of permanent impact. If the project impacts less than 0.5 acre, but more than 0.10 acre, a Pre-Construction Notification would be required by the USACE. If the activity is less than 0.10 acre, notification is not required by the USACE. Coordination with the USACE has been completed, and no concerns were identified.

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APPENDIX A
PROJECT AREA MAPS WITH WATER BODY OBSERVATIONS

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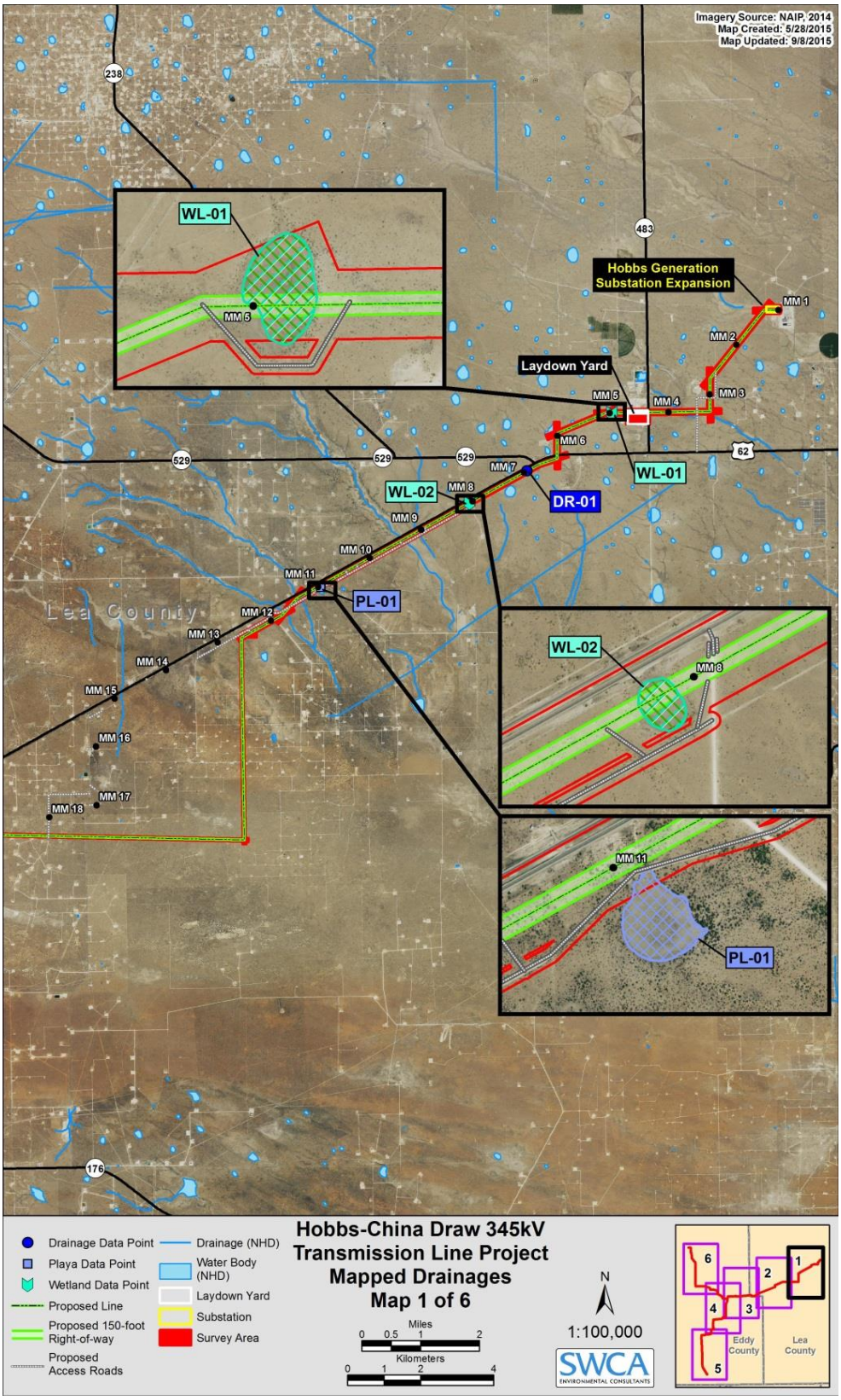


Figure A.1. Water bodies in the project area, map 1 of 6.

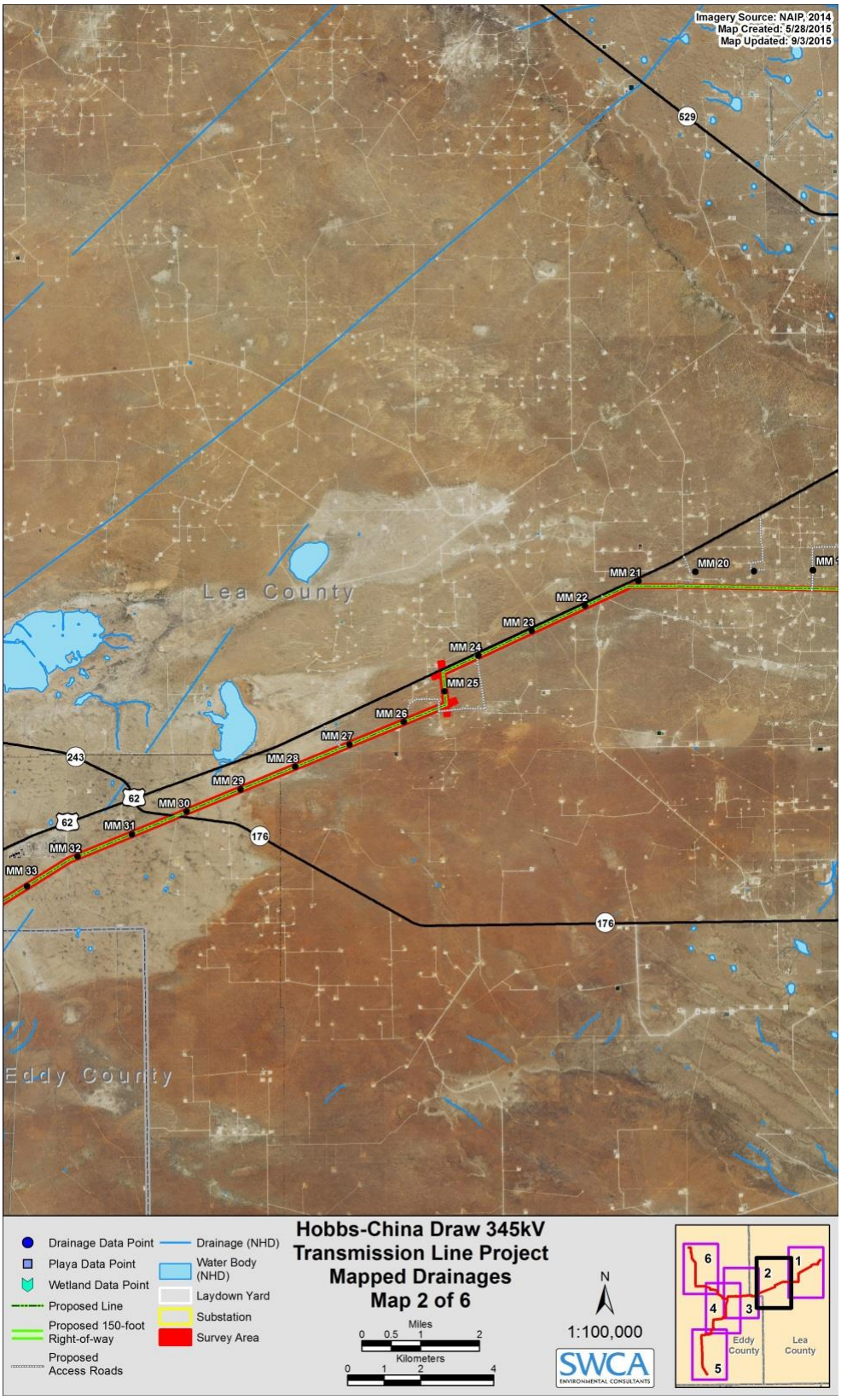


Figure A.2. Water bodies in the project area, map 2 of 6.

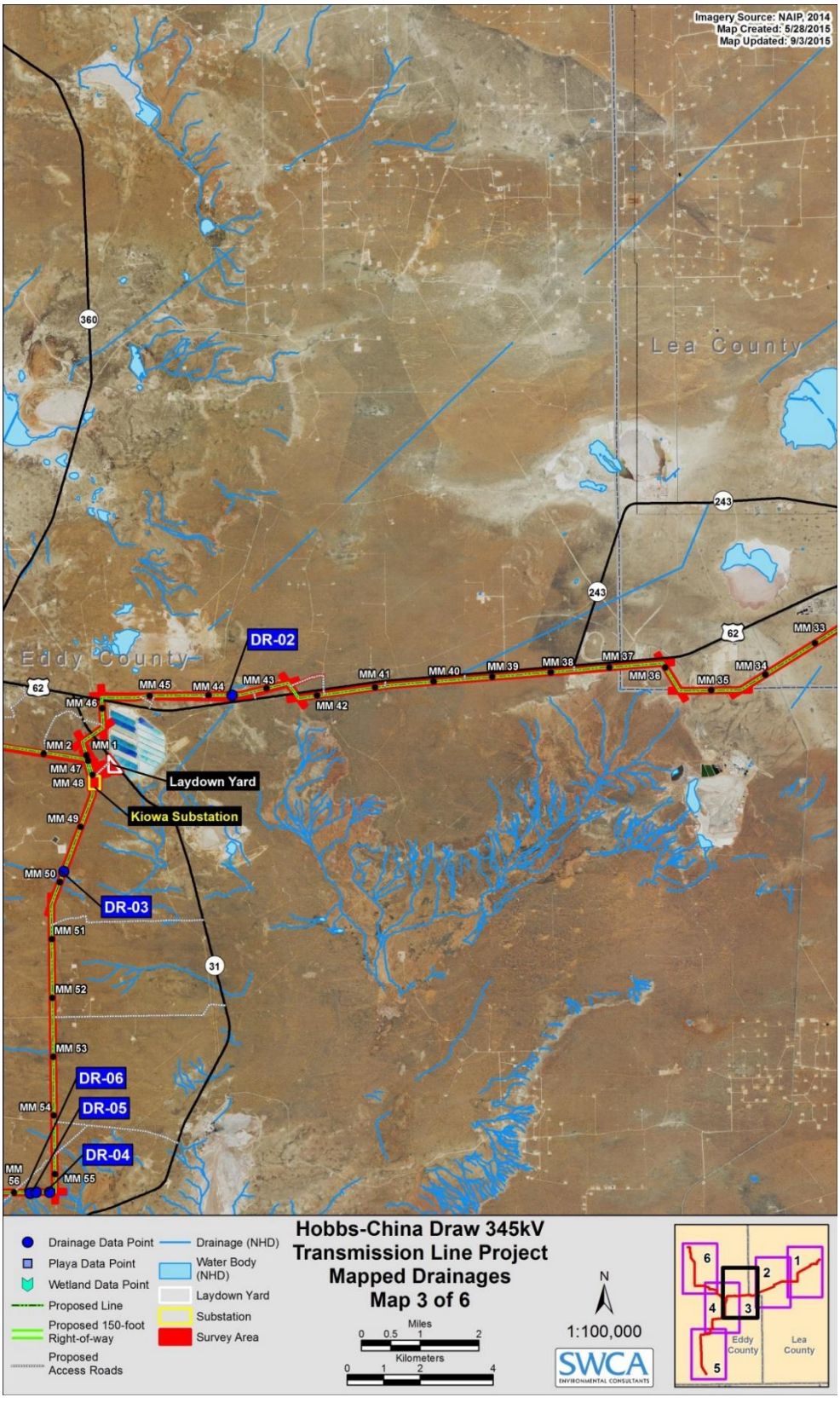


Figure A.3. Water bodies in the project area, map 3 of 6.

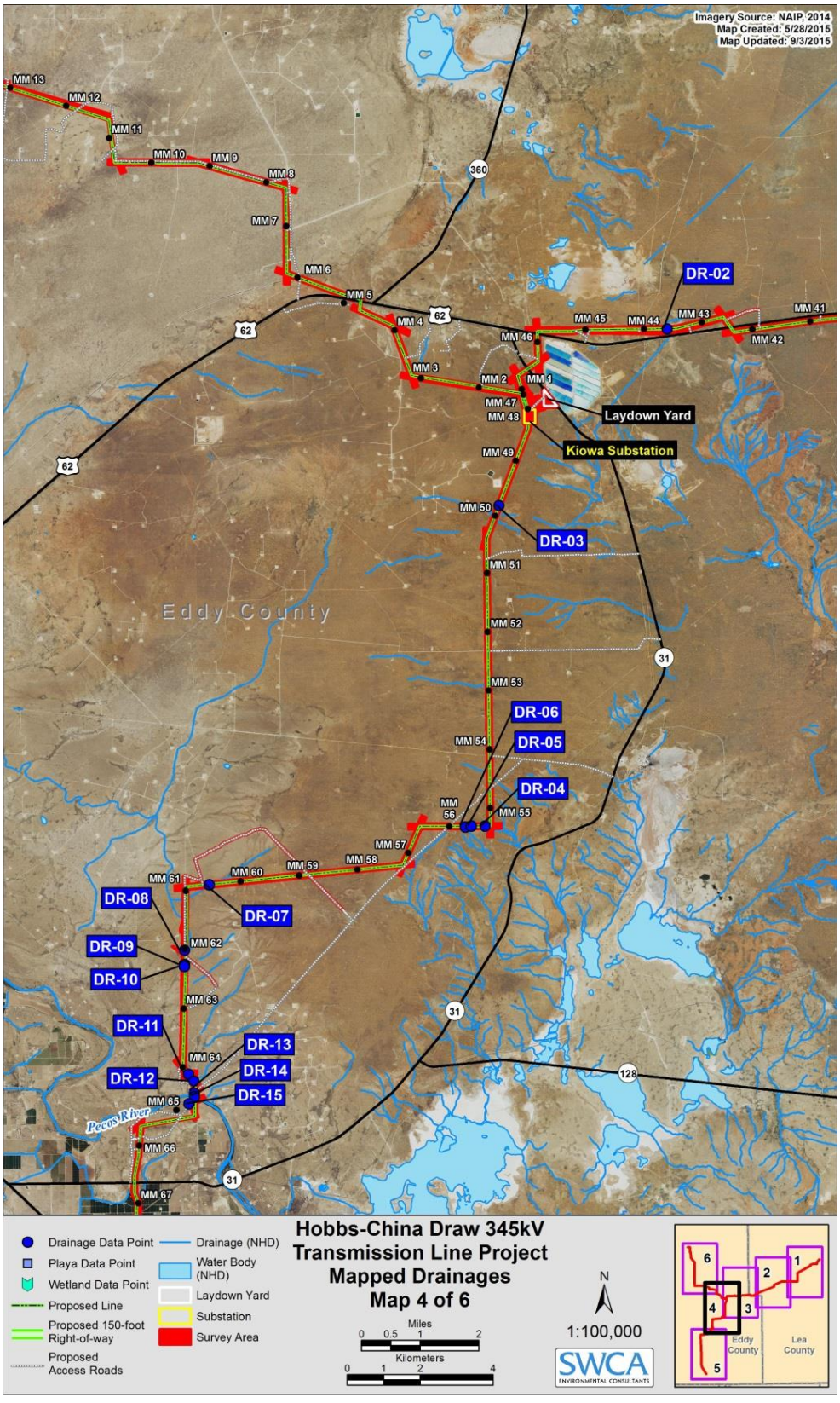


Figure A.4. Water bodies in the project area, map 4 of 6.

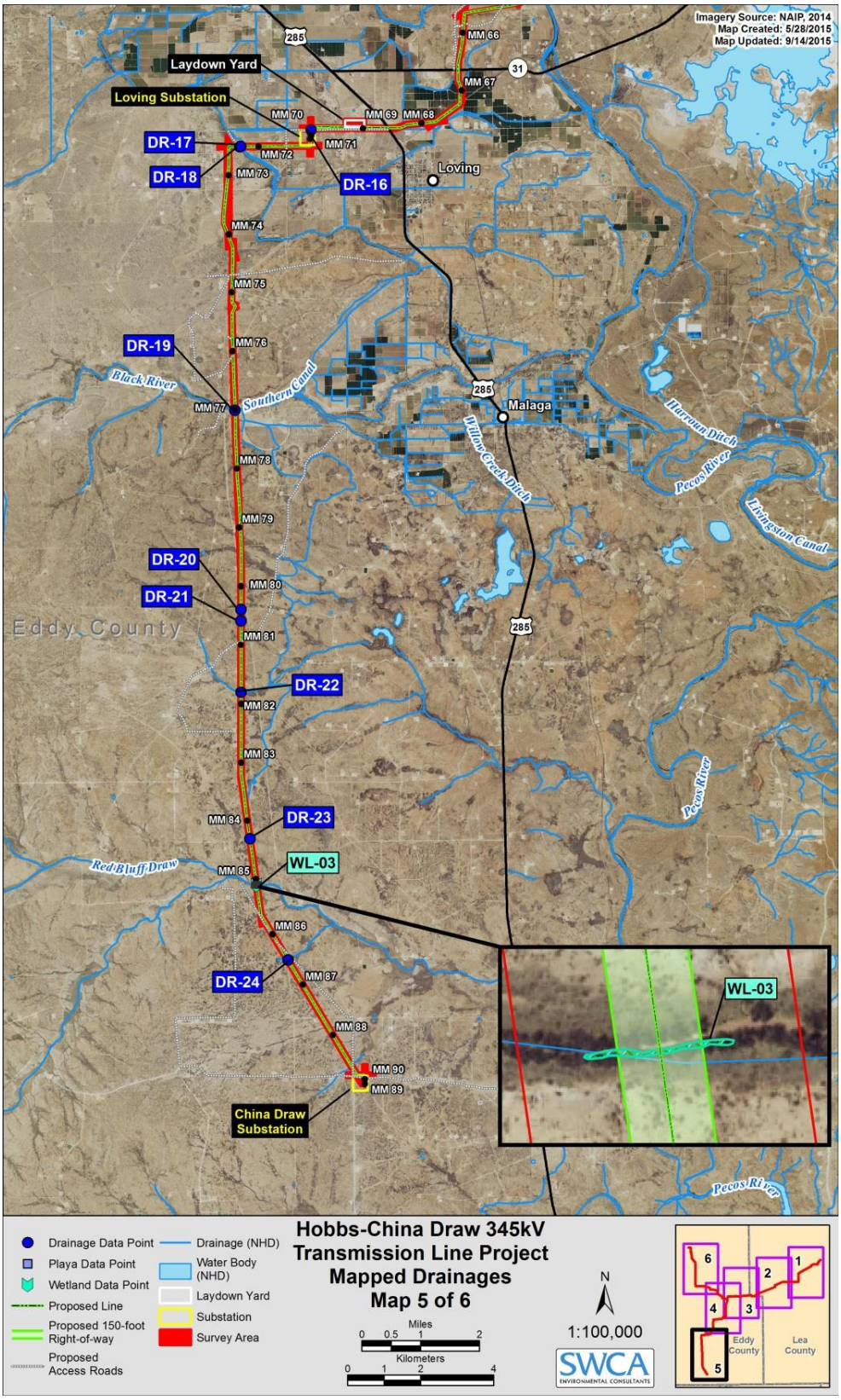


Figure A.5. Water bodies in the project area, map 5 of 6.

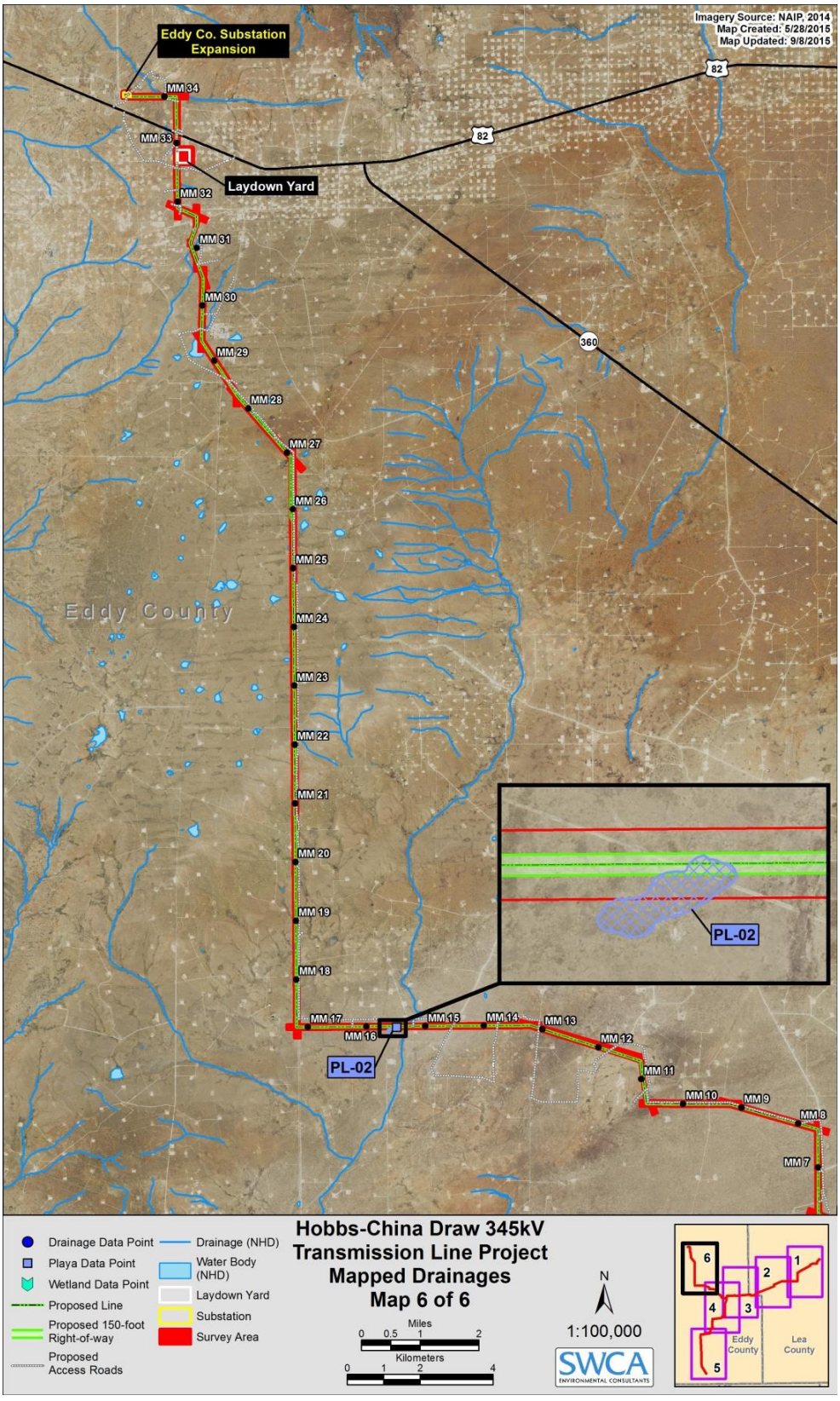


Figure A.6. Water bodies in the project area, map 6 of 6.

APPENDIX B
PHOTOGRAPHS

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Figure B.1. View of typical drainage along the eastern part of the project area.



Figure B.2. View of typical drainage along the eastern part of the project area.



Figure B.3. View of typical drainage along the central portion of the project area.



Figure B.4. View of typical drainage along the central portion of the project area.



Figure B.5. View of the Pecos River facing downstream.



Figure B.6. View of Red Bluff Draw and wetland WL03 facing northwest.



Figure B.7. View of the Black River from the south bank.



Figure B.8. View of a typical drainage along the southern section of the project area.



Figure B.9. View of wetland WL01 facing north.



Figure B.10. View of wetland WL02 facing west.

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APPENDIX C
SOILS IN THE PROJECT AREA

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Map Unit Description

Eddy Area, New Mexico

[Minor map unit components are excluded from this report]

Map unit: Aa - Anthony sandy loam, 0 to 1 percent slopes

Component: Anthony (100%)

The Anthony component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial plains, alluvial fans. The parent material consists of alluvium derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC004NM Sandy ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: Ah - Anthony sandy loam, 0 to 1 percent slopes

Component: Anthony (95%)

The Anthony component makes up 95 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial fans, alluvial plains. The parent material consists of alluvium derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC005NM Deep Sand ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: Ak - Arno-Harkey complex, saline, 0 to 1 percent slopes

Component: Arno (50%)

The Arno component makes up 50 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial plains, alluvial fans. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is low. Shrink-swell potential is high. This soil is occasionally flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC033NM Salty Bottomland ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 13 percent. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Component: Harkey (25%)

The Harkey component makes up 25 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial fans, alluvial plains. The parent material consists of alluvium derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 60 inches during April, May, June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC036NM Salt Flats ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 18 percent. The soil has a moderately saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: At - Atoka loam, 1 to 3 percent slopes

Component: Atoka (100%)

The Atoka component makes up 100 percent of the map unit. Slopes are 1 to 3 percent. This component is on plains, uplands. The parent material consists of mixed alluvium. Depth to a root restrictive layer, petrocalcic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate.

Map Unit Description

Eddy Area, New Mexico

Map unit: At - Atoka loam, 1 to 3 percent slopes

Component: Atoka (100%)

Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 7e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent. The soil has a very slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: BB - Berino complex, 0 to 3 percent slopes, eroded

Component: Berino (60%)

The Berino component makes up 60 percent of the map unit. Slopes are 0 to 3 percent. This component is on fan piedmonts, uplands. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The soil has a very slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Component: Pajarito (25%)

The Pajarito component makes up 25 percent of the map unit. Slopes are 0 to 3 percent. This component is on uplands, dunes. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent.

Map unit: CA - Cacique loamy sand, 0 to 3 percent slopes, eroded

Component: Cacique (100%)

The Cacique component makes up 100 percent of the map unit. Slopes are 0 to 3 percent. This component is on basin floors, uplands. The parent material consists of mixed alluvium. Depth to a root restrictive layer, petrocalcic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC004NM Sandy ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Map unit: ER - Ector-Reagan association, 0 to 9 percent slopes

Component: Ector (65%)

The Ector component makes up 65 percent of the map unit. Slopes are 0 to 9 percent. This component is on uplands, hills. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 4 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R070DY158NM Very Shallow ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 50 percent.

Component: Reagan (25%)

The Reagan component makes up 25 percent of the map unit. Slopes are 0 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of alluvium and/or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a

Map Unit Description

Eddy Area, New Mexico

Map unit: ER - Ector-Reagan association, 0 to 9 percent slopes

Component: Reagan (25%)

depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 40 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: GC - Gypsum land-Cottonwood complex, 0 to 3 percent slopes

Component: Gypsum land (60%)

Generated brief soil descriptions are created for major soil components. The Gypsum land is a miscellaneous area.

Component: Cottonwood (30%)

The Cottonwood component makes up 30 percent of the map unit. Slopes are 0 to 3 percent. This component is on hills, uplands. The parent material consists of residuum weathered from gypsum. Depth to a root restrictive layer, bedrock, paralithic, is 3 to 12 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC006NM Gyp Upland ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: Gs - Gypsum land-Cottonwood complex, 0 to 3 percent slopes

Component: Gypsum land (60%)

Generated brief soil descriptions are created for major soil components. The Gypsum land is a miscellaneous area.

Component: Cottonwood (30%)

The Cottonwood component makes up 30 percent of the map unit. Slopes are 0 to 3 percent. This component is on hills, uplands. The parent material consists of residuum weathered from gypsum. Depth to a root restrictive layer, bedrock, paralithic, is 3 to 12 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC006NM Gyp Upland ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: Hk - Harkey very fine sandy loam, 0 to 1 percent slopes

Component: Harkey (95%)

The Harkey component makes up 95 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial fans, alluvial plains. The parent material consists of alluvium derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC004NM Sandy ecological site. Nonirrigated land capability classification is 7c. Irrigated land capability classification is 1 This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 18 percent.

Map unit: KM - Kermit-Berino fine sands, 0 to 3 percent slopes

Component: Kermit (50%)

The Kermit component makes up 50 percent of the map unit. Slopes are 0 to 3 percent. This component is on uplands, alluvial fans. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer is greater than 60 inches. The natural

Map Unit Description

Eddy Area, New Mexico

Map unit: KM - Kermit-Berino fine sands, 0 to 3 percent slopes

Component: Kermit (50%)

drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC005NM Deep Sand ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Berino (35%)

The Berino component makes up 35 percent of the map unit. Slopes are 0 to 3 percent. This component is on uplands, fan piedmonts. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The soil has a very slightly saline horizon within 30 inches of the soil surface.

Map unit: Kr - Karro loam, 0 to 1 percent slopes

Component: Karro (100%)

The Karro component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial fans, uplands. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R042XC030NM Limy ecological site. Nonirrigated land capability classification is 6s. Irrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 50 percent.

Map unit: Ku - Karro loam, 1 to 3 percent slopes

Component: Karro (100%)

The Karro component makes up 100 percent of the map unit. Slopes are 1 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R042XC030NM Limy ecological site. Nonirrigated land capability classification is 6s. Irrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 50 percent.

Map unit: Kv - Karro loam, saline, 0 to 1 percent slopes

Component: Karro (100%)

The Karro component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial fans, uplands. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R042XC036NM Salt Flats ecological site. Nonirrigated land capability classification is 6s. Irrigated land capability classification is 2s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 50 percent. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map Unit Description

Eddy Area, New Mexico

Map unit: LS - Likes loamy fine sand, 1 to 5 percent slopes

Component: Likes (100%)

The Likes component makes up 100 percent of the map unit. Slopes are 1 to 5 percent. This component is on uplands, alluvial fans. The parent material consists of calcareous alluvium and/or colluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC005NM Deep Sand ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent.

Map unit: PA - Pajarito loamy fine sand, 0 to 3 percent slopes, eroded

Component: Pajarito (100%)

The Pajarito component makes up 100 percent of the map unit. Slopes are 0 to 3 percent. This component is on dunes, uplands. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: Pe - Pima silt loam, 0 to 1 percent slopes

Component: Pima (100%)

The Pima component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial flats, alluvial plains. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R042XC017NM Bottomland ecological site. Nonirrigated land capability classification is 7c. Irrigated land capability classification is 1 This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: PM - Pima silt loam, 0 to 1 percent slopes

Component: Pima (100%)

The Pima component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial flats, alluvial plains. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R042XC017NM Bottomland ecological site. Nonirrigated land capability classification is 7c. Irrigated land capability classification is 1 This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: PS - Potter-Simona complex, 5 to 25 percent slopes

Component: Potter (80%)

The Potter component makes up 80 percent of the map unit. Slopes are 5 to 25 percent. This component is on hills, uplands. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC025NM Shallow ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 50 percent.

Map Unit Description

Eddy Area, New Mexico

Map unit: PS - Potter-Simona complex, 5 to 25 percent slopes

Component: Simona (15%)

The Simona component makes up 15 percent of the map unit. Slopes are 5 to 10 percent. This component is on alluvial fans, uplands. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC002NM Shallow Sandy ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: RA - Reagan loam, 0 to 3 percent slopes

Component: Reagan (100%)

The Reagan component makes up 100 percent of the map unit. Slopes are 0 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of alluvium and/or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent. The soil has a slightly saline horizon within 30 inches of the soil surface.

Map unit: Rc - Reagan loam, 0 to 1 percent slopes

Component: Reagan (100%)

The Reagan component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on alluvial fans, uplands. The parent material consists of alluvium and/or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 6c. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent. The soil has a slightly saline horizon within 30 inches of the soil surface.

Map unit: Rd - Reagan loam, 1 to 3 percent slopes

Component: Reagan (100%)

The Reagan component makes up 100 percent of the map unit. Slopes are 1 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of alluvium and/or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent. The soil has a slightly saline horizon within 30 inches of the soil surface.

Map unit: RE - Reagan-Upton association, 0 to 9 percent slopes

Component: Reagan (70%)

The Reagan component makes up 70 percent of the map unit. Slopes are 0 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of alluvium and/or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R070DY153NM Loamy

Map Unit Description

Eddy Area, New Mexico

Map unit: RE - Reagan-Upton association, 0 to 9 percent slopes

Component: Reagan (70%)

ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent. The soil has a slightly saline horizon within 30 inches of the soil surface.

Component: Upton (25%)

The Upton component makes up 25 percent of the map unit. Slopes are 0 to 9 percent. This component is on fans, uplands. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R070DY159NM Shallow Loamy ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 58 percent.

Map unit: RG - Reeves-Gypsum land complex, 0 to 3 percent slopes

Component: Reeves (55%)

The Reeves component makes up 55 percent of the map unit. Slopes are 0 to 1 percent. This component is on hills, uplands. The parent material consists of residuum weathered from gypsum. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 3s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Component: Gypsum land (30%)

Generated brief soil descriptions are created for major soil components. The Gypsum land is a miscellaneous area.

Map unit: RI - Reeves loam, 0 to 1 percent slopes

Component: Reeves (100%)

The Reeves component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on hills, uplands. The parent material consists of residuum weathered from gypsum. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 3s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: RM - Reeves-Reagan loams, 0 to 3 percent slopes

Component: Reeves (50%)

The Reeves component makes up 50 percent of the map unit. Slopes are 0 to 1 percent. This component is on hills, uplands. The parent material consists of residuum weathered from gypsum. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 3s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map Unit Description

Eddy Area, New Mexico

Map unit: RM - Reeves-Reagan loams, 0 to 3 percent slopes

Component: Reagan (35%)

The Reagan component makes up 35 percent of the map unit. Slopes are 0 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of alluvium and/or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 40 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: RO - Rock land

Component: Rock land (100%)

Generated brief soil descriptions are created for major soil components. The Rock land is a miscellaneous area.

Map unit: Rr - Reeves loam, saline, 0 to 1 percent slopes

Component: Reeves (100%)

The Reeves component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on uplands, hills. The parent material consists of residuum weathered from gypsum. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC036NM Salt Flats ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 3s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a moderately saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: Rt - Reeves loam, shallow, 0 to 1 percent slopes

Component: Reeves (95%)

The Reeves component makes up 95 percent of the map unit. Slopes are 0 to 1 percent. This component is on hills, uplands. The parent material consists of residuum weathered from gypsum. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 3s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map unit: SG - Simona gravelly fine sandy loam, 0 to 3 percent slopes

Component: Simona (95%)

The Simona component makes up 95 percent of the map unit. Slopes are 0 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC002NM Shallow Sandy ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map Unit Description

Eddy Area, New Mexico

Map unit: SM - Simona-Bippus complex, 0 to 5 percent slopes

Component: Simona (55%)

The Simona component makes up 55 percent of the map unit. Slopes are 0 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC002NM Shallow Sandy ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Component: Bippus (30%)

The Bippus component makes up 30 percent of the map unit. Slopes are 0 to 5 percent. This component is on alluvial fans, alluvial plains. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R042XC017NM Bottomland ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent.

Map unit: SN - Simona and Wink fine sandy loams, 0 to 3 percent slopes, eroded

Component: Simona (45%)

The Simona component makes up 45 percent of the map unit. Slopes are 0 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC002NM Shallow Sandy ecological site. Nonirrigated land capability classification is 7e. Irrigated land capability classification is 4s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Component: Wink (40%)

The Wink component makes up 40 percent of the map unit. Slopes are 0 to 3 percent. This component is on depressions, uplands. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC004NM Sandy ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map unit: SR - Stony and Rough broken land

Component: Stony and rough broken land (100%)

Generated brief soil descriptions are created for major soil components. The Stony and rough broken land is a miscellaneous area.

Map unit: TF - Tonuco loamy fine sand, 0 to 3 percent slopes

Component: Tonuco (100%)

The Tonuco component makes up 100 percent of the map unit. Slopes are 0 to 3 percent. This component is on alluvial fans, uplands. The parent material consists of mixed alluvium and/or eolian sands. Depth to a root restrictive layer, petrocalcic, is 6 to 20 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC004NM Sandy

Map Unit Description

Eddy Area, New Mexico

Map unit: TF - Tonuco loamy fine sand, 0 to 3 percent slopes

Component: Tonuco (100%)

ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Map unit: UG - Upton gravelly loam, 0 to 9 percent slopes

Component: Upton (100%)

The Upton component makes up 100 percent of the map unit. Slopes are 0 to 9 percent. This component is on fans, uplands. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC025NM Shallow ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 58 percent.

Map unit: Uo - Upton gravelly loam, 0 to 9 percent slopes

Component: Upton (100%)

The Upton component makes up 100 percent of the map unit. Slopes are 0 to 9 percent. This component is on fans, uplands. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC025NM Shallow ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 58 percent.

Map unit: Ut - Upton soils, 1 to 3 percent slopes

Component: Upton (100%)

The Upton component makes up 100 percent of the map unit. Slopes are 1 to 3 percent. This component is on fans, uplands. The parent material consists of mixed alluvium. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC025NM Shallow ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 58 percent.

Map unit: W - Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Map Unit Description

Lea County, New Mexico

Map unit: AW - Arvana-Lea association

Component: Arvana (45%)

The Arvana component makes up 45 percent of the map unit. Slopes are 0 to 1 percent. This component is on plains, tablelands. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY035TX Sandy 16-21" Pz ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent.

Component: Lea (40%)

The Lea component makes up 40 percent of the map unit. Slopes are 0 to 1 percent. This component is on plains, tablelands. The parent material consists of loamy alluvium derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 25 percent.

Map unit: BF - Berino-Cacique fine sandy loams association

Component: Berino (50%)

The Berino component makes up 50 percent of the map unit. Slopes are 0 to 3 percent. This component is on plains, uplands. The parent material consists of sandy eolian deposits derived from sedimentary rock over calcareous sandy alluvium derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC004NM Sandy ecological site. Nonirrigated land capability classification is 7c. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent.

Component: Cacique (40%)

The Cacique component makes up 40 percent of the map unit. Slopes are 0 to 3 percent. This component is on plains, uplands. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC004NM Sandy ecological site. Nonirrigated land capability classification is 7c. This soil does not meet hydric criteria.

Map unit: JA - Jal association

Component: Jal (55%)

The Jal component makes up 55 percent of the map unit. Slopes are 0 to 3 percent. This component is on playa rims, tablelands. The parent material consists of calcareous alluvium and/or calcareous lacustrine deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC030NM Limy ecological site. Nonirrigated land capability classification is 7c. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 40 percent. The soil has a very slightly saline horizon within 30 inches of the soil surface.

Map Unit Description

Lea County, New Mexico

Map unit: JA - Jal association

Component: Drake (30%)

The Drake component makes up 30 percent of the map unit. Slopes are 0 to 3 percent. This component is on playa dunes, tablelands. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC004NM Sandy ecological site. Nonirrigated land capability classification is 7c. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 35 percent.

Map unit: KD - Kermit-Palomas fine sands, 0 to 12 percent slopes

Component: Kermit (70%)

The Kermit component makes up 70 percent of the map unit. Slopes are 3 to 12 percent. This component is on dunes, sandhills. The parent material consists of calcareous sandy eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC005NM Deep Sand ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Palomas (20%)

The Palomas component makes up 20 percent of the map unit. Slopes are 0 to 5 percent. This component is on dunes, sandhills. The parent material consists of alluvium derived from sandstone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Map unit: KM - Kermit soils and dune land, 0 to 12 percent slopes

Component: Dune land (45%)

Generated brief soil descriptions are created for major soil components. The Dune land is a miscellaneous area.

Component: Kermit (45%)

The Kermit component makes up 45 percent of the map unit. Slopes are 5 to 12 percent. This component is on dunes, sandhills. The parent material consists of calcareous sandy eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC022NM Sandhills ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Map unit: KO - Kimbrough gravelly loam, 0 to 3 percent slopes

Component: Kimbrough (85%)

The Kimbrough component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on tablelands, plains. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 4 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY037TX Very Shallow 16-21" Pz ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent.

Map Unit Description

Lea County, New Mexico

Map unit: KU - Kimbrough-Lea complex

Component: Kimbrough (50%)

The Kimbrough component makes up 50 percent of the map unit. Slopes are 0 to 3 percent. This component is on tablelands, plains. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 4 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY037TX Very Shallow 16-21" Pz ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Component: Lea (30%)

The Lea component makes up 30 percent of the map unit. Slopes are 0 to 3 percent. This component is on plains, tablelands. The parent material consists of loamy alluvium derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 4s. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 25 percent.

Map unit: MM - Ratliff loam

Component: Ratliff (85%)

The Midessa (ratliff) component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on uplands, plains. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 6c. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 35 percent.

Map unit: MN - Ratliff-Wink fine sandy loams

Component: Ratliff (45%)

The Midessa (ratliff) component makes up 45 percent of the map unit. Slopes are 0 to 3 percent. This component is on plains, uplands. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 6c. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 35 percent.

Component: Wink (40%)

The Wink component makes up 40 percent of the map unit. Slopes are 0 to 3 percent. This component is on uplands, plains. The parent material consists of calcareous sandy alluvium and/or calcareous sandy eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC004NM Sandy ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map Unit Description

Lea County, New Mexico

Map unit: MU - Mixed alluvial land

Component: Ustifluvents (85%)

The Ustifluvents component makes up 85 percent of the map unit. Slopes are 0 to 7 percent. This component is on drainageways, uplands. The parent material consists of mixed alluvium derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is high. This soil is frequently flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC017NM Bottomland ecological site. Nonirrigated land capability classification is 6e. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent.

Map unit: MW - Mobeetie-Potter association, 1 to 15 percent slopes

Component: Mobeetie (70%)

The Mobeetie component makes up 70 percent of the map unit. Slopes are 1 to 10 percent. This component is on uplands, escarpments, draws. The parent material consists of calcareous sandy alluvium derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY035TX Sandy 16-21" Pz ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Component: Potter (24%)

The Potter component makes up 24 percent of the map unit. Slopes are 5 to 15 percent. This component is on escarpments, uplands, draws. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY037TX Very Shallow 16-21" Pz ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 50 percent.

Map unit: PC - Portales loam, 0 to 3 percent slopes

Component: Portales (85%)

The Portales component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on playa rims, plains, tablelands. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 35 percent.

Map unit: PT - Pyote loamy fine sand

Component: Pyote (85%)

The Pyote component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on uplands, plains. The parent material consists of sandy eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Map Unit Description

Lea County, New Mexico

Map unit: RT - Reeves-Cottonwood association

Component: Cottonwood (20%)

inches of the soil surface.

Map unit: SE - Simona fine sandy loam, 0 to 3 percent slopes

Component: Simona (85%)

The Simona component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on tablelands, plains. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC002NM Shallow Sandy ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 25 percent.

Map unit: SR - Simona-Upton association

Component: Simona (50%)

The Simona component makes up 50 percent of the map unit. Slopes are 0 to 3 percent. This component is on ridges, tablelands. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC002NM Shallow Sandy ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent.

Component: Upton (35%)

The Upton component makes up 35 percent of the map unit. Slopes are 0 to 3 percent. This component is on tablelands, ridges. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC025NM Shallow ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 58 percent.

Map unit: SS - Stegall and slaughter soils

Component: Stegall (40%)

The Stegall component makes up 40 percent of the map unit. Slopes are 0 to 1 percent. This component is on plains, tablelands. The parent material consists of alluvium derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 65 percent.

Component: Slaughter (35%)

The Slaughter component makes up 35 percent of the map unit. Slopes are 0 to 1 percent. This component is on plains, tablelands. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 6s. Irrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches,

Map Unit Description

Lea County, New Mexico

Map unit: PU - Pyote and maljamar fine sands

Component: Maljamar (45%)

The Maljamar component makes up 45 percent of the map unit. Slopes are 0 to 3 percent. This component is on uplands, plains. The parent material consists of sandy eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 40 to 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7e. Irrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Component: Pyote (45%)

The Pyote component makes up 45 percent of the map unit. Slopes are 0 to 3 percent. This component is on uplands, plains. The parent material consists of sandy eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Map unit: PY - Pyote soils and dune land

Component: Dune land (45%)

Generated brief soil descriptions are created for major soil components. The Dune land is a miscellaneous area.

Component: Pyote (45%)

The Pyote component makes up 45 percent of the map unit. Slopes are 0 to 3 percent. This component is on depressions, sandhills. The parent material consists of sandy eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC003NM Loamy Sand ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Map unit: RT - Reeves-Cottonwood association

Component: Reeves (70%)

The Reeves component makes up 70 percent of the map unit. Slopes are 0 to 3 percent. This component is on playa slopes, playa rims, tablelands. The parent material consists of alluvium derived from gypsum. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC007NM Loamy ecological site. Nonirrigated land capability classification is 7c. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Component: Cottonwood (20%)

The Cottonwood component makes up 20 percent of the map unit. Slopes are 0 to 3 percent. This component is on playa slopes, playa rims, tablelands. The parent material consists of mixed residuum weathered from gypsum. Depth to a root restrictive layer, bedrock, paralithic, is 3 to 12 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC006NM Gyp Upland ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 20 percent. The soil has a slightly sodic horizon within 30

Map Unit Description

Lea County, New Mexico

Map unit: RT - Reeves-Cottonwood association

Component: Cottonwood (20%)

inches of the soil surface.

Map unit: SE - Simona fine sandy loam, 0 to 3 percent slopes

Component: Simona (85%)

The Simona component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on tablelands, plains. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC002NM Shallow Sandy ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 25 percent.

Map unit: SR - Simona-Upton association

Component: Simona (50%)

The Simona component makes up 50 percent of the map unit. Slopes are 0 to 3 percent. This component is on ridges, tablelands. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC002NM Shallow Sandy ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent.

Component: Upton (35%)

The Upton component makes up 35 percent of the map unit. Slopes are 0 to 3 percent. This component is on tablelands, ridges. The parent material consists of calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 7 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R042XC025NM Shallow ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 58 percent.

Map unit: SS - Stegall and slaughter soils

Component: Stegall (40%)

The Stegall component makes up 40 percent of the map unit. Slopes are 0 to 1 percent. This component is on plains, tablelands. The parent material consists of alluvium derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 65 percent.

Component: Slaughter (35%)

The Slaughter component makes up 35 percent of the map unit. Slopes are 0 to 1 percent. This component is on plains, tablelands. The parent material consists of calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 6s. Irrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches,

Map Unit Description

Lea County, New Mexico

Map unit: SS - Stegall and slaughter soils

Component: Slaughter (35%)

typically, does not exceed 65 percent.

Map unit: TF - Tonuco loamy fine sand

Component: Tonuco (85%)

The Tonuco component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on plains, ridges, uplands. The parent material consists of eolian deposits derived from sedimentary rock. Depth to a root restrictive layer, petrocalcic, is 6 to 20 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R077DY046TX Sandy 12-17" Pz ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Map unit: WF - Wink fine sand

Component: Wink (85%)

The Wink component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on depressions, uplands. The parent material consists of calcareous sandy alluvium and/or calcareous sandy eolian deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R042XC005NM Deep Sand ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 23 percent.

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

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APPENDIX D
WETLAND DATA SHEETS

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Hobbs to China Draw 30293 City/County: Hobbs, Lea Cont Sampling Date: Oct 20

Applicant/Owner: State: NM Sampling Point: WB[redacted]01

Investigator(s): Flynn, Franks Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? N Are "Normal Circumstances" present? Yes V No

Are Vegetation , Soil , or Hydrology naturally problematic? N (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes V	No	Is the Sampled Area within a Wetland? Yes V No
Hydric Soil Present?	Yes V	No	
Wetland Hydrology Present?	Yes V	No	

Remarks: Heavy rain within last month.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Juncus balticus	50	yes	Facw?
2. Allium sp.	1		
3. Polygonum sp.	1		
4. Helianthus ciliaris	1		
5.			
6.			
7.			
8.			
	53 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

V Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes V No

Remarks: Flooded

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WB01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3-1						Clay Loam	Mulched, gravel cleared

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): N/A

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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Project/Site: Hobbs to Ch. Draw City/County: Hobbs / Lea County Sampling Date: Oct 21, 2014
Applicant/Owner: State: NM Sampling Point: WB-1002
Investigator(s): Flynn, Franks Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Convex Slope (%): 0
Subregion (LRR): Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Depressional wetland - drainage from highway

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	75	Yes	FACW
2. Muhlenbergia	10	Yes	OBL
3. Panicum obtusum	2	-	-
4. Polygonum sp.	<1	-	-
5.			
6.			
7.			
8.			
	89 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

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SOIL Sampling Point: WB02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16inch	7.5YR 3/1	85	7.5YR 4/3	15	C	M	Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): None
Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ✓ No ____

Remarks:
Redox throughout soil profile

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ____ Depth (inches): Surface
Water Table Present? Yes ____ No ____ Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Flooded at time of survey

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WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Hobbs to China Draw County: Eddy Sampling Date: June 12, 2015
Applicant/Owner: Excel State: NM Sampling Point: Wetland 1
Investigator(s): Shuck and Section, Township, Range: T25S, R28E, S32
Landform (hillslope, terrace, etc.): draw bottom Local relief (concave, convex, none): Concave Slope (%): 0-5
Subregion (LRR): Western Range Lat: 32.09102 Long: -104.10572 Datum: NAD 83
Soil Map Unit Name: Reeves-Reagan loam NWI classification: Not Wetland soil
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No #N/A (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present? Yes X No
Is the Sampled Area within a Wetland? Yes X No

Remarks:
This point was determined to be within a wetland due to the presence of all 3 wetland criteria.
#N/A

VEGETATION - Use scientific names of plants.

	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft.)			
1. *Elaeagnus angustifolia*	15	Yes	FAC
2. *Tamarix chinensis*	10	Yes	FAC
3.			
4.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft.)			
1. *Apocynum cannabinum*	10	No	FAC
2. *Carex sp*	75	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft.)			
1. *None Observed*			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	35	x 3 =	105
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		255 (B)

Prevalence Index = B/A = 2.32

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
A positive indication of hydrophytic vegetation was observed (>50% of dominant species indexed as OBL, FACW, or FAC).
A positive indication of hydrophytic vegetation was observed (Prevalence Index is ≤ 3.0).

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SOIL

Sampling Point: **Wetland 1**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
1-20	7.5YR 3/1	100	None	—	—	—	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soils Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth(inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

A positive indication of hydric soil was observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- X Water Marks (B1) **(Riverine)**
- X Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No x Depth (inches): 0-1

Water Table Present? Yes x No _____ Depth (inches): 0-1

Saturation Present? (includes capillary fringe) Yes x No _____ Depth (inches): 0-1

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

A positive indication of wetland hydrology was observed (at least one primary indicator).

A positive indication of wetland hydrology was observed (at least two secondary indicators).

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TECHNICAL MEMORANDUM

To: David Brown
SWCA Environmental Consultants
257 E. 200 South
Suite 200
Salt Lake City, Utah 84111

From: Jo Guest, Air Quality Specialist

Date: May 6, 2019

Re: **Hobbs to China Draw 345-kV Transmission Line Noise Impact Assessment / SWCA Project No. 53583**

EXECUTIVE SUMMARY

SWCA Environmental Consultants (SWCA) has prepared this technical memorandum to provide a qualitative analysis of the construction and operational noise impacts associated with the development of the Hobbs to China Draw 345-kV Transmission Line Project (Project) in Lea and Eddy Counties, New Mexico. The Project consists of a new substation (Kiowa Substation), two substation expansions (Hobbs Generation and Eddy County Substation), and two 345-kilovolt (kV) transmission lines: the Eddy to Kiowa transmission line and the Hobbs to China Draw transmission line. This memorandum describes the existing conditions within the proposed Project area, the assessment methodology, and a summary of Project-related construction and operational noise impacts.

If all of the construction equipment used for constructing the Hobbs to China Draw transmission line was operating simultaneously at a point along the transmission line right-of-way (ROW) that is closest to the nearest sensitive receptor, it is conservatively estimated a noise level (L_{eq}) of up to 78.6 dBA at the closest sensitive receptor would be generated. At 0.5 miles away from the transmission line route the construction equipment noise level dissipates to below Federal guidelines. The noise impact due to Hobbs to China Draw transmission line construction would be significant but temporary for fifteen sensitive receptors that are within a half mile of the Hobbs to China Draw transmission line route. The noise impact for the rest of the sensitive receptors within the analysis area is less than significant since they are located 0.5 miles away or more from the Hobbs to China Draw transmission line route.

There are no sensitive receptors within the 1.5-mile analysis area for the Eddy to Kiowa transmission line route and the Eddy, Hobbs Generation, or Kiowa Substations. Beyond 1.5 miles the noise generated by construction of the Project will have dissipated to below ambient noise levels. Thus, there is no noise impact due to construction of the Eddy to Kiowa transmission line or the construction of the substations.

Operation noise outputs of transmission lines are minimal and generally limited to corona noise and the occasional maintenance vehicle surveying the transmission line. SWCA anticipates that Project operational noise sources would not permanently increase ambient noise levels above the baseline conditions at the nearest sensitive receptor. Existing ambient baseline noise levels are discussed in the

introduction. The closest noise sensitive receptor to the proposed Project site is a residence located approximately 130 feet west of the Hobbs to China Draw transmission line route. Maximum noise levels associated with corona noise during extreme weather events typically do not exceed 50 dBA as heard from the edge of the ROW. During periods of fair weather, levels typically do not exceed 25 dBA—less than the ambient sound levels of a library. Impacts related to long-term operational noise are less than significant.

INTRODUCTION

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although prolonged exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise; the perceived importance of the noise, and its appropriateness in the setting; the time of day and the type of activity during which the noise occurs; and the sensitivity of the individual.

Noise could also disrupt wildlife life-cycle activities of foraging, resting, migrating, and other patterns of behavior. While wildlife already existing in proximity to human development may already be habituated to noise from land use and human disturbance, changes to these baseline activities may still result in wildlife disruption. Additionally, sensitivity to noise varies from species to species, making it difficult to identify how a noise source would affect all flora and fauna in an area.

The general human response to changes in noise levels that are similar in frequency content (such as comparing increases in continuous [L_{eq}] traffic noise levels) are summarized as follows:

- A 3-decibel (dB) change in sound level is a barely noticeable difference.
- A 5-dB change in sound level typically is noticeable.
- A 10-dB increase is a doubling in loudness.

Community sound levels are generally presented in terms of A-weighted decibels (dBA). The A-weighting network measures sound in a similar fashion to how a person perceives or hears sound, thus achieving a strong correlation with how people perceive acceptable and unacceptable sound levels. The New York Department of Environmental Conservation summarizes in its document "Assessing and Mitigating Noise Impacts", February 2001, A-weighted sound levels and the general subjective responses from some common noise sources such as traffic, jets, human shouting, and pneumatic drills.[1] In his 1993 book, *Handbook of Environmental Acoustics*, James Cowan also lists the A-weighted sound levels for several common sources.[2] Table 1 combines the data from both of these sources and presents the A-weighted sound levels and the general subjective responses associated with common sources of noise in the physical environment.

[1] New York Department of Environmental Conservation. February 2001. Table E, "Assessing and Mitigating Noise Impacts".

[2] Cowan, James P. *Handbook of Environmental Acoustics.* December 1993. John Wiley & Sons, Inc.

Table 1. Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance	Sound Level in A-weighted Decibels (dBA)	Qualitative Description
Carrier deck jet operation	140	
Civil defense siren (100 feet)	130	Pain threshold
Jet takeoff (200 feet)	120	Deafening
Auto horn (3 feet) Pile driver (50 feet) Rock music concert environment	110	Maximum vocal effort
Jet takeoff (100 feet) Shout (0.5 foot) Ambulance siren (10 0 feet) Newspaper press (5 feet) Power lawn mower (3 feet)	100	
Heavy truck (50 feet) Power mower Motorcycle (25 feet) Propeller plane flyover (1,000 feet)	90	Very loud/annoying; Hearing damage (8-hour, continuous exposure)
Pneumatic drill (50 feet) Garbage disposal (3 feet) High urban environment	80	Very loud
Passenger car, 65 mph (25 feet) Living room stereo (15 feet) Vacuum cleaner (3 feet)	70	Loud/Intrusive (telephone use difficult)
Air conditioning unit (20 feet) Human voice (3 feet) Department store environment	60	
Light auto traffic (50 feet) Residential air conditioner (50 feet) Private business office environment	50	Moderate/Quiet
Living room/Bedroom Bird calls (distant)	40	
Library Soft whisper (5 feet) Quiet bedroom environment	30	Very quiet
Broadcasting/Recording studio	20	Faint
	10	Just audible
	0	Threshold of human audibility

Source: Adapted from New York Department of Environmental Conservation. February 2001. Table E, “Assessing and Mitigating Noise Impacts”. and Cowan, James P. *Handbook of Environmental Acoustics.* December 1993. John Wiley & Sons, Inc.

The American National Standards Institute (ANSI) has published a standard with estimates of general ambient noise levels (L_{eq} [energy average noise level] and L_{dn} [day-night average noise level]) based on detailed descriptions of land use categories. [3] The ANSI document organizes land use based on six categories. Table 2 provides the associated estimated daytime and nighttime L_{eq} ambient noise levels for each land use category.

Table 2. Representative Existing Conditions for the Analysis Area Based on Land Use

Category	Land Use	Description	Estimated Existing Daytime L_{eq} (dBA)	Estimated Existing Nighttime L_{eq} (dBA)
1	Noisy Commercial and Industrial Areas	Very heavy traffic conditions, such as in busy downtown commercial areas, at intersections of mass transportation and other vehicles including trains, heavy motor trucks, and other heavy traffic, and street corners where motor buses and heavy trucks accelerate.	69	61
2	Moderate Noisy Commercial and Industrial Areas, and Noisy Residential Areas	Heavy traffic areas with conditions similar to Category 1 but with somewhat less traffic, routes of relatively heavy or fast automobile traffic but where heavy truck traffic is not extremely dense, and motor bus routes.	64	56
3	Quiet Commercial Areas, Industrial Areas, Normal Urban Areas, and Noisy Residential Areas	Light traffic conditions where there are no mass transportation vehicles and relatively few automobiles and trucks pass, and where these vehicles generally travel at low speeds. Residential areas and commercial streets and intersections with little traffic comprise this category.	58	52
4	Quiet Urban Areas and Normal Residential Areas	These areas are similar to Category 3 but, for this group, the background noise is either distant traffic or is unidentifiable.	53	47
5	Quiet Suburban Residential Areas	Isolated areas far from significant sources of sound.	48	42
6	Very Quiet, Sparse Suburban or Rural Areas	These areas are similar to Category 5 but are usually in unincorporated areas and, for this group, there are few if any near neighbors.	43	37

Source: ANSI (American National Standards Institute). 1993. *ANSI S12.9-1993/Part 3 - American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, Part 3: Short-Term Measurements with an Observer*.

The transmission line crosses mostly rural lands in the existing Permian oil patch. Most of the transmission line is surrounded by oil and gas wells. The transmission line route passes by Loving, NM outside the city boundaries and does not pass through any other towns or cities. Existing noise levels were estimated based on land use category 6 for very quiet, sparse suburban, or rural areas.

NOISE REGULATIONS

In 1974 the U.S. EPA published "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin on Safety". In this publication, the U.S. EPA evaluated the effects of environmental noise with respect to health and safety and determined an L_{dn} of 55

[3] American National Standards Institute. 1993. *ANSI S12.9-1993/Part 3 - American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, Part 3: Short-Term Measurements with an Observer*.

dBA (equivalent to a continuous noise level of 48.6 dBA) to be the maximum sound level that will not adversely affect public health and welfare by interfering with speech or other activities in outdoor areas. This maximum sound level was adopted by the Federal Energy Regulatory Commission as published in the FERC Guidance Manual for Environmental Report Preparation. According to this manual, noise levels must be below 55 dBA, or no more than 10 dBA over background if ambient noise levels are above 55 dBA L_{dn}.

There are no state-level standards for noise in New Mexico. However, the New Mexico Public Regulation Commission has jurisdiction on proposed transmission lines in New Mexico. Utilities are required to make an application to the applicable commission when locating within their jurisdiction. In New Mexico, the New Mexico Public Regulation Commission may consider "noise emission levels and interference with communication signals" in determining if the proposed location of the transmission line will unduly impair important environmental values (NMSA 62-9-3(M)(3)). No other county, city, or local laws, regulations, ordinances, or guidelines were identified with specific sound level restrictions limiting the decibel (dB) levels of noise.

METHODOLOGY

Existing noise levels were estimated based on the ANSI estimates of general ambient noise levels for six land use categories given in Table 2. Existing land use in the Project area was estimated based on aerial photography. The Project is adjacent to or runs through quiet, sparsely populated suburban or rural areas and is best described by land use category 6. Therefore, per the ANSI standard, the estimated existing daytime L_{eq} is 43 dBA and the estimated existing nighttime L_{eq} is 37 dBA.

The construction equipment noise level was estimated using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). The RCNM is FHWA's national model for the prediction of construction noise. This software is based on actual sound level measurements from various equipment types taken during the Central Artery/Tunnel project conducted in Boston, Massachusetts, during the early 1990s. The maximum noise levels presented at a specified distance from the source are based on a roster of likely construction equipment operating simultaneously. Although the Project is not a road construction project, the RCNM includes the same types of equipment that would be used in the construction of the Project. The equipment roster used for analysis is given in the construction noise discussion section.

Worker commutes would cause noise that would be short term and have little effect on the hourly average noise level. Therefore, this traffic was not included in the construction noise analysis.

Analysis Area

The analysis area for the evaluation of noise impacts is 1.5 miles on either side of the centerline of the transmission line routes and 1.5 miles surrounding each substation. Beyond 1.5 miles the noise generated by construction of the Project will have dissipated to below ambient noise levels.

Noise Sensitive Receptors

Noise-sensitive receptors generally are defined as locations where people reside or where the presence of unwanted sound may adversely affect the existing land use. Typically, noise-sensitive land uses include residences, hospitals, places of worship, libraries, performance spaces, offices, and schools, as well as nature and wildlife preserves, recreational areas, and parks. Sensitive receptors within 1.5 miles of the

transmission line route were analyzed for potential impacts as a result of Project construction and operation.

There are no sensitive receptors within 1.5 miles of the Eddy to Kiowa transmission line route or within 1.5 miles of Eddy, Hobbs Generation, or Kiowa Substation. There are a number of sensitive receptors within the 1.5-mile analysis area surrounding the Hobbs to China Draw transmission line route. The closest sensitive receptor to the Hobbs to China Draw transmission line is a residence located approximately 130 feet west of the transmission line route. The noise impact analysis conservatively assumed that construction would take place at the point along the transmission line route closest to this sensitive receptor (within 130 feet of the residence). Approximately 15 of the sensitive receptors within the Hobbs to China Draw transmission line analysis area are located less than 0.5 miles away from the transmission line route.

Impacts

For the purposes of this analysis, a significant impact on noise could result if any of the following were to occur from construction or operation of the proposed Project:

- Exceedance of Federal noise regulations or guidelines;
- Increased noise levels could impose restrictions on land currently planned for residential development; or
- Increased noise levels directly or indirectly could affect any places of traditional use that are National Register of Historic Places (NRHP)-listed or eligible, or identified as important to tribes.

Increases to noise levels that impose restrictions on land use or that affect NRHP listed or eligible sites are analyzed qualitatively herein. Noise is a potential issue to sites that are in current use by tribal members. The nearest noise sensitive receptors to the proposed Project were identified; therefore, if operation and maintenance noise impacts affect these noise sensitive receptors, then land use restrictions from increased noise levels or adverse impacts to NRHP sites could be presumed at these locations. Construction impacts would be of limited duration and therefore would not represent significant impacts to land use restrictions or NRHP sites, even if noise levels would be above impact thresholds.

LIMITATIONS

The analysis presented in this memo is based on published noise generating data for those construction equipment types identified in the Federal Highway Administration Roadway Construction Noise Model. Coronal noise estimates were obtained from Electric Power Research Institute *Transmission Line Reference Book*. Baseline or ambient condition estimates were obtained from ANSI 1993 *ANSI S12.9-1993/Part 3 - American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, Part 3: Short-Term Measurements with an Observer*. Because these data are estimates, there is inherent variability built into this analysis. Furthermore, the methodology used to determine impacts results in a conservative noise impact value. There are computer simulations that produce more precisions with respect to potential noise impacts and if necessary, a simulation can be run. However, the analysis presented herein follows general practice for circumstances where actual on the ground noise data are available.

RESULTS

Construction

Estimates of noise from the construction of the Hobbs to China Draw transmission line route are based on a roster of maximum numbers of construction equipment types used at one time in one place to construct the transmission line. Table 3 shows the construction equipment that has been analyzed (for ease of calculation, all equipment is assumed to be operating at this single point). The RCNM has noise levels for various types of equipment pre-programmed into the software; therefore, the noise level associated with the equipment is typical for the equipment type and not based on any specific make or model.

Table 3. Transmission Line Construction Equipment Roster Used for Noise Analysis

Equipment Type	Quantity	Typical Maximum Noise Levels (dBA at 10 feet)
Crane	1	86.6
Boom Truck	1	81.7
Concrete truck	1	88.4
Tractor trailer	2	94.0
Water Truck	1	85.0
Material Truck	3	84.3
Front-End Loader	4	89.1
Pickup truck	6	85.0

The RCNM assumes that the L_{max} is the maximum sound level for the loudest piece of equipment. L_{max} at a distance of 10 feet from the point source will be 94.0 dBA. The approximate noise generated by the construction equipment used at the transmission line has been conservatively calculated based on the maximum amount of construction equipment that would be used in constructing the Hobbs to China Draw transmission line at one time, and not taking into account further attenuation due to atmospheric interference, intervening structures, or implementation of any environmental commitments. The results of the RCNM construction noise calculations are given in Table 4.

Table 4. Calculated Noise Levels Due to Hobbs to China Draw Transmission Line Construction

	Calculated Maximum Construction Noise, L_{max} (dBA)	Calculated Cumulative Construction Noise Level, L_{eq} (dBA)	Total Noise Level, Ambient + Construction (dBA)
			L_{day}
Ambient Baseline Noise Level *	--	--	43.0
Noise Level Attenuated to Nearest Sensitive Receptor (130 feet)	75.6	78.6	78.6
Noise Level Attenuated to Second-Closest Sensitive Receptor (170 feet)	73.3	76.3	76.3
Noise Level Attenuated to Third-Closest Sensitive Receptor (200 feet)	71.8	74.8	74.8
Noise Level Attenuated to 0.5 miles	49.4	52.4	52.9
Noise Level Attenuated to 1 mile	43.4	46.4	48.0
Noise Level Attenuated to 1.5 miles	39.9	42.9	46.0

* Baseline noise level obtained based on estimated local land use.

During construction, the noise level at the nearest sensitive receptor along the transmission line would be very loud (as estimated by the RCNM software and the associated noise calculations supplied in Appendix A), approximately equivalent to a pneumatic drill or heavy truck from 50 feet away. The noise level would be loud and intrusive to this receptor, however not many of the sensitive receptors within the analysis area are located so closely to the transmission line. Furthermore, this analysis conservatively assumes that all of the construction equipment used for transmission line construction would be operating simultaneously and at the point along the transmission line ROW that is closest to the receptor.

There are approximately 15 noise sensitive receptors that are located less than 0.5 miles from the Hobbs to China Draw transmission line route. The rest of the noise sensitive receptors within the analysis area are located at least 0.5 miles away from the Hobbs to China Draw transmission line route. At 0.5 miles away from the construction equipment the noise level dissipates to below Federal guidelines and the construction noise impact at sensitive receptors at this distance from the construction equipment noise source is less than significant.

The noise level at the edge of the analysis area would be comparable to hearing light traffic or an air conditioning unit 50 feet away. Construction equipment sound level at 0.5-miles, 1 mile, and 1.5 miles from the construction equipment noise source are depicted in Figure 1. Figure 1 also shows the sensitive receptors within the analysis area for this portion of the Hobbs to China Draw transmission line route and notes which of those sensitive receptors lie beyond 0.5-miles from the Hobbs to China Draw transmission line ROW and thus experience less than significant impacts due to construction noise.

Noise due to construction of the transmission line would be temporary. Construction of the Hobbs to China Draw transmission line is expected to last approximately 18-months. During this time, construction activities would occur along discrete portions of the transmission line; therefore, noise impacts would occur over a much shorter time frame at any given location. Moreover, construction equipment would move in and out of the construction site and therefore, noise associated with that equipment is transient. For those sensitive receptors closest to the ROW, adverse noise impacts from construction of the Hobbs to China Draw transmission line would be significant but short term, lasting less than a month at one location. For the rest of the sensitive receptors, adverse noise impacts due to construction of the transmission line are less than significant.

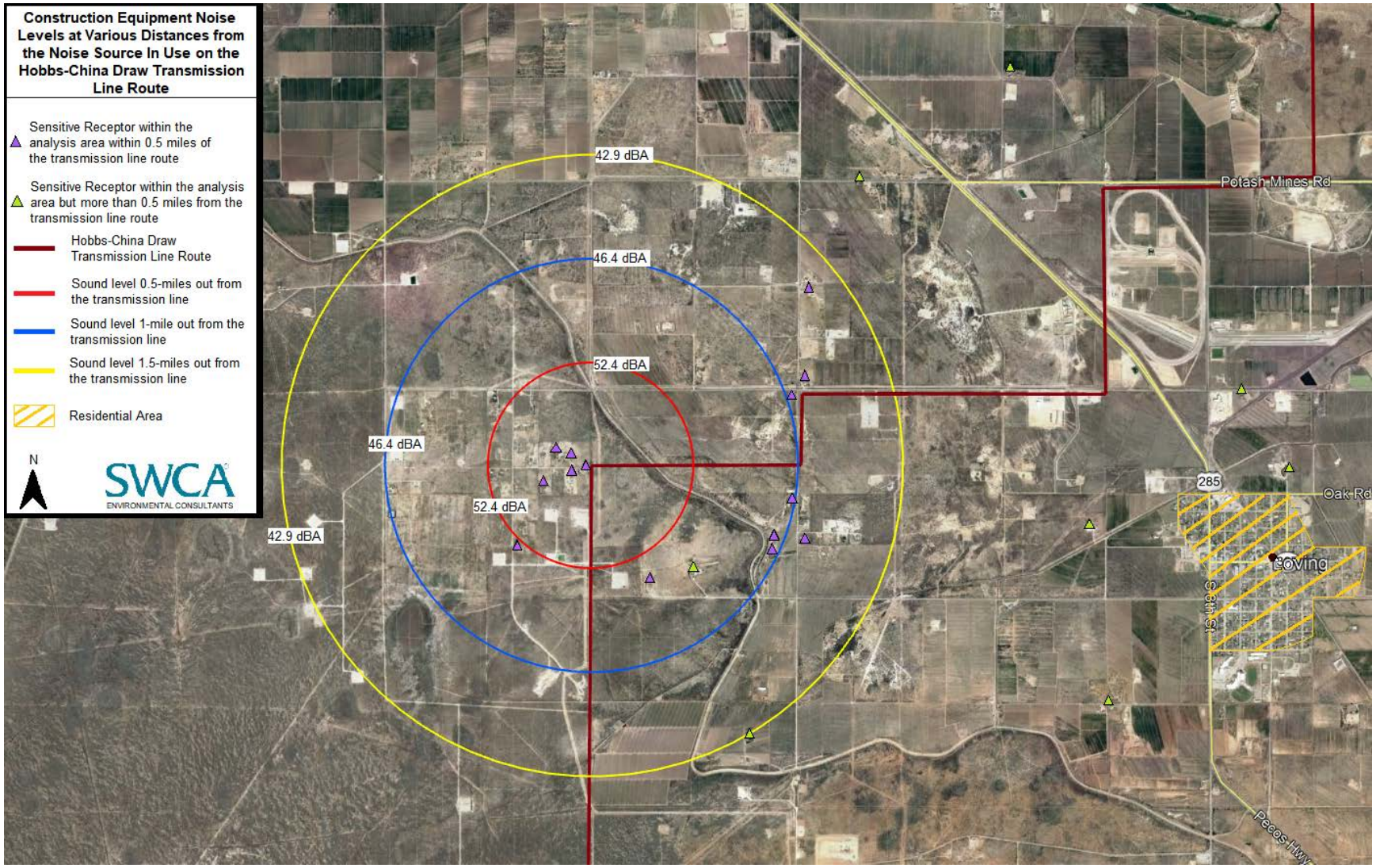


Figure 1. Construction Equipment Noise Levels at Various Distances from the Noise Source

Operation

Corona Noise

Corona generates audible noise during operation of high-voltage transmission lines. Under certain conditions, the localized electric field near an energized conductor can be sufficiently concentrated to produce a tiny electric discharge that can ionize air close to the conductors. This partial discharge of electrical energy is called corona discharge, or corona. Several factors, including conductor voltage, shape and diameter, and surface irregularities such as scratches, nicks, dust, or water drops, can affect a conductor's electrical surface gradient and its corona performance. Corona is the physical manifestation of energy loss and can transform discharge energy into very small amounts of sound, radio noise, heat, and chemical reactions of the air components.

Transmission lines can generate a small amount of sound energy during corona activity. This audible noise from the line can barely be heard in fair weather conditions on higher voltage lines. During wet weather conditions (such as rain or fog), water drops collect on the conductor and increase corona activity so that a crackling or humming sound may be heard near the line. This noise is caused by small electrical discharges from the water drops. However, during heavy rain, the ambient noise generated by the falling raindrops will typically be greater than the noise generated by corona.

The operation of the proposed transmission line would result primarily in corona-generated noise, occurring in the atmosphere near the conductor. Changes to local atmospheric pressure may result in a hissing or cracking sound that may be heard directly under the transmission line or within a few feet of the ROW depending on weather, altitude, and system voltage, with the level of corona noise receding with distance. Maximum noise levels associated with corona noise during extreme weather events typically do not exceed 50 dBA as heard from the edge of the ROW.[4] However, during heavy rain, the ambient noise generated by the falling raindrops will typically be greater than the noise generated by corona. During periods of fair weather, levels typically do not exceed 25 dBA—less than the ambient sound levels of a library.[5]

Transmission Line Maintenance

Noise impacts during operation and maintenance of the proposed Project are expected to be negligible. Maintenance activities for the transmission line would include driving the length of the transmission line, inspecting the transmission line aerially via helicopter, and making any necessary repairs which may involve construction equipment. The noise impacts due to maintenance activities would be temporary and would have less of an impact than construction of the Project.

ABOUT THE AUTHOR

Jo Guest is an air quality specialist and meteorologist with experience in air quality compliance and permitting, air and noise impact analyses, and emission inventories. She has performed air and noise impact analyses for National Environmental Policy Act impact assessments, and Federal Energy Regulatory Commission environmental impact studies, California Environmental Quality Act impact assessments, environmental assessments, and environmental impact statements.

[4] Electric Power Research Institute. 1987. Transmission Line Reference Book, 345 kV.

[5] USEPA. 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. No. 550/9-74-004*. Washington, DC.

APPENDIX A

Noise Calculations

345 kV Power Line Segment Construction Equipment Noise

Equipment Type	Equipment Name in Model	Calculated (dBA) At 10 feet from Source		Quantity	Calculated L_{eq} Total At 10 feet from Source	Community Noise Level (includes baseline noise)	
		*L_{max}	L_{eq}			L_{day} (7a - 10p)	L_{night} (10p - 7a)
Crane	Crane	94.5	86.6	1	86.6	86.6	86.6
Boom Truck	Man Lift	88.7	81.7	1	81.7	81.7	81.7
Concrete Truck	Concrete Mixer Truck	95.4	88.4	1	88.4	88.4	88.4
Water Truck	Pickup Truck	89	85	1	85.0	85.0	85.0
Material Truck	Flat Bed Truck	88.2	84.3	3	89.1	89.1	89.1
Tractor Trailer	Tractor	98	94	2	97.0	97.0	97.0
Tracked Vehicle	Front End Loader	93.1	89.1	4	95.1	95.1	95.1
Pickup Truck	Pickup Truck	89	85	6	92.8	92.8	92.8
TOTAL		**98**			**101.0**	**101.0**	**101.0**
Attenuated to 25 feet (7.62 meters)		89.9			92.9	92.9	92.9
Attenuated to 50 feet (15 meters)		84.0			87.0	87.0	87.0
Attenuated to 130 feet (39.6 meters)		75.6			78.6	78.6	78.6
Attenuated to 170 feet (51.8 meters)		73.3			76.3	76.3	76.3
Attenuated to 200 feet (61 meters)		71.8			74.8	74.8	74.8
Attenuated to 0.5 miles (805 meters)		49.4			52.4	52.9	52.6
Attenuated to 1 mile (1,609 meters)		43.4			46.4	48.0	46.9
Attenuated to 1.5 miles (2,414 meters)		39.9			42.9	46.0	43.9

Source	L_{day} 7 a - 10 p	L_{night} 10 p - 7 a
ANSI 1993 Land Use Category 6	43.0	37.0

Equations:

Multiple Quantities of Same Noise Source: $L_{wt} = L_{ws} + 10 \log(n)$

Where: L_{wt} = Total Sound Power Level

L_{ws} = Sound Power Level For A Single Source

n = number of sources

Point Source Sound Divergence Attenuation:

$SPL_2 = SPL_1 - 20 \log (R_2/R_1)$, where

R_1 = Distance from point source for SPL_1

R_2 = Distance from point source for SPL_2

SPL_1 = Sound level measured at R_1

SPL_2 = Sound level calculated at R_2

APPENDIX B

Resume for Jo Guest

SWCA | Resume

JO GUEST, B.S., AIR QUALITY SPECIALIST

Ms. Guest is an air quality specialist and meteorologist with experience air quality compliance and permitting, air and noise impact analyses, emission inventories, NEPA impact assessments, and Federal Energy Regulatory Commission environmental impact studies. She is a highly versatile professional with a background in meteorology, mathematics, and computer programming.

YEARS OF EXPERIENCE

3

EXPERTISE

Air Quality Compliance and Permitting

Air Impact Analysis

Noise Impact Analysis

Environmental Impact Assessment

EDUCATION

B.S., Meteorology; e: Computer Science and Mathematics; University of Oklahoma, Norman, Oklahoma; 2007

SELECTED PROJECT EXPERIENCE

Allen Compressor Station Upgrade Project; Hughes County, Oklahoma; Enable Gas Transmission, LLC. SWCA was retained by Enable Midstream Partners to conduct the environmental permitting and FERC Prior Notice for the Allen Compressor Station Upgrade Project in Hughes County, Oklahoma. *Role: Air Quality Specialist. Ms. Guest prepared the construction air emissions calculations and construction noise calculations and wrote the Resource Report 9 – Air and Noise Quality.*

Sierrita Compression Expansion Project; Pima County, Arizona; Sierrita Gas Pipeline, LLC. SWCA was contracted to complete the FERC and environmental permitting for a new KMI compressor station on the Sierrita pipeline, Pima County, Arizona. *Role: Air Quality Specialist. Ms. Guest prepared the construction impact analyses for air and noise and wrote the Resource Report 9 – Air and Noise Quality for submittal to FERC.*

TUUSSO Energy Kittitas County Solar, Kittitas County, WA; TUUSSO Energy, LLC. SWCA was selected by TUUSSO Energy LLC (TUUSSO) to initially prepare seven Critical Issues Analyses (CIAs) for potential commercial solar project developments in Kittitas County, Washington. Each solar project would generate up to 5 megawatts (MW) and would be located on 39- to 50-acre parcels of agricultural lands. SWCA is continuing to provide additional services, including conducting fast turn-around natural resources fieldwork and evaluations, wetland delineations, archaeological fieldwork and assessments, Phase 1 ESAs, visual simulations, air quality and noise calculations, and preparation of permit applications. *Role: Air Quality Specialist. Ms. Guest prepared the emission calculations, air impact analysis, and construction noise calculations for the different solar projects evaluated and wrote the air and noise sections for the application for site certification.*

Confidential Transmission Project; California; Confidential Clients. SWCA provided planning and permitting support for a new 230-/70-kV substation, 10 miles of new aboveground 70-kV power line, 6 miles of reconductoring a 70-kV line, and a 230-kV interconnection. Services included routing and siting support; alternatives analysis; cultural, biological, and paleontological resource surveys; preparation of a Proponent's Environmental Assessment; certificate of public convenience and necessity application filing and noticing, and post-filing California Environmental Quality Act and permitting support. *Role: Air Quality Specialist. Ms. Guest prepared the air quality and noise sections of the PEA, including construction and operational noise analyses and analyzing the air modeling results.*

GP Joule Solar Project Environmental Assessment; Lander County, Nevada; GP Joule USA, Inc. SWCA was contracted to complete the environmental assessment and associated environmental documents for an access road over BLM land to a solar plant on private lands in Lander County, Nevada. *Role: Air Quality Specialist. Ms. Guest prepared the construction and operation impact analyses for air and noise and wrote the environmental consequences chapter for air and noise for the environmental assessment.*

Leavitt Reservoir Expansion Project; Big Horn County, Wyoming; AECOM Technical Services, Inc. SWCA is preparing an Environmental Impact Statement evaluating the potential effects of the impoundment to create the Leavitt Reservoir. SWCA is serving as the lead to the BLM to write the EIS for this project. *Role: Air Quality Specialist. Ms. Guest prepared the construction and operation impact analyses for noise and wrote the environmental impacts and cumulative impacts sections for noise.*



Eddy to Kiowa 345-kV Transmission Line Project
Map 1 of 3

0 Miles 2
0 Kilometers 4

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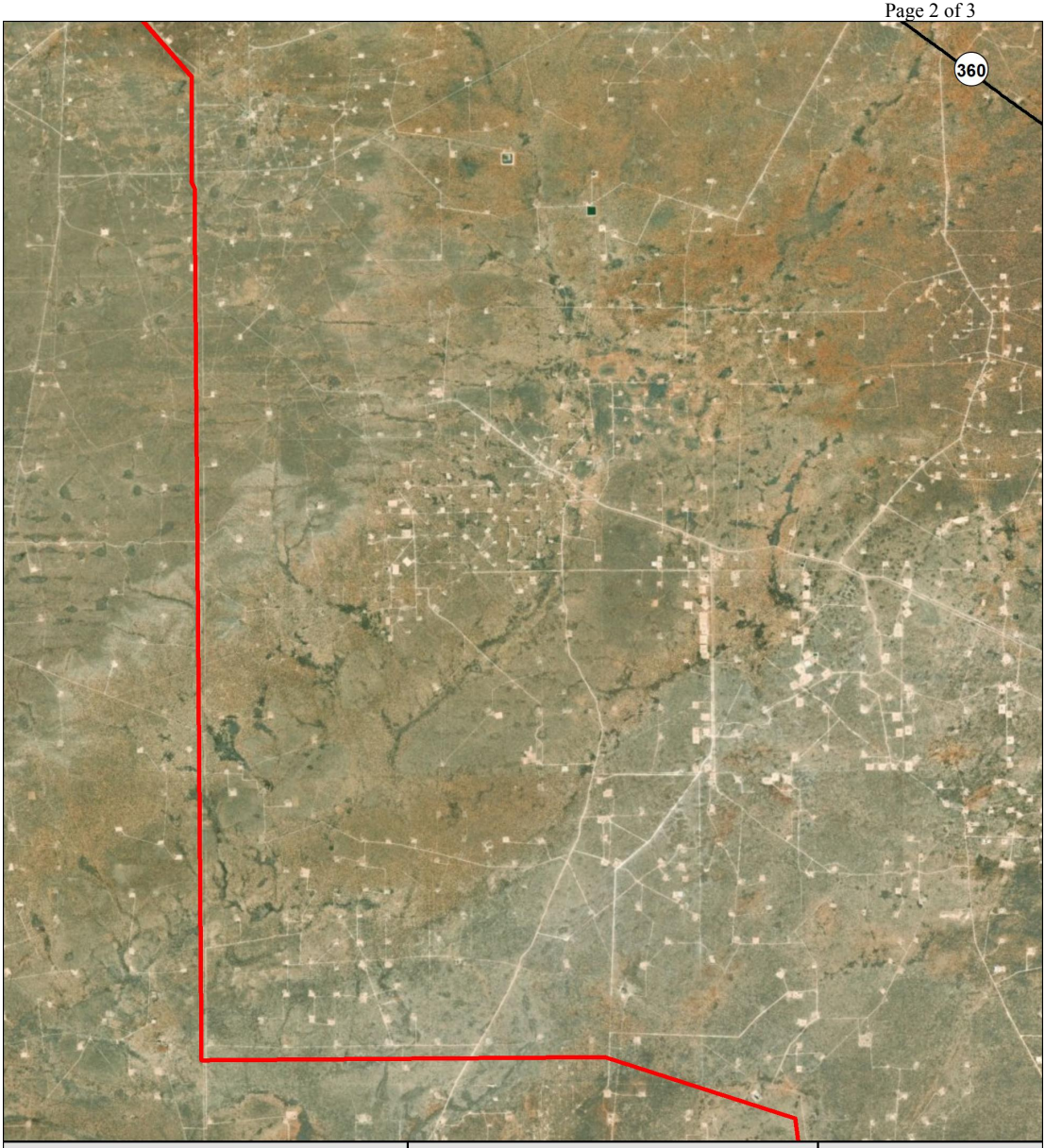
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SWCA ENVIRONMENTAL CONSULTANTS

Major Roadway
Drainage
Proposed Line
Proposed Access Road
Substation

New Mexico



Eddy to Kiowa 345-kV Transmission Line Project
Map 2 of 3

0 Miles 2
0 Kilometers 4

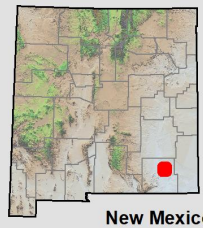
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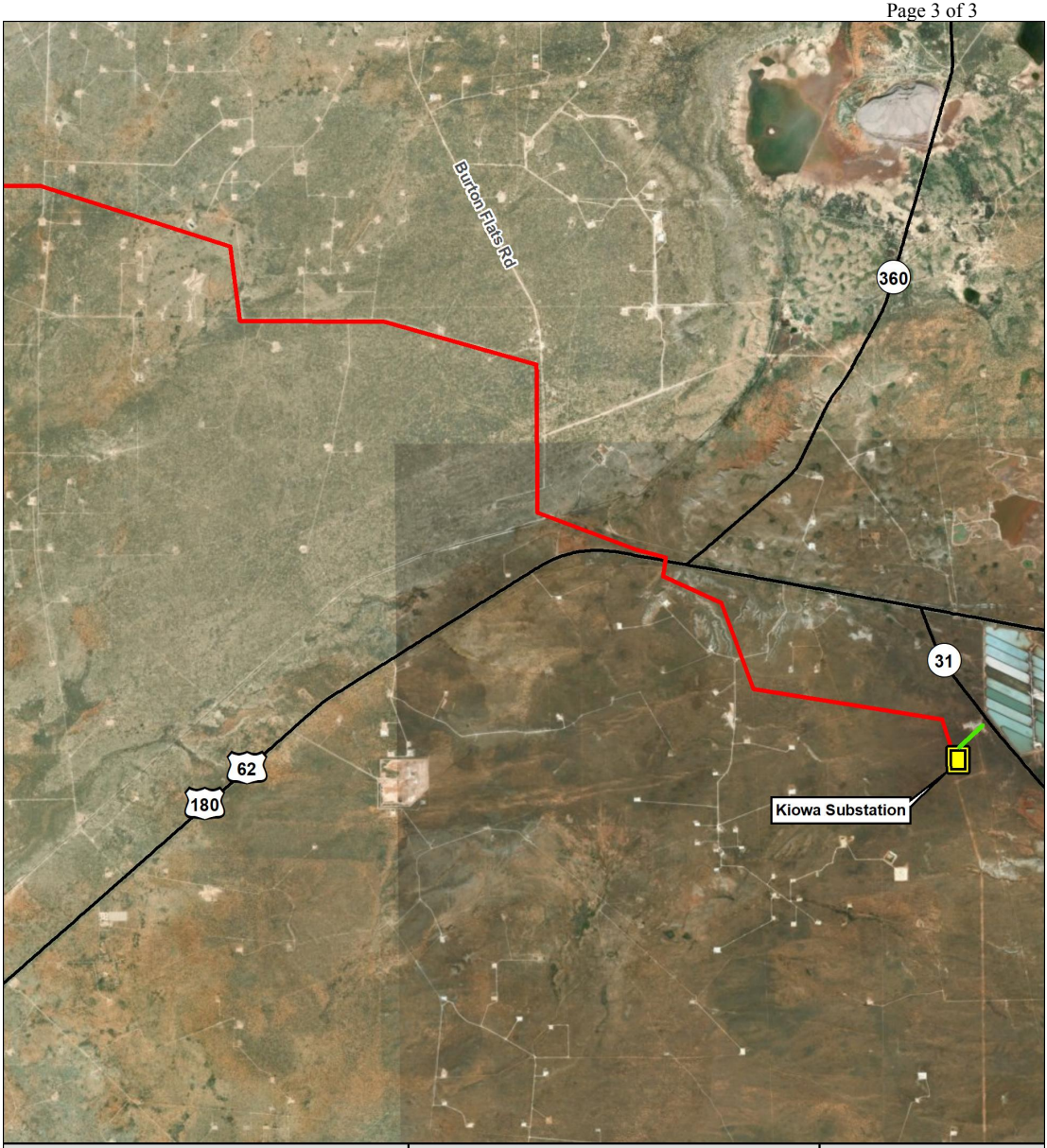
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SWCA ENVIRONMENTAL CONSULTANTS

Major Roadway
Proposed Line



New Mexico



Eddy to Kiowa 345-kV Transmission Line Project
Map 3 of 3

0 Miles 2
0 Kilometers 4

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Project No. 53583
File: EK_Detail_20190211_aerial_3of3
Map Created: 2/11/2019
Map Updated: 2/11/2019

SWCA ENVIRONMENTAL CONSULTANTS

Major Roadway
Proposed Line
Proposed Access Road
Substation

New Mexico

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220

Finding of No Significant Impact (FONSI)

Southwestern Public Service Company (SPS)
Hobbs to China Draw 345kV Transmission Line Project Environmental Assessment
NEPA No. DOI-BLM-NM-P020-2016-0089-EA

FINDING OF NO SIGNIFICANT IMPACT

Based upon a review of the EA and the supporting documents, I have determined that the Proposed Action, as described in the EA would not have any significant impact, individually or cumulatively, on the quality of the human environment. Because there would not be any significant impact, an Environmental Impact Statement is not required.

In making this determination, I considered the following factors:

1. The activities described in the Proposed Action do not include any significant beneficial or adverse impacts (40 CFR 1508.27(b) (1)). The EA includes a description of the expected environmental consequences of the Proposed Action and all practical means to avoid or minimize environmental harm have been adopted. The beneficial effects of the Hobbs to China Draw 345kV Project are needed to satisfy increase in electrical demand in southeast New Mexico where development of oil and gas fields has grown tremendously. This additional capacity will allow SPS to reliably accommodate the future electrical load within its system. Adverse effects include impacts to soils, vegetation, wildlife, and visual resources that would occur temporarily during construction of the Proposed Action. Long-term effects include impacts to vegetation, wildlife, and visual resources.

2. The activities included in the Proposed Action would not significantly affect public health or safety (40 CFR 1508.27(b) (2). The BLM and SPS have selected the Proposed Action, comprising the 122-mile ROW and associated substations, as the environmentally preferred alternative. The Proposed Action achieves the balance of resource protection and beneficial uses of the human environment envisioned by the National Environmental Policy Act.

3. The proposed activities would not significantly affect any unique characteristics (40 CFR 1508.27(b) (3)) of the geographic area such as prime and unique farmlands,

caves, wild and scenic rivers, designated wilderness areas, wilderness study areas, or areas of critical concern. There are no wild and scenic rivers in the project area. As described in the EA, impacts to cultural resources were identified for the preferred alternative. Monitoring and environmental commitments included in the Proposed Action would be implemented during project construction to minimize the potential for adverse impacts to heritage resources.

4. The activities described in the Proposed Action do not involve effects on the human environment that are likely to be highly controversial (40 CFR 1508.27(b)(4)). The effects on the quality of the human environment are not likely to be highly controversial because there is no known scientific controversy over the impacts of the project.

5. The activities described in the Proposed Action do not involve effects that are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b)(5)). The BLM has considerable experience with the types of activities to be implemented. The effects analysis (EA, Chapter 3) shows the effects are not uncertain and do not involve unique or unknown risk. No highly uncertain or unknown risks to the human environment were identified during analysis of the preferred alternative.

6. My decision to implement these activities does not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration (40 CFR 1508.27(b)(6)) because it conforms to all existing BLM plans and is applicable to the project area.

7. The effects of the construction of the transmission lines and substations would not be significant, individually or cumulatively, when considered with the effects of other actions (40 CFR 1508.27(b)(7)). No individually or cumulatively significant impacts were identified for the preferred alternative. Any adverse impacts identified for the preferred alternative, in conjunction with any adverse impacts of other past, present, or reasonably foreseeable future actions would result in negligible to moderate impacts to natural and cultural resources.

8. Additional Mitigation Measure:
The proposed activities may effect, but are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973 (40 CFR 1508.27(b)(9)). Environmental commitments integral to the preferred alternative would also lessen adverse effects to wildlife and special status species designated by the U.S. Fish and Wildlife Service and the BLM. In order to minimize the potential for adverse effect on the aplomado falcon, If construction and maintenance activities, including mechanical or herbicide treatments of woody vegetation, cannot be avoided in the primary nesting season for migratory birds (March–August), migratory bird and nest surveys would be performed up to two weeks prior to commencing with those activities, and an avoidance buffer around each active nest would be implemented until the young have fledged.

In order to minimize the potential for adverse effect on the lesser prairie chicken, timing and noise restrictions would be applied to prevent disruption of mating and nesting activities, construction activities would be prohibited from 3:00 a.m. to 9:00 a.m. during March 1 to June 15. Non-construction activities such as tailgate meetings and activities where machinery is not needed would be allowable outside the timing limitations. In order to minimize the potential for adverse effect on the dunes sagebrush lizard, a BLM-approved monitor would be required for every up to 3-mile segment that contains open holes in DSL habitat.

9. The proposed activities would not threaten any violation of federal, state, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)). Applicable laws and regulations were considered in the EA (see EA Chapter 1.4). This action is consistent with the Carlsbad RMP, as amended (1997 RMPA pp. AP2-8–AP2-9) and (2008 RMPA pp. 2-13). The preferred alternative violates no federal, state, or local environmental protection laws.

Approved:

Cody B. Layton
for George MacDonell
Field Manager
Carlsbad Field Office

1/27/16
Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220

DECISION RECORD
for the
DOI-BLM-NM-P020-2016-0089-EA
Southwestern Public Service Company (SPS)
Serial Nos. NM-133171; NM-134370; NM-134336; NM-077768
SPS' Hobbs to China Draw 345kV Transmission Line Project

SUMMARY OF THE DEVELOPMENT PROPOSAL

Southwestern Public Service Company (SPS), a wholly owned subsidiary of Xcel Energy Inc., has submitted four Applications for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) to the Bureau of Land Management (BLM) Carlsbad Field Office (CFO) for right-of-way (ROW) grants needed to construct, operate, and maintain two 345-kilovolt (kV) transmission lines, a new substation (Kiowa Substation), and two substation expansions (Hobbs Generation and Eddy County Substation) in southeast New Mexico, herein referred to as the "project" or "Proposed Action." Xcel Energy is a registered holding company that owns several electric and natural gas utility operating companies. The project crosses BLM CFO–managed surface lands, New Mexico State Land Office (SLO) lands, and private lands. The BLM is serving as the lead federal agency for the undertaking.

The four applications include distinct project components but are considered to be connected actions as defined in the BLM's National Environmental Policy Act (NEPA) handbook (Section 6.5.2.1) and regulations of the Council of Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1508.25). As such, impacts from construction and operation of the proposed project are analyzed and disclosed together within the Project's Environmental Assessment (EA). This Decision Record includes the BLM's decision for all four subject applications as described in the EA.

The 345-kV transmission lines interconnect with other existing and proposed electrical system facilities owned and operated by SPS, as parts of the larger electrical system grid. SPS is requesting a 150-foot-wide permanent ROW for the transmission lines. One new substation, and four substation expansions are proposed. Additional temporary workspace is also proposed for staging areas or other construction-related needs. Disturbance associated with the Proposed Action (2,661 acres) would be primarily short term, as the majority of the ROW would be reclaimed following construction.

Prior to siting the preliminary routes for the ROW, a desktop analysis was conducted by the BLM to identify sensitive areas to avoid. Once the preliminary route was identified

and cultural resource and biological resource surveys were conducted, the route was then adjusted or realigned in several segments in order to avoid impacts to cultural or biological resources where possible.

I. Decision

I have decided to select the Proposed Action for implementation as described in Chapter 2 of the attached Environmental Assessment (EA) (DOI-BLM-NM-P020-2016-0089-EA) dated January 6, 2016. Based on my review of the EA and project record, I have concluded that the Proposed Action was analyzed in sufficient detail to allow me to make an informed decision. I have selected the Proposed Action because this action sufficiently meets the purpose and need for the action in a manner that conforms to the 1988 Carlsbad Resource Management Plan (RMP), as amended by the 1997 Carlsbad Approved RMP Amendment (Appendix 2; pp. AP2-8–AP2-9), and 2008 Approved RMP Amendment (pp. 2-13).

II. Finding of No Significant Impact

I have reviewed the direct, indirect, and cumulative effects of the proposed activities documented in the EA for the Proposed Action (DOI-BLM-NM-P020-2014-1434-EA). I have also reviewed the project record for this analysis. The effects of the Proposed Action and alternatives are disclosed in the Alternatives and Environmental Consequences sections of the EA. I have determined that the project is not a major federal action and would not significantly affect the quality of the human environment, individually, or cumulatively with other actions in the general area. I have determined that the preparation of an Environmental Impact Statement is not necessary.

III. Other Alternatives Considered

Alternatives to the Proposed Action were developed to explore different ways to accomplish the purpose and need while minimizing environmental impacts and resource conflicts and meeting other objectives of the RMP. Consistent with BLM National Environmental Policy Act (NEPA) Handbook H-1790-1, the agency "need only analyze alternatives that would have a lesser effect than the Proposed Action." Those with greater adverse resource impacts or those that are not feasible because of existing physical constraints or infrastructure were not brought forward for detailed analysis in the EA. The proposed transmission line route and design would meet the BLM's purpose and need while minimizing environmental impacts to the greatest extent possible. The route was ultimately planned to minimize impacts to habitat for both the lesser prairie-chicken (*Tympanuchus pallidicinctus*) and the dunes sagebrush lizard (*Sceloporus arenicolus*) (see EA section 3.6.3). Cultural and historic sites were also avoided where applicable (see EA Section 3.7.3 for details regarding avoidance of cultural sites). Any other proposed ROW routing would likely result in greater surface impacts and environmental impacts. Public scoping did not identify any additional unforeseen alternatives.

IV. Public Involvement

The project description and location was posted to the BLM's website, as well as the Carlsbad and Hobbs newspapers, beginning on March 2, 2015, for a 30-day public

scoping comment period. In addition, the BLM CFO published a NEPA log for public inspection. This log contained a list of proposed and approved actions in the CFO planning area. The log is located on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html). No public comments were received.

COMPLIANCE AND MONITORING

SPS and BLM will provide qualified representatives on the ground during and following construction to validate construction, reclamation, other approved design and compliance commensurate with the provisions of this Decision Record. SPS will be required to conduct monitoring of the project in cooperation with the BLM. SPS will monitor reclamation to ensure that mitigation measures are enforced, the project is constructed per the plans of development, and revegetation meets accepted standards.

V. Appeals

This decision may be appealed to the Interior Board of Land Appeals (IBLA), Office of the Secretary, in accordance with the regulations contained in 43 Code of Federal Regulations (CFR) 4. Any appeal must be filed within 30 days of this decision. Any notice of appeal must be filed with the Authorized Officer at Carlsbad Field Office, 620 E. Greene St., Carlsbad, New Mexico 88220. The appellant shall serve a copy of the notice of appeal and any statement of reasons, written arguments, or briefs on each adverse party named in the decision, not later than 15 days after filing such document (see 43 CFR 4.413(a)). Failure to serve within the time required will subject the appeal to summary dismissal (see 43 CFR 4.413(b)). If a statement of reasons for the appeal is not included with the notice, it must be filed with the IBLA, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, Virginia 22203 within 30 days after the notice of appeal is filed with the Authorized Officer.

Notwithstanding the provisions of 43 CFR 4.21(a)(1), filing a notice of appeal under 43 CFR 4 does not automatically suspend the effect of the decision. This decision shall take effect when the BLM Authorized Officer issues a "Grant Issued" decision letter and shall remain in effect while any appeal is pending unless the IBLA issues a stay (43 CFR 2801.10). If you wish to file a petition for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the IBLA, the petition for a stay must accompany your notice of appeal.

A petition for a stay is required to show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied;
(2) The likelihood of the appellant's success on the merits;
(3) The likelihood of immediate and irreparable harm if the stay is not granted; and
(4) Whether the public interest favors granting the stay.

In the event a request for stay or an appeal is filed, the person/party requesting the stay or filing the appeal must serve a copy of the appeal on the Office of the Field Solicitor, U.S. Department of the Interior, Bureau of Land Management, P.O. Box 27115, Santa Fe, New Mexico 87502-0115.

Cody R. Layton
for George MacDonell, Field Manager
Carlsbad Field Office, BLM

1/27/16
Date

Attachment(s)
1. Southwestern Public Service Company's Hobbs to China Draw 345kV Transmission Line Project, Lea and Eddy Counties, New Mexico. Environmental Assessment (DOI-BLM-NM-P020-2016-0089-EA) dated 01/06/16.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220
Finding of No Significant Impact
Serial No. NM-124559-01 Amendment & NM-139982
Southwestern Public Service Company

FINDING OF NO SIGNIFICANT IMPACT:

I have determined that the proposed action, as described in the EA (DOI-BLM-NM-P020-2019-0734-EA) will not have any significant impact, individually or cumulatively, on the quality of the human environment. Because there would not be any significant impact, an environmental impact statement is not required.

In making this determination, I considered the following factors:

1. The activities described in the proposed action do not include any significant beneficial or adverse impacts (40 CFR 1508.27(b) (1)). The EA includes a description of the expected environmental consequences of the proposed action and all practical means to avoid or minimize environmental harm have been adopted.

2. The activities included in the proposed action would not significantly affect public health or safety (40 CFR 1508.27(b) (2).

3. The proposed activities would not significantly affect any unique characteristics (40 CFR 1508.27(b) (3)) of the geographic area such as prime and unique farmlands, caves, wild and scenic rivers, designated wilderness areas, wilderness study areas, or areas of critical concern. No such areas exist in the project area to be affected.

4. The activities described in the proposed action do not involve effects on the human environment that are likely to be highly controversial (40 CFR 1508.27(b) (4). The effects on the quality of the human environment are not likely to be highly controversial because there is no known scientific controversy over the impacts of the project.

5. The activities described in the proposed action do not involve effects that are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b) (5). The BLM has considerable experience with the types of activities to be implemented. The effects analysis (EA, Chap 3) shows the effects are not uncertain, and do not involve unique or unknown risk.

6. My decision to implement these activities does not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration (40 CFR 1508.27(b)(6) because it conforms to all existing BLM plans and is applicable to the project area.

7. The effects of the construction of the station would not be significant, individually or cumulatively, when considered with the effects of other actions (40 CFR 1508.27(b)(7)). The EA discloses that there are no other connected or cumulative actions that would cause significant cumulative impacts. The cumulative impacts are not significant.

8. I have determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)).

9. The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR 1508.27(b)(9)). The action will not adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species act of 1973.

10. The proposed activities will not threaten any violation of Federal, State, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)). Applicable laws and regulations were considered in the EA (See EA Chap 1.4). This action is consistent with the Resource Management Plan, pages AP2-8.

APPROVED:

Field Manager
Carlsbad Field Office

24 May 2019
Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220

DECISION RECORD for DOI-BLM-NM-P0-2019-0734-EA Eddy County Substation Expansion Serial No. NM-124559-01 & NM-139982 Southwestern Public Service Company

I. Decision

I have decided to select the proposed action for implementation as described in Chapter 2 and mitigation as described in Chapter 4 of the attached Environmental Assessment (EA) (DOI-BLM-NM-P020-2019-0734-EA). Based on my review of the (EA) and project record, I have concluded that the proposed action was analyzed in sufficient detail to allow me to make an informed decision. I have selected the proposed action because this action sufficiently meets the purpose and need for the action in a manner which conforms to the 1988 Carlsbad RMP and the Proposed Action is in conformance with the 1988 Carlsbad Resource Management Plan, as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment (page AP2-8, Overhead Distribution power lines).

II. Finding of No Significant Impact

I have reviewed the direct, indirect and cumulative effects of the proposed activities documented in the EA for the (DOI-BLM-NM-P020-2019-0734-EA). I have also reviewed the project record for this analysis. The effects of the proposed action and alternatives are disclosed in the Alternatives and Environmental Consequences sections of the EA. I have determined that the project is not a major federal action and will not significantly affect the quality of human environment, individually or cumulatively with other actions in the general area. I have determined that the preparation of an Environmental Impact Statement is not necessary.

III. Other Alternatives Considered

Not applicable

IV. Public Involvement

The Carlsbad Field Office (CFO) publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions in the field office. The log is located in the lobby of the CFO as well as on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html). The CFO uses Geographic Information Systems (GIS) in order to identify resources that may be affected by proposed action. A map of the project area is prepared to display the resources in the area and to identify potential issues. The proposed action was circulated among CFO resource specialists in order to identify any issues associated with the project. No issues were raised by resource specialists.

V. Appeals

This decision may be appealed to the Interior Board of Land Appeals (IBLA), Office of the Secretary, in accordance with the regulations contained in 43 CFR Part 4. Any appeal must be filed within 30 days of this decision. Any notice of appeal must be filed with the authorized officer at Carlsbad Field Office, 620 E. Greene St, Carlsbad, New Mexico 88220. The appellant shall serve a copy of the notice of appeal and any statement of reasons, written arguments, or briefs on each adverse party named in the decision, not later than 15 days after filing such document (see 43 CFR 4.413(a)). Failure to serve within the time required will subject the appeal to summary dismissal (see 43 CFR 4.413(b)). If a statement of reasons for the appeal is not included with the notice, it must be filed with the IBLA, Office of Hearings and Appeals, U. S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203 within 30 days after the notice of appeal is filed with the authorized officer.

Notwithstanding the provisions of 43 CFR 4.21(a) (1), filing a notice of appeal under 43 CFR Part 4 does not automatically suspend the effect of the decision. This decision shall take effect when the BLM authorized officer issues a "Grant Issued" decision letter and shall remain in effect while any appeal is pending unless the Interior Board of Land Appeals (IBLA) issues a stay (43 CFR 2801.10). If you wish to file a petition for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal.

A petition for a stay is required to show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied;
(2) The likelihood of the appellant's success on the merits;
(3) The likelihood of immediate and irreparable harm if the stay is not granted; and
(4) Whether the public interest favors granting the stay.

In the event a request for stay or an appeal is filed, the person/party requesting the stay or filing the appeal must serve a copy of the appeal on the Office of the Field Solicitor, U.S. Department of the Interior, Bureau of Land Management, P.O. Box 27115 Santa Fe, NM 87502-0115

Field Manager
Carlsbad Field Office, BLM

24 May 2019
Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220
Finding of No Significant Impact
Serial No. NM-134336 Amendment
Southwestern Public Service Company, Inc.

FINDING OF NO SIGNIFICANT IMPACT:

I have determined that the proposed action, as described in the EA (DOI-BLM-NM-P020-2019-0654-EA) will not have any significant impact, individually or cumulatively, on the quality of the human environment. Because there would not be any significant impact, an environmental impact statement is not required.

In making this determination, I considered the following factors:

1. The activities described in the proposed action do not include any significant beneficial or adverse impacts (40 CFR 1508.27(b) (1)). The EA includes a description of the expected environmental consequences of the proposed action and all practical means to avoid or minimize environmental harm have been adopted.

2. The activities included in the proposed action would not significantly affect public health or safety (40 CFR 1508.27(b) (2).

3. The proposed activities would not significantly affect any unique characteristics (40 CFR 1508.27(b) (3)) of the geographic area such as prime and unique farmlands, caves, wild and scenic rivers, designated wilderness areas, wilderness study areas, or areas of critical concern. No such areas exist in the project area to be affected.

4. The activities described in the proposed action do not involve effects on the human environment that are likely to be highly controversial (40 CFR 1508.27(b) (4). The effects on the quality of the human environment are not likely to be highly controversial because there is no known scientific controversy over the impacts of the project.

5. The activities described in the proposed action do not involve effects that are highly uncertain or involve unique or unknown risks (40 CFR 1508.27(b) (5). The BLM has considerable experience with the types of activities to be implemented. The effects analysis (EA, Chap 3) shows the effects are not uncertain, and do not involve unique or unknown risk.

6. My decision to implement these activities does not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration (40 CFR 1508.27(b)(6) because it conforms to all existing BLM plans and is applicable to the project area.

7. The effects of the construction of the pipeline would not be significant, individually or cumulatively, when considered with the effects of other actions (40 CFR 1508.27(b)(7)). The EA discloses that there are no other connected or cumulative actions that would cause significant cumulative impacts. The cumulative impacts are not significant.

8. I have determined that the activities described in the proposed action will not adversely affect or cause loss or destruction of scientific, cultural, or historical resources, including those listed in or eligible for listing in the National Register of Historic Places (40 CFR 1508.27(b)(8)).

9. The proposed activities are not likely to adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (40 CFR 1508.27(b)(9)). The action will not adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species act of 1973.

10. The proposed activities will not threaten any violation of Federal, State, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)). Applicable laws and regulations were considered in the EA (See EA Chap 1.4). This action is consistent with the Resource Management Plan, pages AP2-8.

APPROVED:

Field Manager
Carlsbad Field Office

17 May 2019
Date

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Pecos District
Carlsbad Field Office
620 E Greene Street
Carlsbad, NM 88220

DECISION RECORD for DOI-BLM-NM-2019-0654-EA Kiowa Substation Expansion Serial No. NM-134336 Amendment Southwestern Public Service Company, Inc.

I. Decision

I have decided to select the proposed action for implementation as described in Chapter 2 and mitigation as described in Chapter 4 of the attached Environmental Assessment (EA) (DOI-BLM-NM-P020-2019-0654-EA). Based on my review of the (EA) and project record, I have concluded that the proposed action was analyzed in sufficient detail to allow me to make an informed decision. I have selected the proposed action because this action sufficiently meets the purpose and need for the action in a manner which conforms to the 1988 Carlsbad RMP and the Proposed Action is in conformance with the 1988 Carlsbad Resource Management Plan, as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment.

II. Finding of No Significant Impact

I have reviewed the direct, indirect and cumulative effects of the proposed activities documented in the EA for the (DOI-BLM-NM-P020-2019-0654-EA). I have also reviewed the project record for this analysis. The effects of the proposed action and alternatives are disclosed in the Alternatives and Environmental Consequences sections of the EAg. I have determined that the project is not a major federal action and will not significantly affect the quality of human environment, individually or cumulatively with other actions in the general area. I have determined that the preparation of an Environmental Impact Statement is not necessary.

III. Other Alternatives Considered

Not applicable

IV. Public Involvement

The Carlsbad Field Office (CFO) publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions in the field office. The log is located in the lobby of the CFO as well as on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html). The CFO uses Geographic Information Systems (GIS) in order to identify resources that may be affected by proposed action. A map of the project area is prepared to display the resources in the area and to identify potential issues. The proposed action was circulated among CFO resource specialists in order to identify any issues associated with the project. No issues were raised by resource specialists.

V. Appeals

This decision may be appealed to the Interior Board of Land Appeals (IBLA), Office of the Secretary, in accordance with the regulations contained in 43 CFR Part 4. Any appeal must be filed within 30 days of this decision. Any notice of appeal must be filed with the authorized officer at Carlsbad Field Office, 620 E. Greene St, Carlsbad, New Mexico 88220. The appellant shall serve a copy of the notice of appeal and any statement of reasons, written arguments, or briefs on each adverse party named in the decision, not later than 15 days after filing such document (see 43 CFR 4.413(a)). Failure to serve within the time required will subject the appeal to summary dismissal (see 43 CFR 4.413(b)). If a statement of reasons for the appeal is not included with the notice, it must be filed with the IBLA, Office of Hearings and Appeals, U. S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203 within 30 days after the notice of appeal is filed with the authorized officer.

Notwithstanding the provisions of 43 CFR 4.21(a) (1), filing a notice of appeal under 43 CFR Part 4 does not automatically suspend the effect of the decision. This decision shall take effect when the BLM authorized officer issues a "Grant Issued" decision letter and shall remain in effect while any appeal is pending unless the Interior Board of Land Appeals (IBLA) issues a stay (43 CFR 2801.10). If you wish to file a petition for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal.

A petition for a stay is required to show sufficient justification based on the following standards:

(1) The relative harm to the parties if the stay is granted or denied;
(2) The likelihood of the appellant's success on the merits;
(3) The likelihood of immediate and irreparable harm if the stay is not granted; and
(4) Whether the public interest favors granting the stay.

In the event a request for stay or an appeal is filed, the person/party requesting the stay or filing the appeal must serve a copy of the appeal on the Office of the Field Solicitor, U.S. Department of the Interior, Bureau of Land Management, P.O. Box 27115 Santa Fe, NM 87502-0115

17 May 2018

Field Manager
Carlsbad Field Office, BLM

Date

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