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Talavera Substation and Distribution Project

Environmental Assessment

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(View of existing, temporary substation on Dripping Springs Road)

Signature and Title of Project Lead   Date

Signature of Planning & Environmental Coordinator   Date

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Acronyms and Abbreviations

BLM	Bureau of Land Management
CFR	Code of Federal Regulations
County	Doña Ana County
dBA	A-weighted decibels
EA	environmental assessment
EMF	electromagnetic fields
EPA	U.S. Environmental Protection Agency
EPE	El Paso Electric Company
ESA	Endangered Species Act of 1973
ETZ	Las Cruces Extraterritorial Zone
FLPMA	Federal Land Policy and Management Act of 1976
ID	Interdisciplinary
IEEE	Institute of Electrical and Electronics Engineers
ICNIRP	International Commission on Non-Ionizing Radiation Protection
KOP	key observation point
kV	kilovolt
LCDO	Las Cruces District Office
L_{eq}	equivalent sound level
MBTA	Migratory Bird Treaty Act of 1918
Monument	Organ Mountains–Desert Peaks National Monument
mph	mile(s) per hour
MRI	Midwest Research Institute
NESC	National Electrical Safety Code
NEPA	National Environmental Policy Act of 1969
NMPRC	New Mexico Public Regulation Commission
NSPA	New Mexico Night Sky Protection Act
OSHA	Occupational Safety and Health Administration
RMP	Resource Management Plan
ROW	right-of-way
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOE	U.S. Department of Energy
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management
WAPA	Western Area Power Administration

CHAPTER 1. INTRODUCTION

El Paso Electric Company (EPE) has submitted six Applications for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) to the Bureau of Land Management (BLM) Las Cruces District Office (LCDO) for the issuance of new and amended right-of-way (ROW) grants to construct, operate, and maintain a new permanent substation (Talavera Substation) and associated transmission and distribution lines in Doña Ana County (County), New Mexico (referred to as the Proposed Action, or project). The proposed project is located approximately 3.5 miles east of the city of Las Cruces (Figure 1-1).

1.1 Background

EPE is a regional electric utility providing generation, transmission, and distribution service to approximately 400,000 retail and wholesale customers in a 10,000-square-mile area of southern New Mexico and western Texas. Its service territory extends from Hatch, New Mexico, to Van Horn, Texas, and includes two connections to Juarez, Mexico, and the Comisión Federal de Electricidad, Mexico's national utility. EPE's projects are subject to the regulatory authority of the New Mexico Public Regulation Commission (NMPRC). The costs of all projects are distributed among customers.

EPE has identified a need to add a permanent substation to the electrical power grid and make improvements to the distribution feeder line grid that supports the city of Las Cruces and surrounding communities. In July 2013, EPE received permission from the BLM to construct and operate the existing temporary Talavera Substation. The temporary substation was installed to provide immediate load relief on the Salopek distribution feeder electric line for the area. The temporary substation was designed as a quick fix to meet load demands until a permanent substation could be located, permitted, and constructed. The temporary substation has limited load capacity and functionality and is not sufficient to meet load growth in the near or long-term future.

The new proposed substation would convert 115-kilovolt (kV) electricity to 24-kV electricity for distribution into the power grid for current consumption and to meet future demand and support future economic growth in the area. The new permanent substation would not produce electric power, but would serve as the interface between the 115-kV transmission system and the 24-kV distribution system and provide additional load capacity to the power grid.[1] The general area of the substation location was selected from an engineering standpoint to ensure continued system reliability and resiliency as the load continues to grow.

The project would also include seven ROW grant amendments for the rebuilding of approximately 10.5 miles of existing 24-kV distribution line to replace and/or add infrastructure to upgrade these lines, and to construct approximately 2.2 miles of new 24-kV distribution line to connect existing distribution circuits. Portions of these ROW amendments are located within the boundaries of the Organ Mountains–Desert Peaks National Monument (Monument) and were built prior to the designation of the Monument. Amending the ROW grants for all existing distribution lines (except that for NMNM 115695)[2] under the Proposed Action includes expanding the current ROWs from a 25-foot width to a 50-foot width. The proposed increase in ROW width is necessary to accommodate and adhere to modern operational

[1] Substations are not generation facilities, rather, they connect high-voltage transmission and lower-voltage distribution networks by converting electrical characteristics, either by "stepping down" (reducing) or "stepping up" (increasing) voltage.
[2] While included under the Proposed Action, no rebuilding of this line is proposed, and the existing ROW width would remain at 20 feet.

distribution line safety practices, including access for modern-sized equipment and increased safety clearances for line workers during construction, maintenance, and inspections.

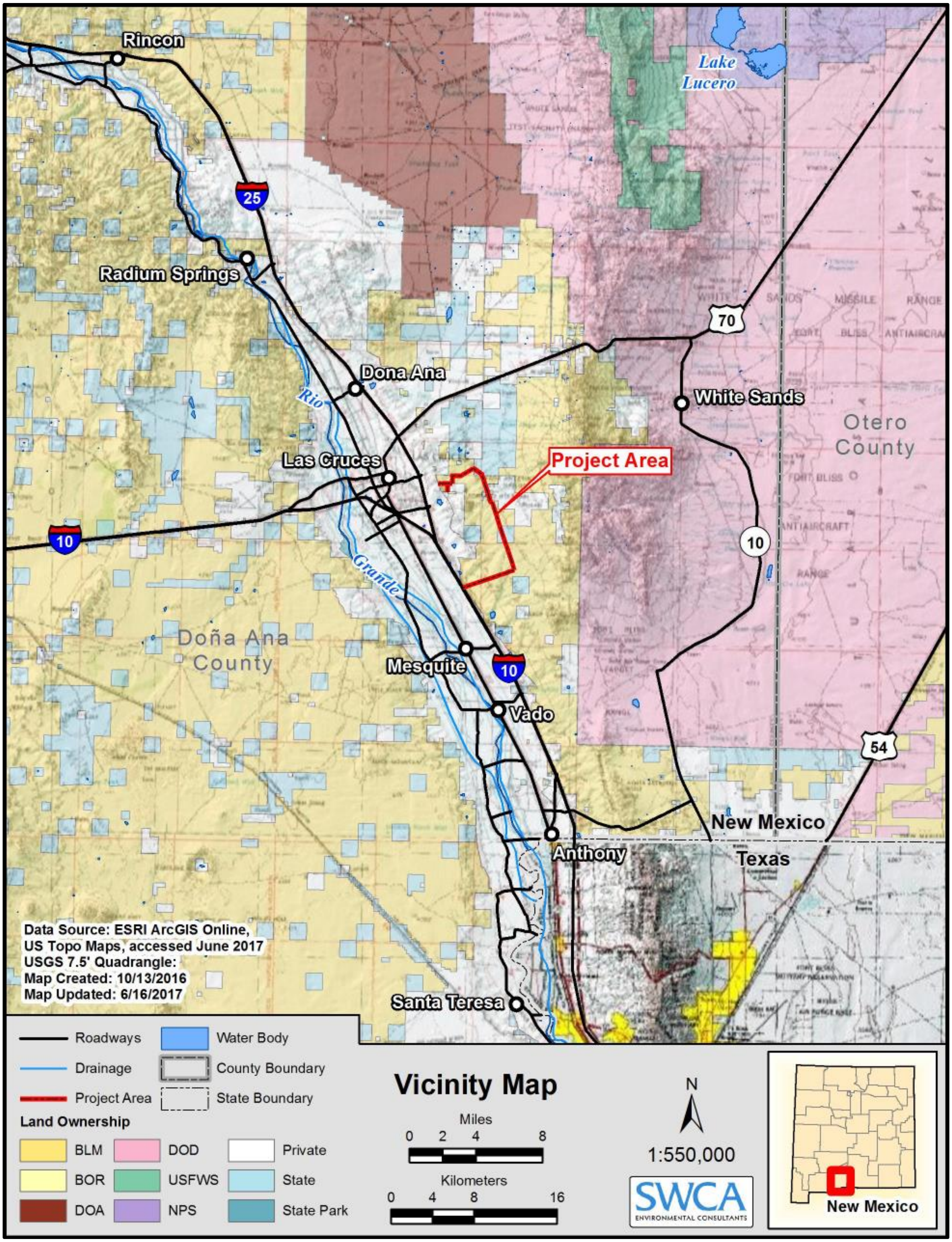

Figure 1-1. Project vicinity.

1.2 Purpose and Need

The BLM's mandate for multiple uses of public lands includes development of energy resources and utilities 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 policies and mandates set forth in the Mimbres Resource Management Plan (RMP) and the BLM's responsibility under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA), as amended (43 United States Code [USC] 1761–1771). As such, the BLM is required to respond to the six applications for ROW submitted by the proponent pursuant to 43 Code of Federal Regulations (CFR) 2804.12. The BLM will respond by evaluating the applications for use of federal land to issue a new ROW grant needed to construct, operate, maintain, and terminate a new substation, a substation connection corridor, and a new distribution line, as well as to amend existing ROW grants to rebuild the distribution line.

The BLM's purpose is to respond to EPE's application for legal use and access across BLM-managed public lands by granting EPE new or amended ROWs for the substation and its associated facilities. The BLM would consider these applications in accordance with 43 CFR 2800, Rights-of-Way, under FLPMA and the Energy Policy Act of 2005 (Public Law 109–58).

1.3 Decision to be Made

In making its decision, the BLM must determine and consider the environmental impact on all lands crossed as a result of granting the ROWs across BLM-administered public lands. In its decision to issue a ROW grant, the BLM must also consider existing RMPs and other BLM plans in terms of how the authorizations and actions conform to existing BLM land use plans.

This environmental assessment (EA) analyzes the Proposed Action, five action alternatives, and the No Action Alternative. This EA analyzes site-specific impacts associated with the implementation of each alternative, identifies mitigation measures to potentially reduce or eliminate those impacts, and provides the BLM with detailed analyses with which to inform its decision. The deciding authorized officer for the ROW grants is the Las Cruces District Manager. Based on the information provided in this EA, the District Manager will decide whether to:

- issue the grant for any and/or all ROW applications for use of federal land;
- grant any and/or all applications with modifications (which 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)); or
- deny any and/or all applications.

1.4 Plan Conformance and Relationship to Statutes and Regulations

1.4.1 1.4.1. Plan Conformance

The project conforms to the lands and realty program resource management guidance provided under the Mimbres RMP, approved in December 1993 (BLM 1993). The BLM recognizes utility corridors as an appropriate use of public lands through its issuance of ROWs, leases, and permits to individuals, businesses, and government entities for the use of public land (BLM 1993:2–14). The Mimbres RMP provides management direction for the designation of ROW corridors, encouraging applicants to locate new facilities near existing sites or within existing ROW corridors. Most land actions within the Mimbres Resource Area are compatible and overlapping ROWs are issued whenever possible (BLM 1993:2–14).

1.4.2 1.4.2. Relationship to Statutes and Regulations

The project has been designed to conform to these applicable statutes and regulations:

- Endangered Species Act of 1973 (ESA) (16 USC 1531 *et seq.*)—Directs federal agencies to ensure their actions do not jeopardize threatened and endangered species.
- Clean Air Act of 1990 (42 USC 85)—Provides the principal framework for national, state, and local efforts to protect air quality.
- Clean Water Act of 1987 (33 USC 1251 *et seq*.)—Establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation's water resources.
- Migratory Bird Treaty Act of 1918 (MBTA) (16 USC 703–708/710–712)—Protects migratory birds.
- Section 106 of the National Historic Preservation Act of 1966 (54 USC 306108) and its implementing regulations (36 CFR 800)—Requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment.
- Section 368 of the Energy Policy Act of 2005—Requires federal agencies, including the U.S. Department of the Interior, to take into account the need for upgraded and new infrastructure, and to take actions to improve reliability, relieve congestion, and enhance the capability of the national grid to delivery electricity.
- BLM Manual 6220 (National Monuments, National Conservation Areas, and Similar Designations)—Provides guidance to the BLM on managing BLM public lands that are components of the BLM's National Landscape Conservation System and that have been designated by Congress or the President as National Monuments, National Conservation Areas, and similar designations.
- Presidential Proclamation No. 9131 (DCPD-201400387)—Designated the Organ Mountains–Desert Peaks National Monument on May 21, 2014, which was established to protect prehistoric, historic, geological, and biological resources of scientific interest of the Organ Mountains, Desert Peaks, Potrillo Mountains, and the Doña Ana Mountains.

This EA has been prepared in conformance with BLM regulations for issuance of ROWs on public lands as mandated by FLPMA and in accordance with the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations. This EA has been prepared in accordance with the BLM NEPA Handbook (H-1790-1) (BLM 2008a).

1.5 Scoping and Issues

1.5.1 Internal Scoping

The BLM held a project meeting with the LCDO NEPA Interdisciplinary (ID) Team on November 7, 2016, to identify preliminary issues for analysis, as well as the rationale for issues not necessary for detailed analysis. An additional meeting with ID Team members was held on November 8, 2017, to discuss the multiple alternative substation sites and issues related to the various locations.

1.5.2 External Scoping

The BLM solicited input from the public on the proposed project to assist in identifying key issues and defining the scope of the project and environmental analysis. The BLM administered two separate scoping periods for the project, the first of which was held from February 3 to March 3, 2017.

Project information was sent to 98 recipients from the BLM's interested party mailing list. This scoping period resulted in 45 comment letter submissions. The letters primarily focused on objections to the proposed Talavera Substation location and suggested multiple other potential locations for the substation. After the first scoping period, the BLM reviewed the public's input and suggested alternatives, and identified several other substation locations for consideration.

As a result of the public comments received during the first scoping period, the BLM initiated a second scoping period to identify issues related to EPE's proposed site, as well as 14 additional alternatives under consideration. This scoping period lasted 60 days and was held from June 17 to August 17, 2017. Sixty-three comment letters were received during this scoping period. The scoping report addresses all aspects of the scoping process, including all comments received during scoping, and is available on the BLM's website (BLM 2017).

1.5.3 Issues

Using the scoping comments submitted and input from the BLM ID Team, a list of issues to address in the EA was developed in accordance with guidelines set forth in the BLM NEPA Handbook (BLM 2008a). Where project design features would not mitigate impacts of the action below significance, or if the scoping indicated a need for analysis to determine impact significance, these issues were retained for detailed analysis.

The key issues identified during public and agency scoping, and analyzed in this EA are summarized in Table 1-1. The indicators provided are used to describe the affected environment for each issue in Chapter 3, measure change in the issue for the different alternatives, and assess the impacts of alternatives.

Table 1-1. Issues Identified for Detailed Analysis

Issue Number	Issue Statement	Impact Indicator
Issue 1	How would construction of the proposed project components impact the viewshed from residences and Dripping Springs Road?	Degree of visual contrast; conformance to Visual Resource Management Classes 3 and 4
Issue 2	How would noise from construction and operation of the proposed project affect nearby residences?	A-weighted decibels (dBA) of background (ambient) noise levels
Issue 3	How would electric and magnetic fields (EMF) from the proposed substation and transmission or distribution lines impact the health of nearby residents?	EMF levels
Issue 4	How would proximity to the proposed substation and transmission or distribution lines impact residential property values from impacts to the viewshed, increased noise, and quality of life?	Results of the visual contrast study, noise analysis, and EMF study
Issue 5	How would the ground fill needed for the permanent access road for Site 7, and the substation pad at Site 7 or Site 11 impact water flows?	Acres of impacts to drainages and cubic yards of cut and fill required
Issue 6	How would increased electrical capacity impact economic development?	Qualitative analysis of demographic factors and growth

An issue was dismissed from detailed analysis if the issue was not present or would not be impacted, if potential impacts would not be significant and detailed analysis is not necessary to determine such, or if impacts would be mitigated below significance through implementation of project design features. The following issues were evaluated and are not discussed in further detail in this EA for the reasons described in Table 1-2.

Table 1-2. Issues Not Included in Further Detail in the Environmental Assessment

Issue Statement	Rationale for Not Further Discussing in Detail in the EA*
How would construction of the proposed project impact vegetation?	General biological surveys were conducted for the Proposed Action and the distribution components common to all alternatives, on November 15–17, 2016, including a vegetation inventory, and the results were documented in a biological survey report (SWCA Environmental Consultants [SWCA] 2018). One vegetation community (Chihuahuan Desert scrub at 35%–45% cover), a common vegetation type, was observed. No special-status plant species were observed. The BLM provides for independent salvage of certain species of cactus, and these measures would also be implemented for this project (Section 2.2.3). Additional vegetation surveys would be conducted prior to project construction, and salvage and avoidance would be implemented as necessary based on results of that survey. Project design features would mitigate impacts to vegetation because disturbed areas not needed for operations and maintenance would be revegetated with a native seed mix (see Section 2.2.3). The long-term success and effectiveness of revegetation depends on factors such as weed control and frequency of precipitation. The vicinity of the project area has been previously disturbed by transmission infrastructure, and areas not needed for long-term operations have previously been successfully revegetated to achieve vegetation conditions comparable with nearby undisturbed areas, i.e. 35%–45% percent cover, using native vegetation to blend with the surrounding landscape, as documented in the biological survey report (SWCA 2018). The area of the proposed project not needed for long-term operations, as well as the remainder of the project area once the project has reached end-of-life, is anticipated to have similar revegetation success.
How would the proposed project affect the potential spread of noxious weeds and invasive plants?	General biological surveys were conducted for the Proposed Action and the distribution components common to all alternatives, on November 15–17, 2016, including a noxious weed inventory, and the results were documented in a biological survey report (SWCA 2018). One New Mexico Department of Agriculture (NMDA) listed weed species was observed during initial vegetation surveys of the project area (saltcedar [*Tamarix ramosissima*]). Project design features include standard noxious weed control and monitoring stipulations. See Section 2.2.3 for design features specific to weed control. The vicinity of the project area has been previously disturbed by transmission infrastructure, and areas associated with those projects, not needed for long-term operations, have previously been successfully revegetated to achieve 35%–45% percent cover, using native vegetation to blend with the surrounding landscape. The lack of weed species observed during the initial biological survey (November 15–17, 2016) demonstrates the effectiveness of BLM's standard stipulations for weed control and revegetation (SWCA 2018).

Issue Statement	Rationale for Not Further Discussing in Detail in the EA*
How would ground-disturbing activities impact cultural resources and Native American sacred sites (traditional cultural properties)?	A Class I search for previously recorded cultural resources sites was conducted for all alternative sites. A pedestrian Class III cultural resource survey was conducted (November 16–20, 2016) for the Proposed Action and the distribution components common to all alternatives. A survey was also conducted of alternative Sites 2, 3, and 3A (including the access road to Site 3A) on September 28, 2017. Two previously recorded archaeological sites (LA 2894 and LA 120447) and one newly identified site (LA 186990) were recorded (SWCA 2017a). Two additional known sites (LA 52281 and LA 86426) were identified during the records search, but were not able to be located during the survey. Additional cultural resources surveys would be required ahead of any ground-disturbing activities where not previously conducted, and all known cultural resources identified in the project area would be avoided or treated to mitigate adverse effect under Section 106 of the National Historic Preservation Act. This would include monitoring during construction in site-specific areas, in accordance with BLM's cultural resource management guidelines in compliance with the National Historic Preservation Act (see Section 2.2.3).
How would fugitive dust emissions generated by ground-disturbing activities impact air quality and visibility?	Sources of fugitive dust emissions would include construction operations, unpaved roads, and aggregate soil storage/stockpiles. Dust is generated from these sources by either mechanical means—such as equipment blades and vehicle wheels—or by wind erosion, which is a natural phenomenon (U.S. Environmental Protection Agency [EPA] 2016). Impacts to air quality and visibility resulting from fugitive dust emissions generated by ground-disturbing activities would be mitigated through the implementation of the Air Quality design features listed in Section 2.2.3. This would include suppression of dust during construction through use of water and or chemical means, and phasing of construction to minimize the amount of bare ground areas at any one time. Effectiveness of these measures is documented by the EPA (EPA 1992; Midwest Research Institute 1990). Successful fugitive dust control relies on the actions of the construction personnel to react to the given conditions of the weather (temporarily stopping construction in high winds, or increasing the frequency of water or chemical controls when needed). Phasing the construction (i.e., the installation of project components would not occur all at once or at the same time) is an effective method for controlling fugitive dust emissions because it reduces the amount of surface disturbance exposed to dust-generation processes at any given time (EPA 1992). Design features would be incorporated into proposed projects to control fugitive dust emissions resulting from reasonably foreseeable future actions discussed under cumulative impacts. These measures would be similar to those implemented for this project, based on standard industry best management practices, and would effectively mitigate impacts to air quality and visibility.

Issue Statement	Rationale for Not Further Discussing in Detail in the EA*
How would ground-disturbing activities and long-term maintenance impact key habitat for burrowing owls (*Athene cunicularia*), raptors, migratory birds, sand prickly pear cactus (*Opuntia arenaria*), or other threatened and endangered species?	General biological surveys were conducted for the Proposed Action and the distribution components common to all alternatives, on November 15–17, 2016, including documentation of habitat for special-status wildlife species, and the results were documented in a biological survey report (SWCA 2018). No burrows suitable for burrowing owl nesting were identified during the survey. Additionally, no sand prickly pear cactus or Bendire's thrasher was observed in the project area (SWCA 2018). Several bird species were observed or heard, and several inactive passerine nests and two raptor nests used during a previous nesting season were identified (SWCA 2018). Impacts would be avoided or mitigated through project design features, including facility design and timing restrictions. If construction or maintenance activities take place during the breeding-nesting season (March–September 15), preconstruction nest surveys would be required ahead of any ground-disturbing activities to prevent impacts to migratory bird nests or eggs. The project is not located in the known distribution area for breeding/nesting bald eagles (*Haliaeetus leucocephalus*), and no bald eagles were observed. Two golden eagles (*Aquila chrysaetos*) were seen during the biological survey; however, no nests or habitat suitable for nesting for golden eagles were identified within or adjacent to the project area. Therefore, the project would not cause take of individual bald or golden eagles, their nests, or eggs. No direct impacts to adult eagles are anticipated due to their mobility and ability to avoid areas of human activity. As stated above, preconstruction surveys would be required ahead of any ground-disturbing activities, and impacts to all known key habitat would be avoided or mitigated below the level of significance in consultation with appropriate agencies. As described in the design features (see Section 2.2.3), the guidelines in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006) would be followed to avoid electrocution of birds. The proposed project falls within the Central Flyway for migratory birds, which encompasses nearly a dozen states east of the Continental Divide (USFWS 2017). Flyways are routes routinely used by migrating birds to avoid high mountain ranges while continuing along a path with adequate food, water, and cover. As the proposed project would not impact riparian or wetland resources used by migratory birds during migration, no direct impacts to migratory birds are anticipated. Additional general biological surveys would be required of any areas not already surveyed, and if the prior survey is more than 2 years old, new surveys would take place prior to construction of any alternative site chosen by BLM. Project design features also include facility design, timing restrictions for construction, monitoring, and other best management practices specifically for mitigation (below significance) of impacts to wildlife during construction of the proposed project (see Section 2.2.3).
How would ground-disturbing activities impact potential subsurface paleontological resources?	A paleontological resource survey was conducted for the Proposed Action and the distribution components common to all alternatives (December 9–13, 2016). No significant fossil localities were discovered, and there were no non-significant fossil occurrences (SWCA 2017b, 2017c). Additional paleontological resource surveys would be required ahead of any ground-disturbing activities, and impacts to all known paleontological resources would be avoided or mitigated below the level of significance using design features specific to paleontological resources (see Section 2.2.3). This would include monitoring during construction in site-specific areas where the BLM determines it to be necessary.

Issue Statement	Rationale for Not Further Discussing in Detail in the EA*
How would the proposed project impact the resources, objectives, and values of the Organ Mountains–Desert Peaks National Monument?	The Organ Mountains–Desert Peaks National Monument was established via presidential proclamation in May 2014 for the preservation of significant pre-historic and historic resources, geological, paleontological, visual, and biological resources. The proposed project includes the replacement of existing aged utility lines within the Monument boundary, and no new utility lines, ROWs, or roads are proposed. Replacing these lines requires a wider ROW than was previously used to accommodate safe practices for workers (see Section 2.2.1 for additional detail). This activity is permitted within the proclamation that established the Monument (White House 2014:4). To consider this activity, the BLM requires mitigation of impacts and avoidance for all resources protected under the proclamation, including cultural, geological, and biological resources (see above rationale for these issues). Cultural and biological surveys of all project components within the Monument have been conducted, and no resource values, including cultural, biological, or paleontological, would be impacted (SWCA 2017c, SWCA 2018). The project as proposed is consistent with other infrastructure in the immediate vicinity and would not impact sensitive viewpoints within the Monument or the management objectives of the Monument. The project would not draw the attention of visitors traveling toward the Monument because it is consistent with existing transmission infrastructure in the immediate area.
How would outdoor security lighting for the proposed substation affect dark skies, including night sky conditions for nearby residences and wildlife?	The New Mexico Night Sky Protection Act (NSPA) was enacted in 1999 to regulate outdoor night lighting fixtures to preserve and enhance the state's dark sky while promoting safety, conserving energy, and preserving the environment for astronomy (New Mexico Statutes Annotated [NMSA] 1978 Section 74-12). The NSPA requires that all outdoor lighting be fitted with shielding that directs light emissions downward. Substation security lighting would be shielded in accordance with the NSPA and lights and shields would be constructed to protect light rays emitted by the fixture downward on a horizontal plane. Light would not be directed upward or laterally. Substation security lighting could be equipped with motion sensors to reduce operation duration. Substation security lighting would have a manual override to provide a safe working environment for personnel during active work efforts (see Section 2.2.3). Because all outdoor security lighting would comply with the NSPA requirements, there would be no impact to dark skies, including night sky conditions for nearby residences and wildlife. Because design features would be implemented to mitigate any impacts to dark sky conditions from outdoor lighting for the substation, there would be no impacts to other issue areas/resources, including property values, from the project as proposed.
How would long-term operation of the proposed substation impact safety of nearby residences related to risk of fire?	The proposed project would be designed and constructed to maintain public safety in accordance with all applicable regulations. All new electrical facilities would be constructed, operated, and maintained in accordance with Occupational Safety and Health Administration (OHSA) regulations and established protocols for emergency preparedness and response. Project design would incorporate clearance requirements and industry safety design standards as established by the National Electrical Safety Code (NESC) as well as industry guidelines and standards published by the Institute of Electrical and Electronics Engineers (IEEE) for electrical facilities. Additionally, applicable measures for electric substation fire protection would also be implemented as part of project design, and would follow the IEEE Guide for Substation Fire Protection (IEEE Std. 979-2012). These mitigation measures would prohibit the spread of surface fire and assist in containment if a fire were to occur (see Section 2.2.3).

Issue Statement	Rationale for Not Further Discussing in Detail in the EA*
How would ground-disturbing activities impact groundwater resources?	Average groundwater depth for a water well in similar terrain near the affected area is approximately 69 feet below the land surface (USGS 2018). Any excavation or other construction activities associated with the proposed project would not impact groundwater resources. The proponent would follow applicable laws and regulations, such as OSHA regulations and NESC requirements that limit the storage and use of hazardous materials onsite. The proponent would develop an emergency response plan to mitigate environmental impacts in the event of a chemical spill or similar event.
How would the proposed project impact existing ROWs or leases?	The BLM conducted a search of existing ROW holders in the vicinity of the project and identified multiple other ROWs held by utility companies, the Department of Transportation, the County, and other agencies or entities. Impacts to existing ROWs can occur from modifications to or encroachment upon existing ROWs and leases. Multiple existing ROWs would be crossed or temporarily disturbed as a result of the proposed distribution components common to all alternatives. However, this temporary use, or crossing, of other ROWs would not encroach upon or otherwise limit the use, or future use, of the existing ROWs.

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES

2.1 No Action Alternative

Under this alternative, the BLM would not grant the proposed new or amended ROWs to the applicant, the proposed new permanent substation would not be built, and the corresponding transmission modifications would not occur. The associated surface disturbance and vegetation clearing would not occur. EPE would continue to operate the existing temporary Talavera Substation to provide limited capacity and relief to the electrical grid.

The No Action Alternative is the only alternative that does not meet the stated purpose and need. This alternative provides a baseline for analysis and comparison of resource impacts, i.e., the existing conditions in the project area and the continuing trends based on those conditions if the BLM does not implement the Proposed Action. BLM NEPA Handbook H-1790-1 states that for EAs on externally generated applications, the No Action Alternative generally means that the proposal would be rejected or the application denied (BLM 2008a:52).

2.2 Action Alternatives

The proposed project includes construction, operation, and maintenance, and ROW renewal and/or decommissioning applicable to all action alternatives analyzed in this EA.

Regular inspection of the substation, 115-kV transmission line, distribution lines, and support systems is critical for safe, efficient, and economical operation of the project. All public roads or authorized access roads would be used for operation and maintenance purposes upon completion of construction. Maintenance would be performed on an as-needed basis, as approved by the BLM Authorized Officer, to keep the Talavera Substation and its associated facilities in a safe and functioning condition.

The proposed project would have a minimum projected operation life of 50 years or longer. A ROW grant issued for 30 years with the option of renewal would be necessary for the operation, maintenance, and decommissioning of the substation and distribution line facilities located on BLM-managed lands. At the end of the ROW grant term (30 years), EPE would have the option to renew the ROW grant to continue operation of the infrastructure or terminate the ROW agreement. The BLM Authorized Officer must approve the plan in writing prior to commencement of any termination activities. Restoration and termination procedures would attempt to restore and reclaim the landscape to a condition as near to its original state as possible and would be implemented under a termination and restoration plan reviewed and approved by the BLM Authorized Officer.

2.2.1 Project Distribution Components Common to All Action Alternatives

EPE proposes to construct, operate, and maintain a new permanent six-position ring bus substation and connect it to the existing Salopek-to-Arroyo 115-kV transmission line (NMNM 18156) near Las Cruces, New Mexico (Figure 2-1). Several alternative sites for the substation are described in the next sections. To accommodate the new substation, the project proposal also includes rebuilding approximately 10.5 miles of existing 24-kV distribution line to replace and/or add infrastructure to upgrade these lines and construct approximately 2.2 miles of new 24-kV distribution line to connect existing distribution circuits. This new and upgraded distribution infrastructure is common to all the action alternatives. These distribution system upgrades with associated service road upgrades and temporary work areas would result in approximately 103.3 acres of disturbance (see Table 2-1 below) within or parallel to existing ROWs on BLM lands.

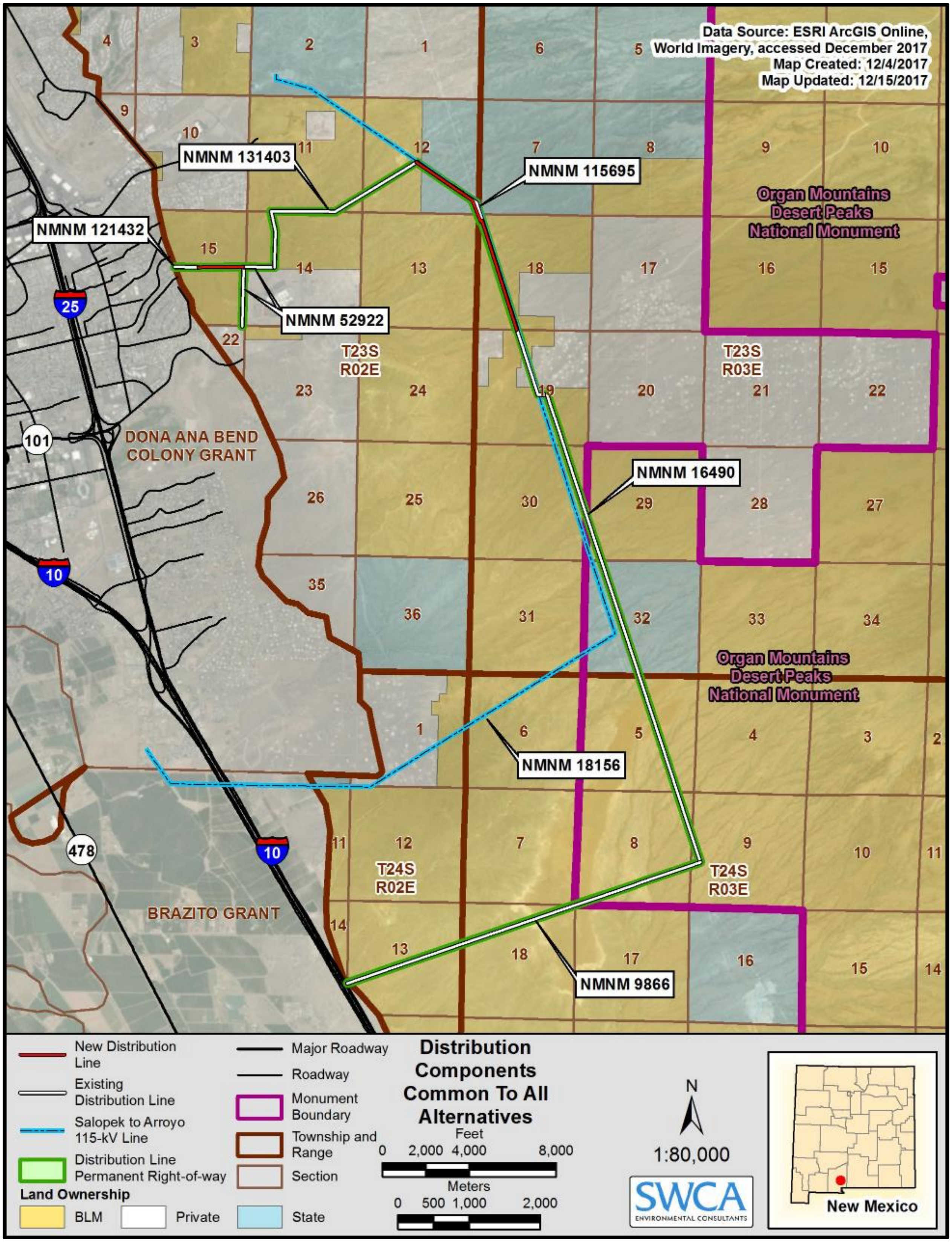

Figure 2-1. Distribution components.

2.2.1.1 Proposed Amendments to Existing Distribution Lines and Facilities

- NMNM 18156—Amend the existing ROW to allow modification to the existing Salopek-to-Arroyo 115-kV transmission line to connect to the proposed Talavera Substation. No ROW width expansion is proposed.
- NMNM 115695—Amend the existing ROW to allow modification to the existing 2.5-mile-long, single-circuit, three-phase distribution line to disconnect from a temporary substation and connect to the new proposed Talavera Substation. No ROW width expansion is proposed.
- NMNM 131403—Amend the existing ROW to allow the following modifications:
    - Rebuild the entire 1.9-mile, current single-circuit, three-phase line to a double-circuit, three-phase line.
    - Extend the NMNM 131403 proposed double-circuit, three-phase line 1.8 miles and connect to the proposed Talavera Substation.
    - Expand the ROW width from 25 to 50 feet.
    - Authorize a service road to remain within the ROW corridor.
- NMNM 121432—Amend the existing ROW to allow the following modifications:
    - Rebuild the entire 0.2-mile, current single-circuit, three-phase line to accommodate a larger conductor wire.
    - Build a 0.4-mile single-circuit, three-phase line to connect to the NMNM 52922 ROW.
    - Expand the ROW width from 30 to 50 feet.
    - Authorize a service road to remain within the ROW.
    - Consolidate the ROW into the NMNM 131403 ROW grant.
- NMNM 52922—Amend the existing ROW to allow the following modifications:
    - Rebuild a 0.5-mile segment of the current single-circuit, three-phase line to accommodate a larger conductor wire.
    - Rebuild and upgrade a 0.3-mile segment to a three-phase, double-circuit 24-kV line and connect to the NMNM 131403 ROW.
    - Expand the ROW width from 25 to 50 feet.
    - Authorize a service road to remain within the ROW.
    - Consolidate the ROW into the NMNM 131403 ROW.
- NMNM 9866—Amend the existing ROW to allow the following modifications:
    - Rebuild the entire 3.3-mile, current single-circuit, single-phase line to a single-circuit, three-phase line to accommodate a larger conductor wire and additional phases.
    - Increase the ROW width from 25 to 50 feet.
    - Authorize a service road to remain within the ROW.
- NMNM 16490—Amend the existing ROW to add the following modifications:
    - Rebuild the entire 4.3-mile current single-circuit, single-phase line to a single-circuit, three-phase line to accommodate a larger conductor wire and additional phases.
    - Increase the ROW width from 25 to 50 feet.
    - Authorize a service road to remain within the ROW.

All of the new and rebuilt distribution feeder lines would be similar to those existing lines associated with the project and currently authorized under BLM ROW grants. These lines would have a nominal voltage of 24-kV alternating current (AC) in a horizontal circuit configuration. Ground clearance of the conductor would exceed 20 feet, as required by the National Electrical Safety Code. ROW corridor width for existing distribution lines is currently 25 feet. A 50-foot-wide ROW has been requested for all distribution lines included under the Proposed Action, which would require amending current ROW grants for the existing distribution lines to accommodate the proposed 50-foot ROW corridor width. The increase in ROW width is necessary to accommodate the new operational practices used by today's utility linemen; it provides for additional safety and allows an increase in clearance while working distribution lines.

Distribution line construction and rebuilding would consist primarily of the installation of wood poles with 10-foot cross-arm assemblies (Figures A-1 through A-3 in Appendix A). Pole height would range between 50 and 70 feet, and poles would have an average span length from 150 to 280 feet, depending on topographic and environmental constraints. Poles would be buried on an average of approximately 5 to 10 feet deep, depending on soil and terrain. Distribution pole anchors, which are used to keep tension on the lines for stability against environmental factors (e.g., wind and ice loads) to maintain clearances, would be used at required locations, as determined by engineering, design, and terrain characteristics.

The construction of new distribution line would begin once approval and authorization has been issued from the BLM and would be completed during the construction of the new Talavera Substation. Rebuilds and upgrades of existing distribution lines would also coincide with the construction of the Talavera Substation, with the exception of the proposed rebuild of NMNM 9866. This segment is located within the Monument. Rebuilding of this distribution line would not begin until 2 years after the construction of the permanent Talavera Substation has been completed.

Table 2-1 provides a summary of distribution system upgrades (including length and acres of surface disturbance) common to all action alternatives.

Table 2-1. Length and Proposed Acres of Disturbance for Distribution System Upgrades Common to All Action Alternatives

Project Component	Land Ownership	Length (miles)†	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Distribution line (50-foot ROW)*	BLM	13.8	72.7	72.7
	State Land Office	1.1	6.4	–
	Private	0.3	0.8	–
Subtotal		**15.2**	**79.9**	**72.7**
Additional temporary work areas (pull pockets)	BLM	–	0.8	0.8
	State Land Office	–	0.1	–
	Private	–	<0.1	–
Subtotal		**–**	**0.9**	**0.8**
Service patrol roads (14-foot-wide ROW)	BLM	17.6	29.8	29.8
	State Land Office	1.1	1.9	–
	Private	1.1	1.8	–
Subtotal		**19.8**	**33.5**	**29.8**
Total proposed disturbance (acres)			**114.3**	**103.3**

* All lines would have a 50-foot-wide ROW, except NMNM 115695, which would remain a 20-foot-wide ROW.
† The length of distribution applies to all action alternatives except Site 11, which would not require the 1.8-mile new extension of NMNM 131403 (see Section 2.2.1.1 above).

2.2.1.2 Temporary Work Areas

Temporary work areas would consist of wire-pulling/tensioning sites (pull pockets) located at the beginning and end of distribution lines, or at turns or directional changes in both directions of angles. The pull pockets would be approximately 50 × 150 feet in size and would extend outside the permanent 50-

foot ROW for the distribution lines. Temporary work area for staging of equipment and supplies during construction would be located within the permanent ROW widths or on private or SLO lands. Temporary work areas would be selected based on the phase of construction and progress of work. Previously disturbed areas within reason would be utilized to the greatest extent possible; then areas that are relatively level within existing ROW would be selected and utilized. These temporary work areas would be the width of the permanent ROW, relatively flat, and cleared of vegetation to accommodate equipment and supplies.

2.2.1.3 Service Roads

Service roads would be needed to facilitate construction, regular inspection, and maintenance activities associated with the proposed substation and all transmission and distribution lines. Access to the distribution line corridors would be done via existing roads to the maximum extent possible. These roads would be maintained both during and after construction for operation, maintenance, and patrol of the distribution lines once the proposed construction and upgrades to the distribution lines are complete. The permanent patrol road for all distribution lines would be located entirely within the proposed ROW corridors. All patrol roads would be constructed or maintained no wider than 14 feet and would receive basic maintenance, as approved by the BLM Authorized Officer, for long-term operation. EPE would also construct an access road, or maintain an existing road, for construction, operation, maintenance, inspection, and repair of infrastructure for the proposed substation. Because access to each alternative substation location is site-specific, substation access roads are discussed under each action alternative below under Section 2.2.2.

2.2.1.4 Removal of Temporary Substation

The project also includes removal of the temporary substation, and reclamation and termination of the existing temporary substation ROW. At present, the temporary substation consists of an approximately 291 × 150–foot (<1.0-acre) area with associated facilities. Once the new permanent substation is completed and in operation, EPE would move the existing load from the temporary substation to the new Talavera substation. EPE would then remove the temporary substation infrastructure and revegetate the ROW following the approved reclamation plan developed in accordance with BLM ROW guidelines. Once the ROW is reclaimed, it would be terminated, and BLM would close the ROW case file (NMNM 130056).

2.2.2 Proposed and Alternative Substation Sites

The project proposes to build one permanent substation on a 3.7-acre parcel (400 × 400 feet), with an additional 50-foot temporary construction buffer on all sides (totaling 500 × 500 feet). If authorized by the BLM, this permanent substation would replace the existing temporary substation. The new substation would connect to the existing Salopek-to-Arroyo 115-kV transmission line and would convert 115 kV to 24 kV for distribution use. The substation would include a fence or wall around the perimeter to provide for public safety and security of the substation facility. The substation would be equipped with security lighting, which would be shielded to project downward so as to avoid emitting light upward or laterally. Security lighting could be equipped with motion sensors to reduce operating time, and will have a manual override to provide a safe working environment for personnel during active work efforts. All lighting for the proposed substation would be designed to comply with all applicable regulations.

The substation would also include installation of transmission and distribution structures to connect the new substation to the existing electrical grid, and installation of all of the substation components. The location of the substation would dictate the length of additional transmission and distribution lines needed to connect the grid. Figure A-6 in Appendix A provides a conceptual substation site plan; however, layout and configuration would be dependent on final engineering and design.

All new electrical facilities would be constructed, operated, and maintained in accordance with Occupational Safety and Health Administration (OSHA) regulations and established protocols for emergency preparedness and response. Project design would incorporate clearance requirements and industry safety design standards as established by the National Electrical Safety Code (NESC) as well as industry guidelines and standards published by the Institute of Electrical and Electronics Engineers (IEEE) for electrical facilities. Applicable measures for electric substation fire protection would be implemented as part of project design, and would follow the IEEE Guide for Substation Fire Protection (IEEE Std. 979-2012). These measures would prohibit the spread of surface fire and assist in containment if a fire were to occur (see Section 2.2.3.10 below).

2.2.2.1 Proposed Action Site 1

The Proposed Action Site 1 is located immediately west and adjacent to the existing transmission line corridor, depicted in Figure 2-2. This substation site is suitable for construction and would result in approximately 7.9 acres of disturbance. Site 1 would include a chain-link fence with tan slats around the substation perimeter with a minimum height of 8 feet. In addition to the 3.7-acre substation parcel (400 × 400 feet in size), this site would require a new 240-foot-long transmission line to connect the substation to the existing Salopek-to-Arroyo 115-kV transmission line. The proposed substation site and substation corridor would be located on BLM land. Access to this substation location would be provided by an existing service access road, permitted by the temporary substation ROW grant, from Dripping Springs Road.

No additional distribution line and/or distribution infrastructure, service roads, or temporary work areas, other than those described in Section 2.2.1 above, would be required for the Proposed Action Site 1. Construction of the substation and substation access corridor for Proposed Action Site 1 would take 16 to 20 months to complete, during which time the distribution line facilities would also be constructed.

Table 2-2 provides a summary of length and acres of disturbance for project components associated with the Proposed Action Site 1.

Table 2-2. Length and Acreage of Surface Disturbance for the Proposed Action Site 1

Project Component	Land Ownership	Length (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Talavera Substation (Site 1) (500 × 500 feet*)	BLM	–	5.7	5.7
Substation connection corridor (400 × 240 feet)	BLM	<0.1	2.2	2.2
Total proposed disturbance (acres)			**7.9**	**7.9**

* Substation footprint includes the 400 × 400-foot ROW, with a 50-foot temporary work buffer on all sides.

Site 1 – Substation Connection Corridor

In order to tie the proposed Talavera Substation into the electrical grid, Site 1 would require a 400-foot-wide, 240-foot-long ROW on BLM-managed lands to accommodate the transmission and distribution infrastructure coming in and out of the new substation (see Figure 2-2). The width of the ROW would be required to accommodate the Salopek-to-Arroyo 115-kV transmission line and distribution lines that would tap into and out of the new substation. This substation location would require two sets of three-pole dead-end structures in the connection corridor. These dead-end structures would be un-guyed, self-supporting steel structures on concrete foundations (Figure A-4 in Appendix A). No modifications to existing transmission structures would be necessary.

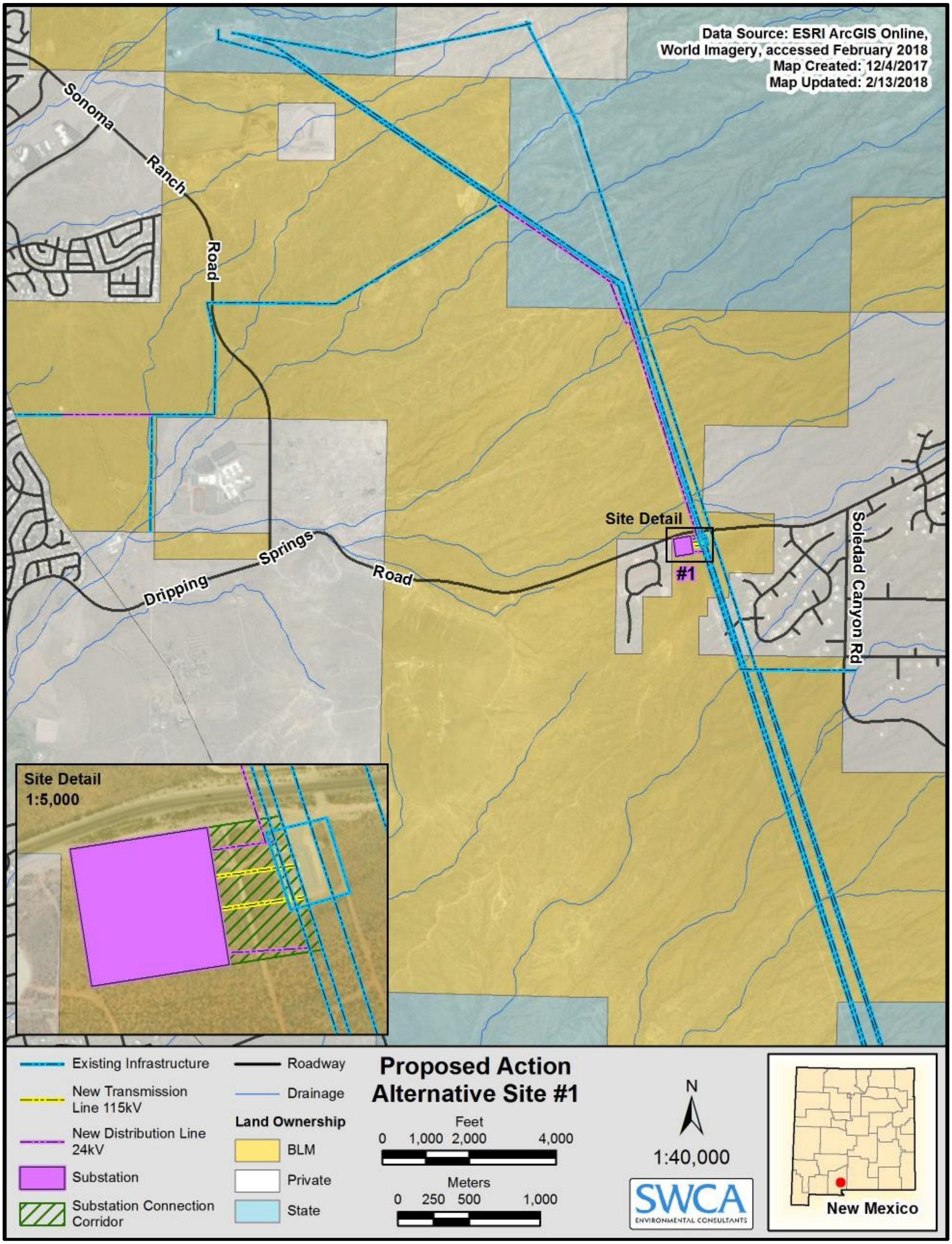

Figure 2-2. Vicinity and location for Proposed Action Site 1.

2.2.2.2 Alternative Site 2

Site 2 is located to the east of the existing transmission corridor (Figure 2-3). Selection of this substation site, which is suitable for construction, would result in approximately 10.3 acres of disturbance. This alternative site would include a pre-fabricated, textured concrete wall, painted Shadow Gray (from the BLM Standard Environmental Colors Chart CC-001: June 2008 [BLM 2008b]) in color, around the perimeter of the substation and a minimum height of 8 feet. In addition to the 3.7-acre substation parcel (400 × 400 feet in size), this site would require a new 500-foot-long transmission line to connect the substation to the existing Salopek-to-Arroyo 115-kV transmission line. The proposed substation site and substation corridor would be located on BLM-managed land. Access to this substation location would be provided via Dripping Springs Road and the existing frontage access.

No additional distribution line and/or distribution infrastructure, service roads, or temporary work areas, other than those described in Section 2.2.1 above, would be required for this proposed substation location. Construction of the substation and substation access corridor for Alternative Site 2 would take 16 to 20 months to complete, during which time the distribution line facilities would also be constructed.

Table 2-3 provides a summary of length and acres of disturbance for project components associated with Site 2.

Table 2-3. Length and Acreage of Surface Disturbance for Site 2

Project Component	Land Ownership	Length (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Talavera Substation (Site 2) (500 × 500 feet*)	BLM	–	5.7	5.7
Substation connection corridor (400 × 500 feet)	BLM	<0.1	4.6	4.6
Total proposed disturbance (acres)			**10.3**	**10.3**

* Substation footprint includes the 400 × 400–foot ROW, with a 50-foot temporary work buffer on all sides.

Site 2 – Substation Connection Corridor

To tie the proposed Talavera Substation into the electrical grid, Site 2 would require a 400-foot-wide, 500-foot-long ROW on BLM-managed lands to accommodate the transmission and distribution infrastructure coming in and out of the new substation (see Figure 2-3). The width of the ROW would be required to accommodate the Salopek-to-Arroyo 115-kV transmission line and 24-kV distribution lines that would tap into and out of the new substation. In addition to two sets of three-pole dead-end structures in the connection corridor (see Figure A-4 in Appendix A), this proposed substation location would require eight transmission structure replacements to bring the existing Salopek-to-Arroyo 115-kV transmission line under the existing Anthony-to-Arroyo 115-kV transmission and Newman-to-Arroyo 345-kV transmission lines and to Site 2.

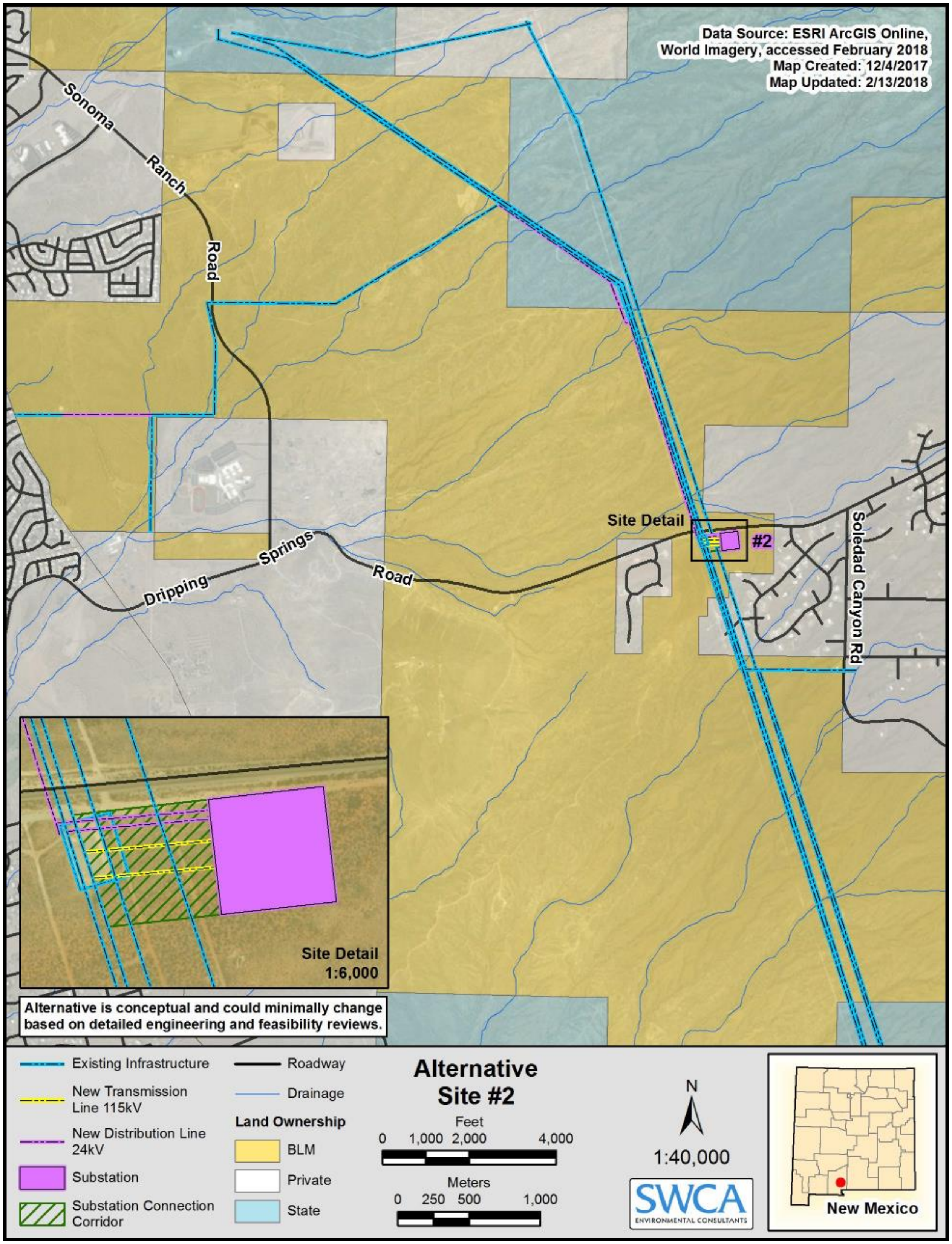

Figure 2-3. Vicinity and location for Alternative Site 2.

2.2.2.3 Alternative Site 3

Site 3 is located east of the existing transmission corridor, situated on BLM-managed lands along Achenbach Canyon Road south of the Talavera Fire Station (Figure 2-4). This alternative site would include a pre-fabricated, textured concrete wall, painted Shadow Gray (from the BLM Standard Environmental Colors Chart CC-001: June 2008) in color, around the perimeter of the substation and a minimum height of 8 feet. In addition to the 3.7-acre substation parcel (400 × 400 feet in size), this site would require a new approximately 2,000-foot-long (0.4-mile-long) double transmission line corridor to connect the substation to the existing Salopek-to-Arroyo 115-kV transmission line. The proposed substation site and new transmission line corridor would be located on BLM land. Access to Site 3 would be provided via Achenbach Canyon and Soledad Canyon Roads from Dripping Springs Road north of the proposed substation site.

In addition to the components discussed above in Section 2.2.1, Site 3 includes three design options for additional distribution routing necessary for this proposed substation location. The location of the proposed substation and new double transmission line corridor are the same for all three options. Construction of the substation, additional distribution routing, and double transmission line corridor for Alternative Site 3 would take 16 to 20 months to complete, during which time the distribution line facilities would also be constructed.

Summaries of proposed lengths and acreages of disturbance for each design option for Site 3 are presented in Table 2-4.

Table 2-4. Length and Acreage of Disturbance for Site 3 Design Options

Project Component	Land Ownership	Length (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Option 3-O				
Talavera Substation (Site 3) (500 × 500 feet*)	BLM	–	5.7	5.7
Double Transmission line corridor (200 × 2,000 feet)	BLM	0.4	9.2	9.2
Overhead distribution (50-foot ROW)	BLM	0.6	3.6	3.6
	Private†	1.0	6.0	–
Option 3-O Total proposed disturbance (acres)			**24.5**	**18.5**
Option 3-U				
Talavera Substation (Site 3) (500 × 500 feet*)	BLM	–	5.7	5.7
Double Transmission line corridor (200 × 2,000 feet)	BLM	0.4	9.2	9.2
Underground distribution (50-foot ROW)	BLM	0.6	3.6	3.6
	Private†	1.0	6.0	–
Option 3-U Total proposed disturbance (acres)			**24.5**	**18.5**

Project Component	Land Ownership	Length (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Option 3-T				
Talavera Substation (Site 3) (500 × 500 feet*)	BLM	–	5.7	5.7
Double Transmission line corridor (200 × 2,000 feet)	BLM	0.4	9.2	9.2
Overhead distribution (50-foot ROW)	BLM	0.7	4.5	4.5
	Private†	0.3	1.6	–
Option 3-T Total proposed disturbance (acres)			**21.0**	**19.4**

* Substation footprint includes the 400 × 400–foot ROW, with a 50-foot temporary work buffer on all sides.
† Distribution would be located within an existing utility easement available for utility companies within the Doña Ana County ROW.

Option 3-O – Overhead Distribution

Option 3-O would include a 1.6-mile length of 24-kV *overhead* distribution line routed along Dripping Springs and Soledad Canyon Roads (see Figure 2-4). Some modification to the existing distribution line may be needed to support the additional circuit. This option would include construction of overhead distribution line on both BLM lands and within the existing utility easement in the County ROW. If selected, EPE would route the overhead line within existing utility easement along these portions of Dripping Springs and Soledad Canyon Roads. In total, this option would result in approximately 24.5 acres of ground disturbance, including approximately 18.5 acres of BLM-managed lands, including distribution, transmission, and substation disturbance.

The overhead distribution line under this design option would consist of single wood poles ranging from 45–50 feet in height, with a typical span length of approximately 260 feet. Pole and cross-arm assembly design would be similar to those distribution components common to all alternatives (see Section 2.2.1, Figures A-1 through A-3 in Appendix A). Final design of the distribution line, including spacing, number of poles, and pole height, would be based on maintaining proper line clearance and safe operation in accordance with NERC requirements and would be dependent on final engineering.

Option 3-U – Underground Distribution

Option 3-U would be similar to the overhead option, with the exception that the total 1.6-mile 24-kV distribution line would be buried *underground* following the same alignment along Dripping Springs and Soledad Canyon Roads across BLM lands and within the existing utility easement in the County ROW (see Figure 2-4). Similar to the overhead option 3-O, Option 3-U would result in approximately 24.5 acres of ground disturbance, including approximately 18.5 acres of BLM-managed lands.

Option 3-T – Overhead Distribution through Transmission Corridor

Option 3-T would include an approximately 1-mile, 24-kV *overhead* distribution line (0.7 mile of new line and 0.3 mile of rebuild) that would be routed through the existing transmission line corridor (see Figure 2-4). Under this option, no distribution line would be constructed along Dripping Springs or Soledad Canyon Roads if Site 3 were selected. If selected, the overhead distribution line would cross both BLM-managed lands and private land through the existing transmission corridor, which would require private easement agreements with landowners for approximately 0.3 mile of the new line. Selection of this option would depend on private easement agreements being reached. In total, this option including the associated substation and transmission line, would result in approximately 21.0 acres of disturbance, including approximately 19.4 acres of BLM-managed lands. Overhead distribution line design under this option (poles, pole height, spacing) would be the same as described under Option 3-O above.

Site 3 – Double Transmission Line Corridor

To tie the proposed Talavera Substation into the existing electrical grid, Site 3 would require a 400-foot-wide, approximately 2,000-foot-long (0.4-mile-long) ROW on BLM-managed lands for the transmission in and out tie (see Figure 2-4). Steel H-frame structures would be installed due to the length needed to tie into the substation, which would require a horizontal circuit configuration. Based on typical design, the transmission line would consist of single-circuit, steel H-frame structures approximately 85 feet in height (Figure A-5 in Appendix A) and spaced between 300 and 350 feet apart (between five and seven structures in total, depending on final span). Generally, structures are buried to 10% of the structure height plus an additional 2 feet. EPE would conduct soil tests and a topographical survey prior to construction. Final design, including structure height, location, span distance, and bury depth would be determined based on the results of the soil tests and terrain survey.

In addition to new transmission line structures needed in the corridor, this proposed substation location would require replacing eight transmission structures to raise the existing Anthony-to-Arroyo 115-kV and Newman-to-Arroyo 345-kV transmission line, so that the Salopek-to-Arroyo 115-kV transmission line can be built under the other transmission lines to Site 3.

As discussed above, the new double transmission line corridor would be needed if any of the three design options for Site 3 are selected.

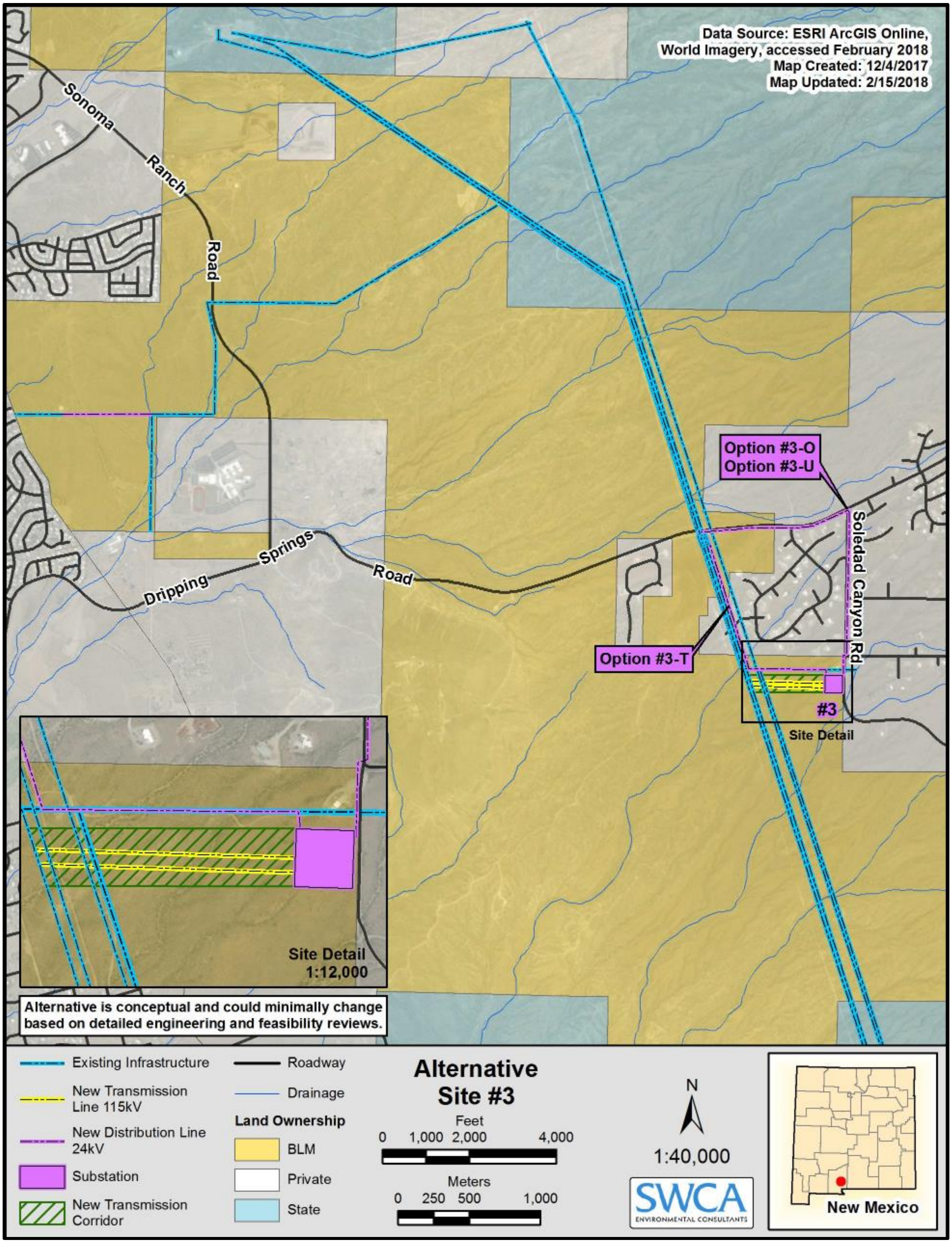

Figure 2-4. Vicinity and location for Alternative Site 3.

2.2.2.4 Alternative Site 3A

Site 3A is located adjacent to the east side of the existing transmission line corridor on BLM lands southwest of Achenbach Canyon Road (Figure 2-5). This alternative site would include a pre-fabricated, textured concrete wall, painted Beetle (from the BLM Standard Environmental Colors Chart CC-001: June 2008) in color, around the perimeter of the substation and a minimum height of 8 feet. In addition to the 3.7-acre substation parcel (400 × 400 feet in size), this site would require a new, approximately 500-foot-long substation connection corridor to connect the substation to the existing Salopek-to-Arroyo 115-kV transmission line. The proposed substation site and substation connection corridor would be located on BLM land. Access to Site 3A would also require a new approximately 0.3-mile-long permanent substation access road from Achenbach Canyon Road near the Talavera Fire Station, that would be located within a 50-foot wide ROW for the access road (see Figure 2-5). The substation access road would be designed and constructed to meet the payloads of the substation equipment and transport vehicles. Typically, the road would have a minimum of a 25-foot-wide travel surface with drainage features. The road would have a minimum of 12-inches of road base, no more that 8% slope, and graded to shed water during rain events. Road would be capped with a finishing road material to prevent degrading and provide a low maintenance travel surface. The cap material would be determined during the design of the road, and would consist of asphalt, gravel, crusher fine, or other similar material commonly used for road construction. Substation access road must be accessible at all times in all-weather conditions. This road would contain the distribution options 3A-O and 3A-U if those distribution options were selected.

In addition to the project components discussed above in Section 2.2.1, Site 3A includes three design options for additional distribution routing that would be required for this proposed substation location. The site of the proposed substation and substation connection corridor are the same for all three options. Construction of the substation, additional distribution routing, and substation connection corridor for Alternative Site 3A would take 16 to 20 months to complete, during which time the distribution line facilities would also be constructed.

Summaries of proposed lengths and acreages of disturbance for each design option for Site 3A are presented in Table 2-5.

Table 2-5. Length and Acreage of Disturbance for Site 3A Design Options

Project Component	Land Ownership	Length (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Option 3A-O				
Talavera Substation (Site 3A) (500 × 500 feet*)	BLM	–	5.7	5.7
Substation connection corridor (400 × 500 feet)	BLM	<0.1	4.6	4.6
Substation access road (within 50-foot ROW†)	BLM	0.0	0.0	0.0
Overhead distribution (50-foot ROW within road ROW)	BLM	0.8	4.9	4.9
	Private‡	1.0	6.0	–
Option 3A-O Total proposed disturbance (acres)			**21.2**	**15.2**

Project Component	Land Ownership	Length (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Option 3A-U				
Talavera Substation (Site 3A) (500 × 500 feet*)	BLM	–	5.7	5.7
Substation connection corridor (400 × 500 feet)	BLM	0.4	4.6	4.6
Substation access road (within 50-foot ROW)	BLM	0.0	0.0	0.0
Underground distribution (50-foot ROW within road ROW)	BLM	0.8	4.9	4.9
	Private†	1.0	6.0	–
Option 3A-U Total proposed disturbance (acres)			**21.2**	**15.2**
Option 3A-T				
Talavera Substation (Site 3A) (500 × 500 feet*)	BLM	–	5.7	5.7
Substation connection corridor (400 × 500 feet)	BLM	0.4	4.6	4.6
Substation access road (within 50-foot ROW)	BLM	0.3	1.8	1.8
Overhead distribution (50-foot ROW between existing Transmission lines)	BLM	0.7	4.2	4.2
	Private	0.3	1.6	–
Option 3A-T Total proposed disturbance (acres)			**17.9**	**16.3**

* Substation footprint includes the 400 × 400–foot ROW, with a 50-foot temporary work buffer on all sides.
† Access road to substation would be located within a 50-foot ROW and would not require additional ground disturbance outside the ROW corridor.
‡ Distribution would be located within an existing utility easement available for utility companies within the Doña Ana County ROW.

Option 3A-O – Overhead Distribution

Option 3A-O would include a 1.8-mile length of 24-kV *overhead* distribution line routed along Dripping Springs and Soledad Canyon Road (see Figure 2-5). This option would include construction of overhead distribution line on both BLM lands and within the existing utility easement in the County ROW. If selected, EPE would route the overhead line within the existing utility easement along these portions of Dripping Springs and Soledad Canyon Roads. In all, this option would result in approximately 21.2 acres of disturbance, including approximately 15.2 acres of BLM lands, for the substation and distribution components.

The distribution line under this design option would be the same as Option 3-O described above (see Section 2.2.3) and consist of single wood poles ranging from 45–50 feet in height, with a typical span length of approximately 260 feet. Pole and cross-arm assembly design would be similar to those distribution components common to all alternatives (see Section 2.2.1, Figures A-1 through A-3 in Appendix A). Final design of the distribution line, including spacing, number of poles, and pole height, would be based on maintaining proper line clearance and safe operation in accordance with NERC requirements and would be dependent on final engineering.

Option 3A-U – Underground Distribution

Option 3A-U would be similar to the overhead option (3A-O), with the exception that the total 1.8-mile 24-kV distribution line would be buried *underground* following the same alignment along Dripping Springs and Soledad Canyon Roads across BLM lands and within the existing utility easement in the County ROW (see Figure 2-5). Similar to the overhead option, Option 3A-U would result in approximately 21.2 acres of disturbance, including approximately 15.2 acres of BLM lands, for the substation and distribution components.

Option 3A-T – Overhead Distribution through Transmission Corridor

Option 3A-T would include the construction of approximately 1-mile, 24-kV *overhead* double circuit distribution line that would be routed through the existing transmission line corridor (see Figure 2-5). Under this option, no distribution line would be constructed along Dripping Springs or Soledad Canyon Roads. If selected, the overhead distribution line would cross both BLM-managed lands and private land through the existing transmission corridor, which would require private easement agreements with landowners. This option, together with the associated substation and access road, would result in approximately 17.9 acres of disturbance, including approximately 16.3 acres of BLM-managed lands. Overhead distribution line design under this option (poles, pole height, spacing) would be the same as described under Option 3A-O above.

Site 3A – Substation Connection Corridor

To tie the proposed Talavera Substation into the electrical grid, Site 3A would require a 400-foot-wide, 500-foot-long ROW on BLM-managed lands to accommodate the transmission structures and distribution structures coming in and out of the new substation (see Figure 2-5). The width of the ROW would be required to accommodate the Salopek-to-Arroyo 115-kV transmission line and distribution lines that would tap into and out of the new substation. In addition to two sets of 3-pole dead-end structures in the connection corridor (see Figure A-4 in Appendix A), this proposed substation location would require replacing eight transmission structure to raise the existing Anthony-to-Arroyo 115-kV transmission and the Newman–Arroyo 345-kV transmission line, so that the Salopek-to-Arroyo 115-kV transmission line can be built under the other transmission lines to Site 3A.

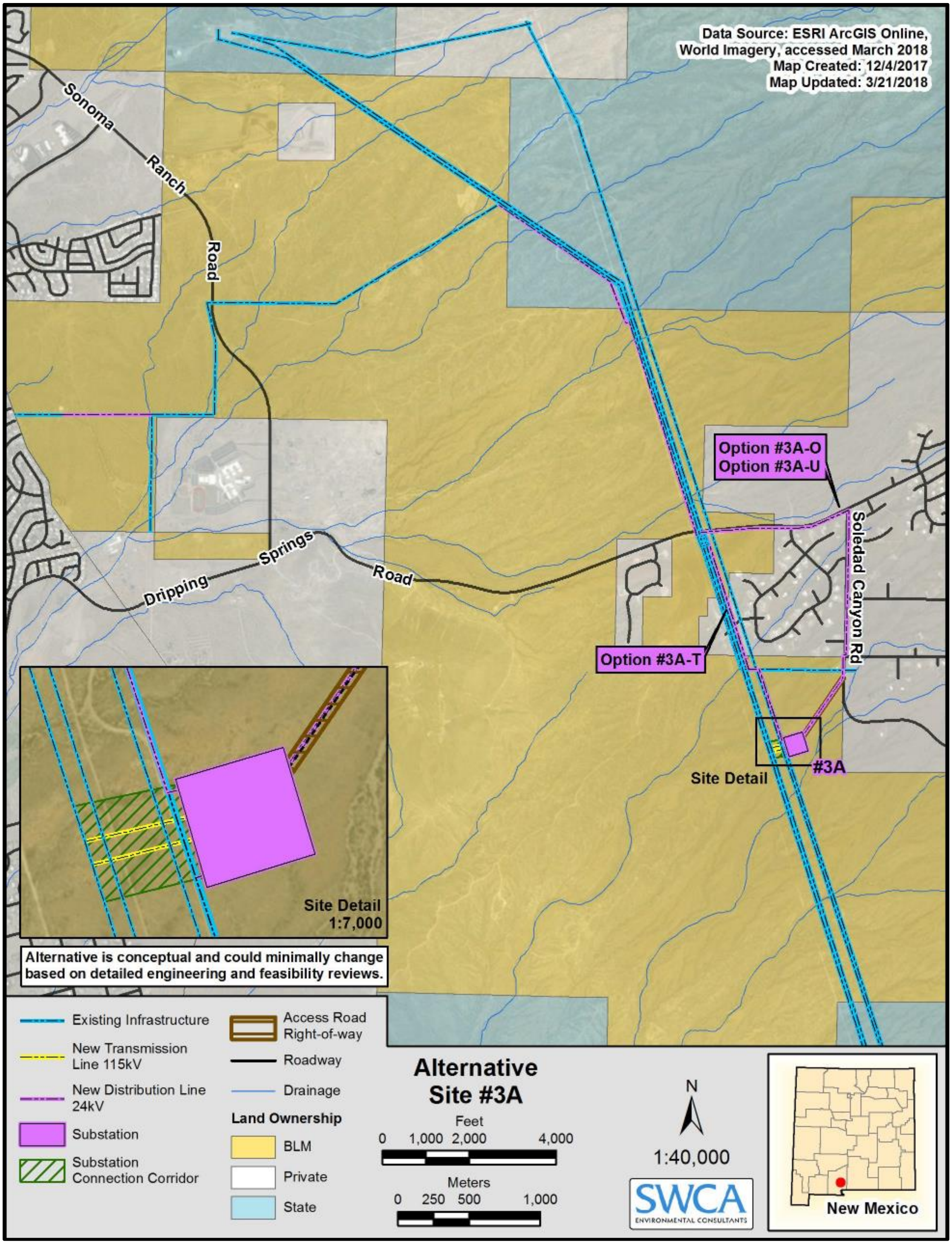

Figure 2-5. Vicinity and location for Alternative Site 3A.

2.2.2.5 Alternative Site 7

Site 7 is located immediately adjacent to the west of the existing transmission corridor, approximately 0.7 mile northwest of Dripping Springs Road (Figure 2-6). This substation site would result in approximately 11.9 acres of disturbance. Site 7 would include a chain-link fence with tan slats around the substation perimeter and a minimum height of 8 feet. In addition to the 3.7-acre substation parcel (400 × 400 feet in size), this site would require a new approximately 200-foot-long transmission line to connect the substation to the existing Salopek-to-Arroyo 115-kV transmission line. The proposed substation site and substation corridor would be located on BLM-managed land.

If selected, this substation location would require grading, leveling, and ground fill for the substation pad to compensate for the gradually sloping nature of the site (approximately 3% slope from east to west) and make the site suitable for the substation.

No additional distribution line and/or distribution infrastructure, other than that described in Section 2.2.1 above, would be required for this site. Construction of the substation, substation access road, and substation connection corridor for Alternative Site 7 would take 20 to 26 months to complete, during which time the distribution line facilities would also be constructed. The longer time frame for construction would be required because of the access constraints of this substation site.

Table 2-6 provides a summary of length and acres of disturbance for project components associated with Site 7.

Table 2-6. Length and Acreage of Surface Disturbance for Site 7

Project Component	Land Ownership	Length (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Talavera Substation (Site 7) (500 × 500 feet*)	BLM	–	5.7	5.7
Substation connection corridor (400 × 200 feet)	BLM	<0.1	1.8	1.8
Substation access road (50-foot-ROW)	BLM	0.7	4.4	4.4
Total proposed disturbance (acres)			**11.9**	**11.9**

* Substation footprint includes the 400 × 400–foot ROW, with a 50-foot temporary work buffer on all sides.

Site 7 – Substation Access Road

Permanent access to Site 7 would require construction of an approximately 0.7-mile-long (3,800-foot-long) new access road from Dripping Springs Road to the substation site. The access road for Site 7 is conceptual and has not been fully engineered. However, a preliminary evaluation has determined the road would require a minimum 50-foot-wide ROW and would cross four major drainages to the substation site; it would require the fill of 68,000 cubic yards of earth and the cut of approximately 28,000 cubic yards of earth (Souder, Miller, and Associates 2017). Culverts or low-water crossings would be used to allow flow of water and would be designed based on BLM recommendations for storm event size (25-year or 50-year storm).

The 50-foot-wide ROW would be needed because of the extensive roadway and earthwork required to structurally support the 25-foot-wide road surface necessary to safely and adequately accommodate large transformer trucks that would use the road during construction. The substation access road would be designed and constructed to meet the payloads of the substation equipment and transport vehicles. Typically, the road would have a minimum of 25-foot travel surface with drainage features. Road would have a minimum of 12 inches of road base, no more that 8% slope, and graded to shed water during rain events. Road would be capped with a finishing road material to prevent degrading and provide a low maintenance travel surface. The cap material would be determined during the design of the road, and would consist of asphalt, gravel, crusher fine, or other similar material commonly used for road construction. Substation access road must be accessible at all times in all-weather conditions.

Permitting for the access road would require U.S. Army Corps of Engineers (USACE) consultation to impact the drainages crossed by the road.

Site 7 – Substation Connection Corridor

In order to tie the proposed Talavera Substation into the electrical grid, Site 7 would require a 400-foot-wide, approximately 200-foot-long ROW on BLM-managed lands to accommodate the transmission structure and distribution structure coming in and out of the new substation (see Figure 2-6). The width of the ROW would be required to accommodate the Salopek-to-Arroyo 115-kV transmission line and distribution lines that would tap into and out of the new substation. This substation location would require two sets of three-pole dead-end structures in the connection corridor. These dead-end structures would be un-guyed, self-supporting steel structures on concrete foundations (see Figure A-4 in Appendix A). No modifications to existing transmission structures would be necessary.

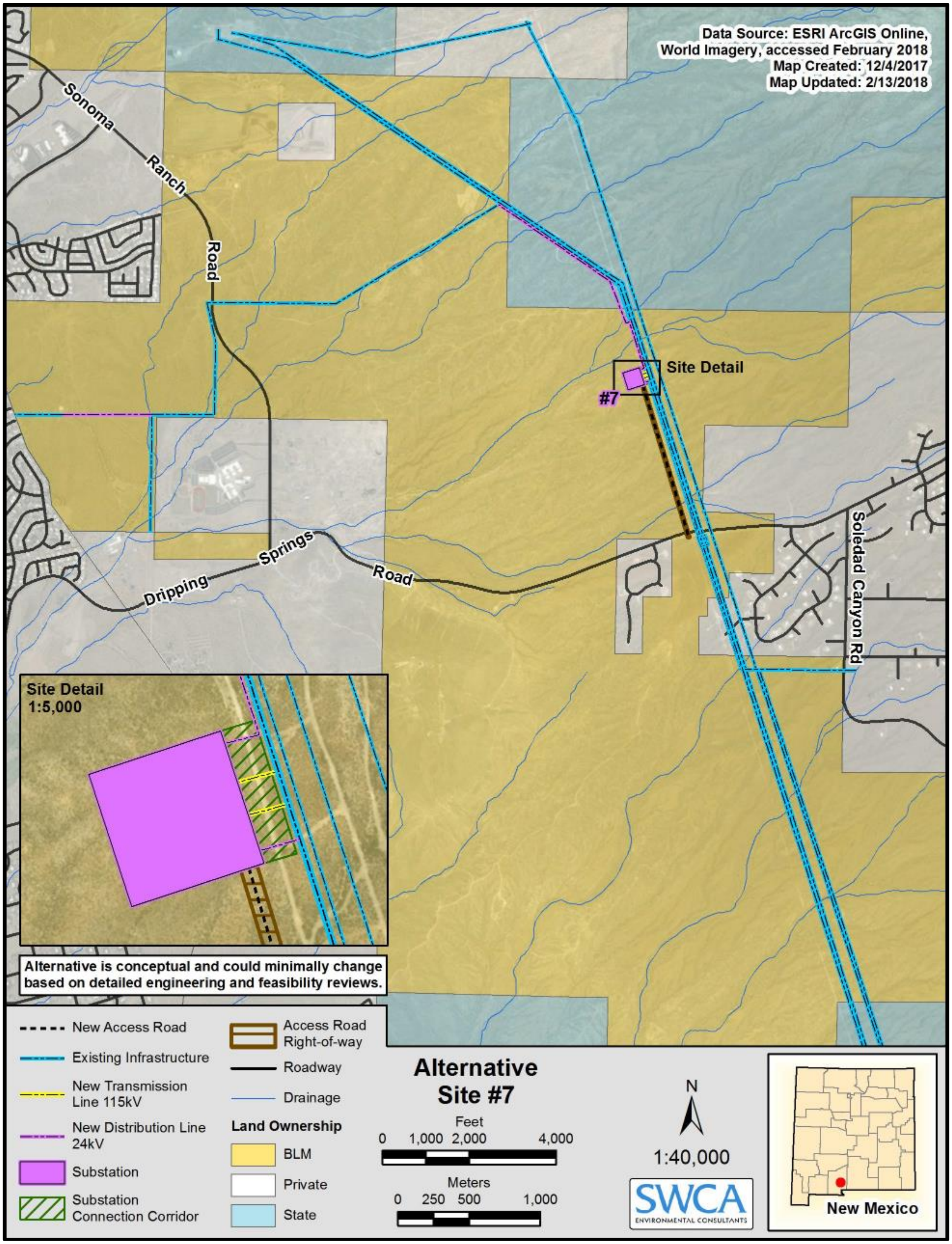

Figure 2-6. Vicinity and location for Alternative Site 7.

2.2.2.6 Alternative Site 11

Site 11 is located at the intersection of Gravel Pit Road and Sonoma Ranch Boulevard, immediately north of Centennial High School (Figure 2-7). The site is suitable for construction and, if selected, would result in approximately 57.5 acres of disturbance. Site 11 would include a chain-link fence with tan slats around the substation perimeter and a minimum height of 8 feet. In addition to the 3.7-acre substation parcel (400 × 400 feet in size), this site would require a new, approximately 2.1-mile-long double 115-kV transmission line corridor to connect the substation to the existing Salopek-to-Arroyo 115-kV transmission line. This site would also require a 700-foot length of overhead 24-kV distribution line to connect the substation to the proposed distribution rebuild. The proposed substation site, new double transmission line corridor, and new segment of distribution line would be located on BLM land. Access would be provided via a new approximately 430-foot-long dirt service road from Sonoma Ranch Boulevard within a permanent 50-foot ROW on BLM land. The substation access road would be designed and constructed to meet the payloads of the substation equipment and transport vehicles. The road would have a minimum of 25-foot travel surface with drainage features. Road would have a minimum of 12-inches of road base, no more that 8% slope, and graded to shed water during rain events. Road would be capped with a finishing road material to prevent degrading and provide a low maintenance travel surface. The cap material would be determined during the design of the road, and would consist of asphalt, gravel, crusher fine, or other similar material commonly used for road construction. Substation access road must be accessible at all times in all-weather conditions.

This location would co-locate the new infrastructure with existing infrastructure. Additionally, Site 11 would not require the 1.8-mile extension of NMNM 131403 (see Section 2.2.1.1 and Table 2-2 above), and no other additional distribution line and/or distribution infrastructure routing would be necessary for this site. Construction of the substation, substation access road, and substation connection corridor for Alternative Site 11 would take 18 to 24 months to complete, during which time the distribution line facilities would also be constructed.

Table 2-7 provides a summary of length and acres of disturbance for project components associated with Site 11.

Table 2-7. Length and Acreage of Surface Disturbance for Site 11

Project Component	Land Ownership	Lengths (miles)	Proposed Total Disturbance (acres)	Proposed BLM Disturbance (acres)
Talavera Substation (Site 11) (500 × 500 feet*)	BLM	–	5.7	5.7
Double transmission line corridor (200 × 11,000 feet)	BLM	2.1	50.5	50.5
Substation access road (50-foot ROW)	BLM	<0.1	0.5	0.5
Overhead distribution (50-foot ROW)	BLM	0.1	0.8	0.8
Total proposed disturbance (acres)			**57.5**	**57.5**

* Substation footprint includes the 400 × 400–foot ROW, with a 50-foot temporary work buffer on all sides.

Site 11 – Double Transmission Line Corridor

To tie the proposed Talavera Substation into the electrical grid, Site 11 would require a 200-foot-wide, approximately 2.1-mile-long ROW on BLM-managed lands for a new 4.2-mile-long (in and out transmission line construction, 2.1 miles each, respectively) 115-kV transmission line. The 200-foot-wide corridor would accommodate the new transmission structures and distribution structures coming in and out of the new substation (see Figure 2-7). Typical design for this double transmission line would consist of single-circuit, steel monopole structures approximately 90 feet in height (see Figure A-5 in Appendix A) and spaced between 300 and 350 feet apart (between 63 and 74 structures in total, depending on final span). Generally, structures are buried to 10% of the structure height plus an additional 2 feet. EPE would conduct soil tests and a topographic survey prior to construction. Final design, including structure height, location, span distance, and bury depth, would be determined based on the results of the soil tests and terrain survey. Access to each transmission structure would be determined during final design. Access would occur down the 200-foot ROW and would be cleared and graded completely to accommodate construction equipment and supplies. It might be necessary to blade and clear additional access road and routes as needed outside of the transmission ROW, in which case EPE would apply for a temporary ROW for the areas outside of the transmission line. These additional routes might be needed based on final design and structure location due to terrain or other natural obstacles and barriers. These additional access routes would be maximum of 14 feet in width, and would begin at existing routes and roads.

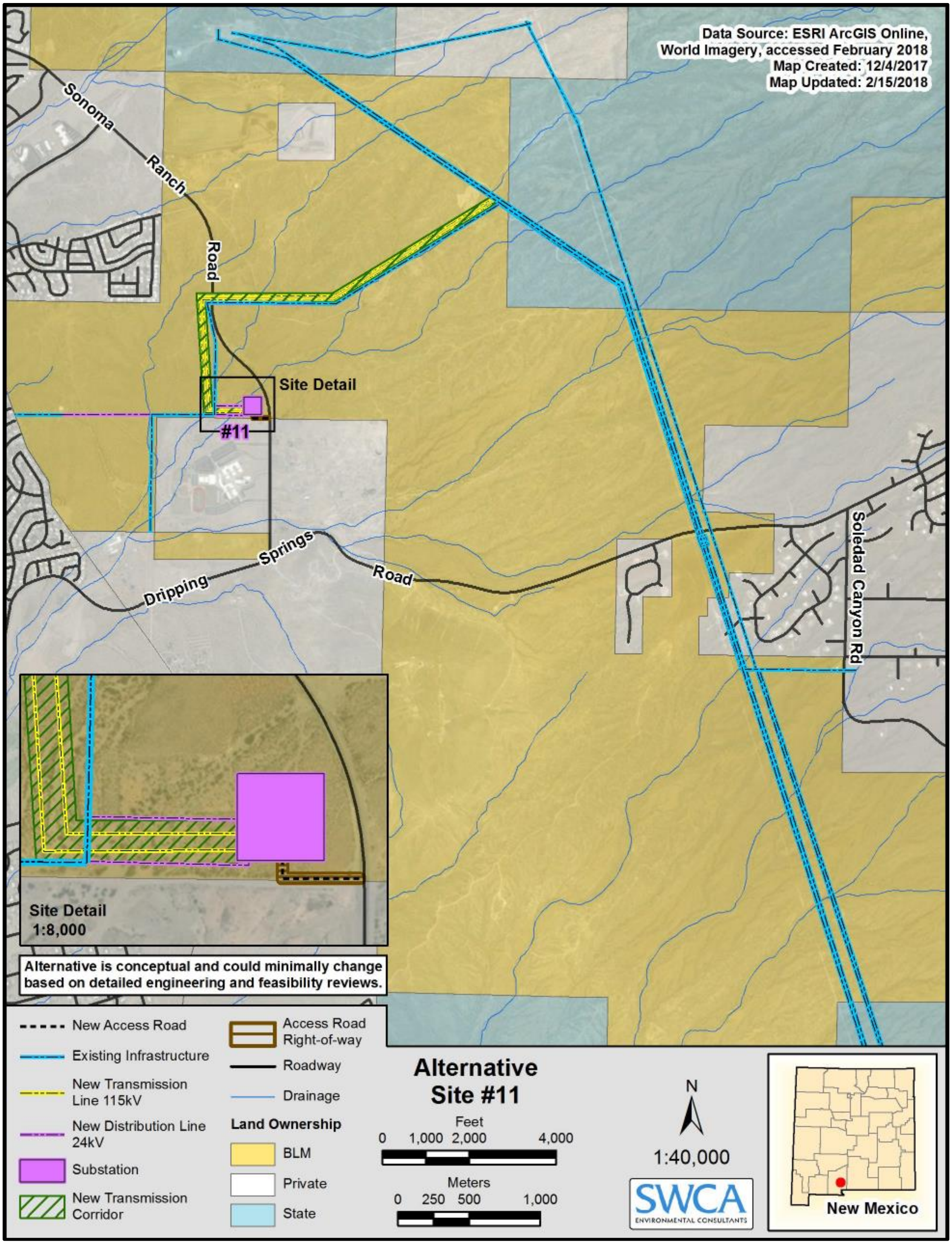

Figure 2-7. Vicinity and location for Alternative Site 11.

2.2.3 Design Features Common to All Alternatives

In order to reduce impacts to resources, the following design features have been incorporated into the project:

2.2.3.1 Air Quality

- The Holder shall meet all Federal, State of New Mexico, and local emissions standards for air quality.
- The Holder shall meet all Federal, State of New Mexico, and local standards for necessary dust control measures as approved by the BLM Authorized Officer.
- The Holder shall implement dust abatement measures as needed to prevent fugitive dust from vehicular traffic, equipment operations, or wind events. The BLM may direct the operator to change the level and type of treatment (watering or application of various dust agents, surfactants, and road surfacing material) if dust abatement measures are observed to be insufficient to prevent fugitive dust.
- Construction of all project components would occur in phases and in specific areas. Staggering site preparation, ROW clearing, and other mechanical activities would reduce surface disturbance and the number of sources of fugitive dust emissions, which reduces the overall potential for uncontrolled fugitive dust from the project (U.S. Environmental Protection Agency [EPA] 1992).
- Wet suppression methods (application of water via water truck) would be implemented prior to, during, and after ground-disturbing activities. Water would be applied to travel surfaces and working construction areas. Water application would occur at sufficient frequency and quantity (e.g., more frequently and in greater amounts during drier, warmer days where fugitive dust is more likely) to control fugitive dust emissions (EPA 1992).
- EPE and its contractor would consider weather conditions (e.g., wind speed, humidity) on a daily basis when planning construction activities. Water would be applied prior to periods of higher winds exceeding 10 miles per hour (mph) and construction would be halted during high wind events (e.g., where average sustained wind speed exceeds 10 mph over a 1-minute interval period) (EPA 1992).
- EPE and its contractor would ensure that all equipment and vehicles are cleaned prior to entering and exiting the project area to prevent trackout of mud and dirt as a result of wet suppression applications during construction (Midwest Research Institute [MRI] 1990).
- Water would be applied to the spoil/soil stockpiles, and ground areas around the piles (particularly as soil is added and removed from the pile). Loading and unloading of soils would be restricted to the downwind side of the pile (EPA 1992; MRI 1990).
- No spoil or soil stockpiles would be left on-site after construction (EPA 1992).
- If project activities require hauling of soil/debris by truck during construction, wet suppression would be implemented by watering the load and covering it during transportation (EPA 1992).
- Construction traffic would use existing access and patrol roads where available and traffic volume on all unpaved roads would be minimized to the greatest extent possible during construction to reduce the potential for wind erosion. Traffic speed on unpaved access roads (existing and new) would be restricted to under 25 mph. Off-road vehicle traffic would occur only where necessary during construction upon the approval of the BLM Authorized Officer, and any disturbed areas would be reclaimed once construction is completed (EPA 1992).
- Vehicle traffic on access roads during operation and maintenance phases of the project would be low in volume, occurring primarily during inspection and repair activities. Vehicle and equipment traffic would use established access and patrol roads and travel surfaces within the ROWs, and traffic speeds on all unpaved roads would be restricted to under 25 mph (EPA 1992).
- All disturbed areas not needed for operations or ongoing maintenance of the project would be reclaimed and revegetated after construction to minimize fugitive dust emissions resulting from wind erosion (EPA 1992).

- Gravel would be placed within the substation yard and at access points to the substation, which would assist in removing soil and mud from vehicle tires and minimize fugitive dust emissions resulting from wind erosion (EPA 1992).

2.2.3.2 Soils and Vegetation and Weed Control

- The Holder shall remove only the minimum amount of vegetation necessary for the construction of structures and facilities. Topsoil shall be conserved during excavation and reused as cover on disturbed areas to facilitate regrowth of vegetation.
- The Holder shall, as determined and directed by the BLM Authorized Officer, seed all disturbed areas, using an agreed-upon method suitable for the location. Seeding shall be repeated if a satisfactory stand is not obtained as determined by the Authorized Officer upon evaluation.
    - Seed-bed preparation shall be performed to provide a hospitable environment for germinating seed by breaking up impermeable soil layers that have formed and increasing void spaces for air and water. Ground shall be roughed-up prior to seeding, by raking, harrowing, or other methods, especially those areas that are compacted during project construction.
    - Seeding shall be accomplished in June or July to coincide with the "rainy" season to achieve optimum results. Seed will be planted a quarter to half inch deep using a disc type or similar rangeland drill sufficient to accommodate variations in seed sizes, or if broadcast, the rates should be doubled. If broadcasted, seed shall be broadcast with a "cyclone" hand seeder or similar broadcast seeder to facilitate an even spread. After seed is broadcast, ground shall be raked or dragged, to help bury it and improve soil contact and provide texture.
    - Mulching is required on all seeding projects to prevent loss of moisture and seed to wind. Mulch shall be free of weeds and weed seed. Rotten or molded hay is not acceptable as mulch. Mulching shall be accomplished using one of these following methods:
        - Weed free straw (2 tons/ac.; kg/ha)
        - Wood residues (sawdust, wood chips, bark (2 tons/ac.; kg/ha)
        - Hydro-mulching (1,500 lbs./ac.; kg/ha)
        - Composted manure (5 tons/ac.; kg/ha)
        - Excelsior blanket
        - Straw jute
    - Mulch shall be applied on the surface within 1 day following seeding. A soil-stabilant shall be applied as an overspray after seed and mulch are in place. This tack should be at a sufficient rate so as to prevent mulch from moving due to wind. The following site identifies certified weed-free mulch providers: http://aces.nmsu.edu/ces/seedcert/certified-weed-free-fora.html. Site-specific seed mix will be reviewed and approved by the Authorized Officer.
    - Any seed used on public land shall not contain noxious weed seed and must meet certified seed quality. The seed procured for use on public land will meet the Federal Seed Act criteria. All seed to be applied on public land must have a valid seed test, within 1 year of the acceptance date, from a seed analysis lab by a registered seed analyst (Association of Official Seed Analysts). The seed lab results shall show no more than 0.5% by weight of other weed seeds. The seed lot shall contain no noxious, prohibited, or restricted weed seeds according to state seed laws in the respective state(s). Copies of the seed lab test results, including purity and germination (viability) rate, must be forwarded to the appropriate BLM office prior to seed application. If the seed does not meet the BLM and State/Federal standards for noxious weed seed content or other crop seed allowances, it shall not be applied to public land.
    - Stabilization will occur after a minimum of two full summer growing seasons after planting.

- Erosion issues shall be repaired as discovered, as directed by the BLM Authorized Officer.

- No activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 3 inches deep, the soil shall be deemed too wet to support construction equipment.
- The Holder shall be responsible for the prevention and control of soil erosion, storm water runoff, stabilization, and re-vegetation on BLM-administered land covered by this authorization, and land adjacent thereto, where such erosion has resulted from construction or maintenance of this project.
- If diversion of water from the authorized area will result in accelerated erosion in undisturbed areas, water bars shall not be constructed. Furthermore, if the authorized area has a side slope approximately one-third or more of the slope along the length of the authorized area, water bars may not be constructed. Exceptions to spacing intervals will be upon approval of the Authorized Officer.
- The Holder shall re-contour disturbed areas, or designated sections of the authorized area by grading to restore the sites to approximately the original contour of the ground, as determined by the Authorized Officer.
- The Holder shall, as directed by the BLM Authorized Officer, rectify backfill settling in the authorized area.
- When sufficiently abundant, overburden and topsoil will be stockpiled (within the authorized area) during construction for use during reclamation. Prior to seeding, the topsoil will be re-deposited (shaped and contoured) to resemble surrounding topography. Ripping or plowing compacted soils may be necessary in some areas and will be addressed on a case-by-case basis, as directed by the BLM Authorized Officer.
- The Holder shall uniformly spread topsoil over all unoccupied disturbed areas (outside the ditch line, fence line, or work area). Spreading shall not be done while the ground or topsoil is frozen or wet.
- The Holder shall restore drainages, to the greatest extent possible, to the original bank concentration, stream-bottom width, and channel gradient.
- The Holder shall construct, maintain, repair, or replace, erosion control measures (water bars, etc.), barriers, and sedimentation control devices as necessary to ensure optimum function, as directed by the BLM Authorized Officer.
- 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, 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/routes necessary for operation and future maintenance, 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.
- The Holder shall be responsible for weed control on disturbed areas within the limits of the site. The Holder is responsible for consultation with the BLM Authorized Officer and/or local authorities for acceptable weed control methods, which include following the Environmental Protection Act and BLM requirements and policy.
- Power or high-pressure clean all equipment of all mud, dirt, and plants immediately prior to moving into the project area. Any gravel or fill to be used must come from weed-free sources. Inspect gravel pits and fill sources to identify weed-free sources. No soil spoil that could potentially contain noxious weed seeds shall be transported out of the area where it is created.

- The Holder shall be responsible for conducting a survey for and control of noxious weeds along the route proposed for construction. If during construction, noxious weeds are identified that were not originally encountered during the survey, the project applicant shall avoid driving vehicles and equipment through or over the infested area. If avoidance measures cannot be taken within the area originally cleared, construction shall cease and the BLM Authorized Officer shall be contacted.
- Any use of herbicides/pesticides shall comply with the applicable Federal and State laws. Herbicides/pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, the Holder shall obtain from the Authorized Officer written approval of a plan showing the type and quantity of materials to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the Authorized Officer. Emergency use of pesticides shall be approved in writing by the Authorized Officer prior to use.

2.2.3.3 Water Resources

- The Holder shall comply with the construction practices and mitigating measures established by 33 CFR 323.4, which sets for the parameters of the "nationwide permit" required by Section 404 of the Clean Water Act. If the proposed action exceeds the parameters of the nationwide permit, the Holder shall obtain an individual permit from the appropriate office of the USACE and provide the BLM Authorized Officer with a copy of the same. Failure to comply with this requirement shall be cause for suspension or termination of this authorization.
- Any chemical treatments of the ROW would comply with the applicable laws and procedures of the land management agencies, the EPA, and the New Mexico Environment Department.
- 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 and the New Mexico Environment Department.
- 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 watercourses, 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.
- The Holder shall construct water diversions on all disturbed areas to the spacing and cross sections specified by the BLM Authorized Officer. Water diversions are to be constructed to: 1) simulate the imaginary contour lines of the slope (ideally with a grade of 1 or 2%); 2) drain away from the disturbed area; and 3) begin and end in vegetation or rock whenever possible. Water diversions typically will consist of water bars constructed at the following space intervals:

Table 2-8. Water diversion spacing intervals

Percent Slope	Spacing Interval
Less than 1%	400 feet
1–5%	300 feet
5–15%	200 feet
15–25%	100 feet
More than 25%	50 feet

2.2.3.4 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. 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.
- For construction and maintenance activities on authorizations that are in and adjacent to occupied habitat for special status plants (endangered, threatened, BLM sensitive), the project area would be inspected by a qualified botanist prior to beginning work. Special status plans would be identified and avoided, or the BLM Authorized Officer would be contacted if this is not possible. Special status plant observations would be provided to the BLM Authorized Officer.
- Electrical facility design would be in accordance with *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee 2006) and EPE's approved internal standards.
- To the extent possible, construction activities during the migratory bird nesting season (March–September 15) in suitable habitat would be avoided. Seasonal dates may vary depending on the species, current environmental conditions, and pre-construction survey results.
- If the Holder's construction and maintenance activities, including mechanical or herbicide treatments of woody vegetation, occur during the primary nesting season for migratory birds (March–September 15), migratory bird and nest surveys would be performed no more than 2 weeks prior to commencing with those activities by a qualified biologist, 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. Established stick nests would always be identified and avoided; stick nest locations shall be provided to the BLM Authorized Officer.
- If during construction, wildlife species (such as reptiles, amphibians, or small mammals) are encountered, they would be avoided or allowed to move out of the way.
- 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.
- Removal of any unoccupied raptor nests may require replacement by nest platforms if directed by the BLM Authorized Officer.
- Construction holes left open overnight shall be covered. Covers shall be secured in place and shall be strong enough to prevent livestock or wildlife from falling through and into a hole.
- Screen caps or covers shall be installed on any open-top vertical pipes less than 12 inches in diameter, to reduce wildlife mortality resulting from entrapment.

2.2.3.5 Cultural Resources

- Intensive pedestrian surveys would be required ahead of any ground-disturbing activities to identify cultural resources in the project area.
- Archaeological testing would be conducted at LA 2894 prior to ground-disturbing activities within 30 meters (approximately 100 feet) of the site boundary as recorded in 2016 (SWCA 2017a).
- Impacts to archaeological sites would be avoided. In consultation with appropriate land management agencies and the State Historic Preservation Officer, specific mitigation measures for cultural resources would be developed and implemented, which may include project modifications (e.g., reroutes or narrowing of ROWs), monitoring of construction activities, and/or data recovery studies.

- An archaeological construction monitor would be present during ground-disturbing activities in site-specific areas identified prior to construction.
- Any cultural resource (historic or prehistoric site or object) discovered by the Holder, or any person working on his or her behalf, on public or Federal land shall be immediately reports to the BLM Authorized Officer. The Holder shall suspend all operations within 30 meters (approximately 100 feet) of such discovery until written authorization to proceed is issued by the Authorized Officer. In addition, the area of discovery will be covered, stabilized, or otherwise protected from damage. An evaluation of the discovery will be made by the BLM Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The Holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the BLM Authorized Officer after consulting with the Holder.

2.2.3.6 Paleontological Resources

- Pedestrian surveys would be required ahead of any ground-disturbing activities to identify surface fossils and to assess the potential of subsurface paleontological resources.
- A paleontological construction monitor would be present during ground-disturbing activities in site-specific areas identified prior to construction.
- The Holder shall immediately notify the BLM Authorized Officer of any paleontological resources discovered as a result of operation under this authorization. The Holder shall suspend all activities in the vicinity of such discovery until notified to proceed by the BLM Authorized Officer and shall protect the discovery from damage or looting. The Holder may not be required to suspend all operations if activities can be adjusted to avoid further impacts to a discovered locality or be continued elsewhere. The BLM Authorized Officer will evaluate, or will have evaluated, such discoveries as soon as possible, but not later than 10 working days after being notified. Appropriate measures to mitigate adverse effects to significant paleontological resources will be determined by the BLM Authorized Officer after consulting with the Holder. Within 10 days, the Holder will be allowed to continue construction through the site, or will be given the choice of either (1) following the BLM Authorized Officer’s instructions for stabilizing the fossil resource in place and avoiding further disturbance to the fossil resource, or (2) following the BLM Authorized Officer’s instructions for mitigating impacts to the fossil resource prior to continuing construction through the project area.
- A BLM-permitted paleontologist shall conduct spot-monitoring of spoils piles from pole excavation within the areas mapped as the Camp Rice Formation (Qcf and Qct, as mapped by Seager et al. 1987). Additional ground-disturbing activities that reach three feet or greater within areas mapped as the Camp Rice Formation (Qcf and Qct as mapped by Seager et al. 1987) would require a paleontological monitor.

2.2.3.7 Visual Resources

- All above-ground structures not subject to safety requirements shall be color treated by the Holder to blend in with the natural color of the landscape, as directed by the BLM Authorized Officer. The color treatment used shall be a color that simulates Standard Environmental Colors designated by the Rocky Mountain Five-State Interagency Committee.
- No signs or advertising devices shall be placed on the premises or on adjacent public land except those posted by or at the direction of the BLM Authorized Officer.
- Self-weathering steel structures (Corten), galvanized steel structures, or wood poles would be used to reduce visual impacts, as directed by the BLM Authorized Officer.
- Non-specular conductors (conductors made of non-reflective materials) would be used where specified by the BLM Authorized Officer.

- 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.

2.2.3.8 Noise

- Construction and maintenance activities would only occur during daytime hours. Any emergency work needed to restore services during nighttime hours would be exempt from general noise limits established under the County Noise Ordinance (Doña Ana County 2017).
- 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).

2.2.3.9 Dark Skies

- Substation security lighting would be shielded in accordance with the New Mexico Night Sky Protection Action (New Mexico Statutes Annotated 1978 Section 74-12). Lights and shields would be constructed to protect light rays emitted by the fixture downward on a horizontal plane.
- Substation security lighting could be equipped with motion sensors to reduce operation duration.
- Substation security lighting would have a manual override to provide a safe working environment for personnel during active work efforts.

2.2.3.10 Public Safety

- All new electric facilities would be constructed, operated, and maintained in accordance with Occupational Safety and Health Administration (OSHA) regulations and established protocols for emergency preparedness and response.
- Design and construction for the new permanent substation and all associated components would follow industry guidelines and standards published by the Institute of Electrical and Electronics Engineers (IEEE).
- Project design would include appropriate clearance requirements and safety design standards found in the National Electrical Safety Code (NESC).
- Measures for electrical substation fire protection as established by the IEEE Guide for Substation Fire Protection (IEEE Std. 979-2012) would be implemented, including the installation of 4–6 inches of gravel within the substation perimeter to prohibit the spread of surface fire and the installation of a perimeter wall made from non-flammable material to prohibit the spread of fire and assist with containment were a fire to occur.
- EPE's substation design and construction would follow industry guidelines and standards. Security lights could be equipped with motion sensors to reduce operating duration. Security lighting will have a manual override to provide a safe working environment for personnel during active work efforts.

2.3 Alternatives Considered but Dismissed

Alternatives to the Proposed Action are developed to explore different ways to accomplish the purpose and need while minimizing environmental impacts and resource conflicts as well as 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 2008a:80).

The two scoping periods (see Section 1.5 above) identified issues with the location of the Proposed Action substation, which resulted in the development of several alternatives for the substation location.

The BLM reviewed the public's input and suggested alternatives, and subsequently considered 14 different substation locations, in addition to the applicant's Proposed Action.[3] Of the 15 action alternatives under consideration, six were retained for analysis. The other nine alternatives were dismissed from further detailed discussion in this EA in accordance with BLM NEPA Handbook (H-1790-1) guidance (BLM 2008a:52) because the alternative was determined to:

- be ineffective (it would not meet the purpose and need);
- be technically or economically infeasible;
- be inconsistent with the basic policy objectives for the management area;
- be an implementation that is remote or speculative;
- be substantially similar in design to an alternative that is being analyzed; or
- have substantially similar effects as an alternative that is being analyzed.

Those with greater adverse resource impacts, those with similar effects to an alternative being analyzed, or those that are not feasible because of existing physical constraints or infrastructure are not brought forward for detailed analysis in this EA.

The Alternatives Report (SWCA 2017d), which documents in detail the development of alternatives and screening methods used in the preparation of this EA, is provided in Appendix B.

2.3.1 Additional Alternatives Consideration

Section 4.1 and the Public Comment and Response Summary and Matrix in Appendix D detail the public involvement on the EA and the resulting public concerns. A few additional alternatives were suggested that were not already documented in the Alternatives Report. These are as follows:

1. Use of non-wire or battery solutions instead of a substation. BLM has determined that this alternative does not meet the criteria of technical feasibility as defined in the BLM NEPA Handbook (BLM 2008a:52). This alternative technology will not be analyzed in detail in the EA (see Comment No. 185 in Appendix D).
2. Suggestion of an alternate location for the substation near Alternative Site 11. BLM has determined that this alternative is substantially similar in design to an alternative that is analyzed, and therefore this alternative is not fully analyzed in this EA (see Comment No. 193 in Appendix D).
3. Expanding an existing substation. BLM has determined that this alternative is ineffective (it would not respond to the purpose and need), as defined in the BLM Handbook (BLM 2008a:52). Expanding an existing substation would not adequately increase distribution capacity and would not increase the reliability of the system, therefore this alternative will not be analyzed in this EA (see Comment No. 306 in Appendix D).

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

3.1 Introduction

This chapter describes the existing conditions relevant to the issues presented in Table 1-1 and discloses the potential direct, indirect, and cumulative impacts of the Proposed Action and alternatives on those issues.

[3] The 15 action alternatives include the Proposed Action Site 1, Sites 2–3, 3A, and 4–14.

3.2 Cumulative Actions

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 (i.e., the projected ROW grant time frame). A description of the cumulative impacts for each issue is described within each issue brought forward for detailed analysis. The geographic scope for cumulative effects is the combined analysis areas of all issues identified. This area stretches from the east side of Las Cruces up to the Organ Mountains.

3.2.1 Past and Present Actions

Past and present actions in the analysis area include housing and road developments, the Centennial High School and the Talavera Fire Station. Other existing distribution infrastructure and major transmission infrastructure includes two 115-kV transmission lines and one 345-kV transmission line, which form a segment of a major electric transmission corridor through southern New Mexico, and an existing natural gas utility line, which runs parallel to the transmission corridor.

3.2.2 Reasonably Foreseeable Future Actions

The BLM has identified three actions that are reasonably foreseeable in the vicinity of the project area:

1. Proposed upgrades to Soledad Canyon Road including widening and placement of a new bike and pedestrian path. Anticipated to begin construction in Fall 2018 (Federal Highway Administration 2018).
2. Proposed drainage improvements along Dripping Springs Road and chip-sealing Baylor Canyon Road, using funds left over from the previously approved Dripping Springs Road and Baylor Canyon Road Improvement Project (Doña Ana County 2018).
3. Potential new housing on vacant lots in Talavera and Organ Mesa Ranch subdivisions with associated infrastructure such as roads, driveways, and utilities. Approximately 50 buildable lots are listed for sale in the Talavera and Organ Mesa Ranch neighborhoods (Zillow 2018).

3.3 Issue 1: How would construction of the proposed project components impact the viewshed from residences and Dripping Springs Road?

The primary impact causing element is the introduction of the new substation facility which includes structures and equipment, and the introduction of new distribution or transmission infrastructure, depending on the alternative, into the viewshed of the area. The analysis area for visual resources is the combined viewsheds from residences and from Dripping Springs Road. Nine key observation points (KOPs) (Figure 3-1) were selected based on feedback from the public and BLM ID Team input on points of visual sensitivity. The visual analysis indicator is the level of contrast to line, form, color, and texture from the introduction of the new components as viewed from the KOPs.

3.3.1 Affected Environment

Visual resources include the natural and human modified landscape. The existing visual quality of the project area is influenced by the presence of the Organ Mountains to the east of the project area and A Mountain to the west of the project area. The project is within the Organ Mountains Scenic Quality Rating Unit (SQRU No 49) as described in the Las Cruces District Office Visual Resource Inventory (BLM 2010). The Organ Mountains create a dominant line and form on the east side of the landscape because of their proximity and size.

Within this zone, the most visible features, aside from the mountains, are the existing transmission line corridor, which includes two high-voltage 115-kV transmission lines and one high-voltage 345-kV transmission line, consisting of large H-frame structures that are approximately 50 to 120 feet high; the existing housing developments, which consist of medium to large homes in white, creams, tans, and browns; Centennial High School and grounds; the Talavera Fire Station; and paved and unpaved roads. Typical views from residences and Dripping Springs Road include natural and human-made elements.

Vegetation in the project area is characteristic of the Chihuahuan Deserts–Chihuahuan Basins and Playas ecoregion (EPA Level IV). Vegetative cover within this community is typically 35% to 45%. The dominant vegetation community is Chihuahuan Desert scrub. Predominant colors include tans and browns from the sandy soils and bluish gray of the Rocky Mountains, light to medium greens and yellows from the vegetation, and adobe, grey, and cream colors from the homes and human-made structures, and occasional red or yellow from signs or vehicles.

The casual observers in this area are residents living in the foothill neighborhoods and their visitors, and the visitors traveling by vehicle along Dripping Springs Road to access and then depart from the Organ Mountains to engage in scenic and heritage-based activities, including hiking and photography. This range of individuals defines the casual observer.

Visual Resource Management Classes and Objectives

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. BLM-administered lands are categorized into one of four VRM classes, as described in BLM Manual H-8410-1 (BLM 1986), and are managed in accordance with the class objectives. For this project, the proposed distribution components common to all alternatives are in VRM Classes III and IV. All of the alternative substation sites are in VRM Class III. The objectives are as follows for Class III:

- Partially retain the existing character of the landscape.
- Change should be moderate.
- Activities may attract attention but should not dominate the view.

The objectives are as follows for Class IV:

- Provide for management activities which require major modification of the existing character of the landscape.
- Change can be high.
- Activities may attract attention, may dominate the view, but are still mitigated.

3.3.2 Environmental Impacts

BLM's VRM program includes a standardized system for reviewing land actions for RMP conformance. The analysis area for viewshed impacts are the viewsheds from nine KOPs associated with Sites 1–3 and 3A identified by the BLM (see Figure 3-1). The public input from the scoping periods indicated that the primary visual issue was the impact to residents' views of the Organ Mountains, as well as traffic heading east or west on Dripping Springs Road, either to or from the Monument access points. Therefore, KOPs were chosen to represent views from private residences in the areas around the alternative sites and associated components, as well as traffic on Dripping Springs Road (Table 3-1). In this section, we will present the KOPs and provide visual simulations of project components as viewed from those KOPs. Note that there are nine KOPs and 11 simulations. KOPs 6 and 7 have two associated visual simulations: one for Site 3 and Site 3A. Associated public concerns regarded property values partially dependent on the quality of those views; impacts to property values are discussed in Section 3.6.2.

Table 3-1. Summary of Impacts to Viewsheds

Alternative	Summary of Visibility	Contrast Rating	Conformance to VRM Class
No Action	Not Visible	None	Yes
Proposed Action Site 1	Visible from KOPs 1 and 5	Strong	No
Alternative Site 2	Visible from KOPs 2 and 4	Medium to Strong	No
Alternative Site 3 • Distribution Option 3-O • Distribution Option 3-U • Distribution Option 3-T	Visible from KOPs 6 and 7 • Visible from KOP 3 • Not Visible • Not Visible	Medium to Strong • Medium • None • None	No • Yes • Yes • Yes
Alternative Site 3A • Distribution Option 3A-O • Distribution Option 3A-U • Distribution Option 3A-T	Visible from KOPs 6, 7, and 8 • Visible from KOP 3 • Not Visible • Not Visible	Medium • Medium • None • None	Yes • Yes • Yes • Yes
Alternative Site 7	Not Visible	None	Yes
Alternative Site 11	Visible from KOP 9	Medium	Yes

To summarize the overall impacts presented above of the 11 visual simulations created to depict the project, three would not fit within VRM Class III objectives. The substation at Site 1 from KOP 1, at Site 2 from KOP 4, and at Site 3 from KOP 7 creates strong contrasts in the line, form, color, and texture of the existing landscape and dominates the view, primarily because of the proximity of the KOPs to the respective substation sites.

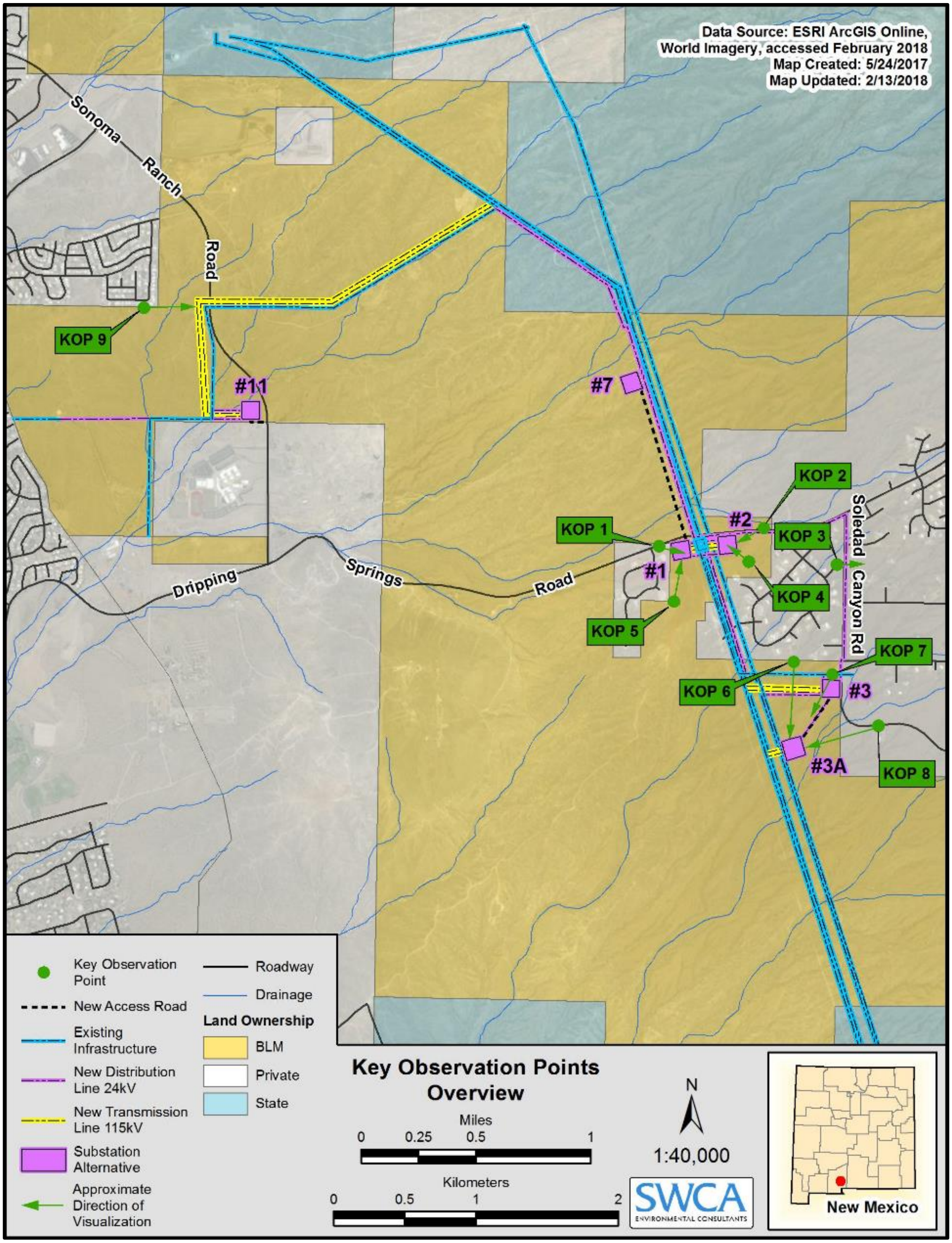

Figure 3-1. Key observation points overview.

3.3.2.1 Impacts of the No Action Alternative

Under the No Action Alternative, the BLM would not grant the proposed new or amended ROWs, the proposed new permanent substation would not be built, and the corresponding transmission and distribution infrastructure would not be constructed. Existing infrastructure, including the housing, roads, temporary substation, 24-kV distribution lines, and 115-kV transmission and 345-kV transmission lines, would be unchanged.

3.3.2.2 Impacts of Distribution Components Common to All Action Alternatives

The distribution components common to all alternatives are proposed within existing ROWs and corridors. Some distribution structures would be replaced with new structures, which could be slightly taller. All of these modifications would conform to VRM III and IV objectives. No KOPs were identified to simulate the distribution replacements and upgrades because these elements would not be noticeable to sensitive viewers.

3.3.2.3 Impacts of the Proposed Action Site 1

The visual simulations for KOPs 1 and 5 depict the proposed substation at Site 1. These two KOPs were chosen to represent viewshed impacts at either side of the small housing development on Sheep Springs Road and Lake Lucero Loop. The substation wall would be approximately 180 feet east of the nearest residence on Lake Lucero Loop (see Figure 3-1).[4] The substation would be approximately 200 feet from KOP 1 and 800 feet from KOP 5. The photograph and visual simulation for KOP 1 are provided below (Figures 3-2 and 3-3). The Proposed Action would add a new element to the landscape, creating an incremental addition to the past, present, and reasonably foreseeable actions, including other ground-disturbing permanent facilities, resulting in a cumulative impact to the viewshed. For example, the road surfacing project on Soledad Canyon Road could introduce a shinier or reflective element to the landscape. Additional housing would introduce more structural, human-made elements into the existing viewsheds of the KOPs.

KOP 1: The contrast rating worksheet for KOP 1 is provided in Appendix C. The contrasts from the project at KOP 1 would be moderate to strong, based on the comparison of the existing landscape elements with the proposed substation elements. The greatest contrast would be from the introduction of the substation wall and tallest structures inside the wall (dead-end transmission structures) in the foreground and middle ground of the viewshed. The long-term impacts to the viewshed from KOP 1 would be greater than the other substation alternatives because of the proximity. Given the proximity of KOP 1 to the substation at Site 1, Site 1 would dominate the viewshed and therefore would not conform to VRM III objectives.

[4] Satellite imagery, publicly available through Google Earth, was used in conjunction with the application's distance measurement tool to identify distances presented in this analysis, e.g. the distance between the proposed project components and private property.

Figure 3-2. Photo of existing view at KOP 1.

Figure 3-3. Visual simulation of Proposed Action Site 1 from KOP 1.

KOP 5: The contrast rating worksheet for KOP 5 is in Appendix C. Figures 3-4 and 3-5 show the existing view and visual simulation. Moderate to strong contrasts would be created in the line and form elements of the structures and land/water body features at KOP 5. All other contrasts would be weak. The strongest contrast would be from the substation chain-link fence and tallest structures inside the wall (transmission dead-end structures) in the middle ground of the viewshed. However, the distance between KOP 5 and the substation would reduce the degree of contrasts. Additionally, the existing transmission lines dominate the view at KOP 5. The visual impacts at KOP 5 would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the existing landscape are repeated, and the project does not dominate the view from KOP 5.

Figure 3-4. Photo of existing view at KOP 5.

Figure 3-5. Visual simulation of Proposed Action Site 1 from KOP 5.

3.3.2.4 Impacts of Alternative Site 2

Visual simulations from KOP 2 and 4 depict the proposed substation at Alternative Site 2. KOP 2 is approximately 700 feet from Site 2 and shows the view from Dripping Springs Road heading west. KOP 4 is approximately 500 feet from Site 2 and shows the viewshed from the nearby homes on Organ Mesa Loop, looking northwest.

KOP 2: The contrast rating worksheet for KOP 2 is provided in Appendix C. The photograph and visual simulation for KOP 2 are provided below (Figures 3-6 and 3-7). The contrasts at KOP 2 would be weak to moderate, based on the comparison of the existing landscape, including the existing transmission line elements, with the proposed substation elements. The moderate contrast would be from the introduction of the substation wall and tallest structures inside the wall (transmission dead-end structures) in the middle ground of the viewshed. From this KOP the Corten finished transmission structures appear rust colored, which may create a higher contrast than the galvanized steel option. These levels of contrasts would conform to the BLM’s management prescriptions under VRM III, which allows for moderate change that does not dominate the view.

Figure 3-6. Photo of existing view at KOP 2.

Figure 3-7. Visual simulation of substation at Alternative Site 2 from KOP 2.

KOP 4: The contrast rating worksheet for KOP 4 is provided in Appendix C. The photograph and visual simulation for KOP 4 are provided below (Figures 3-8 and 3-9). Contrasts introduced into the viewshed at KOP 4 from Site 2 are less than, but similar to, the impacts to KOP 1 from Site 1. The moderate and strong contrasts created by the substation would dominate the view at KOP 4 because of its proximity, even though the substation repeats some of the same line and form elements. For this reason, the contrasts created by the substation at Site 2 from KOP 4 would not conform to VRM III objectives.

Figure 3-8. Photo of existing view at KOP 4, looking toward Site 2.

Figure 3-9. Visual simulation of Alternative Site 2 from KOP 4.

3.3.2.5 Impacts of Alternative Site 3

Three KOP locations were identified to analyze viewshed impacts from Alternative Site 3: KOPs 3, 6, and 7 (see Figure 3-1). KOP 3 analyzes the proposed overhead distribution line along the east side of Soledad Canyon Road, associated with Alternative Sites 3 and 3A. This distribution option is known as 3-O or 3A-O. KOP 6 was identified to analyze the viewshed impacts to homes along Organ Mesa Loop, looking south toward the double transmission structures necessary for Alternative Site 3. KOP 7 was identified to analyze the viewshed impacts to the Talavera Fire Station from Alternative Site 3.

KOP 3: The contrast rating worksheet for KOP 3 is provided in Appendix C. The photograph and visual simulation for KOP 3 are provided below (Figures 3-10 and 3-11). KOP 3 is approximately 120 feet from Soledad Canyon Road. The addition of the distribution lines and structure poles creates a strong contrast to the line element and a moderate contrast to the form element of structures. All other feature contrasts are weak or do not exist. The contrast at KOP 3 would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic vertical form and line elements of the existing landscape are repeated except for the introduction of horizontal lines, and the project does not dominate the view from KOP 3.

Figure 3-10. Photo of existing view at KOP 3.

Figure 3-11. Visual simulation of 3-O (or 3A-O) distribution line from KOP 3.

KOP 6 – Site 3: The contrast rating worksheet for KOP 6 is included in Appendix C. The photograph and visual simulation for KOP 6 are provided below (Figures 3-12 and 3-13). KOP 6 is approximately 600 feet from the transmission structures associated with Alternative Site 3. The existing landscape has existing transmission towers in the middle ground/background. The addition of more transmission towers repeats the types of lines and forms in the existing environment. However, a moderate contrast is created because of the increase in towers and closer proximity of the transmission structures needed for Site 3, making an addition to the foreground. The land/water and vegetation retain all the elements (line, form, color, texture). All contrasts are weak, except for the form and line of the structures. The project would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the existing landscape are repeated, and the project does not dominate the view from KOP 6.

Figure 3-12. Photo of existing view at KOP 6.

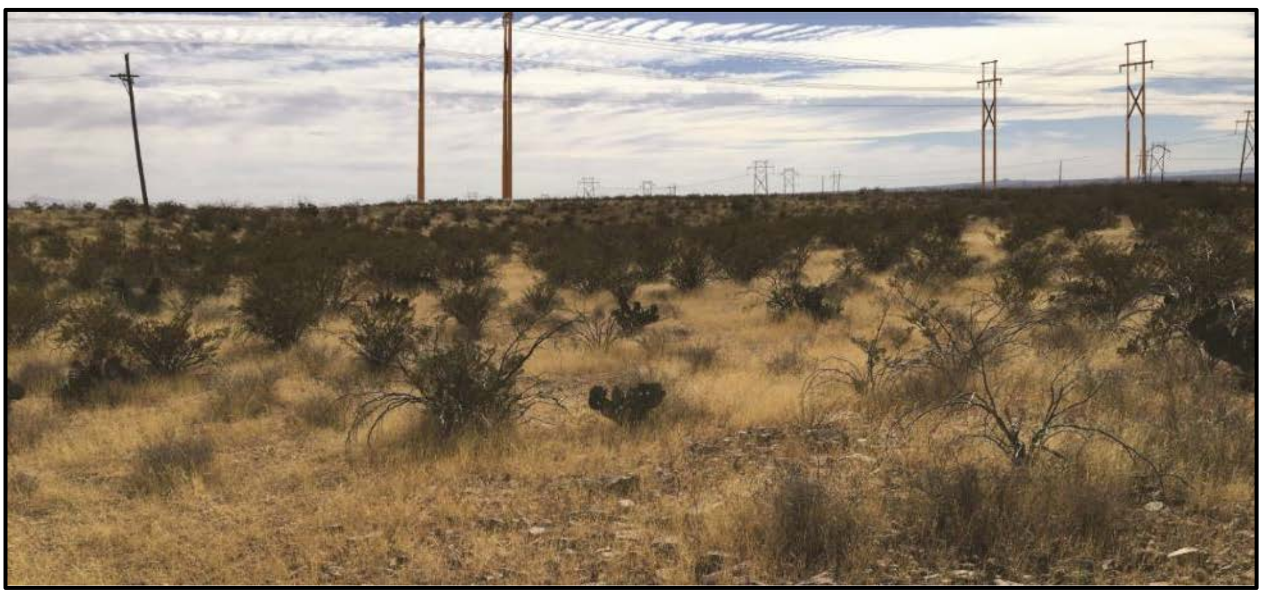

Figure 3-13. Visual simulation of Alternative Site 3 transmission corridor from KOP 6.

KOP 7 – Site 3: The contrast rating worksheet for KOP 7 is included in Appendix C. The photograph and visual simulation for KOP 7 are provided below (Figures 3-14 and 3-15). KOP 7 is approximately 120 feet from the Alternative Site 3 substation location. From this close proximity, the substation is in the foreground and would result in a strong visual contrast. The view from KOP 7 would not conform to VRM Class III objectives because the substation would dominate the view of the casual observer standing at the Talavera Fire Station.

Figure 3-14. Photo of existing view at KOP 7.

Figure 3-15. Visual simulation of Alternative Site 3 from KOP 7.

3.3.2.6 Impacts of Alternative Site 3A

Three KOP locations were identified to analyze viewshed impacts from Alternative Site 3A: KOPs 6, 7, and 8 (see Figure 3-1). See Section 3.3.2.5 above for impacts to the viewshed at KOP 3 from the overhead distribution option along Soledad Canyon Road.

KOP 6 was identified to analyze the viewshed impacts to homes along Organ Mesa Loop, looking south toward the substation site in the distance. KOP 7 was identified to analyze the viewshed impacts to the Talavera Fire Station from Alternative Site 3A. KOP 8 was identified to analyze the viewshed impacts to a nearby residence on Achenbach Canyon Road.

KOP 6 – Site 3A: The contrast rating worksheet for KOP 6 is included in Appendix C. The photograph and visual simulation for KOP 6 are provided below (Figures 3-16 and 3-17). KOP 6 is approximately 1,600 feet from substation Site 3A. At this distance, the visual contrast is weak, and the predominant structural elements are the existing transmission lines. The addition of the substation at Site 3A would conform to BLM's VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the existing landscape are repeated, and the project does not dominate the view.

Figure 3-16. Photo of existing view at KOP 6.

Figure 3-17. Visual simulation of Alternative Site 3A from KOP 6.

KOP 7 – Site 3A: The contrast rating worksheet for KOP 7 is included in Appendix C. The photograph and visual simulation for KOP 7 are provided below (Figures 3-18 and 3-19). KOP 7 is approximately 1,600 feet from substation Site 3A. At this distance, the visual contrast is weak, and the predominant elements are the existing transmission lines. The addition of the substation at Site 3A would conform to BLM's VRM Class III objectives.

Figure 3-18. Photo of existing view at KOP 7.

Figure 3-19. Visual simulation of Alternative Site 3A from KOP 7.

KOP 8: The contrast rating worksheet for KOP 8 is included in Appendix C. The photograph and visual simulation for KOP 8 are provided below (Figures 3-20 and 3-21). KOP 8 is approximately 1,800 feet from substation Site 3A. Similar to the impacts at KOP 7, at this distance, the visual contrast is weak, and the predominant elements are the existing transmission structures and A Mountain in the background. The addition of the substation at Site 3A would conform to BLM's VRM III Class objectives.

Figure 3-20. Photo of existing view at KOP 8.

Figure 3-21. Visual simulation of Alternative Site 3A from KOP 8.

3.3.2.7 Impacts of Alternative Site 7

No KOPs were identified to illustrate impacts to sensitive viewpoints from Alternative Site 7 because the substation would not be visible from KOPs 1 through 9. No homes or sensitive viewpoints are in close proximity to the substation site. The new access road to Site 7 would create a visual contrast to the viewshed of Dripping Springs Road because the vegetation would be permanently removed and a new linear element introduced. This contrast is expected to be weak and would not attract the attention of the casual observer. It therefore conforms to VRM III and IV. The substation at Site 7 would not present visual issues and would conform to VRM III and IV management. Of all the alternatives, Site 7 would have the least visual impact, given the distance to any sensitive viewpoints or developed areas, but it would have the most associated ground disturbance of all alternatives. This is because Sites 1, 2, 3, 3A, and 11 are all located closer to or adjacent to existing major access roads. Site 7 is close to the existing transmission corridor and would not require any additional transmission corridor. The primary impact of Site 7, compared with the other alternatives, would be the presence of a new and major access road over several deep arroyos (see Section 3.7).

3.3.2.8 Impacts of Alternative Site 11

KOP 9 was identified to analyze the viewshed from the residences on Stone Canyon Drive, looking east toward the Organ Mountains. The components visible at this KOP are primarily the transmission lines and monopole structures that would be required to connect the substation at Alternative Site 11 to the existing Salopek-to-Arroyo 115-kV transmission line.

KOP 9: The contrast rating worksheet for KOP 9 is included in Appendix C. The photograph and visual simulation for KOP 9 are provided below (Figures 3-22 and 3-23). The transmission line connection would be a double circuit (two lines) of transmission structures built parallel to an existing distribution line. KOP 9 is approximately 950 feet from the Alternative Site 11 transmission line connection corridor.

The existing landscape has transmission towers and lines and a two-track dirt road in the foreground/middle ground. The addition of the transmission towers repeats the types of lines and forms in the existing environment; however, a moderate contrast is created by the addition of more horizontal and vertical lines. The land/water and vegetation retains all the elements from the existing environment. All contrasts are weak to moderate. The project would fit within VRM Class III objectives because the change to the characteristic landscape is moderate and the project does not dominate the view from KOP 9.

Figure 3-22. Photo of existing view at KOP 9.

Figure 3-23. Visual simulation of the proposed transmission corridor associated with Alternative Site 11 from KOP 9.

3.4 Issue 2: How would noise from construction and long-term operation of the proposed project affect nearby residences?

There are different sources and levels of noise associated with electrical facilities. This section discusses the impacts to background (ambient) noise levels that may result from short-term construction and long-term maintenance and operation of the proposed project specific to each action alternative. An equivalent sound level (L_{eq}), expressed in decibels on the A-weighted scale (dBA), corresponds to the average sound level as perceived by the human ear. A change in noise level of at least 5 dBA is required before any noticeable difference can be detected, with a 10-dBA change being perceived as a "half as/twice as loud" to an individual (EPA 1974; U.S. Department of Transportation 2011). Noise exposure is dependent upon the time spent near and the distance from the source of noise generation. Impacts to ambient noise conditions occur from the introduction of audible noise (measured in dBA) and the duration of the noise as heard from a specific location.

By quantifying hourly dBA L_{eq} levels anticipated by construction equipment and maintenance and operation of the project components, the impact to ambient noise conditions for each alternative can be assessed. Short-term noise impacts anticipated for the project were calculated based on maximum noise levels for construction equipment at a reference distance of 50 feet from the source. Long-term noise impacts were evaluated based on the primary sources of noise resulting from the long-term operation of the proposed electrical facilities at specific reference distances, including the substation transformer (with a reference distance of 1 foot) and the 115-kV transmission line components (with a reference distance of 75 feet from the source). Using these established audible noise levels and reference distances as baselines for analysis, impacts were calculated by assessing the rate of noise attenuation (established as a reduction of 6 dBA as distance from the source is doubled), and incorporating the rule of decibel addition to account for combined noise sources.[5]

Noise generated from standard equipment that would be used during construction (grader, bulldozer, heavy and medium trucks, backhoe, and crane equipment) have an anticipated maximum combined hourly L_{eq} dBA of 90 at 50 feet from the construction site.[6] Noise generated by the proposed stationary electrical facilities during operation would result primarily from the substation's transformer, which is anticipated to operate at no more than 73 L_{eq} dBA at 1 foot from the transformer, which is comparable to the sound of a gas lawnmower at 100 feet (U.S. Department of Energy [USDOE] 1996).[7]

Lastly, the transmission line infrastructure may produce audible corona noise under certain environmental conditions. Corona noise is perceived as a cracking or hissing sound and results from the breakdown of air into charged particles caused by the electrical field on the surface of the conductor wire and is most likely to occur during poor weather conditions when conductors are wet.[8] It represents energy loss along the line and is of concern primarily for higher voltage transmission lines. For example, corona-generated noise from a 230-kV transmission line component would have an audible noise level of 39 dBA approximately 50 feet during rain (worst-case scenario), which is quieter than a suburban living room at approximately 46 dBA (USDOE 1996:5-23). Because dBA levels are low for corona-generated noise for a 230-kV transmission line, even directly under the line itself during foul weather conditions (which at 42 dBA remains lower than a suburban living room), corona-generated audible noise is typically only an issue with high-voltage transmission lines operating above 230 kV (BLM 2011; USDOE 1996).

Comparably, a 115-kV transmission line would have a maximum hourly level of 11 L_{eq} dBA at a distance of 75 feet from the transmission line component, a level that, at even at half that distance (17 L_{eq} dBA at

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[5] The rate of sound propagation (i.e., noise attenuation) and the rules for combining sound levels by decibel addition are detailed in *Highway Traffic Noise: Analysis and Abatement Guidance* (U.S. Department of Transportation 2011:9–10).
[6] See Table 2 of Thalheimer (2000:160). Noise levels for project components do not include effects of shielding/blocking of sound due to walls, fences, other residences and/or buildings, and do not account for attenuation that may occur by atmospheric absorption, which is influenced by air pressure, wind, temperature, humidity and other environmental factors.
[7] L_{eq} dBA for a proposed 115-kV substation in Itasca County, Minnesota was assessed at 71 dBA when the cooling fans were not running and 73 dBA when in operation (Itasca County 2010:4-4 to 4-5).
[8] Fair weather levels for corona noise have been evaluated at an average of 25 dBA lower than during rain (USDOE 1996).

37.5 feet from the source), is undetectable by the human ear, being quieter than a bedroom at night (25 L_{eq} dBA) (USDOE 1996).[9]

Transformer noise and corona activity do not combine to result in a higher level of audible sound because of the rule of decibel addition, which dictates that when two decibel values differ by 10 dBA or more, there is no increase in audible noise level because the louder sound would cover the other source (USDOT 2011).

The analysis area for these impacts is defined as a 1,600-foot buffer extending from the proposed project components, including the substation, and 115-kV transmission and 24-kV distribution infrastructure. This analysis area is based on the rate of noise attenuation and the distance at which the loudest sources of noise generated from project activities (i.e., construction equipment) would decrease to low levels (i.e., levels comparable to a conversation held indoors at 60 L_{eq} dBA) (USDOE 1996). The 1,600-foot analysis area incorporates the reference distances mentioned above for the primary sources of noise associated with the project (i.e., construction equipment [50 feet], substation transformer [1 foot], and corona noise [75 feet]) and considers nearby residences that would be most likely to hear audible noise generated by short-term and long-term project activities.

3.4.1 Affected Environment

Background (ambient) noise levels experienced in a specific location are typically the result of a combination of both transient (short-term noise sources, such as passing vehicles and aircraft) and stationary sources (longer-term sources, including industrial facilities, roadways, electrical facilities, and urban areas), as well as sounds from natural sources, including wind, rain, and fauna.

While there are no established levels for ambient conditions within the analysis area, and noise studies have not been conducted, the overall quality of existing noise levels can be assumed based on overall characteristics of the area as a quiet residential neighborhood of 40 to 50 average dBA (Center for Hearing and Communication 2018), but can reach lower levels (30 dBA) away from homes.[10] Ambient noise levels are intermittently higher in areas closer to Las Cruces and lower elsewhere due to undeveloped land. There are County roadways, including Dripping Springs Road, and the Talavera and Organ Mesa Ranch subdivisions also contribute to existing noise conditions. In general, ambient noise levels in and around the project area are dependent upon human-made and natural sources, as well as weather conditions, on any given day.

In the analysis area, existing infrastructure contributes to the area's ambient noise levels, particularly along the existing Salopek-to-Arroyo and Anthony-to-Arroyo 115-kV transmission lines and the Newman-Arroyo 345-kV transmission line. The existing infrastructure has been present since at least the 1950s, so noise produced from these facilities has been continuously present for the past several decades. Audible corona noise produced by these existing facilities includes noise from the transmission structures

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[9] For AC lines, corona noise is considered a foul-weather event resulting from wet conductors. Noise levels presented reflect a worst-case scenario for corona noise during inclement weather as modeled for a proposed 115-kV transmission line analyzed under an environmental impact statement for the North Steens Transmission Line Project in Harney County, Oregon (BLM 2011: Table 7, Appendix C-35). Corona activity also increases with elevation. The North Steens modeling assumed an elevation of 4,500 feet above mean sea level, which corresponds to the maximum elevation for the Talavera project area (BLM 2011: Appendix C-5).
[10] One ambient noise level sample was performed at the proposed substation location for Alternative Site 3A, which measured a peak reading of 34.2 dBA at 10:32 a.m. on May 9, 2018 (EPE 2018).

themselves that combined, during foul weather, is calculated at a maximum hourly L_{eq} dBA of 48 at a distance of 75 feet from the lines.[11]

The temporary substation along Dripping Springs Road is also a stationary source of noise in the project area. Noise generated by the temporary substation has a maximum hourly L_{eq} dBA of 73 at 1 foot from the source based on published data, accounting for the "hum" of the transformer (not corona-generated noise) and is the added noise of the cooling fan when it is in operation. One noise level reading was taken in the field at the perimeter fence (approximately 34 feet from the transformer) and measured at a peak of 58.6 dBA (EPE 2018). This would drop to 52.6 dBA at 68 feet from the transformer. Due to the rule of decibel addition, there would be no combined noise increase from any corona-generated noise from the 115-kV dead-end structures found at the temporary substation because the noise of the transformer, if it were to occur at the same time as corona-generated noise, would supersede it.

The EPA has established a noise-limit guideline of less than 55 dBA for an average day-night level (i.e., the average noise level over a 24-hour period) in outdoor areas (EPA 1974). While there are no state-level standards for noise in New Mexico, Doña Ana County has established a noise control ordinance (Doña Ana County 2017) with the intent to protect the enjoyment of life of County residents and to minimize exposure to excessive noise in order to protect the public welfare. Table 3-2 presents general noise limits established under the County's noise ordinance.

Table 3-2. General Noise Limits Established by Doña Ana County

Land Use Category of Receiving Property*	Maximum dBA
Residential and noise-sensitive[†] properties	50
Office and commercial properties	60
Industrial properties	70

* Under Section 261-9 of the County Code, a noise-sensitive property is defined as a dwelling unit or units, school, hospital, religious institution, childcare facility, adult care facility, court, or library.
† Section 261-10(C)(2) requires that sound projecting from one land use category onto the property of another land use category having a lower sound-level limit must adhere to the limit of that receiving property.

The County's general noise limits only apply during nighttime hours, defined as the hours between 10:00 pm to 6:00 am during the week (Section 261-9). Additionally, the noise ordinance prohibits any nighttime construction, repair, demolition, excavation, or grading work to commercial or residential buildings, roadways, utility facilities or infrastructure that would disturb the comfort or repose of any person(s), or that exceeds the established limits (see Table 3-4 above). The noise ordinance does exempt emergency work that occurs overnight.

The audible noise levels from the existing electrical facilities that contribute to ambient conditions do not exceed the federal day-night levels (over a 24-hour period) or the local noise limits established for nighttime hours outside of the ROW.

3.4.2 Environmental Impacts

In summary of the overall impacts presented below, the primary source of noise impacts to ambient conditions would result from construction of the proposed project components. Operation of the

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[11] This is based on the combined maximum audible noise level of the two existing 115-kV lines (13 dBA combined) and the existing 345-kV line (average of a 500-kV transmission line [49 dBA] and a 230-kV transmission line [47 dBA]) under worse-case weather conditions, based on the rule of decibel addition (BLM 2011).

substation, including the transmission line, would not create audible noise increases affecting nearby residences. All action alternatives would have intermittent levels of audible noise introduced during repair and maintenance activities. Based on typical equipment used during inspections (bucket truck/crew vehicles), the noise level for maintenance would be 55 L_{eq} dBA (USDOE 1996) on a sporadic, short-term basis, lasting anywhere between a few hours to a day for typical repairs.

Table 3-3 presents a summary of short- and long-term noise impacts for the Proposed Action and action alternatives. Distances were determined using Google Earth satellite imagery and the application's distance measurement tool to identify the number of residences within the 1,600-foot analysis area, measured as the distance between proposed project components and individual residential properties.

Table 3-3. Summary of Noise Impacts to Nearby Residences

Alternative	No. of Residences within Analysis Area*	Short-Term Impact (Construction)†	Long-Term Impact‡
No Action	–	–	–
Distribution Components Common to All	337	60–90 dBA — Duration would depend upon the alternative	No impacts; distribution voltages do not produce corona noise (BLM 2011)
Proposed Action Site 1	11	60–84 dBA for 16–20 months	No impacts; noise generated by the substation transformer and corona activity would not be detectable
Alternative Site 2	23	60–84 dBA for 16–20 months	Same as Proposed Action
Alternative Site 3		60–84 dBA for 16–20 months	Same as Proposed Action
Option 3-O	78		Same as Distribution Components Common to All
Option 3-U	78		
Option 3-T	42		
Alternative Site 3A		60–84 dBA for 16–20 months	Same as Proposed Action
Option 3A-O	71		Same as Distribution Components Common to All
Option 3A-U	71		
Option 3A-T	23		
Alternative Site 7	4	60–72 dBA for 20–26 months	Same as Proposed Action
Alternative Site 11	63	60–66 dBA for 18–24 months	Same as Proposed Action

Note: The table does not take into account "overlapping" residences that may be affected by both the distribution components common to all alternatives with one or more of the action alternatives, or between the action alternatives themselves. For example, construction of the 1.8-mile extension of NMNM 131403 would impact a number of residences that would also be affected by the construction of the Proposed Action Site 1 or Alternative Site 2. Additionally, construction and operation of the Proposed Action Site 1 would affect a number of residences that would also be impacted by Alternative Site 2 because of proximity, and so forth.* The analysis area extends 1,600 feet out from all project components.
† Short-term audible impacts to nearby residences from construction activities were assessed as a range based on predicted decibel levels perceived by the closest residence to project components (such as the edge of the proposed substation parcel) to the maximum distance at 1,600 feet, which is the extent of the analysis area for noise impacts.
‡ Audible noise levels resulting from operation of proposed project components would be for the life of the project.

3.4.2.1 Impacts of the No Action Alternative

Under the No Action Alternative, the BLM would not grant the proposed new or amended ROWs, the proposed new permanent substation would not be built, and the corresponding transmission and distribution infrastructure would not be constructed. Current continuous noise levels produced from existing infrastructure, largely resulting from operation of the temporary substation and the existing 115-kV transmission lines and 345-kV transmission line, would continue but would remain inaudible from residences within the analysis area. Noise impacts from routine maintenance of existing lines, substations, and access roads, which occurs on a periodic basis, would also continue unchanged.

3.4.2.2 Impacts of the Project Components Common to All Action Alternatives

There are 337 residences within the analysis area for the proposed project components common to all action alternatives, largely concentrated in the northwestern portion of the project area near Centennial High School. Construction of the project components common to all action alternatives would temporarily increase noise levels due to operation of construction equipment and vehicles. Noise generated from construction of 2.2 miles of new distribution line and rebuilding of 10.5 miles of existing lines would be short term but would increase existing noise levels up to 90 L_{eq} dBA for those residences closest to the distribution lines, which would dissipate to 60 L_{eq} dBA at 1,600 feet away over a short period within the construction time frame where work is occurring. It is important to reiterate that these are maximum levels that do not account for local shielding—including walls, fences, trees, and even other residences—or atmospheric absorption, both of which would further reduce audible noise levels by absorbing sound. The duration of noise levels resulting from construction of the distribution components would occur within the time frame for construction of the substation and transmission infrastructure under each alternative (see below).

Future maintenance would minimally increase noise levels temporarily (approximately 55 dBA from maintenance vehicle activity) and only for a short period immediately adjacent to the area. Construction and maintenance—with the exception of an emergency situation—would only occur during daytime hours and would not violate the federal day-night levels (over a 24-hour period), nor would noise levels exceed Doña Ana County's established noise limits, which only apply to nighttime activities.

There would be no increase in noise levels in the analysis area resulting from operation of the proposed rebuild of 10.5 miles of existing 24-kV distribution line because these lines are already in operation and the upgrades would not increase voltage or current and would not alter the alignments of these lines. Additionally, operation of 2.2 miles of new 24-kV distribution line would not produce any discernible increase in noise levels in the analysis area, even within the 50-foot ROW. Distribution voltages do not produce corona activity, which is a factor of high-voltage transmission lines (230 kV and higher [BLM 2011; USDOE 1996]). Therefore, construction, operation, and maintenance of the distribution line components common to all action alternatives would result in temporary, short-term increases in noise levels, as described above, lasting through the period of construction (the duration of which is alternative-specific and discussed below), and there would be no long-term impacts to ambient conditions within the analysis area.

The cumulative impacts of the project components common to all action alternatives on background noise levels would occur when actions are undertaken at the same time and in relatively close proximity. Construction of distribution infrastructure, when it occurs within the vicinity of other construction (i.e., during Soledad Canyon road improvements or housing construction in residential areas) would introduce a maximum noise level of 90 L_{eq} dBA (based on standard construction equipment) that, when added to other construction noise, would result in a combined increase of 93 L_{eq} dBA (based on the rule of decibel addition) if construction were occurring within 50 feet of a residence. As all residences within the analysis area would be farther than 50 feet from the source of construction noise, these combined noise levels would fall to 87 L_{eq} dBA as perceived by the nearest residences, a level similar to a chain saw operating at 50 feet (Thalheimer 2000).

3.4.2.3 Impacts of the Proposed Action Site 1

Under the Proposed Action, construction of the new permanent substation and the substation connection corridor would temporarily increase noise levels in the analysis area due to the operation of construction equipment and vehicles. Specifically, there are 11 residences within 1,600 feet of Site 1 that would experience temporary, short-term increases in noise levels during construction (16–20 months). As all of these homes are more than 100 feet from the substation and substation connection corridor, these increases in noise levels would range between a maximum of 84 dBA and 60 dBA at the edge of the analysis area. These are maximum levels that do not account for local shielding or atmospheric absorption, both of which would further reduce audible noise levels by absorbing sound. Construction activities would adhere to all applicable federal and local regulations pertaining to noise levels and, with the exception of emergency situations, would only occur during daytime hours.

Once operational, the new permanent substation, which would replace the existing temporary substation, would not produce noise levels much higher than those that already exist with the temporary facility currently in operation. The substation transformer would produce a low-frequency hum of 73 dBA (when cooling fans are running) at a distance of 1 foot from the transformer itself. Additional noise-level readings were taken at three existing substations to evaluate audible noise generated by typical substation equipment at the perimeter wall: Airport Substation (48.4 dBA); Jornada Substation (47.2 dBA); and Arroyo Substation (53.4 dBA), averaged at 49.7 dBA (EPE 2018). The proposed substation would have comparable audible noise levels based on similar equipment and layout. Assuming an average of 49.7 dBA (again, which is the average of all three permanent substations for which field readings were taken) at the perimeter fence, these levels would be below that of a typical indoor conversation at 60 dBA (BLM 2011). This would further be reduced by other equipment at the site and the perimeter fence around the substation. The sound produced by the substation transformer would not be audible from any residence within the analysis area as these levels would drop by 6 dB as distance doubles and would not be detectable by the nearest residence at approximately 180 feet away.

As discussed above, corona-generated noise does not typically occur at 115-kV voltage levels, and is generally a factor of higher voltages above 230 kV (BLM 2011; USDOE 1996); however, if corona noise were to occur under foul weather conditions for the proposed project, such levels would be produced by the 115-kV dead-end structures and lines tying into the new substation.[12] The level of corona noise produced by the new 115-kV transmission lines under foul-weather conditions would be a maximum of 11 L_{eq} dBA at 75 feet from the source (BLM 2011), which is not perceivable to the human ear at that distance (USDOE 1996). Therefore, Proposed Action Site 1 would not increase current background noise levels in the analysis area, which are largely attributable to the existing 115-kV and 345-kV overhead lines through the utility corridor, once construction is complete. Maintenance activities would be performed on an as-needed basis and would generate an infrequent and temporary increase in noise levels of up to 55 L_{eq} dBA from vehicles in the analysis area.

The cumulative effects of the Proposed Action on background noise levels would occur when actions are undertaken at the same time and in relatively close proximity and would be the same as described above under Section 3.5.2.2 for project components common to all action alternatives.

[12] This would be the same under all action alternatives analyzed in this EA.

3.4.2.4 Impacts of Alternative Site 2

There are 23 residences within the analysis area for Alternative Site 2. Under Alternative Site 2, impacts to ambient noise levels resulting from the construction, operation, and maintenance of the new permanent substation for this alternative would be the same as those described under the Proposed Action above with the exception that this alternative site location would include a pre-fabricated concrete wall around the substation, that would further reduce levels of audible noise generated from equipment by blocking the sound.

Cumulative effects for Alternative Site 2 on ambient noise conditions would be identical to those described under the Proposed Action above (see Section 3.4.2.3).

3.4.2.5 Impacts of Alternative Site 3

Under Alternative Site 3, impacts to ambient noise levels resulting from the construction, operation, and maintenance of the new permanent substation for this site location would be identical to those described under the Proposed Action above, with the exception that this alternative would include a pre-fabricated concrete wall around the perimeter. This would further reduce the levels of noise generated by substation equipment by blocking sound. Alternative Site 3 would include construction of a 0.4-mile-long segment of double 115-kV transmission line and 1.6-mile-long segment of 24-kV distribution line that would be required to connect to the Salopek-to-Arroyo 115-kV overhead line. This would not result in a longer construction period, which is anticipated to last 16 to 20 months (the same as the Proposed Action), and the level and duration of construction-related noise would be the same as the Proposed Action.

Again, while corona noise does not generally occur at 115-kV voltage levels, if corona noise were to occur under foul weather conditions, the source would be the overhead lines and structures for the double transmission line. Operation of the double 115-kV transmission line under Alternative Site 3, if subjected to foul-weather conditions under which corona noise were generated, would result in an increase of 13 L_{eq} dBA[13] 75 feet from the transmission line structure, a level not be perceptible to the human ear (USDOE 1996). All houses would be located at distances greater than 75 feet from the double transmission line corridor, so there would be no discernible change to ambient noise conditions to residences within the analysis area.

There are 78 residences within 1,600 feet of Option 3-O and Option 3-U, and 42 residences within 1,600 feet of Option 3-T. These residences would experience infrequent and temporary increases in daytime noise levels during the period of construction (16–20 months), which is the same for the Proposed Action (see Section 3.5.2.3 above). Overall, impacts resulting from construction, operation, and maintenance activities of any of the three design options for distribution under Alternative Site 3 would be identical to those described above under Section 3.4.2.2 (Impacts of Project Components Common to All Action Alternatives).

Cumulative impacts for Alternative Site 3 on ambient noise conditions (including all three design options) would be identical to those described under the Proposed Action above (see Section 3.4.2.3).

3.4.2.6 Impacts of Alternative Site 3A

Under Alternative Site 3A, the impacts to ambient conditions resulting from the construction, operation, and maintenance of the new permanent substation and three design options (Options 3A-O, 3A-U, and 3A-T, respectively) would be identical to those described under Alternative Site 3 above except that there would be no double transmission line corridor constructed. Additionally, there would be few houses

[13] This calculation is based on the combined maximum audible noise level of two 115-kV transmission lines (13 dBA combined) under worse-case weather conditions, based on the rule of decibel addition (BLM 2011).

within the analysis area for each design option, as there are 71 residences within 1,600 feet of Option 3A-O and Option 3A-U, and 23 residences within 1,600 feet of Option 3A-T. Overall, impacts to noise levels resulting from construction, operation, and maintenance of the substation connection corridor under Alternative Site 3A would be identical to those described for the Proposed Action and Alternative Site 2 above (see Sections 3.5.2.3 and 3.5.2.4 above, respectively).

Cumulative impacts for Alternative Site 3A on ambient noise conditions would be identical to those described under the Proposed Action above (see Section 3.4.2.3).

3.4.2.7 Impacts of Alternative Site 7

There are four residences within the analysis area for Alternative Site 7, all of which are within 1,600 feet of the south end of the proposed substation access road, south of Dripping Springs Road. Under Alternative Site 7, increases to ambient noise levels resulting from construction would be identical to those described under the Proposed Action above (see Section 3.5.2.3); however, due to the access road needed for this site, the duration of construction would be longer (20–26 months). Therefore, these residences would hear daytime noise level increases of a maximum of 72 dBA potentially over a longer period of time, but primarily resulting from construction of the access road to Site 7 and not from construction of the substation or substation connection corridor. Impacts to existing noise levels for residences within the analysis area for operation and maintenance of the new permanent substation and substation connection corridor would be identical to those described under the Proposed Action above (see Section 3.4.2.3).

Cumulative impacts for Alternative Site 7 on ambient noise conditions would be identical to those described under the Proposed Action above (see Section 3.4.2.3).

3.4.2.8 Impacts of Alternative Site 11

There are 63 residences within the analysis area for Alternative Site 11. Under Alternative Site 11, impacts to ambient noise levels resulting from the construction, operation, and maintenance of the new permanent substation for this site location would be identical to those described under the Proposed Action above (see Section 3.4.2.3). However, this alternative would include construction of approximately 2 miles of new, double 115-kV transmission line that would be required to connect the new substation to the Salopek-to-Arroyo 115-kV line to the east of this alternative site. This would result in a longer construction period (18–24 months) to accommodate the new double transmission line and would result in longer duration of construction-related noise in the analysis area.

The operation of the double 115-kV transmission line under Alternative Site 11 would be the same as those described under Alternative Site 3 above. There would be no impact to nearby residences, as all would be more than 75 feet from the double transmission line corridor under this alternative. There would be no discernible change to ambient noise conditions to residences within the analysis area from corona-generated noise if it were to occur along the double 115-kV transmission line under foul weather conditions because all nearby homes are more than 75 feet and any such noise would be imperceptible.

3.5 Issue 3: How would electric and magnetic fields (EMF) from the proposed substation and transmission or distribution lines impact the health of nearby residents?

Electric and magnetic fields (i.e., electromagnetic fields, or EMF) are produced both in the natural environment and through human activity, including within the home from such sources as electrical appliances. This section discusses the impacts to health of nearby residents from the potential exposure to EMF that may result from the proposed project specific to each action alternative. The analysis area for these impacts is defined as a 300-foot buffer extending from the proposed project components, including the substation and 115-kV transmission and 24-kV distribution infrastructure. EMF levels rapidly decrease in strength as the distance from the source increases. This analysis area is based on scientific modeling that demonstrates that EMF levels from electrical facilities are measurable up to 300 feet, after which, according to the World Health Organization, field strength diminishes to background levels equivalent to those found far away from electrical facilities (World Health Organization 2018). That is, at distances greater than 300 feet, electric and magnetic fields produced by electrical facilities cannot be distinguished from those present from other background sources found in the environment.

Research has not determined whether exposure to EMF affects human health (Western Area Power Administration [WAPA] 2017). Studies examining EMF exposure and health has largely focused on high-voltage transmission (230 kV and above), with fewer studies focusing on sources that produce lower voltages, including 115 kV (Tatos et al. 2016). Because electric fields increase with higher voltages and magnetic fields increase with higher current flow (WAPA 2017), it can be assumed that EMF produced by transmission, substation, and medium-voltage (e.g., 24-kV distribution) sources are proportionally lower than those of the higher voltage transmission facilities examined under previous peer-reviewed studies.

3.5.1 Affected Environment

WAPA, one of four power marketing administrations within the USDOE, has published a brochure summarizing issues related to EMF and health concerns (WAPA 2017). To understand potential impacts to health and safety from EMF, it is important to understand how electric and magnetic fields function. Electric and magnetic fields are different types of fields. Electric fields are produced by voltage, or the pressure behind the flow of electricity, while magnetic fields are produced by current (WAPA 2017). Electric fields are measured in volts—or kVs—per meter (V/m and kV/m, respectively), and magnetic fields are typically measured in milliGauss (mG). Voltage creates electric fields around any electrical source, whether or not it is operating; however, current must be flowing for magnetic fields to be produced. Electric fields can be blocked by walls, trees, or other vegetation, which weaken the strength of the field, while magnetic fields are not easily blocked or affected by physical obstacles (WAPA 2017).

Both electric and magnetic fields dissipate rapidly as distance increases from the source. Like all electrical appliances within the home, all overhead electric lines produce EMF. The fields are usually the strongest directly under an overhead and dissipate rapidly to either side of the line as distance increases. The strength of EMF is also dependent on the height of the line.

In the project area, there is one existing 345-kV transmission line (Newman-to-Arroyo) and two existing 115-kV transmission lines (Salopek-to-Arroyo and Anthony-to-Arroyo, respectively). Table 3-4 presents typical electric and magnetic fields resulting from standard distribution, 115-kV, and 345-kV transmission lines, compared with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) recommended exposure limits. Electric and magnetic field levels for 345-kV voltage is calculated by averaging field levels established for a 230-kV and a 500-kV line, respectively (WAPA 2017).

Table 3-4. Typical Electric and Magnetic Fields from Standard Overhead Electric Lines

Line Voltage*	Exposure Limit†	Center Line (Peak Value)	100 Feet	200 Feet	300 Feet
24 kV					
Electric (kV/m)	4.2	0.04	0.0	0.0	0.0
Magnetic (mG)	2,000	14.0	0.0	0.0	0.0
115 kV					
Electric (kV/m)	4.2	1.0	0.07	0.01	<0.01
Magnetic (mG)	2,000	30.0	1.7	0.4	0.2
345 kV					
Electric (kV/m)	4.2	4.5‡	0.7	0.2	0.06
Magnetic (mG)	2,000	72.1	9.9	2.5	1.1

Source WAPA (2017).
* By comparison, the average household background magnetic field range is 1–2 mG, with the average electric field up to 0.02 kV/m (20 volts) (WAPA 2017).
† Electric and magnetic field levels for 24 kV line are adapted from Hydro-Québec (2011).
‡ Exceeds ICNIRP 2010 continuous exposure limit for the general public.

There are several existing 24-kV overhead distribution lines in the project area (see Section 2.2.1.1, and Figure 2-1 above for existing distribution line ROWs). Being substantially lower in voltage than the existing transmission lines located within the project area, EMF from these distribution lines are not measurable beyond the centerline and would stay within the 50-foot ROW.

There is currently one substation, the temporary substation, located in the project area (see Section 1.1 above). Operating substations produce EMF from a variety of electrical equipment, including transformers and auxiliary components. Most of this equipment is enclosed within metal casing/housing, which eliminates electric fields but not magnetic fields. However, as transformers and other equipment are point sources, magnetic fields generated by this equipment attenuates rapidly as distance increases. Typically, substations produce electric fields of less than 0.1 kV/m and magnetic fields of less than 1 mG because EMF are substantially reduced by typical equipment spacing and local shielding (National Radiation Laboratory 2008; WAPA 2017). As EMF are low and not measurable beyond the perimeter wall of the substation, the main source of EMF associated with substations is the overhead transmission lines going in and out of the substation facility (WAPA 2017).

Overall, the existing transmission, distribution, and substation facilities in the project area produce EMF to which exposure would occur primarily under and parallel to the existing infrastructure. These lines were all installed prior to development of the Organ Mesa Ranch subdivision, with the Newman-to-Arroyo 115-kV line constructed in 1963 (NMNM 128691), the Newman-to-Arroyo 345-kV line in 1967 (NMNM 794), and the Salopek-to-Arroyo 115-kV line in 1973 (NMNM 18156). Electric and magnetic fields do not combine in the same way that sound levels do. The interaction of these fields and how they affect one another is dependent on direction and magnitude, as well as other factors. Levels of EMF are not quantifiable in the same manner as noise; however, one field typically only need be slightly higher to dominate the other (i.e., “cancel” the other out). Therefore, it is assumed that the existing EMF levels within the analysis area primarily result from the 345-kV line. All residences include an existing electrical distribution line that feeds power to the structure. Approximately 6 residences were built within 300 feet of the existing transmission lines, continuous exposure levels for these residences do not exceed the limits established for the general public based on those known for these transmission lines (see Table 3-3 above) (ICNIRP 2010; WAPA 2017).

There are no federal standards that limit public exposure to EMF. The ICNIRP, the formally recognized organization for providing such guidance for the World Health Organization, has established a continuous electric field exposure limit of 4.2 kV/m for the general public and 2,000 mG for public exposure to magnetic fields (ICNIRP 2010).

3.5.2 Environmental Impacts

To summarize the overall impacts, there would be no impacts to the health of those living in nearby residents from EMF produced by any of the action alternatives. Scientific studies on EMF have failed to definitively demonstrate a connection between EMF exposure and health effects, especially at lower levels of exposure (Jackson and Pitts 2010). The controversy has also been the subject of numerous court cases that have affirmed that there is no evidence for adverse health impacts from electric and magnetic fields (*Lakey v. Puget Sound Energy, Inc.*, 176 Wash. 2d 909, 296 P.3d 860 (2013); *Covalt v. San Diego Gas & Electric Company*, 13 Cal. 4th 893 (1996)). Overall, operation of the substation, including the transmission line, and the distribution components would not impact the health of nearby residents.

Table 3-5 presents a summary of EMF impacts for the Proposed Action and action alternatives.

Table 3-5. Summary of Health Impacts to Nearby Residences from EMF

Alternative	No. of Residences within 300-feet	Impact
No Action	–	–
Distribution Components Common to All	10	No impacts; EMF from distribution lines are not detectable outside the ROW
Proposed Action Site 1	2	No impacts; EMF levels decline to zero at the boundary of the substation (National Radiation Laboratory 2008; WAPA 2017)
Alternative Site 2	0	Same as Proposed Action
Alternative Site 3	0	Same as Proposed Action
Option 3-O	13	Same as Distribution Components Common to All
Option 3-U	13	
Option 3-T	2	
Alternative Site 3A	0	Same as Proposed Action
Option 3A-O	13	Same as Distribution Components Common to All
Option 3A-U	13	
Option 3A-T	2	
Alternative Site 7	0	Same as Proposed Action
Alternative Site 11	0	Same as Proposed Action

Note: Satellite imagery, publicly available through Google Earth, was used in conjunction with the internal distance measurement tool to identify the number of residences within the analysis area, determined by the distance between existing and proposed electrical facilities and private property. The distance from the project component was measured to the property (backyard) wall or façade of the residence, depending on orientation to the proposed project.

3.5.2.1 Impacts of the No Action Alternative

Under the No Action Alternative, the BLM would not grant the proposed new or amended ROWs, the proposed new permanent substation would not be built, and the corresponding transmission and distribution infrastructure would not be constructed. The existing conditions noted above would not change and the existing EMF in the area from the existing high-voltage transmission lines would continue.

3.5.2.2 Impacts of All Action Alternatives

Any 24-kV Distribution Line

Because EMF resulting from 24-kV distribution infrastructure are undetectable outside the ROW, any distribution lines associated with any and all action alternatives would not impact the health of those living in nearby residences, even in their combined effects with other electrical infrastructure.

Any Substation Location

The new substation would produce EMF similar to that which exist for the temporary substation (less than 0.1 kV/m for electric fields and less than 1 mG for magnetic fields [National Radiation Laboratory 2008]). Exposure to these EMF would be limited to within the substation parcel because substations are not major sources of EMF beyond the extent of the substation perimeter fence (National Radiation Lab 2008; WAPA 2017). The health of residents living near the substation would not be affected.

Any 115-kV Transmission Line

As 115-kV transmission line structures do not produce high levels of electric and magnetic fields and none of the residences within the analysis area would be exposed to EMF from these project components. The levels of EMF generated by the 115-kV conductors, or dead-end structures, would drop to negligible levels (<0.07 kV/m for electric fields and <1.7 mG for magnetic fields) at the edge of the ROW (see Table 3-5 above).

3.6 Issue 4: How would proximity to the proposed substation and transmission or distribution lines impact residential property values from impacts to the viewshed, increased noise, and quality of life?

Several factors can contribute to effects on residential property values, including distance of the property from transmission structures and lines, the type and size of structures, the visual appearance of transmission infrastructure, and the visual appearance of the ROW easement in relation to the surrounding landscape, undesirable noise (corona noise), and perceived risks to human health through exposure to EMF as overall impacts to quality of life (Anderson et al. 2017; Pitts and Jackson 2007).

The analysis area for these impacts is defined as a 500-foot buffer extending from the proposed project components, including the substation, and 115-kV transmission and distribution infrastructure, though viewsheds from residences farther away than 500 feet were also considered. The analysis uses the following assumptions:

- Lower-voltage transmission lines (below 230 kV) carry bulk power from major substations to regional and local distribution substations (Tatos et al. 2016:207–208). Because of their similar function, these types of transmission lines (including 115 kV and 138 kV) are comparable in design, configuration, and appearance.
- Residences less than 160 feet (50 m) away from the substation facility could see an approximately 2.9% drop in residential property value. For residences more than 160 feet away from a substation, the effect on property values would be less than 0.4% (Tatos et al. 2016:214).

3.6.1 Affected Environment

Residential development in the eastern part of Doña Ana County has grown in the past 25 years. Private land parcels between the western foot of the Organ Mountains and the city of Las Cruces have been subdivided and developed, and many lots and homes are still under development or planned for future development. Quality of life characteristics in the area that contribute to property values include pleasing views of the mountains and the city of Las Cruces, quietude, and recreational opportunities in the nearby Monument.

There are existing electrical facilities on BLM lands that bisect the area, creating a major transmission corridor of three high-voltage transmission lines constructed in the early 1960s and early 1970s that predate the residential development. The private property developments consist of around 60 existing homes in the Organ Mesa Ranch neighborhood and are mostly surrounded by BLM-managed land. The existing transmission corridor includes two 115-kV lines and one 345-kV line, supported by H-frame transmission structures. In some cases, the private homes have been constructed as close as 60 feet from the existing transmission line structures. For some properties, the proximity to existing transmission lines may have already constrained the value of those residences compared to similar single-family homes built away from the same type of power line infrastructure. The developers of some residential areas, such as the Organ Mesa Ranch neighborhoods, have chosen to have home connection and some local electrical distribution infrastructure buried to further enhance the aesthetic quality of these residential areas.

3.6.2 Environmental Impacts

There has been a substantial amount of research conducted over the past several decades examining the effects of electric power lines on residential property values. Recent publications have often focused on literature reviews and evaluation of analysis methods to assess these impacts (Anderson et al. 2017; Headwaters Economics 2012; Jackson and Pitts 2010; Moore 2017; Pitts and Jackson 2007). Research that has been conducted to quantify impacts to residential property values have used limited data sets, targeting a specific neighborhood or subdivision to analyze only one type of infrastructure type (such as a transmission line), or the combined effects of several types of power lines (Tatos et al. 2016:205–206).

Overall, these studies have yielded mixed results regarding the effects of electrical facilities on residential property values due to market complexity, location factors, and varying methodology. Survey-based research conducted from the late 1960s to 2010 identified that many people hold unfavorable opinions on electric power lines largely the unappealing visual aspect of such infrastructure as well as perceived health risks; however, these perceptions, even though adverse, did not necessarily translate to quantifiable market value differences (Anderson et al. 2017:180). Many studies found no significant effects to residential property values resulting from transmission lines; others identified actual impacts that were either negligible or minor, representing small reductions in values (generally less than 10%) that were associated with proximity to the lines (Jackson and Pitts 2010; Pitts and Jackson 2007). For those studies that found small reductions in market values of surrounding residential properties, all concluded that as distance from the lines increased, the effects, if any, decreased (Anderson et al. 2017; Headwaters Economics 2012; Jackson and Pitts 2010; Pitts and Jackson 2007).[14]

[14] Anderson et al. notes that changes in energy policy (including renewable energy initiatives) have encouraged research on the impacts of transmission lines on property values because they require modernization of the power grid to replace, upgrade, and even expand existing, ageing transmission infrastructure to meet renewable energy policy objectives. As more and more states adopt Renewable Portfolio Standards that require them to generate a certain percentage or obtain a certain amount of their energy from renewable resources, increasing demands on the power grid will require more efficient, more reliable infrastructure with greater capacity to transport renewable energy from generation to consumers (Anderson et al. 2017:179–180).

It is important to note that much of the research focus has been on high-voltage transmission lines,[15] with very little attention paid to other types of electric facilities, including substations and distribution lines. One study conducted in Salt Lake County and published in 2016 did examine potential impacts to residential property values from substations in addition to different types of transmission lines on a relatively larger scale than previous studies examining value impacts (Tatos et al. 2016).[16] Yet, even this comprehensive, county-level scale did not include distribution lines or infrastructure. Distribution facilities are located close to customer locations (e.g., homes and businesses), recognizable by the poles we see along municipal streets and in subdivisions where consumers connect into the power supply chain using service drops (Tatos et al. 2016). Unfortunately, the overwhelmingly narrow emphasis on high-voltage overhead transmission lines has led to the exclusion of market research into the impacts of distribution lines on residential property values (Anderson et al. 2017:179). However, because of the absence of peer-reviewed research examining these lower-voltage networks, the impacts of distribution line infrastructure (including overhead/underground lines, poles, and transformers) is unknown.[17]

Overall, the 2016 study concluded that it was not the higher-voltage lines (230 kV and up) that generated the largest percentage of impact to property values in Salt Lake County, but lower transmission voltage (specifically 138 kV for this study, which did not examine 115-kV voltages). For residences within 160 feet of the lower-voltage 138 kV transmission line, the study noted a 5.1% decrease in overall value. This percentage fell to 2.9% for those homes over 160 feet but within approximately 300 feet of a 138-kV line, while at distances beyond 300 feet, the effect further dropped rapidly (Tatos et al. 2016:213). Because lower-voltage transmission lines (such as 138 kV) are comparable in design, configuration, and appearance, these reductions in property values identified for 138 kV lines could be used as estimates for 115-kV infrastructure; however, it is important to note that peer-reviewed literature has demonstrated that generalizing results beyond the respective geographical area where these types of studies are conducted (in this case, Salt Lake County) is problematic (Anderson et al. 2017:182).

It is critical to understand that the effects of different types of transmission lines on residential property values are influenced by a variety of factors. This includes proximity to other types of electrical facilities (including substations), which could result in overlapping impacts from both new and existing infrastructure. When assessing impacts to property values from new infrastructure proposed in proximity to existing infrastructure, the presence of the existing lines must be taken into account, or else the impact of the proposed new lines may be overstated (Tatos et al. 2016:208–209). Additionally, impacts to property values, as assessed through previous quantitative investigations, are also affected by factors not associated with the electrical facilities themselves, including health of the real estate market (sales per year, supply and demand),[18] condition of the economy (local, regional, national), employment rates, and,

[15] There is no widely accepted, industry standard definition of "high-voltage overhead transmission" (Anderson et al. 2017:179), which has resulted in the term used to more simply distinguish between transmission lines and distribution lines, which have very different functions within the power grid.

[16] This study examined almost all single-family home sales over a 14-year period for Salt Lake County, Utah, including 125,000 sales and 450 home characteristics to examine the effects of different types of transmission lines (46, 138, and 345 kV voltages, respectively) and substations (Tatos et al. 2016:205).

[17] The fact that distribution systems are integral and ubiquitous components of urban, suburban, and even rural residential development is likely an influencing factor to the degree of impact to residential property values from such infrastructure, if any such impacts exist.

[18] In addition to economic factors, the market value of a residential property is often influenced by certain independent variables, including lot size and shape, view, topography, location, utility, and entitlements (Anderson et al. 2017:180–181).

with all of these taken into account, the characteristics (including size, location, extent) of the area of concern.[19]

Analysis of effects to property values from electrical facilities generally relies on market response as an impact indicator, and therefore, must draw on an adequate established data set for evaluation. As there have been no published studies conducted in the vicinity of the proposed project or the Las Cruces area addressing impacts to market values of private property (residential or otherwise) from electrical infrastructure, this EA incorporates the 2016 published study as the best available science regarding potential impacts to residential properties from lower-voltage transmission line and substation facilities for the purposes of analysis. However, it is imperative to reiterate that the impacts described below do not equate to fixed or definitive effects certain to occur as a result of the proposed project due to a number of variables that factor into quantifying such impacts specific to this portion of Doña Ana County and the Las Cruces area (see above discussion for examples of these variables). Rather, these data are presented as basic, relative estimates of potential impacts assessed for similar types of infrastructure.

Table 3-6 summarizes the number and distance of nearest residences to proposed project components under each of the action alternatives.

Table 3-6. Summary of Impacts to Property Values

Alternative	No. of Residences within 500 feet	Closest Residence	Potential to Impact Property Values
No Action	–	–	–
Distribution Components Common to All	31	100 feet	No data (see discussion under Section 3.6 above)
Proposed Action Site 1	2	160 feet	Yes
Alternative Site 2	1	495 feet	Yes
Alternative Site 3	0	515 feet	Yes
Option 3-O	19	65 feet	Same as Distribution Components Common to All
Option 3-U	19	65 feet	
Option 3-T	7	230 feet	

[19] One example includes a study published in 2013 that analyzed sales data from 2005 to mid-2007 for areas near Portland, Oregon and Seattle, Washington (respectively), considering impacts of the same types of higher voltage transmission line voltages but in the two different locations. Although the impacts themselves are considered marginal, there was a statistically important difference where the Seattle homes saw a larger percent reduction for those abutting the transmission lines (2.43%) than those in Portland within the same proximity (1.67%). These results further demonstrate the importance of market variables, including geographical location, that factor into real estate values to the extent that researchers recognizes that generalizing results such as these beyond the respective geographical areas should be avoided (Anderson et al. 2017:182).

Alternative	No. of Residences within 500 feet	Closest Residence	Potential to Impact Property Values
Alternative Site 3A	0	1,730 feet	No
Option 3A-O	19	65 feet	Same as Distribution Components Common to All
Option 3A-U	19	65 feet	
Option 3A-T	7	230 feet	
Alternative Site 7	0	3,900 feet	No
Alternative Site 11	0	949 feet	No

Note: Satellite imagery, publicly available through Google Earth, was used in conjunction with the internal distance measurement tool to identify the number of residences within the analysis area, determined by the distance between existing and proposed electrical facilities and private property. The distance from the project component was measured to the property (backyard) wall or façade of the residence, depending on orientation to the proposed project.

3.6.2.1 Impacts of the No Action Alternative

Under the No Action Alternative, the BLM would not grant the proposed new or amended ROWs, the proposed new permanent substation would not be built, and the corresponding transmission and distribution infrastructure would not be constructed. Residential property values in proximity to existing infrastructure, including the temporary substation and the two 115-kV transmission and 345-kV transmission lines, would not be affected.

3.6.2.2 Impacts of the Project Components Common to All Action Alternatives

There are 31 residences within 500 feet of the distribution lines. There would be no impact to residential property values in the analysis area resulting from the construction, operation, and maintenance of the proposed rebuild of 10.5 miles of existing 24-kV distribution line because these lines are already in operation. The upgrades would not increase voltage or current and they would not alter the alignments of these lines. There is no published data on the impacts of 24-kV distribution line infrastructure to residential property values, so the nature and degree of effects from the construction, operation, and maintenance of the 2.2 miles of new 24-kV distribution line is unknown. Again, it is important to understand that distribution lines are located closest to the consumer and are common in residential areas (Tatos et al. 2016:207) and every residence must have a service drop into a distribution to have electricity from the power grid. Distribution lines do not generate corona noise, nor do they emit detectable levels of EMF outside the ROW.

The cumulative impacts of the project components common to all action alternatives on residential property values, when considered with existing electric utilities and reasonably foreseeable future actions, would happen where ongoing residential development occurs in close proximity to overhead power lines (particularly transmission lines) and associated facilities, including substations. Vacant lots are listed for sale in the Organ Mesa Ranch neighborhood and are likely to be developed in the future. As noise and EMF levels would be undetectable outside the distribution ROW, cumulative impacts from project components common to all action alternatives would primarily occur where existing and future electrical facilities intrude into the viewshed of residential areas. The contribution to cumulative impacts to residential property values from project components common to all action alternatives would be incremental, but negligible in the analysis area, even in consideration of combined effects with each action alternative described below.

3.6.2.3 Impacts of the Proposed Action Site 1

Under the Proposed Action, there would be no impact to residential property values in the 500-foot analysis area from unwanted noise or from increased exposure to EMF (see Sections 3.4.2.3 and Sections 3.5.2.2 above, respectively). However, based on the results of the viewshed analysis presented in Section 3.3.2.3 above for the Proposed Action, there could be impacts to residential property values for the two homes within 500 feet of the substation footprint due to proximity. For other properties built farther from the existing transmission corridor, the project may introduce a new element that affects the quality of life values that are taken into account for property appraisals or sales prices. Although this impact cannot accurately be quantified per property, based on established literature (Tatos et al. 2016:214), the 2.9% decrease could be used as an estimate, but would also need to take into account the existing electrical infrastructure, as well as other factors including the rate of employment, housing supply and demand, and other economic factors. See Section 3.3 for a full discussion of impacts to the viewshed of these residences analyzed under KOP 1.

Past and present actions, including existing electrical facilities, have contributed to the existing residential property values in the analysis area where ambient noise conditions and the surrounding viewshed are already impacted. The contribution to cumulative impacts to residential property values under the Proposed Action Site 1 would be incremental but negligible in the analysis area due to the substation being built adjacent to existing transmission facilities (two 115-kV lines and one 345-kV line), which have likely already influenced property values for residences within 500 feet. Future actions, including the Soledad Canyon road improvements and other residential development, could also contribute to property value fluctuations, for example the road improvements could contribute to increased property values from the improved road surface. However, other factors (e.g., real estate market, local economy, employment rates) would also cumulatively influence residential property values.

3.6.2.4 Impacts of Alternative Site 2

Under Alternative Site 2, the impacts to residential property values resulting in the construction, operation, and maintenance of the project components associated with this action alternative would be similar though less than those discussed under the Proposed Action above. One residence is within the 500-foot analysis area, located 495 feet from the substation parcel boundary for Site 2. At this distance, the studies described above (Tatos et al. 2016) indicate the potential effects to residential property values from proximity to a substation are negligible (less than a 0.4% reduction in value).

Similar to the Proposed Action, cumulative impacts for Alternative Site 2 to residential property values would be an incremental contribution to the past, present, and reasonably future impacts from other development.

3.6.2.5 Impacts of Alternative Site 3

Under Alternative Site 3, there would be no impact to residential property values in the 500-foot analysis area resulting from unwanted long-term noise or from increased exposure to EMF for any of the project components associated with this action alternative (see Sections 3.4.2.3 and Sections 3.5.2.2 above, respectively). However, based on the viewshed analysis under Section 3.3.2.3 for this site, the new substation and the 2,000-foot-long, 115-kV transmission line for Site 3 would potentially impact the value of properties located just north of the Site and transmission corridor. While the nearest residences are located over 400 feet from the substation parcel boundary for Site 3, the nearest residence's proximity to the double 115-kV transmission line, at 515 feet, could experience a reduction of value from impacts to their viewshed of approximately 2.1%, based on empirical studies (Tatos et al. 2016:214).

The addition of the overhead distribution line along Soledad Canyon and Dripping Springs Road known as Option 3-O would result in a visual impact for the residences located within 500 feet of the line, primarily along Soledad Canyon Road. The introduction of overhead lines where they do not currently exist could impact those viewsheds, though they are consistent with other distribution lines in the distance. Property value impacts for these homes are unknown, although distribution lines do not generate detectable levels of noise or EMF outside the ROW.

The impacts of distribution lines to market values of residential properties is unknown as there is no published research; however, there would be no residences within the 500-foot analysis area that would experience increased noise levels above ambient conditions or exposure to EMF as discussed in Sections 3.4.2.3 and 3.5.2.2 above under Options 3-U or 3-T. For Option 3-U, there would be no perceivable visual changes from nearby residences within 500 feet of buried distribution line because it would be installed underground. There would also be no increased visual intrusion as seen from nearby residences within the analysis area resulting from the overhead distribution line routed through the existing transmission corridor due to the existing 115-kv transmission lines and the 345-kV transmission line under Option 3-T.

Similar to the Proposed Action, cumulative impacts for Alternative Site 3 to residential property values would be an incremental contribution to the past, present, and reasonably future impacts from other development.

3.6.2.6 Impacts of Alternative Site 3A

Under Alternative Site 3A, there would be no proposed double 115-kV transmission line, and there would be no residences within 500 feet of the substation for this action alternative. Therefore, there would be no impacts to residential property values within the analysis area from the substation or substation connection corridor.

Impacts to residential property values for all three design options (Options 3A-O, 3A-U, and 3A-T, respectively) would be identical to those described under Alternative Site 3 above.

Similar to the Proposed Action, cumulative effects for Alternative Site 3A to residential property values would be an incremental contribution to the past, present, and reasonably future impacts from other development.

3.6.2.7 Impacts of Alternative Site 7

Under Alternative Site 7, there would be no impacts to residential property values because there are no residences within 500 feet of the new substation or substation connection corridor associated with this action alternative. The proposed site and infrastructure would not impact the viewsheds of any residences (see Section 3.4.2.7).

Cumulative effects for Alternative Site 7 would not contribute incrementally to the past, present, and reasonably foreseeable impacts as no direct impact would occur to property values (see Section 3.6.2.3).

3.6.2.8 Impacts of Alternative Site 11

Under Alternative Site 11, there would not likely be impacts to property values based on the results of the viewshed analysis (See Section 3.3.2, KOP 9) and because of the fact that the transmission lines associated with Site 11 would be built parallel to an existing line. The residences to the west of the transmission corridor for Alternative Site 11 would experience moderate viewshed impacts, but not to the degree that would cause an impact to property values.

Similar to the Proposed Action, cumulative effects for Alternative Site 11 to residential property values would be an incremental contribution to the past, present, and reasonably future impacts from other development. The transmission line associated with Site 11 would be built next to an existing distribution line.

3.7 Issue 5: How would the ground fill needed for the permanent access road for Site 7, and the substation pad at Site 7 or Site 11 impact water flows?

Two BLM alternative substation locations (Sites 7 and 11) are located in areas where surface flow drainages are present. In addition, Site 7 is located away from existing access roads, requiring the construction and long-term maintenance of a 0.7-mile substation access road to allow access to the substation site. Since the Proposed Action at Site 1 and Alternative Sites and associated infrastructure at Sites 2, 3, and 3A are not located in areas where surface flow drainages are present, there will be no impacts to water flows or soil erosion. Therefore, they will not be part of this analysis.

Impacts to water flows are measured by calculating the total acreage of surface disturbance within the bank full width of crossed drainages as well as the total cubic yards of fill material needed to construct the access road and substation pad foundations and access road drainage crossings. The analysis area for this issue is the extent of disturbance from the construction of substation pads at Sites 7 and 11, plus the extent of disturbance associated with drainage crossings and associated erosional controls needed for the construction of the access road to Site 7, plus an area equal to six channel widths upstream and downstream of all drainage crossings. This upstream and downstream analysis area was chosen based on average lengths of upstream and downstream impacts, as noted by the U.S. Forest Service (2008). An assumption was made that final engineering of culverts and crossings would not cause damming of water flows. The engineering would take into consideration 25-year and 50-year storm events.

3.7.1 Affected Environment

The project is located approximately 3 miles west of Las Cruces, New Mexico, within Achenbach Canyon–Rio Grande (Hydrological Unit Code 10) between the Organ Mountains to the east, where the majority of precipitation in the region occurs, and the Rio Grande to the west, where all surface flows from precipitation converge. Between the Organ Mountains and the Rio Grande River lies a vast network of drainages. The average annual precipitation of Las Cruces, New Mexico, is 6.28 inches (Western Regional Climate Center 2016). Because of the limited precipitation in this arid region, the drainages in the analysis area only experience water flows after precipitation events and are considered ephemeral.

The slope of the substation pad area at Site 7 is approximately 3%, and the slope at the substation pad area at Site 11 is less than 2%, based on elevation data (Google Earth 2018). Small alluvial drainages cross both pad sites, which generally slope east to west (Table 3-7).

Table 3-7. Site 7 and 11 Drainages

Drainage (numbered from north to south)	Bankfull Width (feet)*	Depth (feet)*	Crossing Method
Site 7 Substation pad			
Drainage 1	4	1	Fill/Diversion
Drainage 2	3	1	Fill/Diversion
Drainage 3	2	1	Fill/Diversion
Drainage 4	2	1	Fill/Diversion

Drainage (numbered from north to south)	Bankfull Width (feet)*	Depth (feet)*	Crossing Method
Site 11 Substation pad			
Drainage 1	145	3	Fill/Diversion
Drainage 2	6	2	Fill/Diversion
Drainage 3	4	2	Fill/Diversion
Drainage 4	5	2	Fill/Diversion
Drainage 5	2	1	Fill/Diversion
Drainage 6	2	2	Fill/Diversion
Drainage 7	3	2	Fill/Diversion

The substation access road to Site 7 would require the crossing of 12 drainages, including one mapped National Hydrography Dataset line. Table 3-8 lists the drainages, potential crossing method, and includes estimated bankfull widths and depths.

Table 3-8. Site 7 Access Road Drainage Crossings

Drainage (numbered from north to south)	Bankfull Width (feet)*	Depth (feet)*	Crossing Method
Drainage 1: Parallels road for 95 feet	4	1	Low-water crossing (ford) diverted via ditch and cross-drain structure
Drainage 2	46	5	Elevated culvert crossing
Drainage 3	8	2	Low-water crossing (ford)
Drainage 4	12	2	Low-water crossing (ford)
Drainage 5: This is an offshoot of Drainage 6 and parallels the access road for 220 feet before terminating	8	2	Low-water crossing (ford) or diverted via ditch and cross-drain structure
Drainage 6	42	4	Elevated culvert crossing
Drainage 7	18	2	Low-water crossing (ford)
Drainage 8	8	2	Elevated culvert crossing
Drainage 9	51	4	Low-water crossing (ford)
Drainage 10	12	3	Low-water crossing (ford)
Drainage 11[†]	180	6	Elevated culvert crossing
Drainage 12	10	2	Low-water crossing (ford)

* Not field verified. Delineations of drainages would take place prior to construction to achieve USACE permit requirements.
† National Hydrography Dataset data.

3.7.2 Environmental Impacts

As discussed above, water flows would not be impacted by Alternative Sites 1, 2, 3, and 3A because the sites and infrastructure are located away from, or can avoid impacts to, drainages. Those sites may require minor leveling, though drainage diversions would likely not be necessary, based on final engineering. Of the impacts to water flows from Sites 7 and 11, the greatest impact is from the access road to Site 7 (Table 3-9).

Table 3-9. Summary of Impacts to Water Flows and Drainages

Alternative	Summary of Impacts to Water Flows
Site 1	None. No drainages would be affected.
Site 2	None. No drainages would be affected.
Site 3	None. No drainages would be affected.
Site 3A	None. No drainages would be affected.
Site 7	Substation Pad and Access road would require cut and fill. Drainage diversions, low-water crossings, and culverts would be needed.
Site 11	Substation pad would require cut and fill. Drainage diversion would be needed.

In order to minimize erosion and impacts to the drainages flow velocity, culverts must be installed so that they are at least 1.2 times wider than the bankfull width of the affected drainage which may require multiple culverts. Additionally, it is required that culverts have an open bottom or be installed below grade of the stream bed with a reconstructed floor that mimics the affected stream (USACE 2015).

3.7.2.1 Impacts of the No Action Alternative

Under the No Action Alternative, the BLM would not grant the proposed new or amended ROWs, the proposed new permanent substation would not be built, and the corresponding transmission and distribution infrastructure would not be constructed. No changes to arroyos and drainages would occur. Existing infrastructure, including the housing, roads, temporary substation, 24-kV distribution lines, and 115-kV and 345-kV transmission lines, would be unchanged.

3.7.2.2 Impacts of Alternative Site 7

As noted above, the slope of the pad site at Alternative Site 7 is approximately 3% from east to west. The pad would be leveled and graded to create a structurally sound area. A few small alluvial drainages cross the pad area. Approximately 0.08 acres of these drainages (bankfull width) would be permanently disturbed by the construction of the pad site. Stormwater would be diverted around the pad site to prevent sheet flow across the substation pad. The pad site is a localized high point, and the origination point of the downslope drainages. The upslope portion of the drainages would be altered where the pad site sits, and the stormwater would be diverted off pad to the northwest, west, and south into the existing drainages. This diversion would not alter the main channels downslope of the pad site.

To provide for the construction and operation of the substation at Site 7, the permanent access road to Site 7 would cross 12 drainages. These drainages range from approximately 4 to 180 feet across as measures by bankfull width and approximately 1 to 6 feet deep (see Table 3-18 above). Approximately 0.34 acres of these drainages (bankfull width) would be permanently disturbed by the construction of the permanent access road. Impacts from construction of elevated roads above drainages can include alteration of the velocity of the natural flow of water causing ponding when flow is restricted, or scouring when the channel is narrowed. Both consequences can result in streambed and bank erosion. According to Tarolli et al. (2013), the construction of a permanent road can result in three primary effects on water flow: the surface flow and subsurface flow interception by the road surface, flow concentration, both on the road surface and in the roadside ditch; and alteration of natural flow directions. The amount of cut and fill needed per drainage would depend on the crossing design used. Initial engineering estimates the total cut for all drainages combined as approximately 28,000 cubic yards, and the total fill across all drainages as 68,000 cubic yards (Souder, Miller, and Associates 2017).

Roadway surface drainage controls best management practices include maintaining positive road surface drainage, using frequently spaced leadoff ditches, and installing and maintaining cross-drain structures to move water from the roadside ditch to the slope below the road minimize potential alteration of the stream from ponding and increased velocity (U.S. Forest Service 2003).

3.7.2.3 Impacts of Alternative Site 11

As noted above the slope of the pad site at Alternative Site 11 is less than 2% from east to west. The pad would be leveled and graded to create a structurally sound area. A few small alluvial drainages cross the pad area. Approximately 0.78 acres of these drainages (bankfull width) would be permanently disturbed by the construction of the pad site. Stormwater flows originating along and to the east of Sonoma Ranch Boulevard would enter the braided alluvial channel to the north of the substation site, and would be diverted around the pad site to prevent sheet flow across the substation pad. This would increase the velocity of water in the main channel within the braided alluvial channel, this could deepen or scour the main channel to the northwest of the pad site over time.

3.8 Issue 6: How would increased electrical capacity impact economic development?

With increased economic development comes increased demand for infrastructure, including electrical capacity. This section discusses potential beneficial economic impacts that may result from the construction and long-term operation of the proposed project. As land-use plans guide future growth and development within established planning areas, beneficial impacts of the proposed project would include meeting long-term objectives within these plans. The Doña Ana County Regional Plan (Regional Plan) identifies the Las Cruces Extra-Territorial Zone (ETZ) as a resource area impact to the long-term planning objectives for the County. The ETZ is a 5-mile planning jurisdiction around Las Cruces established to assist both Las Cruces and the County in joint planning, zoning, and subdivision approval efforts addressing growth in the region. Utilities and infrastructure are identified as critical components necessary for future economic development in the Las Cruces area (Doña Ana County 2012). The analysis area includes the 5-mile planning area that forms the Las Cruces ETZ. The Las Cruces/Doña Ana County Extraterritorial Zone’s Comprehensive Plan (ETZ Comprehensive Plan) directs that future growth and development in the Las Cruces ETZ be consistent with the community’s goals for its physical, social, and economic environment (Las Cruces Extra-Territorial Zoning Authority 2000).

3.8.1 Affected Environment

In Doña Ana County, a resilient local economy is cultivated through planned and managed growth in areas such as employment, business and industry opportunities, education, and residential growth, all of which contribute to the quality of life of its residents (Doña Ana County 2012). Doña Ana County includes five incorporated communities: Anthony, Hatch, Las Cruces, Mesilla, and Sunland Park. Economic projections indicate that over the next 30 years, 325,000 people will reside in the County, up from the nearly 214,000 people who currently live in the Rio Grande Valley (Doña Ana County 2012; U.S. Census Bureau 2017). The population growth is approximately 2.1% per year, and as populations grow, so, too, does the demand on public services and infrastructure capacity that can efficiently and effectively accommodate the needs of a growing community.

EPE is the main electrical services provider to households, businesses, and schools, as well as military, agricultural, and industrial facilities in the Las Cruces region. Currently, there is only one generating station within the County—the Rio Grande generating station—that supplies power to local communities. To supplement this capacity, EPE brings in additional bulk power from outside service areas, including the nuclear generating Palo Verde Facility west of Phoenix, Arizona (Doña Ana County 2012). This power must be transmitted to EPE’s local grid.

Under the ETZ Comprehensive Plan, goals aimed at supporting future population growth and demands for public services (including utilities) must be considered in planning decisions and consideration taken to manage the impact of the expected growth in the area.

For public utilities, the Las Cruces Extra-Territorial Zoning Authority is to coordinate with utility companies, through the subdivision review process, to ensure that services are located and available where needed. Other than very low-density residential development, all other development should be discouraged where utilities are not available. Additionally, the location and operation and maintenance of public utilities should not degrade the quality of the environment, and underground placement of utilities should be encouraged wherever feasible (Las Cruces Extra-Territorial Zoning Authority 2000).

3.8.2 Environmental Impacts

All action alternatives would result in a substation being developed to enhance the power grid and meet future demands for electricity, resulting in increased power reliability for all users in east Doña Ana County. The only difference between alternatives is the cost eventually passed on to consumers, as some alternatives are much more costly to build and maintain than others. EPE developed plans for the least costly alternative, as it is their responsibility as a public regulated utility to propose a project and provide a rationale for best consumer value and protection. The BLM developed other alternatives that would meet the purpose and need and resolve other resource concerns. The Alternatives Summary Report (see Appendix B) includes the cost projections of each alternative. Cumulatively, rates for electrical services are a combined result of many factors, including infrastructure build-out over time across EPE's service area and future growth projections.

3.8.2.1 Impacts of the No Action Alternative

Under the No Action Alternative, the BLM would not grant the proposed new or amended ROWs, the proposed new permanent substation would not be built, and the corresponding transmission and distribution infrastructure would not be constructed. The region would need to rely on the current capacity of the existing infrastructure and existing 115-kV transmission and 345-kV transmission lines. The increased demand on the existing electrical facilities has the potential to overtax the existing grid, increasing the potential for substantial reductions in the power supply, and increased risk of possible service disruptions because the electrical system is unable to provide enough power to consumers. Power capacity to meet future demands would not increase along with the population. Beneficial impacts, including congestion relief, enhanced capability of the grid, and support for future economic growth, would not be achieved.

3.8.2.2 Impacts of All Action Alternatives

The new substation at any of the locations would improve the electrical infrastructure and provide regional services and facilities necessary to sustain the growing population and encourage economic growth in the Las Cruces ETZ. These project components would improve use of existing infrastructure, support ongoing development and future land uses, and provide long-term effect of adequate infrastructure that would meet projected demands. The new substation would establish redundancy of the power network, which would create a more reliable and resilient system. It would fulfill capacity for projected economic growth by making more reliable power available to new businesses with high power demands such as cloud storage facilities and data centers, power generation facilities such as solar fields, and medical facilities.

Past and present electrical utility reliability has created economic growth and the potential for residential and commercial development in Las Cruces and Doña Ana County. The proposed distribution rebuild and construction of new line associated with all action alternatives would cumulatively contribute to current and future electrical grid stability and support the resulting economic development, including future residential development in the Talavera and Organ Mesa Ranch subdivisions.

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3.9 Environmental Impacts Summary

Table 3-10. Environmental Impacts Summary Table

Issue	Alternative							
	No Action	**Common to All**	**Proposed Action- Site 1**	**Site 2**	**Site 3 (Options O, U, T)**	**Site 3A (Options O, U, T)**	**Site 7**	**Site 11**
Issue 1 – Visual	Plan Conformant	Plan conformant	Not plan conformant	Not plan conformant	Not plan conformant	Plan conformant	Plan conformant	Plan conformant
Issue 2 – Noise	No impact	*Short-term:* 60–84 dBA for 16–20 months. *Long-term:* no corona noise	*Short-term:* 60–84 dBA for 16–20 months. *Long-term:* no increase in background noise	*Short-term:* 60–84 dBA for 16–20 months. *Long-term:* no increase in background noise	*Short-term:* 60–84 dBA for 16–20 months. *Long-term:* no increase in background noise	*Short-term:* 60–84 dBA for 16–20 months. *Long-term:* no increase in background noise	*Short-term:* 60–72 dBA for 20–26 months. *Long-term:* no increase in background noise	*Short-term:* 60–66 dBA for 18–24 months. *Long-term:* no increase in background noise
Issue 3 – EMF	Existing EMF and exposure remains unchanged for 6 residences near 345 kV line.	No impacts; EMF levels decline to zero at the boundary of the substation	No impacts; EMF levels decline to zero at the boundary of the substation	No impacts; EMF levels decline to zero at the boundary of the substation	No impacts; EMF levels decline to zero at the boundary of the substation and distribution ROW	No impacts; EMF levels decline to zero at the boundary of the substation and distribution ROW	No impacts; EMF levels decline to zero at the boundary of the substation	No impacts; EMF levels decline to zero at the boundary of the substation and the transmission corridor is not near homes
Issue 4 – Property Value	No impact	No impacts; distribution lines typically do not impact property values	2 homes could decrease 2.9%	1 home could decrease 0.4%	1 home could decrease 2.1%	No impacts	No impacts	No impacts
Issue 5 – Water Flow	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	Impacts to water flows from Access Road and substation site pad	Impacts to water flows from substation site pad
Issue 6 – Economic Impact	Inability to support demands and projected growth.	Installation of the substation and electrical infrastructure would result in increased capacity and reliability of the electrical system, and support future development and growth in the area.						

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CHAPTER 4. CONSULTATION AND COORDINATION

All interested parties were notified of the availability of the EA for public review, by mailing a letter to addresses of record and posting notice to newsletter and newspaper outlets. Notification includes interested stakeholders, lease holders, grazing permit holders, and any other party that has notified the BLM of the desire to receive notification about the project. Doña Ana County and City of Las Cruces representatives are included on the project mailing list. The BLM is consulting with the New Mexico Historic Preservation Division on cultural resource clearances throughout the process.

4.1 Public Involvement

The BLM released the EA to the public from March 26, 2018 to April 30, 2018 (a total of 36 calendar days). The EA was made available on the BLM ePlanning website and at the BLM Las Cruces District Office. Notice of the public review and comment period and how to file comments was posted on the BLM ePlanning website and distributed via mailing list (direct U.S. mail and email) to interested parties on March 26, 2018.

During the public comment period, the BLM held a public outreach meeting on April 5, 2018 at the New Mexico Farm and Ranch Heritage Museum in Las Cruces. This open-house meeting was announced as part of the public notice for the EA on the BLM ePlanning website and via mailing list on March 26, 2018. Printed copies of the EA were made available to meeting attendees. Meeting records show that approximately 80 members of the public attended the April 5, 2018 public meeting.

Those wishing to submit comments on the EA to the BLM could do so via hardcopy comment forms made available at the public meeting, or by direct mail to the BLM LCDO office in Las Cruces or via email. The BLM received 157 individual comment letters, including a handful of late submissions received after the close of the comment period on April 30, 2018. All comments, including the late submissions, were accepted and given consideration.

All comments received for the EA were carefully considered by the BLM. Each of the comment letters were then reviewed for substantive input following the agency's criteria for substantive comments (BLM Handbook H-1790-1). Resolutions to substantive comments were developed and a resolution matrix is included in Appendix D.

This revised EA will inform the BLM decision process, as documented in a separate Decision Record and (if applicable) Finding of No Significant Impact. Table 4-1 summarizes issue areas and concerns brought forward by the public during the EA comment period.

Table 4-1. Summary of Concerns Identified During the EA Public Comment Period

Concern	Where Addressed in EA	Where Addressed in Comment Response Matrix (see Appendix D)*
Impacts to the viewshed from residences and Dripping Springs Road	Section 3.3 Section 2.2.3.7	Comment no. 048
Impacts to nearby residences from noise due to construction and operation of the proposed project	Sections 3.4 Section 2.2.3.8	Comment nos. 126, 129
Impacts to the health of nearby residents from electromagnetic fields	Section 3.5	Comment no. 203

Concern	Where Addressed in EA	Where Addressed in Comment Response Matrix (see Appendix D)*
Impacts to residential property values from impacts to the viewshed, increased noise, and quality of life	Section 3.6	Comment no. 001
Impacts to vegetation	Table 1–2 Section 2.2.3.2	Comment no. 232
Impacts to general wildlife and threatened and endangered species	Table 1–2 Section 2.2.3.4	Comment no. 051
Impacts to the Organ Mountains–Desert Peaks National Monument	Table 1–2	Comment no. 077
Impacts to dark skies/nighttime viewing conditions	Table 1–2 Section 2.2.3.9	Comment no. 008
Impacts to public safety	Table 1–2 Section 2.2.3.10	Comment no. 016
Impacts to groundwater resources	Table 1–2 Section 2.2.3.3	Comment no. 033
Justification for the business need of the project in the EA (on behalf of EPE as the project proponent)	No revision required	Comment nos. 002, 015
Justification of the overall need for the proposed project in the EA (on behalf of the BLM, as the lead agency)	No revision required	Comment no. 002
Alternative locations in other areas of Las Cruces and Doña Ana County in lieu of the action alternatives presented in the EA	Alternatives Report (Appendix B)	Comment nos. 25, 202
Absence of consideration for alternatives for energy generation, including renewable sources (e.g., solar), in the EA	No revision required	Comment no. 044
Absence of consideration of alternative solutions that do not involve a new substation and/or solutions that do not involve additional power capacity in the EA	Alternatives Report (Appendix B)	Comment no. 185
Impacts of substation lighting at night on property values	Table 1–2 Section 2.2.3.9	Comment no. 008
Visual simulation for Alternatives 3A-O and 3-O	Figure 3–11	Comment no. 077
Interchangeable use of terms in the EA such as “could, should, would, will, may” (and other modal verbs) allows for too much uncertainty	Revised as appropriate	Comment nos. 080, 094
BLM should respond to individual comments via email	No revision required	Comment no. 081
The proposed project does not comply with the Doña Ana County Unified Development Code (UDC)	No revision required	Comment no. 084

Concern	Where Addressed in EA	Where Addressed in Comment Response Matrix (see Appendix D)*
Clarification regarding the size and scale of the distribution structures for the proposed project	Section 2.2.2.3 and 2.2.2.4	Comment no. 087
Clarification on the role of the New Mexico Public Regulatory Commission in the NEPA process	No revision required	Comment no. 098
Potential for future expansion of the proposed project, once constructed	No revision required	Comment no, 121
Lack of ambient, existing noise-level data within the analysis area	Section 3.4.2	Comment no. 126
Conditions under which corona noise generated by the project components would be audible	Sections 3.4 and 3.4.2.3	Comment no. 129

*Comment number refers to the individual comment/issue and root/base response developed as resolution. There may be other comments in the response matrix that bring forward the same issue area/concern.

CHAPTER 5. LIST OF PREPARERS

The BLM established an ID Team made up of BLM staff specialists who developed the EA. The BLM worked with cooperating agencies and a third-party contractor to develop the content and analysis in the EA. The following presents a list of preparers who participated in the development of this EA.

Name	Title	Organization or Agency
Paula Montez	Project Manager and Realty Specialist	BLM – LCDO
Ikumi Doucette	Planning and Environmental Coordinator	BLM – LCDO
Dave Wallace	Assistant District Manager	BLM – LCDO
Michael Johnson	Zone Socioeconomic Specialist	BLM – Arizona and New Mexico
Carty Carson	Park Ranger	BLM – LCDO
Gordon Michaud	Soil Scientist	BLM – LCDO
Corey Durr	Hydrologist	BLM – LCDO
David Legare	Archaeologist	BLM – LCDO
Jennifer Hyre	Project Manager and Wildlife Biologist	SWCA Environmental Consultants
Paige Marchus	NEPA Lead	SWCA Environmental Consultants
Annie Lutes	Planning Specialist	SWCA Environmental Consultants
Max Wiegmann	Planning Specialist	SWCA Environmental Consultants
Alex Simons	Planning Specialist	SWCA Environmental Consultants
Julie DeHaven	GIS Specialist	SWCA Environmental Consultants

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APPENDIX A. GRAPHICS

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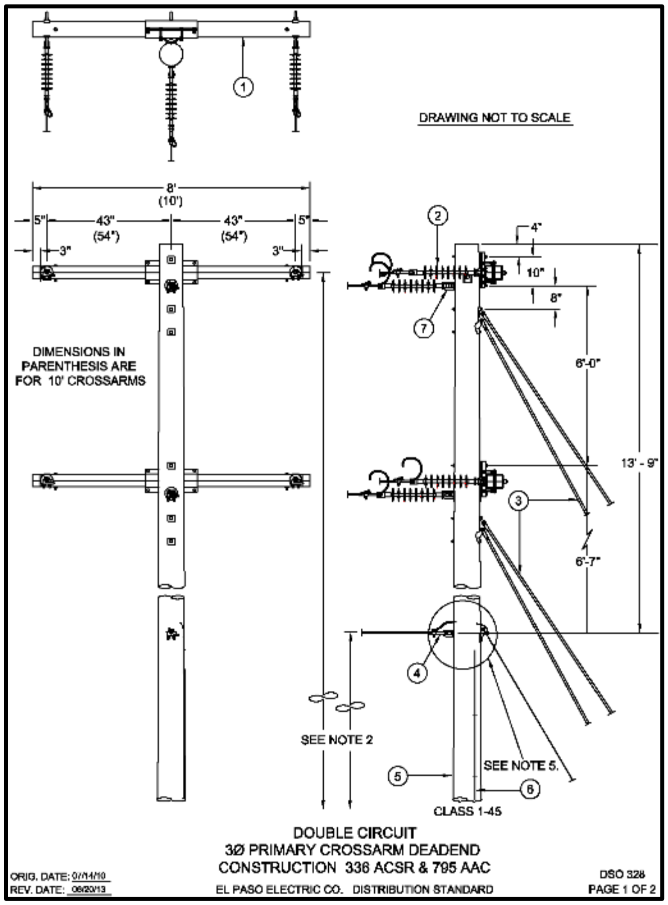

Figure A-1. Standard 24-kV double-circuit structure design.

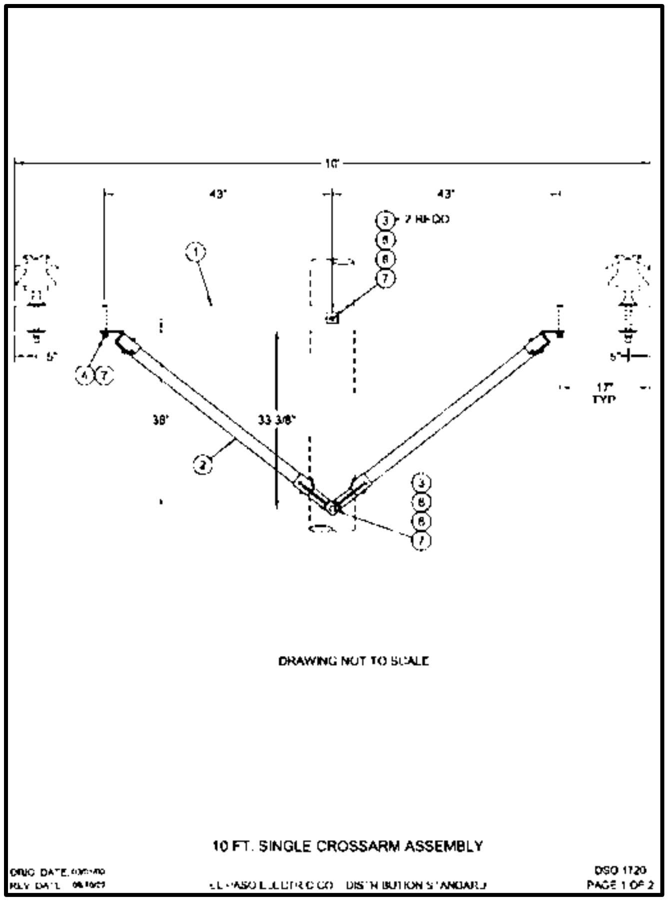

Figure A-2. Standard 24-kV single wood cross-arm design.

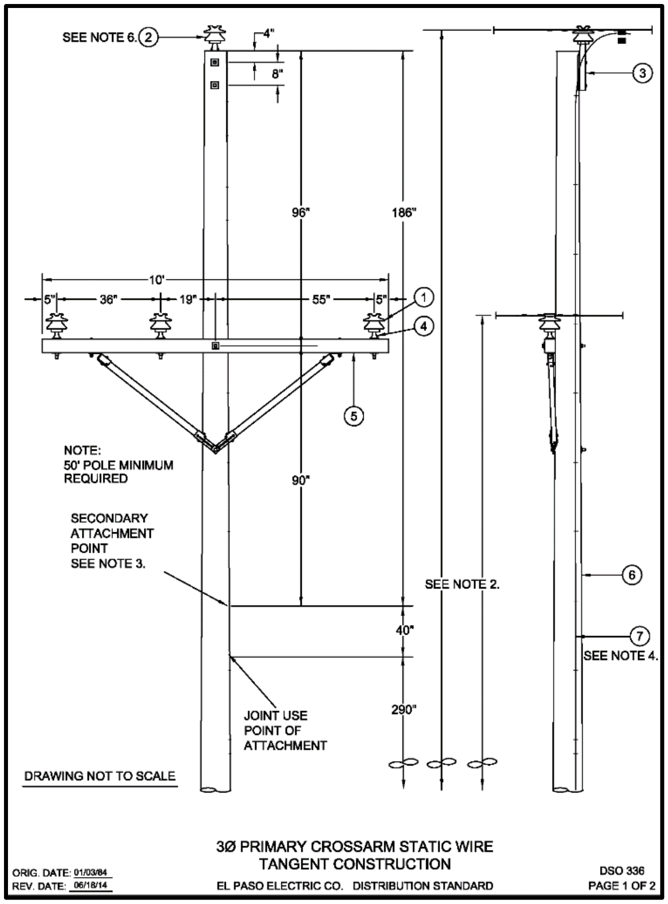

Figure A-3. Standard 24-kV single-circuit structure design.

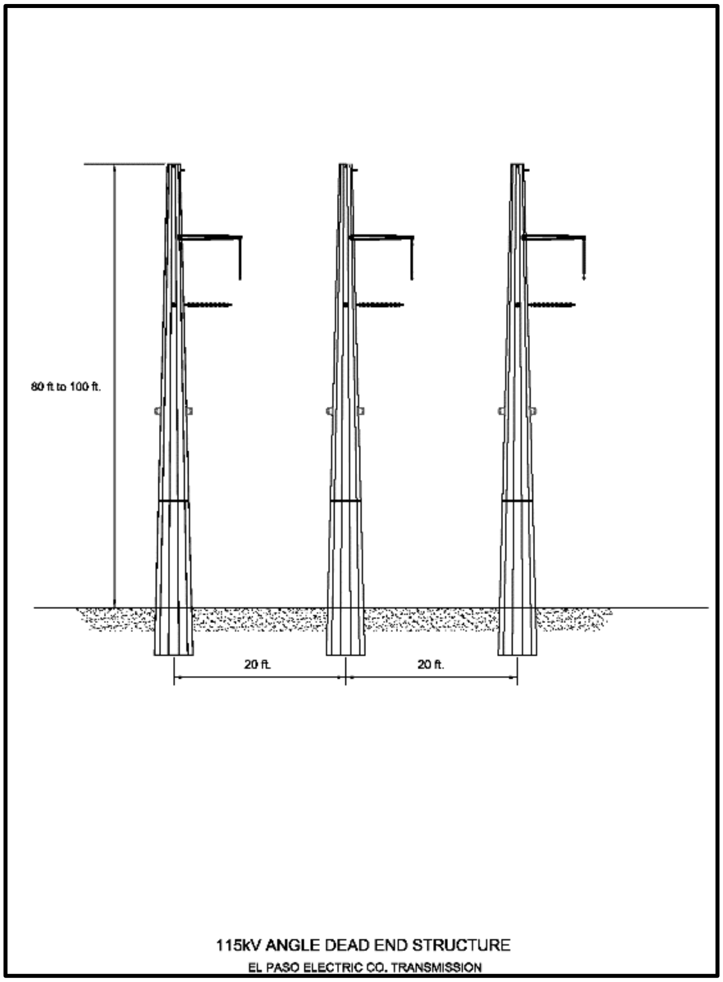

Figure A-4. Basic 115-kV three-pole dead-end structure design.

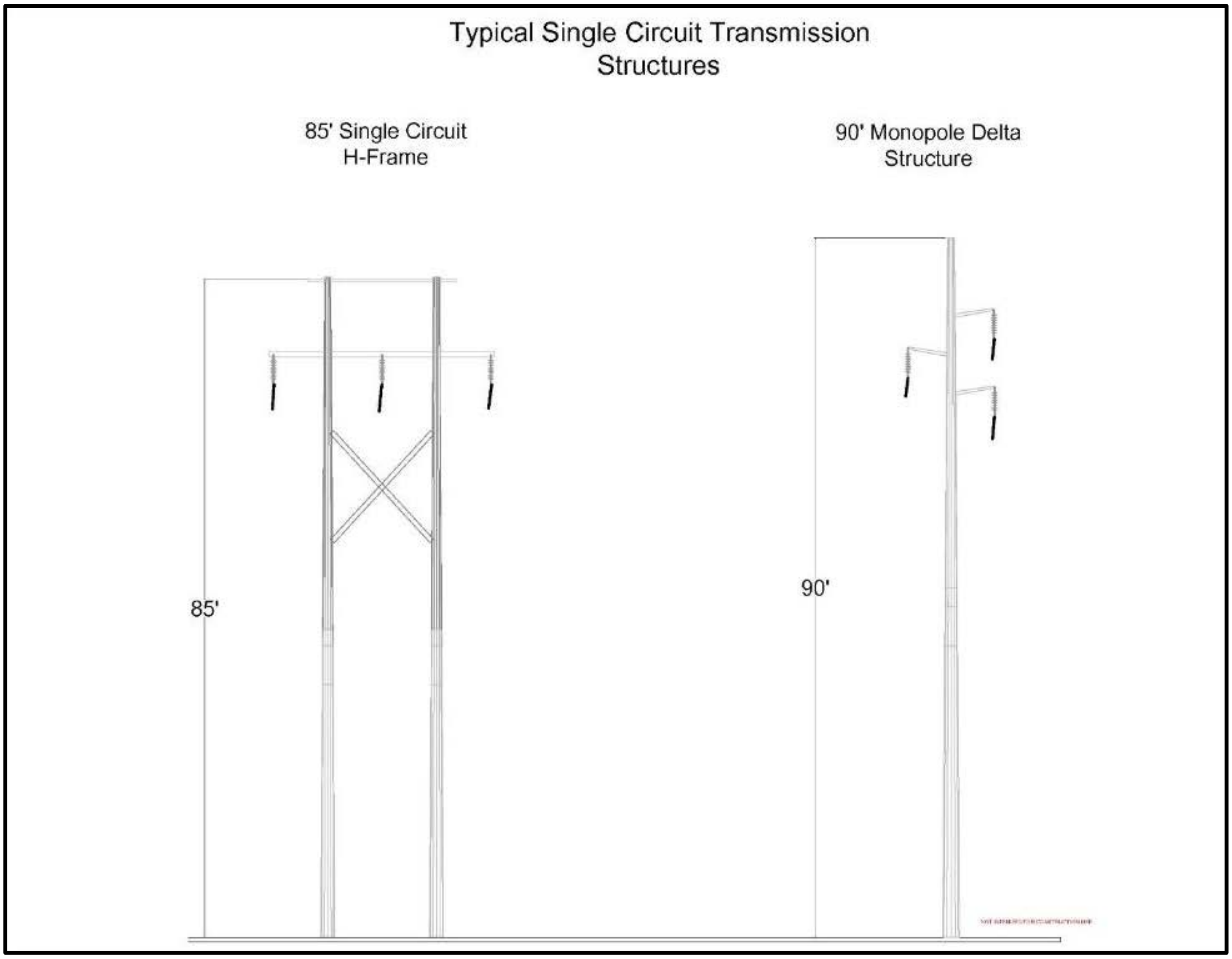

Figure A-5. Typical single-circuit transmission structures.

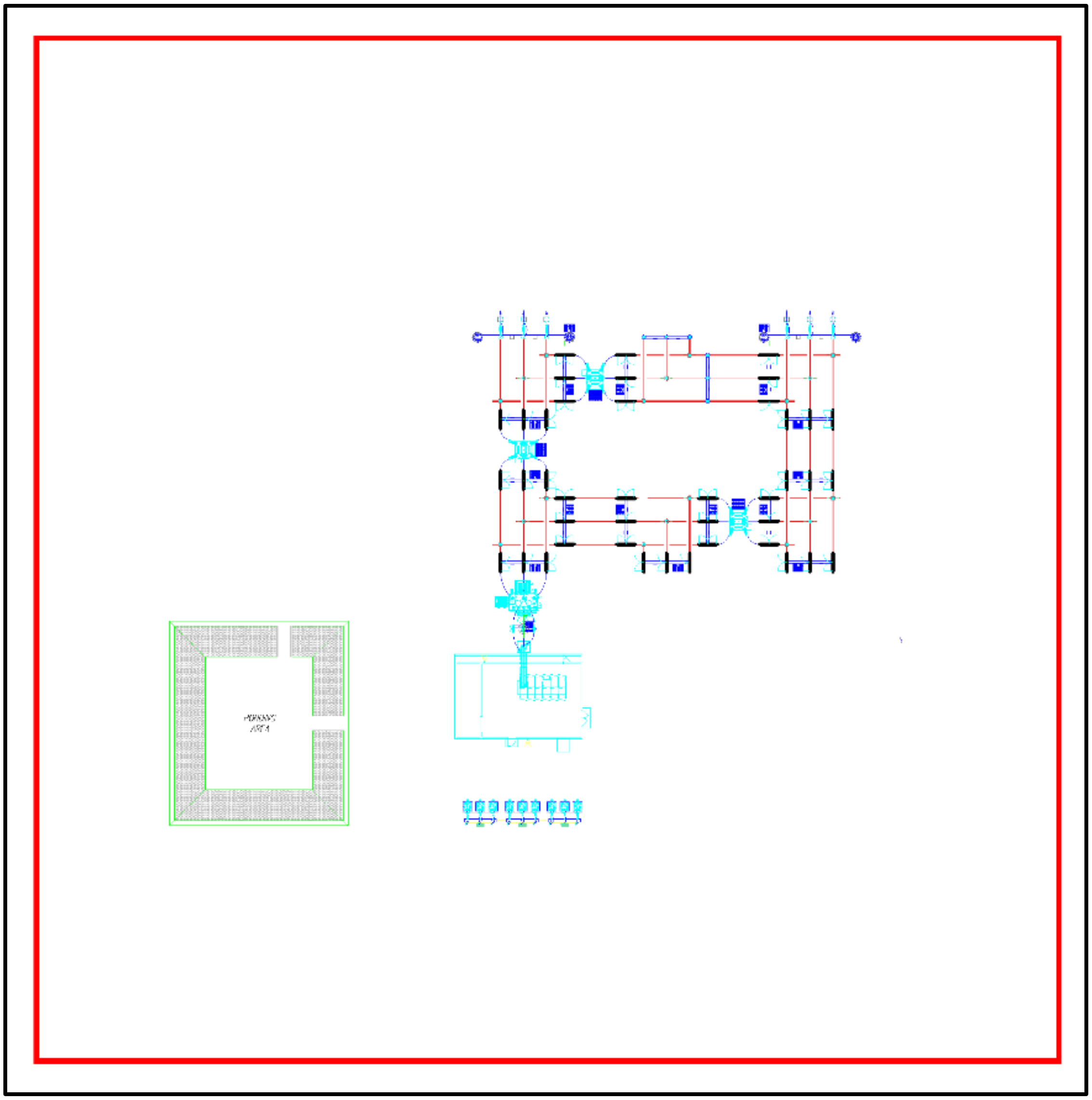

Figure A-6. Conceptual substation site plan (layout will be dependent on final engineering and design).

APPENDIX B. ALTERNATIVES REPORT

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APPENDIX C. VISUAL CONTRAST RATING FORMS

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APPENDIX D. EA PUBLIC COMMENT AND RESPONSE MATRIX

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