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Talavera Substation and Distribution Project

Environmental Assessment

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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
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
NEPA	National Environmental Policy Act of 1969
NMPRC	New Mexico Public Regulation Commission
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
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 an additional 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 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)[1] 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 distribution line safety practices, including access for modern-sized equipment and better safety clearances for line workers during construction, maintenance, and inspections.

[1] While included under the Proposed Action, no rebuilding of this line is proposed, and the existing ROW width would remain at 20 feet.

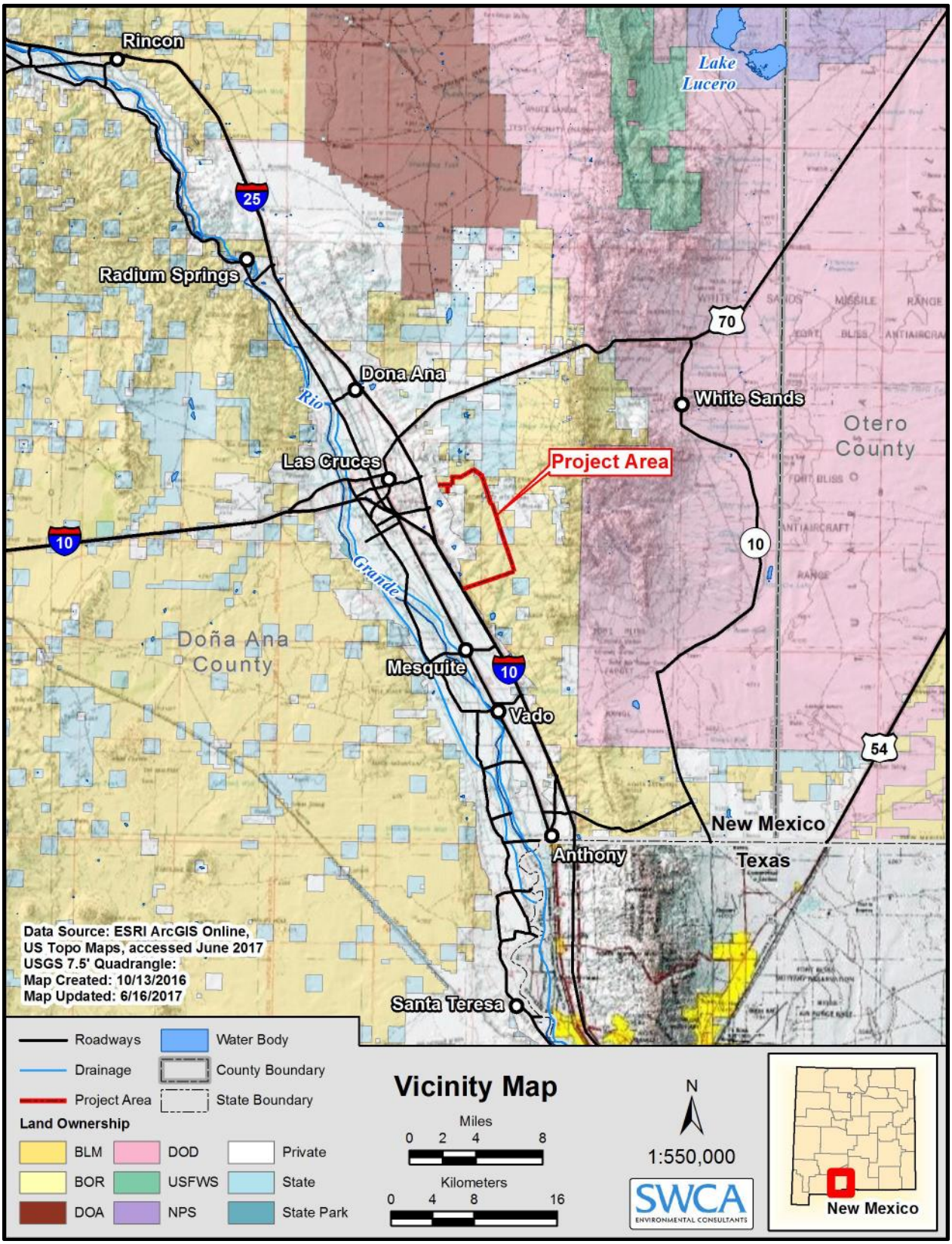

Figure 1-1. Project vicinity.

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. 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 it 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. 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 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 all impacts of the action, or if the public scoping response necessitated full analysis, 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 better electrical capacity benefit 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, or if potential impacts would be mitigated 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] 2017a). 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 been successfully revegetated to achieve percent cover of 35%–45% native vegetation to blend with the surrounding landscape, as documented in the biological survey report (SWCA 2017a).
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 2017a). 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. Additional vegetation surveys would be conducted prior to project construction. 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 been successfully revegetated to achieve percent cover of 35%–45% 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 implementation of BLM's standard stipulations for weed control and revegetation (SWCA 2017a).
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 on September 28, 2017. Two previously recorded archaeological sites (LA 2894 and LA 120447) and one newly identified site (LA 186990) were recorded (SWCA 2017b). 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, and all known cultural resources identified in the project area would be avoided or mitigated. 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).

Issue Statement	Rationale for Not Further Discussing in Detail in the EA*
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 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. It is assumed 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.
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 2017a). 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 2017a). 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 2017a). 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. 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. 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 all known key habitat would be avoided or mitigated in consultation with appropriate agencies. Project design features also include facility design, timing restrictions for construction, monitoring, and other best management practices (see Section 2.2.3) for mitigation of impacts to wildlife.

Issue Statement	Rationale for Not Further Discussing in Detail in the EA*
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 2017c, 2017d). Additional paleontological resource surveys would be required ahead of any ground-disturbing activities, and all known paleontological resources would be avoided or mitigated. This would include monitoring during construction in site-specific areas (see Section 2.2.3).
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 2017a–2017d). 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 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.

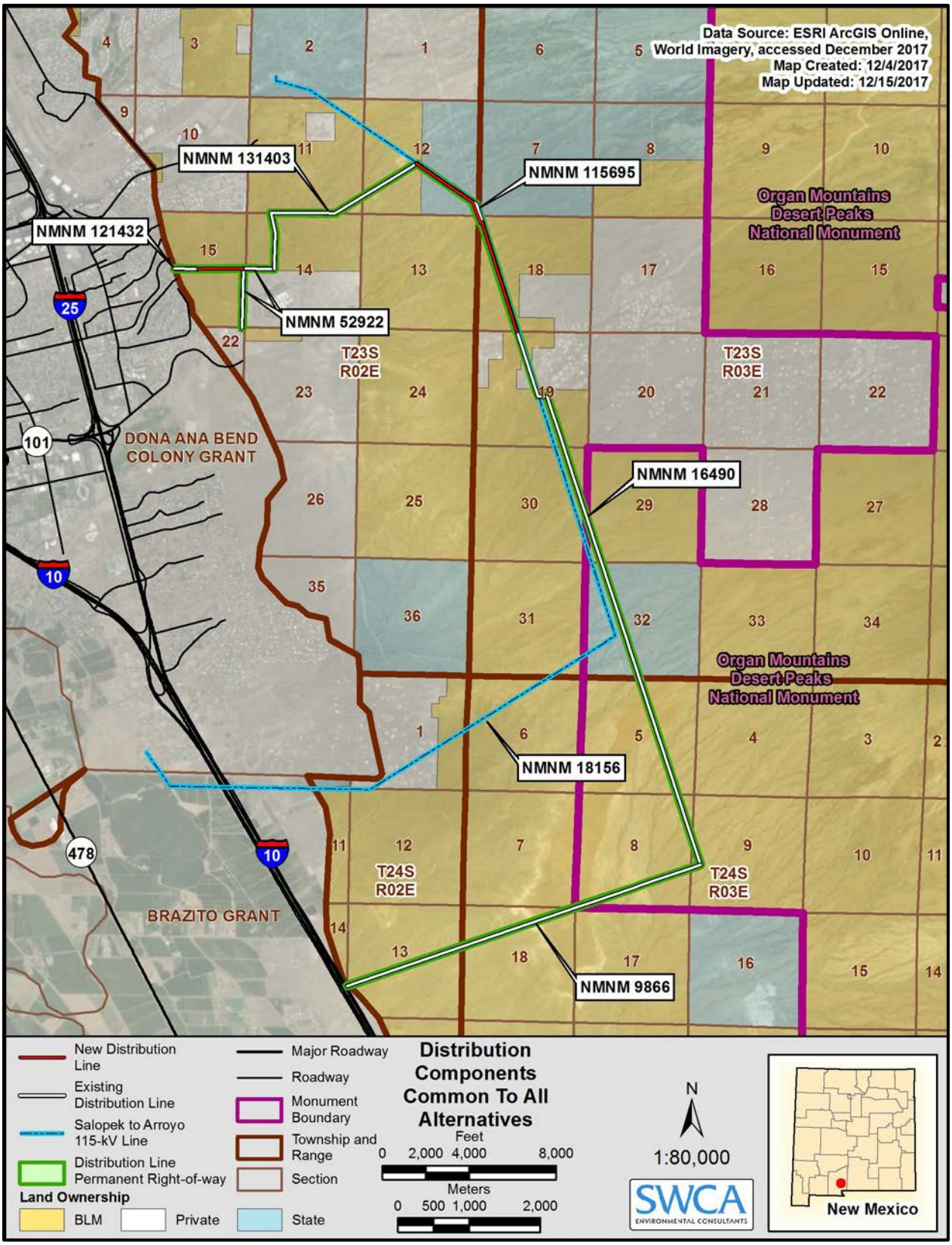

Figure 2-1. Distribution components.

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 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.

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.

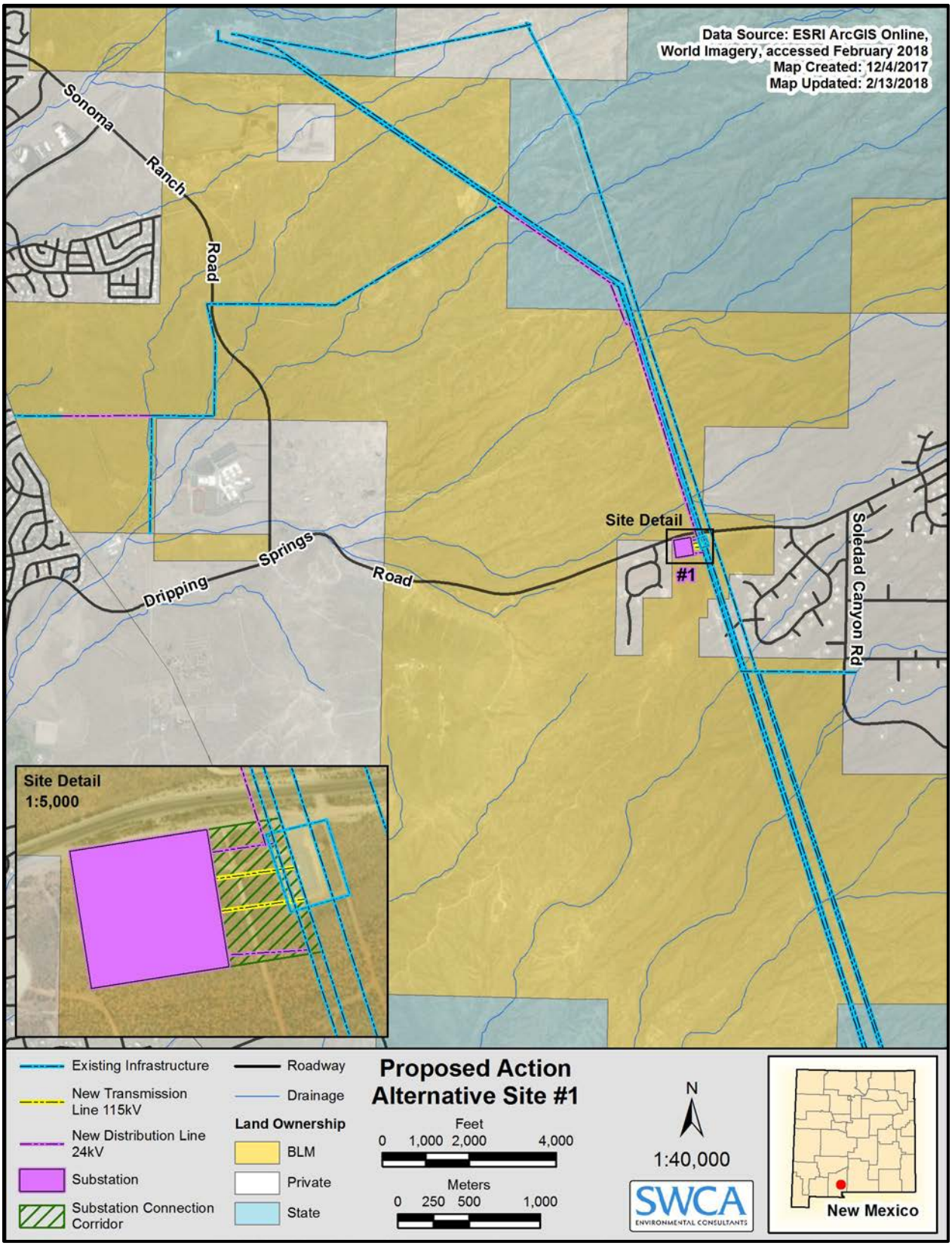

Figure 2-2. Vicinity and location for Proposed Action Site 1.

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 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.

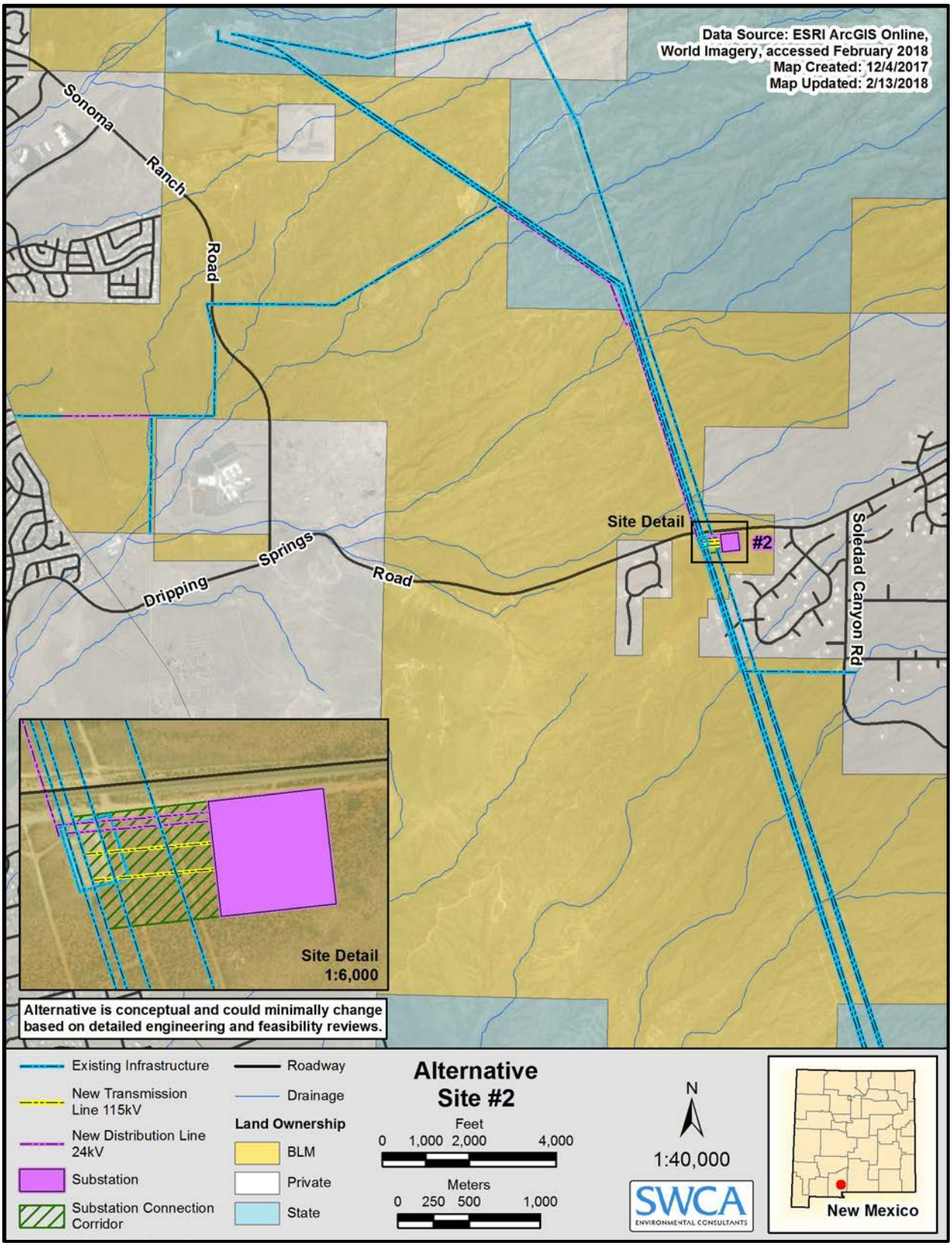

Figure 2-3. Vicinity and location for Alternative Site 2.

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.

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.

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.

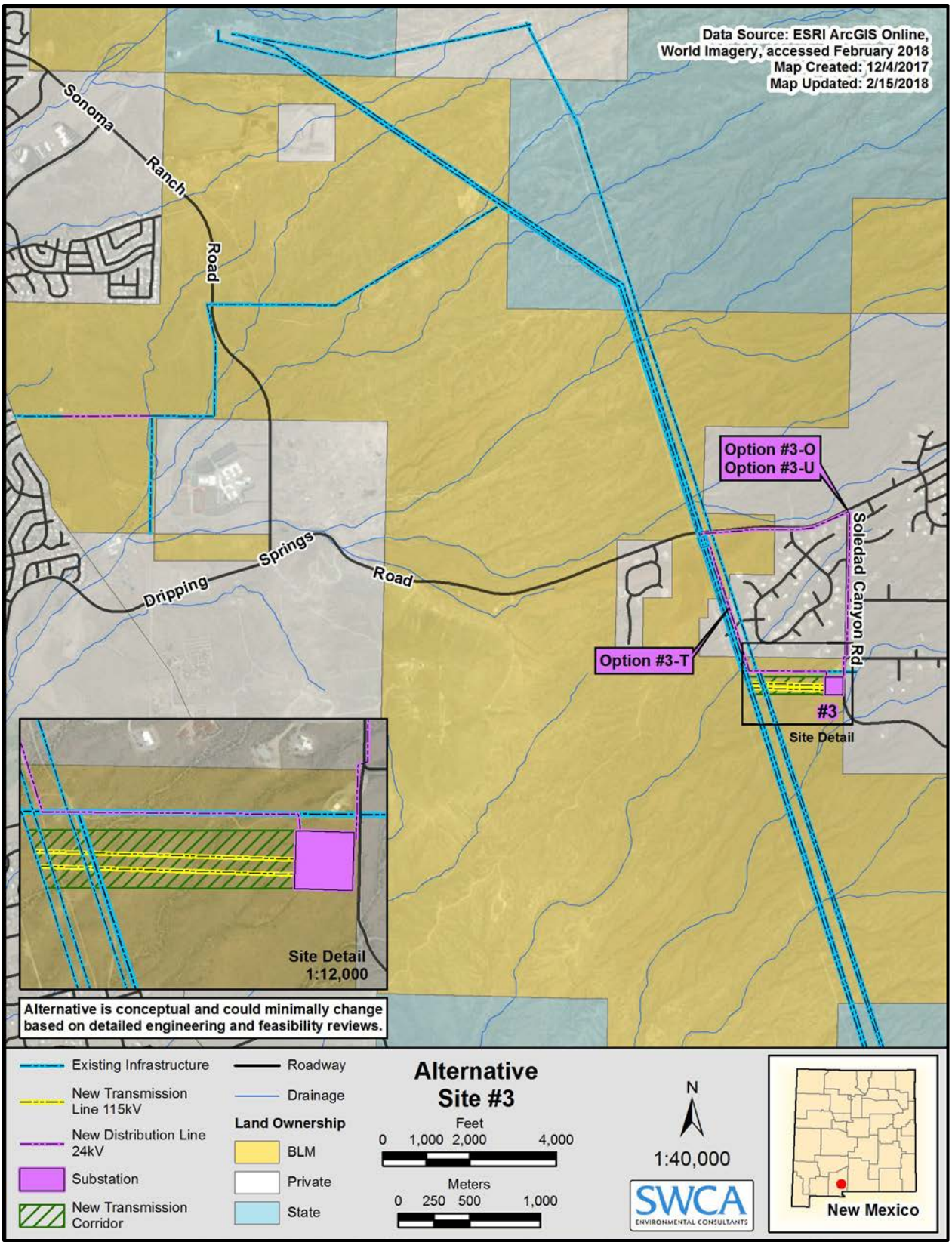

Figure 2-4. Vicinity and location for Alternative Site 3.

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 Scofield Systems Naturescapes Chart A-92014NS) 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 could 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.

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.

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.

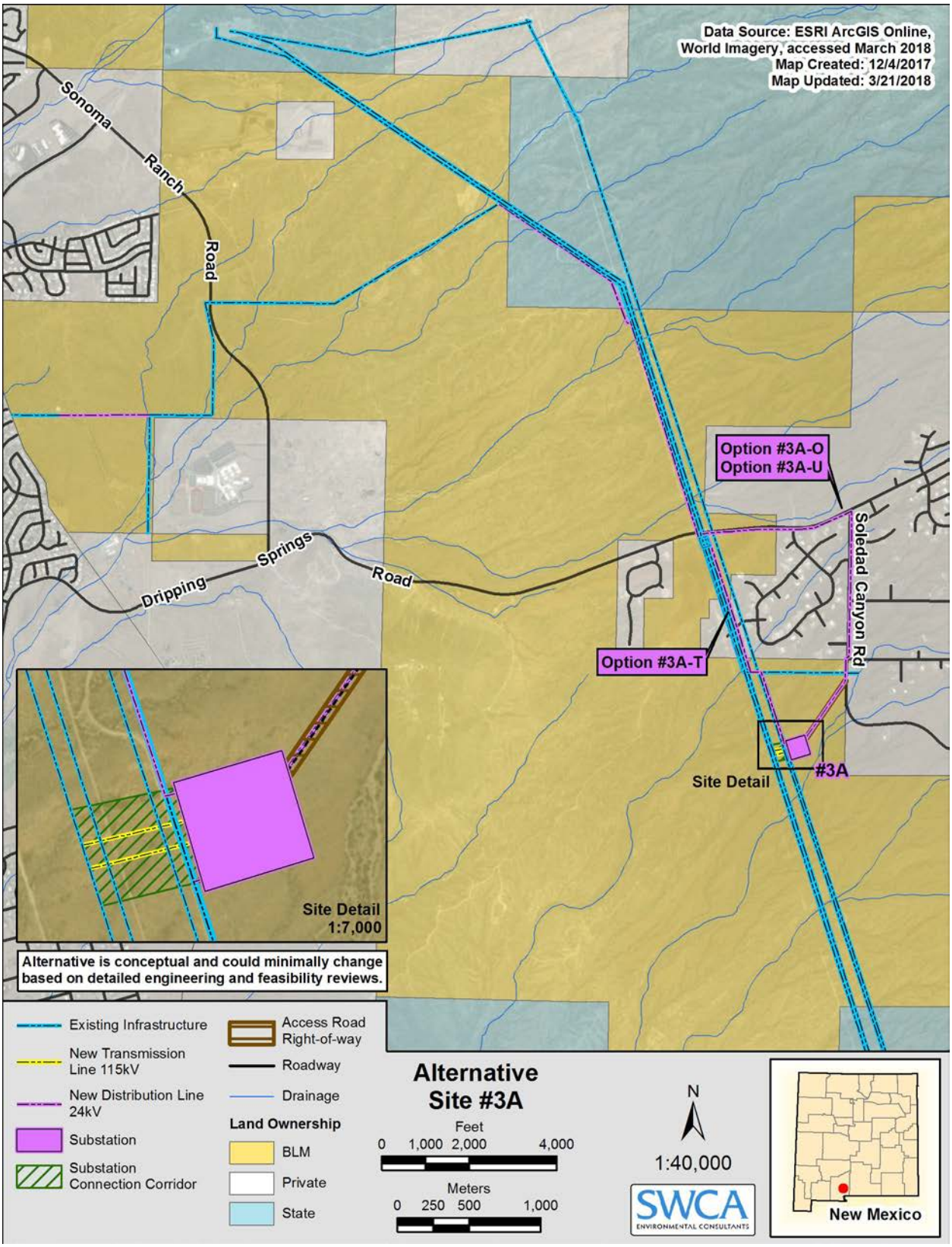

Figure 2-5. Vicinity and location for Alternative Site 3A.

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 could 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.

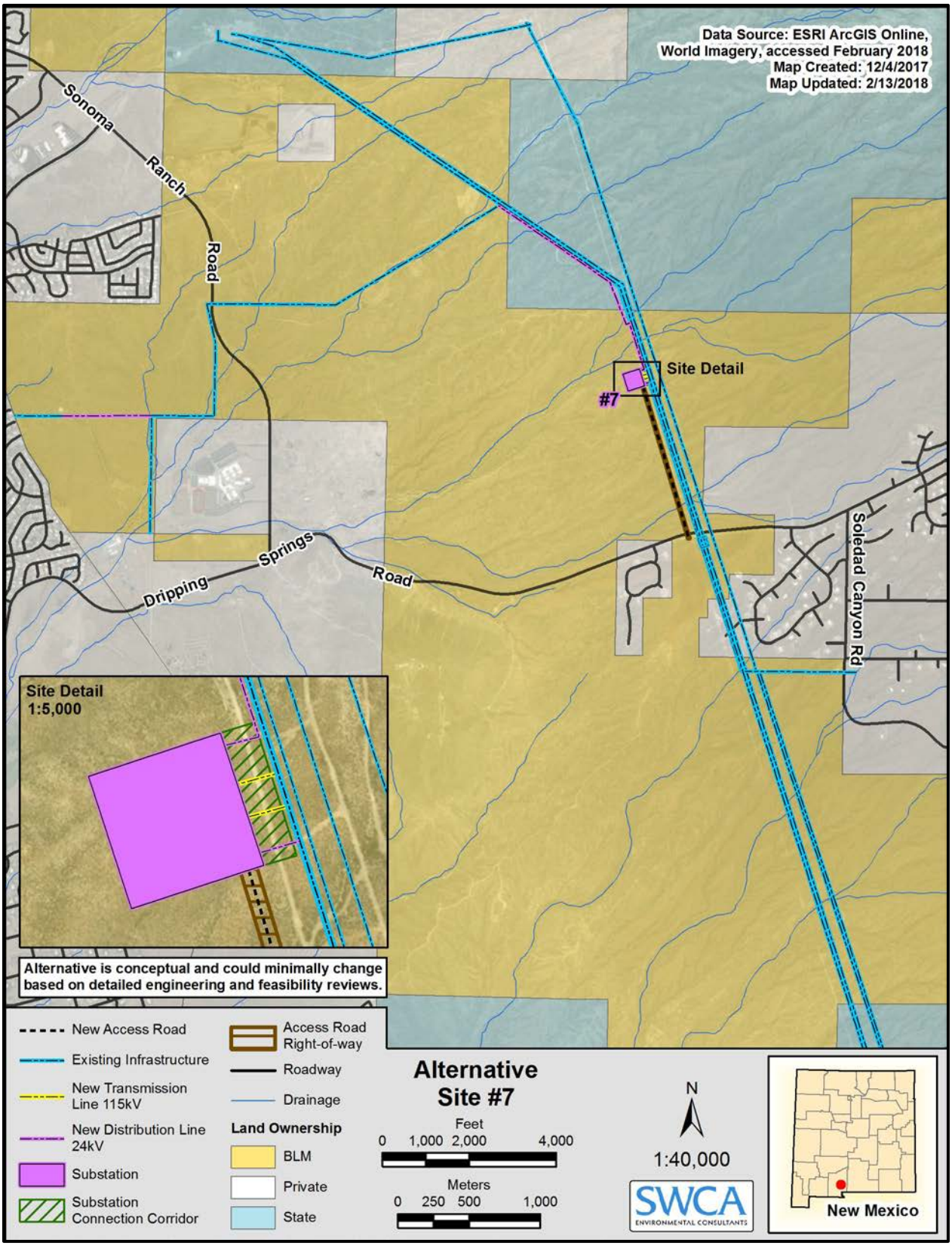

Figure 2-6. Vicinity and location for Alternative Site 7.

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 could 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.

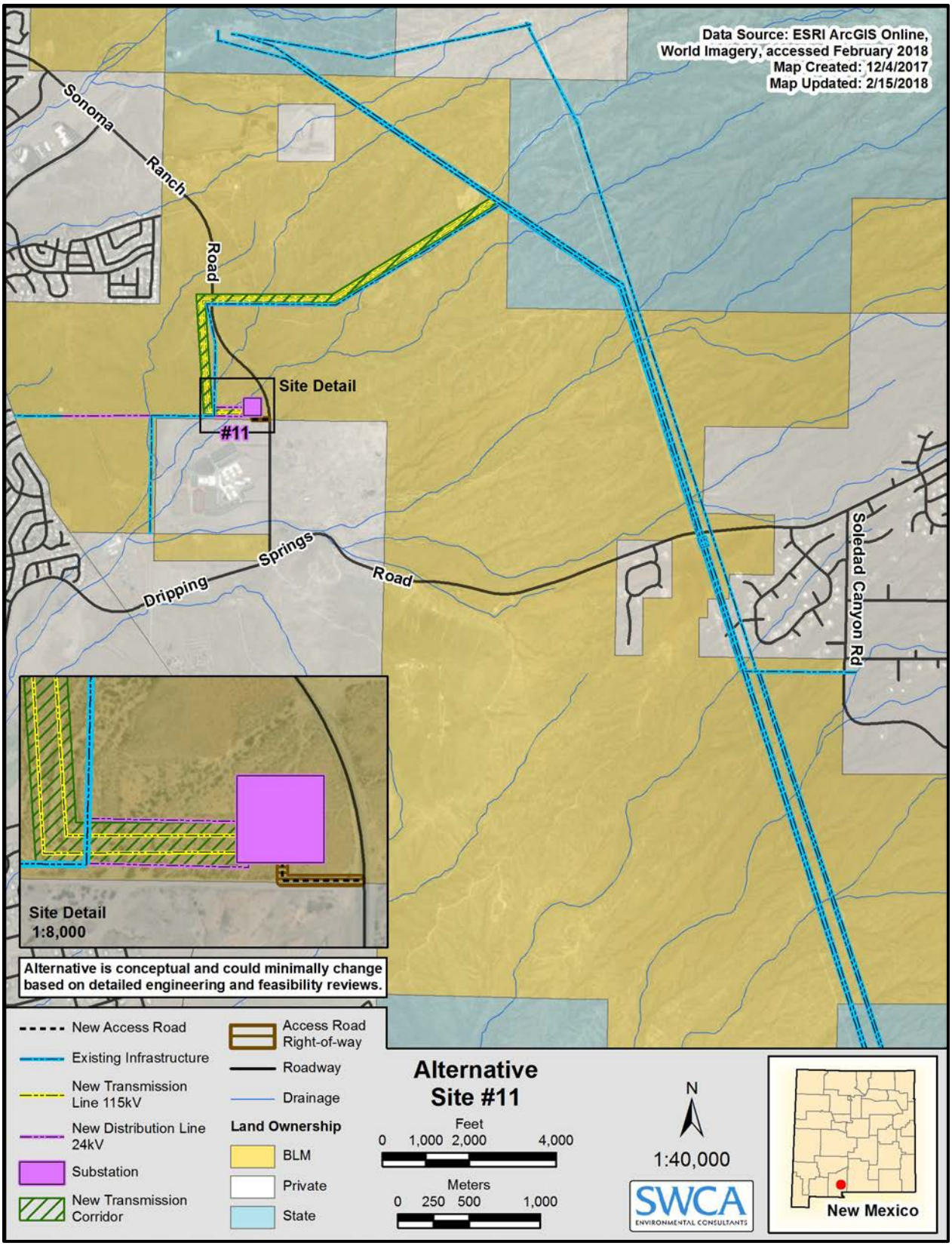

Figure 2-7. Vicinity and location for Alternative Site 11.

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.
- 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 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.

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).

2.3. 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.[2] 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 Environmental Consultants 2017e), which documents in detail the development of alternatives and screening methods used in the preparation of this EA, is provided in Appendix B.

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

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.

3.2. 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. Potential new housing in vacant lots in Talavera and Organ Mesa Ranch subdivisions with associated infrastructure such as roads 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 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 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.

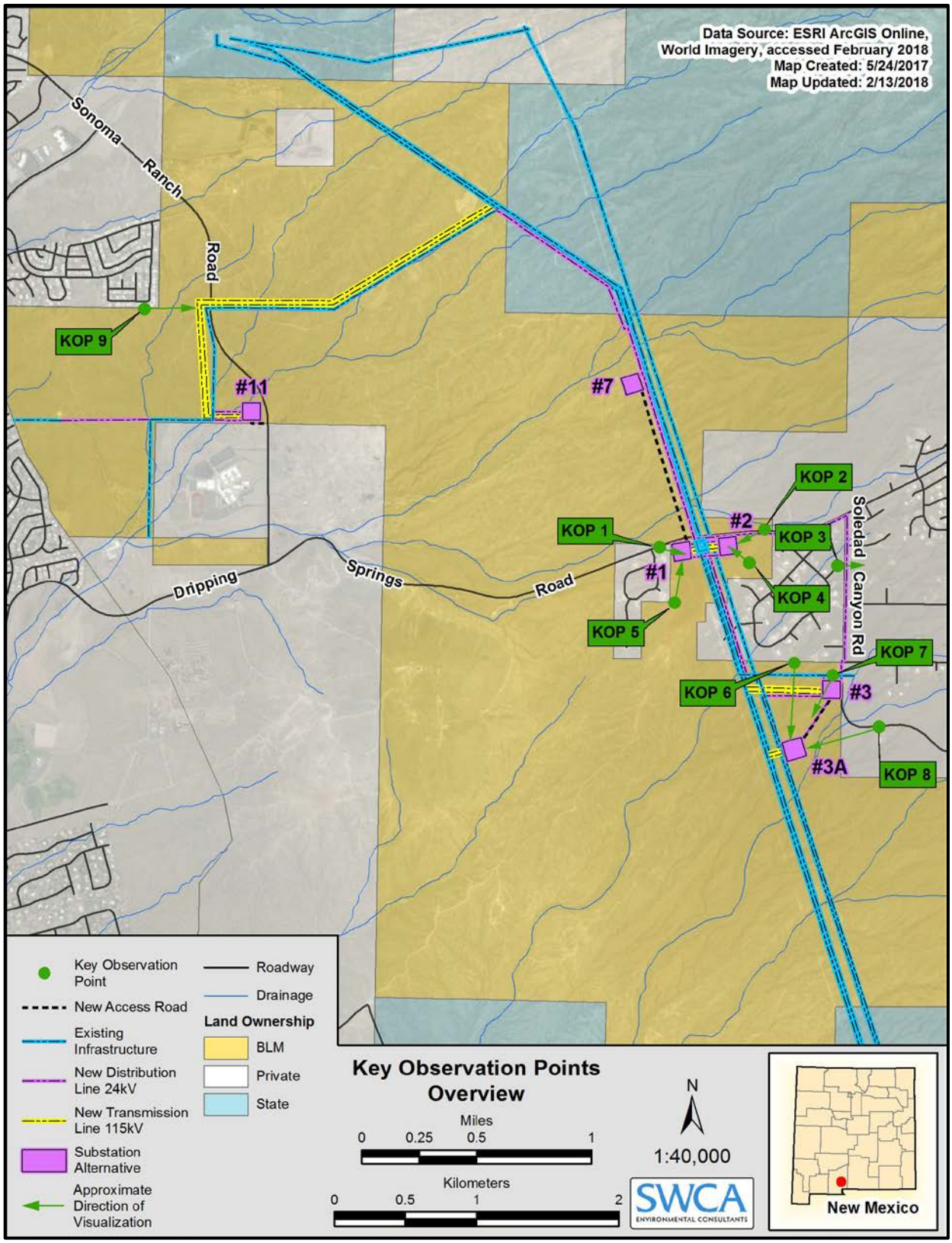

Figure 3-1. Key observation points overview.

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). 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.

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 be 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 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.[3]

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.[4] 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).[5] Lastly, the transmission line infrastructure, which may produce audible corona noise (the a crackling or hissing sound resulting from the breakdown of air into charged particles caused by the electrical field on the surface of the conductor wire) under certain environmental conditions would have a maximum hourly level of 11 L_{eq} dBA 75 feet from the transmission component, a level, even at half that distance (17 L_{eq} dBA at 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).[6] Transformer noise and corona activity would 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

[3] 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).

[4] 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.

[5] 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).

[6] 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).

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). 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 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.[7]

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, which is the result of the "hum" of the transformer. This audible sound level accounts for the added noise of the cooling fan when it is in operation.

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.

[7] 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]), based on the rule of decibel addition (BLM 2011).

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.

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 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.

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

Alternative	No. of Residences within Analysis Area	Short-Term Impact (Construction)	Long-Term Impact*
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.

* 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, which would fall to49 dBA, below levels of a typical indoor conversation of 60 dBA (USDOE 1996) approximately 16 feet from the source. 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.

Under the Proposed Action, the only potential source of corona noise would be that produced by the 115-kV overhead lines tying into the new substation. 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, 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.

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.

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. 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).

The construction of this double 115-kV transmission line under Alternative Site 3 would result in an increase of 13 L_{eq} dBA 75 feet from the transmission line structure, which would 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 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 construction-related noise in the analysis area.

The operation of the double 115-kV transmission line under Alternative Site 11 would result in a long-term increase to ambient noise conditions within 500 feet of the line (40–50 decibels, depending on conditions). There would be no impact to nearby residences, as none are located within 500 feet of the transmission corridor.

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 EMFs) 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 EMFs 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, fields drop to levels that are found 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 sources found in the environment.

Research has not determined whether exposure to EMFs 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 EMFs 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 EMFs, 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 EMFs. 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 EMFs 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, EMFs 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 EMFs 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 EMFs are substantially reduced by typical equipment spacing and local shielding (National Radiation Laboratory 2008; WAPA 2017). As EMFs are low and not measurable beyond the perimeter wall of the substation, the main source of EMFs 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 EMFs 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). EMFs 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 EMFs 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 3-6 above) (ICNIRP 2010; WAPA 2017).

There are no federal standards that limit public exposure to EMFs. 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 EMFs 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 EMFs

Alternative	No. of Residences within 300-feet	Impact
No Action	–	–
Distribution Components Common to All	10	No impacts; EMFs 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

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's in the area from the existing high-voltage transmission lines would continue.

3.5.2.2. Impacts of All Action Alternatives

Any Distribution Lines

Because EMFs 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 EMFs 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 EMFs would be limited to within the substation parcel because substations are not major sources of EMFs 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 (in fact, fluorescent lights within the home produce higher levels [WAPA 2017]), none of the residences within the analysis area would be exposed to EMFs from these project components. The levels of EMFs 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 EMFs as overall impacts to quality of life (Pitts and Jackson 2007). Because distribution lines are lower voltage, produce low levels of EMFs, emit no corona noise, and do not have the degree of visual intrusion that larger transmission structures do, distribution lines typically do not have a perceived impact on property values.

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 has already constrained the value of those residences. 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 views and property values.

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 (Jackson and Pitts 2010; Moore 2017; Pitts and Jackson 2007). These studies 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). These studies have yielded mixed results regarding effects on property values. Many studies found no significant effects to residential property values resulting from transmission lines; others identified minor, negative impacts 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 negative impacts to values of surrounding residential properties, all concluded that as distance from the lines increased, the percentage of reduction in value decreased rapidly (Pitts and Jackson 2007).

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 (below 230 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.

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), condition of the economy, employment rates, and, with all of these taken into account, the characteristics (including size, location, extent) of the area of concern. Table 3-6 summarizes the number and distance of nearest residences to proposed infrastructure.

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; distribution lines typically do not impact property values (Tatos et al. 2016)
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	
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

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 would also be no impact to residential property values in the analysis area resulting from the construction, operation, and maintenance of the 2.2 miles of new 24-kV distribution line because research suggests proximity to distribution lines, which are located closest to the consumer and are common in residential areas (Tatos et al. 2016:207), do not affect property values, and every residence must have distribution to have electricity.

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 EMFs (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 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 EMFs 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 unlikely as distribution lines do not generate detectable levels of noise or EMFs outside the ROW, and based on data available, distribution lines do not contribute to a decline in values to the same degree as transmission and transmission lines, and substation facilities (Tatos et al. 2016).

There would be no impact to property values for residences within the 500-foot analysis area under Options 3-U or 3-T. There would be no residences that would experience increased noise levels above ambient conditions or exposure to EMFs as discussed in Sections 3.4.2.3 and 3.5.2.2 above. 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
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 better electrical capacity benefit 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 stored on 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 better 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 benefit 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.

3.9. Environmental Impacts Summary

Table 3-10. Environmental Impacts Summary Table

	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

	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 6 – Community Benefit	Inability to support demands and projected growth.	Installation of the substation and electrical infrastructure would benefit the community by providing increased capacity and reliability of the electrical system, and enable future development and growth in the area.						

CHAPTER 4. CONSULTATION AND COORDINATION

All interested parties will be notified of the availability of the Draft EA for public review, by mailing a letter to addresses of record and posting notice to newsletter and newspaper outlets. Notification will include 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.

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
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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
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CHAPTER 6. REFERENCES

Avian Power Line Interaction Committee. 2006. *Suggested Practices for Avian Protection On Power Lines: The State of the Art in 2006.* Washington, D.C. and Sacramento, California: Edison Electric Institute, APLIC, and the California Energy Commission.

Center for Hearing and Communication. 2018. Common environmental noise levels. Available at: http://chchearing.org/noise/common-environmental-noise-levels/. Accessed February 12, 2018.

Bureau of Land Management (BLM). 1993. *Mimbres Resource Management Plan*. Las Cruces, New Mexico: U.S. Department of the Interior, Bureau of Land Management, Las Cruces District Office, Mimbres Resource Area.

———. 2008a. *BLM National Environmental Policy Act Handbook H-1790-1*. Office of the Assistant Director. Washington, D.C.: Renewable Resources and Planning (WA-200).

———. 2008b. Standard Environmental Colors Chart CC-001: June 2008. BLM/WY/ST-08/015+8450.

———. 2010. Visual Resource Inventory. Bureau of Land Management Las Cruces District Office. September 2010.

———. 2011. North Steens Transmission Line Project: Appendix C, Electrical Effects (February 2010). In *North Steens 230-kV Transmission Line Project Final Environmental Impact Statement.* Harney, Oregon: U.S. Department of the Interior, Bureau of Land Management, Burns District Office.

———. 2017. BLM eplanning: DOI-BLM-NM-L000-2017-0008-EA (Talavera Substation, Transmission and Distribution Lines Project). Available at: https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=111390. Accessed December 1, 2017.

Doña Ana County. 2012. *One Valley, One Vision 2040: Doña Ana County, New Mexico Regional Plan.* Available at: http://www.las-cruces.org/~/media/lcpublicwebdev2/site%20documents/article%20documents/community%20development/planning%20and%20revitalization%20docs/misc%20plans/ovov2040finallqview041712.ashx?la=en. Accessed December 7, 2017.

———. 2017. Doña Ana County Code: Chapter 261: Noise. Available at: https://ecode360.com/9861275. Accessed December 7, 2017.

El Paso Electric Company (EPE). 2016. *Talavera Substation and Distribution Project NEPA Plan of Development*. El Paso, Texas: El Paso Electric Company.

Google Earth. 2018. Elevation data extracted from Google Earth. Available at: www.googleearth.com. Accessed on February 8, 2018.

Federal Highway Administration. 2018. Soledad Canyon Road project information. Available at: https://flh.fhwa.dot.gov/projects/nm/soledad/. Accessed February 8, 2018.

Hydro-Québec. 2011. *The Power System and Health: Electric and Magnetic Fields*. Available at: ww.hydroquebec.com/fields/pdf/pop_23_01.pdf. Accessed December 14, 2017.

International Commission on Non-Ionizing Radiation Protection (ICNIRP). 2010. Statement guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 Hz). *Health Physics* 99:818–836.

Itasca County. 2010. *Environmental Assessment for the Proposed Pokegama 115-kV Substation and Transmission Line, Itasca County, Minnesota*. Grand Rapids, Minnesota: Itasca County Board of Commissioners.

Jackson, T.O., and J.M. Pitts. 2010. The effects of electric transmission lines on property values: A literature review. *Journal of Real Estate Literature* 18(2):239–259.

Las Cruces Extraterritorial Zoning Authority. 2000. *2000–2020 Comprehensive Plan for the Las Cruces Extraterritorial Zone*. Available at: https://donaanacounty.org/sites/default/files/pages/ETZ_COMP_PLAN.pdf. Accessed December 7, 2017.

Midwest Research Institute (MRI). 1990. *Survey of Construction/Demolition Open Source Regulations and Dust Control Plans.* Prepared for the U.S. Environmental Protection Agency, Industrial Studies Branch, ESD (MD-13). Kansas City, Missouri: Midwest Research Institute.

Moore, R. 2017. *Substation and Property Values*. Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management, Division of Decision Support, Planning and NEPA (WO-210).

National Radiation Laboratory. 2008. *Electric and Magnetic Fields and Your Health: Information on electric and magnetic fields associated with transmission lines, distribution lines, and electrical equipment.* Christchurch, New Zealand: Ministry of Health.

Pitts, J.M., and T.O. Jackson. 2007. Power lines and property values revisited. *The Appraisal Journal* 75(4):323–325.

Souder, Miller, and Associates. 2017. EPEC Talavera Substation #7 Access Road Evaluation-Las Cruces, New Mexico. October 2, 2017.

SWCA Environmental Consultants. 2017a. *Biological Survey Report for the Talavera Substation and Distribution Project, Doña Ana County, New Mexico*. Prepared for the U.S. Bureau of Land Management, Las Cruces District Office. Albuquerque, New Mexico: SWCA Environmental Consultants.

———. 2017b. *A Class III Archaeological Investigation for El Paso Electric Company's Talavera Substation and Distribution Project in Doña Ana County, New Mexico.* Prepared for the U.S. Bureau of Land Management, Las Cruces District Office, and the New Mexico State Land Office. Albuquerque, New Mexico: SWCA Environmental Consultants.

———. 2017c. *Paleontological Survey Report for the El Paso Electric Company's Talavera Substation and Distribution Project, Doña Ana County, New Mexico.* Prepared for the U.S. Bureau of Land Management, New Mexico State Office and Las Cruces District Office. Albuquerque, New Mexico: SWCA Environmental Consultants.

———. 2017d. *Paleontological Survey Report for the El Paso Electric Company's NMNM 52922 24-kV Distribution Powerline Maintenance Project, Doña Ana County, New Mexico.* Prepared for the U.S. Bureau of Land Management, New Mexico State Office and Las Cruces District Office. Albuquerque, New Mexico: SWCA Environmental Consultants.

———. 2017e. *Alternatives Report for the Talavera Substation and Distribution Project*. Prepared for the U.S. Bureau of Land Management, Las Cruces District Office. Albuquerque, New Mexico: SWCA Environmental Consultants.

Tarolli P., S. Calligaro, F. Cazorzi, and G.D. Fontana. 2013. Recognition of surface flow processes influenced by roads and trails in mountain areas using high-resolution topography, *European Journal of Remote Sensing*, 46:1, 176–197, DOI: 10.5721/EuJRS20134610. Available at: http://www.tandfonline.com/doi/abs/10.5721/EuJRS20134610. Accessed February 14, 2018.

Tatos, T., M. Glick, and T.A. Lunt. 2016. Property value impacts from transmission lines, transmission lines, and substations. *The Appraisal Journal* 84(3):205–229.

Thalheimer, E. 2000. Construction noise control program and mitigation strategy for the Central Artery/Tunnel Project. *Noise Control Engineering Journal* 48(5):157–165.

U.S. Army Corps of Engineers (USACE). 2015. *Stream Crossing Best Management Practices*. New England District.

U.S. Census Bureau. 2017. Annual Estimates of the resident population (April 1, 2010 to July 1, 2016): 2016 Population estimates for Doña Ana County, New Mexico. Available at: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF. Accessed December 13, 2017.

U.S. Department of Energy (USDOE). 1996. *Electrical and Biological Effects of Transmission Lines: A Review (DOE/BP 2938 December 1996 IM).* Portland, Oregon: Bonneville Power Administration.

U.S. Department of Transportation. 2011. *Highway Traffic Noise: Analysis and Abatement Guidance (FHWA-HEP-10-025).* Washington, D.C.: U.S. Department of Transportation, Federal Highway Administration.

U.S. Environmental Protection Agency (EPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF. Accessed December 4, 2017.

———. 1992. *Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures.* EPA-450/2-92-004. Research Triangle Park, North Carolina: U.S. Environmental Protection Agency, Office of Air and Radiation, Office of Air Quality, Planning, and Standards.

———. 2016. AP-42: Compilation of air emission factors. Available at: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors. Accessed February 2, 2018.

U.S. Forest Service. 2003. *Low-Volume Roads Engineering: Best Management Practices Field Guide.* Available at: https://www.fs.fed.us/t-d/programs/forest_mgmt/projects/lowvolroads/ Accessed February 14, 2018.

———. 2008. *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings*. Available at: https://www.fs.fed.us/eng/pubs/pdf/StreamSimulation/hi_res/%20FullDoc.pdf. Accessed February 14, 2018.

Western Area Power Administration (WAPA). 2017. Electric and Magnetic Fields Facts. Available at: https://www.wapa.gov/newsroom/Publications/Documents/EMFbook.pdf. Accessed December 6, 2017.

Western Regional Climate Center. 2016. Climate of State University, New Mexico (298535_. Available at: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm4799. Accessed February 12, 2018.

White House. 2014. Establishment of the Organ Mountains–Desert Peaks National Monument. Available at: https://obamawhitehouse.archives.gov/the-press-office/2014/05/21/presidential-proclamation-organ-mountains-desert-peaks-national-monument.

World Health Organization. 2018. Electromagnetic fields (EMF): What are electromagnetic fields? Available at: http://www.who.int/peh-emf/about/WhatisEMF/en/index3.html. Accessed February 14, 2018.

Zillow. 2018. Search of vacant lots listed for sale. Available at: http://www.Zillow.com. Accessed February 14, 2018.

APPENDIX A. GRAPHICS

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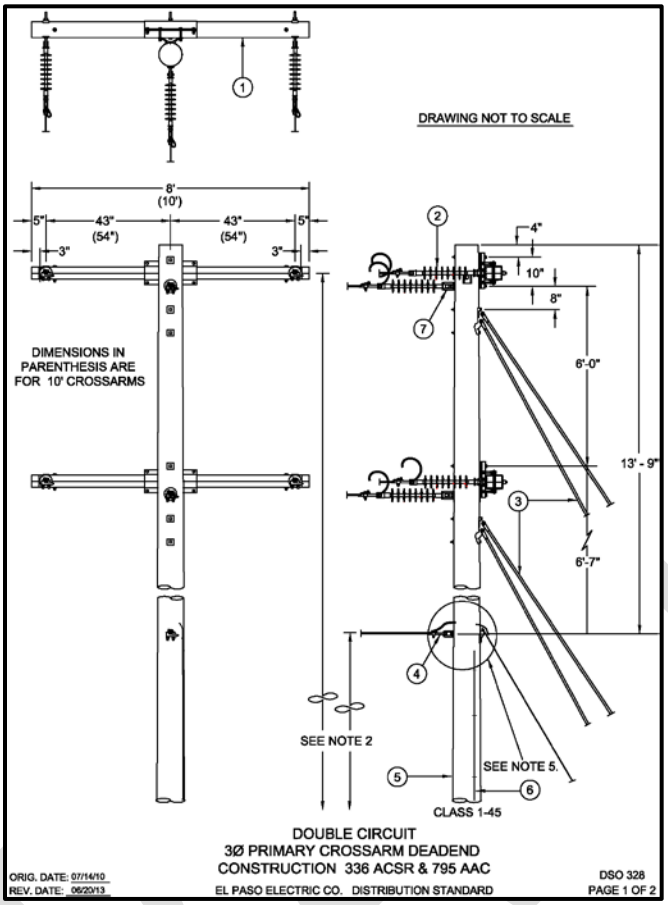

Figure A-1. Standard 24-kV double-circuit structure design.

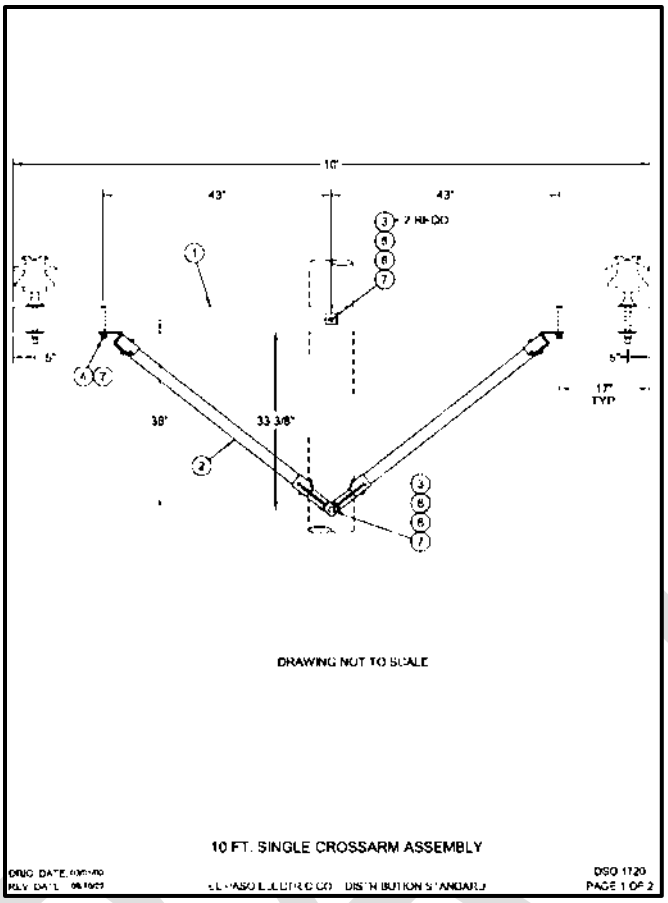

Figure A-2. Standard 24-kV single wood cross-arm design.

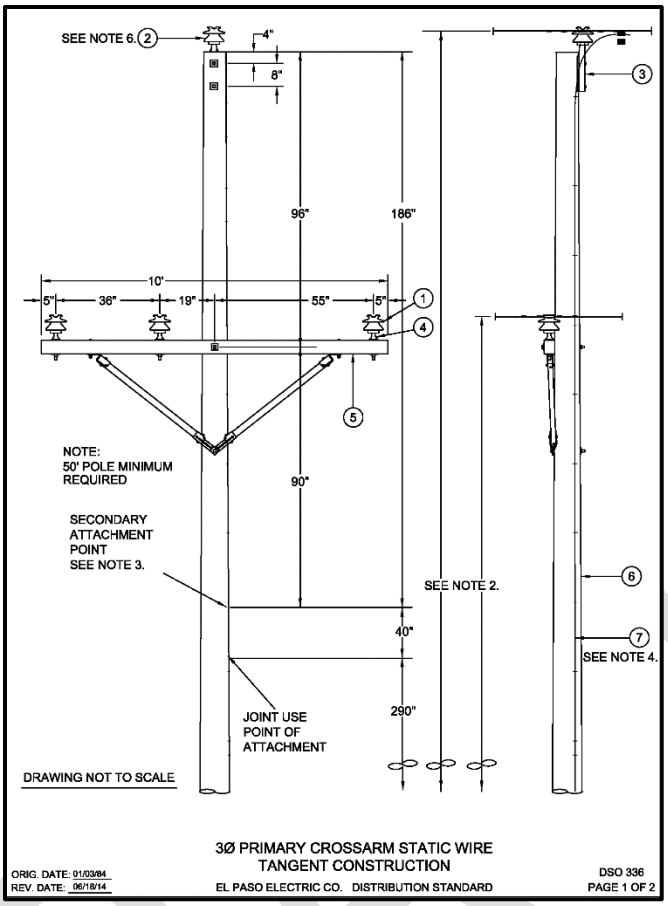

Figure A-3. Standard 24-kV single-circuit structure design.

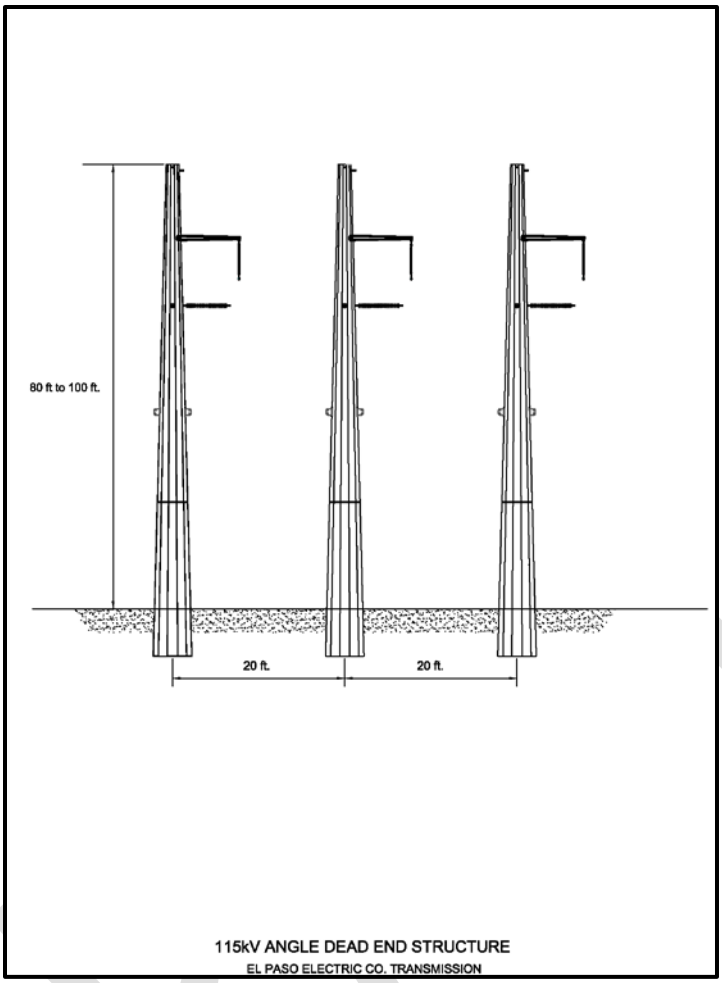

Figure A-4. Basic 115-kV three-pole dead-end structure design.

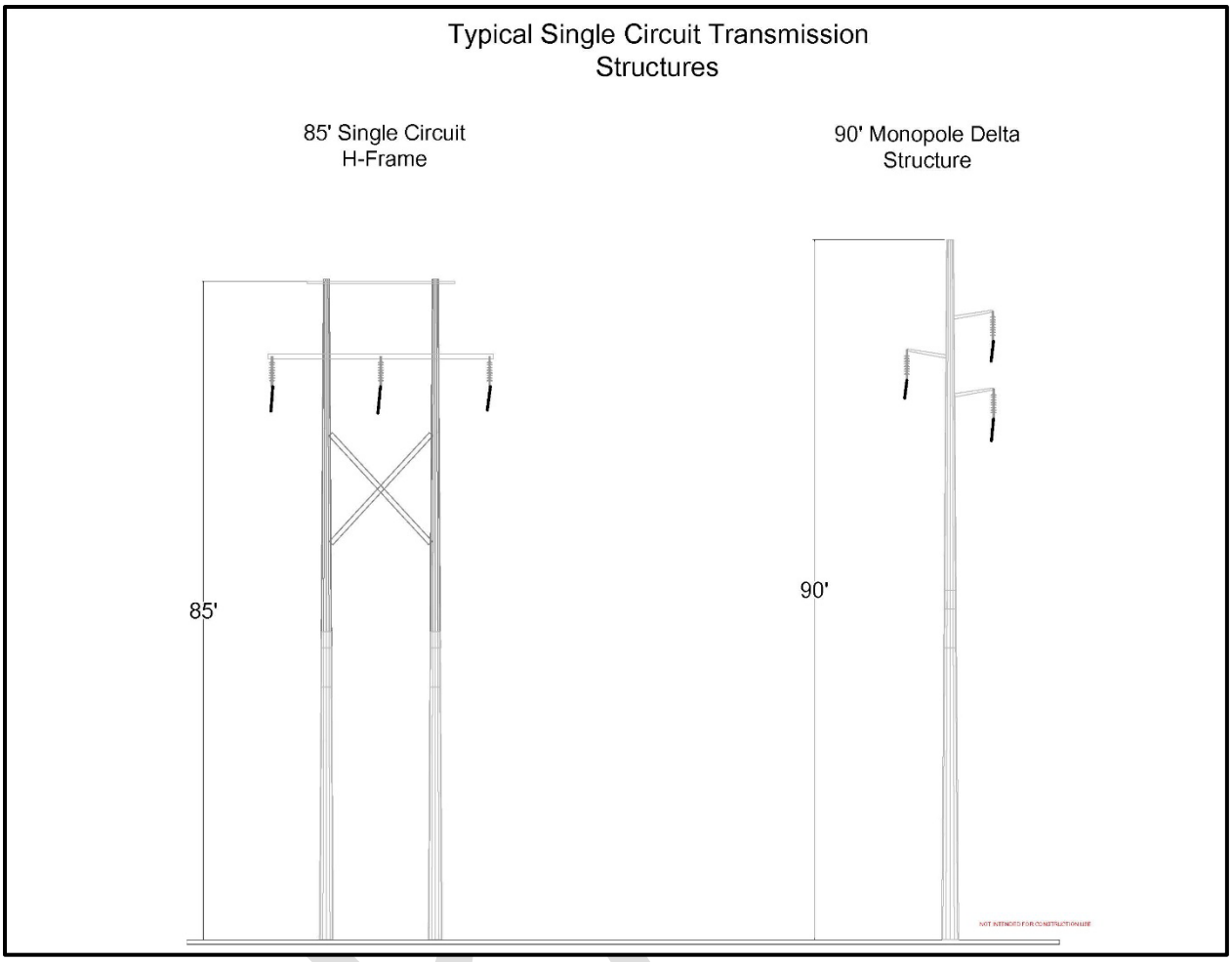

Figure A-5. Typical single-circuit transmission structures.

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APPENDIX B. ALTERNATIVES REPORT

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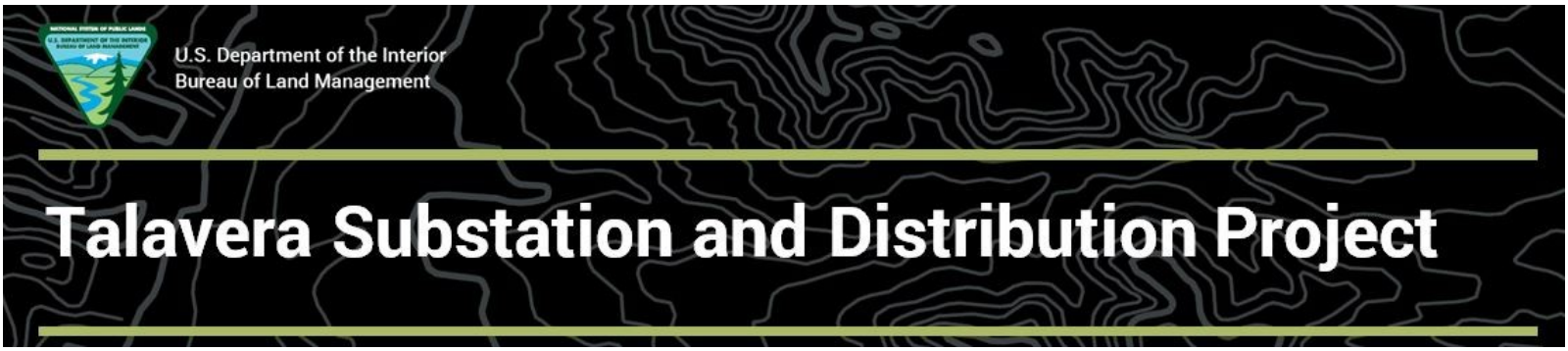

ALTERNATIVES REPORT
FOR THE
TALAVERA SUBSTATION AND DISTRIBUTION PROJECT

U.S. Department of the Interior
Bureau of Land Management
Las Cruces District Office
1800 Marquess Street
Las Cruces, New Mexico 88005
(575) 525-4300

November 2017

ALTERNTIVES REPORT FOR THE TALAVERA SUBSTATION AND DISTRIBUTION PROJECT

Prepared for

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November 8, 2017

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ACRONYMS AND ABBREVIATIONS LIST

BLM	Bureau of Land Management
EA	environmental assessment
EPE	El Paso Electric Company
FONSI	Finding of No Significant Impact
kV	kilovolt
LCDO	Las Cruces District Office
NEPA	National Environmental Policy Act
NMPRC	New Mexico Public Regulatory Commission
ROW	right-of-way
SWCA	SWCA Environmental Consultants

1. INTRODUCTION

El Paso Electric Company (EPE) has identified a need to add an additional 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 southern New Mexico. This objective means that the proposed substation would have both transmission lines going to and from the substation, as well as distribution lines leaving the substation to provide electricity to the end user.

The Bureau of Land Management (BLM) Las Cruces District Office (LCDO) has determined that preparation of an environmental assessment (EA) is necessary under the National Environmental Policy Act (NEPA). The EA will analyze the potential effects from the construction, maintenance, and operation of the substation, distribution lines, and associated infrastructure and will consider alternatives to EPE's proposed action.

2. INITIAL ROUTE SCREENING

SCREENING CONSIDERATIONS

The alternatives development process began with the initial routing efforts completed by EPE to identify a suitable location for the substation. EPE considered the general location target, right-of way (ROW) needs, and access requirements. Each issue is discussed below.

GENERAL LOCATION TARGET

In general, a substation interconnects into the electrical grid with other substations by means of high-voltage transmission lines and low-voltage distribution lines. Improvements to the electrical grid by introduction of a new substation requires the analysis of the whole system, taking into account the location of existing substations to provide system reliability and redundancy, serve load across a given area, and provide service for current and future growth demand. The critical elements for all substation locations are reliable, full-time, permanent access; security; and proximity to electrical infrastructure. In the case of the Talavera project, the general area where the substation can be located is spaced between the existing Arroyo Substation to the northwest, and the existing Salopek Substation to the south and west. The general location was selected based on current load demand, future projected needs, long-term projected population growth of the community, and long-term system reliability planning.

The specific location was driven by its proximity to existing infrastructure. As with all projects, EPE must consider costs to the rate payer. To minimize costs is to minimize environmental impacts and minimize length of new transmission and access construction. New transmission construction is costly and generates additional impacts to the environmental resources and public. Therefore, planning a new substation adjacent to existing transmission line is the best management practice. EPE is regulated by federal and state agencies. EPE must demonstrate prudence in all capital investments to the electrical grid and must able to justify investments to the appropriate agencies, in this case the New Mexico Public Regulatory Commission (NMPRC), in order for expenses to be recouped. EPE has a fiduciary responsibility to consider the impacts to all the rate payers within

the New Mexico service territory when making decisions regarding capital investments expenditures.

CONSOLIDATION OF ROWS/MINIMIZATION OF NEW ROWS

The BLM's land use plan (BLM 1993) describes the LCDO goals to consolidate future development within or adjacent to existing ROWs wherever possible (BLM 1993:2–14). Considering this, the most desirable location of any proposed substation would be on the existing transmission corridor, as substations require transmission lines to operate. The basic function of a substation is to receive high-voltage electricity from a transmission line (in this case, a 115-kilovolt [kV] line), convert to a lower voltage electricity (24 kV) within the substation, and distribute it to end users via distribution lines. Any substation located away from the existing 115-kV transmission line requires a circuit (three separate conductor wires with structures) going to the substation, and a circuit (three separate conductor wires with structures) going away from the substation back to the transmission corridor. This addition of transmission line costs in excess of $1.2 million per mile in construction costs, each way, and requires a new 200-foot-wide ROW corridor to be identified and constructed, with associated environmental impacts and additional costs.

ACCESS REQUIREMENTS

Substation access roads are constructed permanent roads that must provide full access 24 hours a day, 7 days a week, and 365 days a year, in all weather conditions. The inability to access a substation in a timely fashion can cause substantial impacts to management of the electrical grid. These roads must support lowboy trailers with 4 to 6 inches of ground clearance to deliver substation equipment during construction, operations, and maintenance. If not paved, substation access roads must be at least 12 inches of hard-packed soil with a crusher fine or gravel cap. Substation access requires a minimum 25-foot width, with a maximum grade of no more than 8%, but 3% is typical. This type of road requires a 3:1 side-slope with no more than a 4-inch vertical break. Costs for new construction of substation access roads averages $250,000 per 0.5 mile, depending on location, soils, and terrain issues. Substation access roads must not be vulnerable to washouts and must be elevated over large washes or drainages. Depending on topography, substation access roads may require that engineered bridges or extensive drainage systems be constructed over arroyos, washes, and other drainage features. Building access roads and the associated environmental impacts represent a significant permitting and cost constraint, as is the continued long-term maintenance. For these reasons, every effort is made to locate substations near existing improved roads.

INITIAL SCREENING OUTCOME: EPE'S PROPOSED ACTION

EPE's initial screening resulted in the selection of a location on BLM-managed public land 3 miles east of Las Cruces in Doña Ana County, adjacent to an existing temporary substation located off Dripping Springs Road. The project (the proposed Talavera Substation) would include maintenance on 10.4 miles (with a 50-foot-wide ROW) of existing 24-kV distribution line to replace and/or add infrastructure to upgrade these lines and construct 2.2 miles of new 24-kV distribution lines. The proposed Talavera Substation would be connected to the existing Salopek-to-Arroyo 115-kV transmission line and the existing distribution lines associated with this project. **Figure 1** shows the location of the Proposed Action.

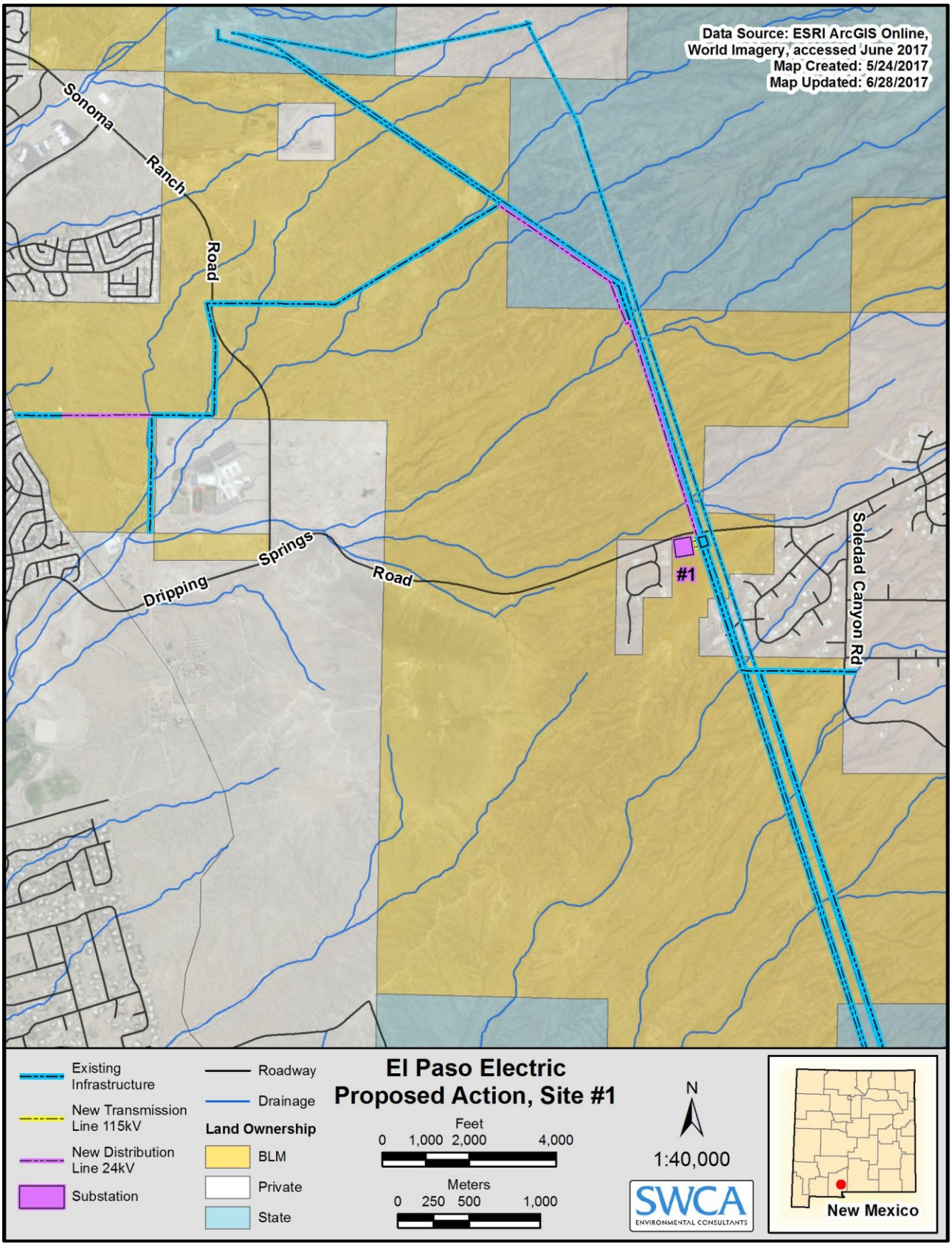

Figure 1. EPE's proposed action.

3. PUBLIC SCOPING PERIOD 1

On February 3, 2017, the BLM mailed scoping invitation letters to 98 recipients from the BLM's interested party mailing list. The letter provided a brief description of the proposed Talavera Substation and project map and identified the initiation of the 30-day public scoping period with an end date of March 3, 2017.

Scoping comments received from the public identified resource concerns associated with the proposed Talavera Substation location (primarily socioeconomics, visual resources, proximity to the Organ Mountains–Desert Peaks National Monument, and human health and safety, and suggested other potential locations for the substation to resolve those issue, summarized below:

- north or northeast side of Dripping Springs Road; 0.5 mile or more to the north along the transmission line corridor;
- near the informal recreational shooting site, north of Dripping Springs Road;
- east of the existing temporary substation on either the north or south side of Dripping Springs Road, or on private lands near Sonoma Ranch and Dripping Spring Road;
- near the Centennial High School, either on private land or BLM land;
- away from Organ Mountains Monument entrance area and the National Monument in general; or
- south of the Talavera area, potentially "near the Vado quarry." "near the gravel pit near A Mountain;" on "empty land east or south of Las Cruces;" "on Las Alturas Boulevard;" or "in a more industrial location."

4. DEVELOPMENT OF PRELIMINARY ALTERNATIVES

Pursuant to 40 Code of Federal Regulations 1502.14, the BLM must rigorously explore and objectively evaluate all reasonable alternatives and provide a rationale for any alternatives that were eliminated from detailed study. The BLM reviewed the public's input and suggested alternatives and identified 14 additional substation locations for consideration, using the BLM alternatives screening criteria identified in BLM H-1790-1 (BLM 2008):

- Is the alternative consistent with the stated purpose and need?
- Does the alternative meet existing land use objectives?
- Does the alternative respond to public and agency scoping input (resolve an issue)?
- Is the alternative technically constructible and feasible?
- Is the alternative economically practical?
- Is the alternative environmentally reasonable?

Information regarding technical feasibility was provided by EPE. As a result of this screening, five locations were determined to be suitable for a substation and were proposed to be retained for detailed analysis: the proposed action (location #1) and alternative locations (#2, #3, #3A, and #11). See the BLM's project website for materials from the Public Scoping Meeting (https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=111390).

5. PUBLIC SCOPING PERIOD 2

The BLM presented the preliminary alternatives and preliminary disposition on analysis of alternatives to the public during a second scoping period to solicit input related to the new alternatives under consideration.

On June 6, 2017, a second letter was mailed to 344 recipients from the project-specific mailing list and additional addresses gleaned from county parcel data. The scoping letter identified the initiation of a 60-day scoping period and indicated that as a result of the earlier scoping effort, the BLM had identified alternative locations for the substation and invited public feedback on the locations.

Scoping comments identified resource concerns associated with the five sites proposed for analysis. Comments also requested that the BLM identify an additional alternative located away from residential areas, or retain Site #8 for detailed analysis.

6. FINAL ALTERNATIVES SCREENING

ALTERNATIVES UNDER CONSIDERATION

As a result of public comments from the second scoping period, the BLM reconsidered all 14 alternatives, soliciting additional information regarding technical feasibility from EPE as needed. **Table 1** contains BLM decisions regarding further analysis and the rationale for carrying locations forward for analysis or not.

As noted in BLM NEPA Handbook H-1790-1 (BLM 2008), an action alternative may be eliminated from detailed analysis if the alternative:

1. is ineffective (it would not respond to the purpose and need),
2. is technically or economically infeasible,
3. is inconsistent with the basic policy objectives for the management of the area,
4. has an implementation that is remote or speculative,
5. is substantially similar in design to an alternative that is analyzed, or
6. would have substantially similar effects to an alternative that is analyzed.

The rationale for eliminating any alternative from detailed analysis is noted in **Table 1**, using the numbering system identified above.

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Table 1. Alternatives Considered

Site Location	Name	Suggested by the Public?	Requires New Major Access?	Requires New Double Transmission Line Corridor?	Notes on Feasibility and other Constraints	Alternative Disposition and Rationale
1	Proposed Talavera Substation location	No	No	No	The site is suitable for substation construction. Existing access on Dripping Springs Road. One constraint is the proximity of the site to existing homes. The visual impact to nearby residences would be analyzed in the EA.	Retained for detailed analysis as applicant's proposed action
2	East side of existing temporary substation	Yes	No	No	The site is suitable for substation construction. Site is similar to Site #1, but provides greater distance to the nearest residence. Similar access off of Dripping Springs Road. One constraint to the location is that modification of the existing Salopek-to-Arroyo 115-kV transmission line would be needed to bring this transmission line under the existing Anthony-to-Arroyo 115-kV and Newman-Arroyo 345-kV transmission lines to the substation. This constraint is still feasible from an engineering standpoint.	Retained for detailed analysis
3	Option 3-O – Fire Station location with *overhead distribution* along Soledad Canyon Road	Yes	No	Yes (0.3 mile)	Overall, the Fire Station site is suitable for substation construction. This site would require EPE to cross under the existing 115-kV and 345-kV transmission lines and build a relatively short length of additional transmission, but would leave more of a distance to nearby existing homes than Site #1. The substation would not be as visible from Dripping Springs Road. Option #3-O would route an overhead distribution line along Soledad Canyon Road and Dripping Springs Road. Selection of this site location with *overhead distribution* is not anticipated to substantially increase the project cost or environmental impacts. Scoping comments expressed concern about visual impacts of overhead distribution line along Soledad Canyon Road, which would be analyzed in the EA.	Retained for detailed analysis.
	Option 3-U – Fire Station location with *underground distribution* along Soledad Canyon Road	Yes	No	Yes (0.3 mile)	This Fire Station site option is similar to Option #3-O above, with the exception that the distribution line would be buried underground, following the same alignment along Soledad Canyon and Dripping Springs roads. While technologically feasible, there are physical constraints associated with underground distribution that lead to higher costs than overhead facilities. Initial construction costs for underground lines are considerably higher than overhead lines. Maintenance costs are also higher due to the reduced lifespan of an underground conductor. Repairs associated with underground distribution are more difficult and costlier to complete than overhead facilities, with longer line-outage durations and an increased potential for service disruption to customers during repairs. Underground lines are also more difficult to modify or reroute once installed, and result in longer delays (versus overhead) for new service-connection requests from developers and homeowners due to additional design and construction requirements. Selection of this site location with *underground distribution* would substantially increase the project cost. A detailed discussion on constraints related to underground distribution is presented in Section 8 below.	Retained for detailed analysis.
	Option 3-T – Fire Station location with *overhead distribution* through existing *Transmission Corridor*	Yes	No	Yes (0.3 mile)	This Fire Station site option is similar to Option #3-O above, but the overhead distribution line would be routed within the existing Salopek-to-Arroyo 115-kv transmission line corridor. One constraint to this option is that routing the overhead line through the transmission corridor would require easement agreements with private landowners. Selection of this site location with *overhead distribution* through the existing *transmission corridor* is not anticipated to substantially increase the project cost or environmental impacts.	Retained for detailed analysis
3A	Option 3A-O – South of Fire Station location with *overhead distribution* along Soledad Canyon Road	Yes	No	No	Overall, the site south of the Fire Station is suitable for substation construction. One constraint to the location is that modification of the existing transmission line would be needed to bring the Salopek-to-Arroyo 115-kV transmission line, under the existing Anthony-to-Arroyo 115-kV and Newman-Arroyo 345-kV lines, to the substation. The substation would not be as visible from Dripping Springs Road. Similar to Option 3-O (Site #3), Option 3A-O for this site location would route an overhead distribution line along Soledad Canyon and Dripping Springs roads. Selection of this site location with *overhead distribution* is not anticipated to substantially increase the project cost or environmental impacts. Scoping comments expressed concern about visual impacts of overhead distribution line on Soledad Canyon Road, which would be analyzed in the EA.	Retained for detailed analysis
	Option 3A-U – South of Fire Station location with *underground distribution* along Soledad Canyon Road	Yes	No	No	Similar feasibility and other constraints as Option 3-U (Site #3) above. A detailed discussion on constraints related to underground distribution is presented in Section 8 below.	Retained for detailed analysis.
	Option 3A-T – South of Fire Station location with *overhead distribution* through existing *Transmission Corridor*	Yes	No	No	This site option is similar to #3-T above, but the overhead distribution line would be routed within the existing Salopek-to-Arroyo 115-kv transmission line corridor. One constraint to this option is that routing the overhead line through the transmission corridor would require easement agreements with private landowners. Selection of this site location with *overhead distribution* through the existing *transmission corridor* is not anticipated to substantially increase the project cost or environmental impacts.	Retained for detailed analysis
4	North side of Dripping Springs Road	Yes	Yes	No	The site is not technically or environmentally feasible for a substation. The arroyo north of and parallel to Dripping Springs Road is a 12,000-cubic-foot-per-second drainage, which precludes substation construction. This site would require a significant foundation and diversion of water flow within the arroyo. In addition, a right-of-way (ROW) conflict exists with a proposed natural gas utility line.	Considered then dismissed from further analysis — Rationale #2 (is technically infeasible), and Rationale #6 (similar or greater effects than Site #2, which is retained for detailed analysis)
5	Northeast side of Dripping Springs Road	Yes	Yes	No	Similar feasibility constraints as Site #4, above.	Considered then dismissed from further analysis — Rationale #2 (is technically infeasible), and Rationale #6 (similar or greater effects than Site #2, which is retained for detailed analysis)
6	Approximately 0.5 mile north of Dripping Springs Road, along existing transmission line corridor	Yes	Yes	No	The topography is extremely inhospitable to the needs of a substation and associated access, primarily because of the terrain, including large arroyos and drainages. Any location along this area would have to be built on a significant foundation and would be susceptible to Clean Water Act permitting issues, likely requiring bridge and significant drainage feature construction. The impact to soils, vegetation, and other environmental factors would be greater than the proposed action.	Considered then dismissed from further analysis — Rationale #5 (is substantially similar in design to an alternative that is analyzed, Site #7); and Rationale #6 (similar or greater effects than Site #7, which is retained for detailed analysis)

Site Location	Name	Suggested by the Public?	Requires New Major Access?	Requires New Double Transmission Line Corridor?	Notes on Feasibility and other Constraints	Alternative Disposition and Rationale
7	Approximately 0.75 mile north of Dripping Springs Road, along existing transmission line corridor	Yes	Yes	No	Similar feasibility constraints as Sites #4 through 6, above. This site is level enough to provide a stable pad for substation construction, but would have the same access issues as Sites #6 and #8.	Retained for detailed analysis
8	BLM land: informal shooting area	Yes	Yes	No	Overall, the feasibility constraints are the same as Site #6. This site also poses additional issues with security and recreational shooters who are known to target electrical infrastructure; this becomes a target and could be damaged, causing impacts and potentially reliability issues to the electrical grid.	Considered then dismissed from further analysis — Rationale #5 (is substantially similar in design to an alternative that is analyzed, Site #7); and Rationale #6 (similar or greater effects than Site #7, which is retained for detailed analysis)
9	Eddie Bins private property (acquisition)	Yes	No	Yes (1.2 miles)	Sites #9 through 12 involve similar feasibility constraints. The major constraint is the location is offset from the exiting transmission corridor, meaning that EPE would need to build approximately 1 mile of new 115-kV transmission lines to and from the proposed substation with the associated additional environmental impact and addition of a new utility corridor outside existing corridors. Site #9 has the additional constraint that the private property owner has previously declined to enter into acquisition talks with EPE.	Considered then dismissed from further analysis — Rationale #5 (is substantially similar in design to an alternative that is analyzed, Site #11); and #6 (similar or greater effects than Site #11, which is retained for detailed analysis)
10	Centennial High School parcel	Yes	No	Yes (1.7 miles)	Similar to Site #9, this location would require more than 1 mile of new double-circuit transmission line. The additional issue to this option is the ownership of the land, which is New Mexico State University Board of Regents. Typically, communities are opposed to high voltage electrical equipment in close proximity to school properties.	Considered then dismissed from further analysis — Rationale #5 (is substantially similar in design to an alternative that is analyzed, Site #11); and Rationale #6 (similar or greater effects than Site #11, which is retained for detailed analysis)
11	Sonoma Ranch Road	Yes	No	Yes (1.7 miles)	Similar to Site #9, but does not have the land ownership issues associated with Sites #9 and #10 and is adjacent to an existing distribution line corridor. This location does not consolidate ROW corridors in accordance with BLM's land use plan.	Retained for detailed analysis
12	BLM land near Centennial High School	Yes	No	Yes (2.2 miles)	Similar constraints as Sites #9 through 11 and is not located adjacent to the transmission corridor, so does not consolidate ROW corridors in accordance with BLM's land use plan.	Considered then dismissed from further analysis — Rationale#5 (is substantially similar in design to an alternative that is analyzed, Site #11); and Rationale #6 (similar or greater effects than Site #11, which is retained for detailed analysis)
13	Las Alturas Boulevard	Yes	No	Yes (2 miles)	This location does not meet EPE's need to satisfy load demand and growth and is outside the overall envelope for location of the substation. Location is more than 4 miles south of the suitable area.	Considered then dismissed from further analysis — Rationale #1 (is ineffective)
14	Vado Quarry	Yes	No	Yes (2 miles)	This location does not meet EPE's need to satisfy load demand and growth and is outside the overall envelope for location of the substation. This location is more than 12 miles south of the suitable area.	Considered then dismissed from further analysis — Rationale #1 (is ineffective)

7. FEASIBILITY CONSIDERATIONS FOR AN UNDERGROUND DISTRIBUTION LINE OPTION FOR ALTERNATIVES NO. 3 AND NO. 3A

Construction of an underground double-circuit distribution line is feasible given the technology available. Many areas in the U.S. that are prone to natural disasters such as hurricanes, tornados, or winter storm events are looking closer at the overall benefits to undergrounding lines to prevent outages, and the cost of repair, from these weather events. EPE's service area including Dona Ana County, does not typically experience these weather-related issues, and, if they arise, overhead lines are still a better service option for customers because they can be repaired quickly and usually inexpensively.

Although construction costs for underground lines are much higher than for overhead lines, with buried distribution being on average six times more expensive than overhead, the difficulty and complexity of repair and maintenance of underground distribution lines is of greater concern. The lifespan of underground conductors is shorter than that of overhead lines. Other major factors that impact the ongoing maintenance costs for underground distribution lines include:

1. **Cable repairs.** Underground lines are susceptible to insulation deterioration because of the loading cycles the lines undergo during their lifetimes. As time passes, the cables' insulation weakens, which increases the potential for a line fault. If and when a fault occurs, however, the cost of finding its location, trenching, cable splicing, and re-embedment is sometimes five-to-10 times more expensive than repairing a fault in an overhead line where the conductors are visible, readily accessible, and overall easier to repair. In addition, easement agreements might require a utility to compensate property owners for disruption in use of their property, and for property damage caused by the repairs to the underground cables.

2. **Line outage durations.** The typical repair duration of cross-linked polyethelene (XLPE), a solid dielectric type of underground cable, ranges from five to nine days. In comparison, a fault or break in an overhead conductor usually can be located almost immediately and repaired within hours or a day or two at most. During the extended line outages required for underground line repairs, services to customers are disrupted. The length of customer outages can be mitigated using redundant feeders, but the duration of such outages is still longer than those associated with overhead lines, and they have additional costs associated with them.

3. **Line modifications.** Overhead power lines are easily tapped, rerouted or modified to serve customers; underground lines are more difficult to modify after the cables have been installed. Such modifications to underground power lines are more expensive because of the inability to readily access lines or relocate sections of lines. For example, when a developer or homeowner requests electric service for a new home, if there's an overhead distribution line nearby, the service connection can be designed, constructed and made available for connection to the new home in a relatively short time. Service drops to new residences can be installed within a day or two after the service request is submitted to the

utility. If the utility is requested to provide underground service to the new home, however, the design and construction will take up to a week or two. This time differential increases the cost for underground power.

WHO PAYS FOR THE COST DIFFERENCE?

Typically, the differential costs for new distribution services are paid by the developer according to a regulated tariff. The developer may then pass those costs to home buyers who purchase property fed by underground power lines. This has been the model for the Organ Mesa subdivision. This proposed double-circuit distribution line is part of the larger grid, and the need for this new power line is supported by load growth rather than a single individual user. EPE needs to justify the need and costs of any new facilities to the regulator (New Mexico Public Regulation Commission [PRC]). The cost of new facilities is justified by who benefits and by performing a typical industry cost comparison. If a new facility cannot be justified to the regulatory agency, the utility must bear the costs or at least the differential costs of designing, constructing and operating the facility. In the U.S., more than 97 percent of the double-circuit distribution lines are installed overhead, so it is difficult to justify installing underground power. Established standard design and construction practices are to place such lines overhead. Unless undergrounding is justified by physical constraints, the utility would be responsible for the differential cost between the overhead and underground installation of the line.

8. ALTERNATIVES RETAINED FOR DETAILED ANALYSIS

As a result of this screening, six locations were determined to be suitable for a substation and were proposed to be retained for detailed analysis: the proposed action (Site #1) and five alternative locations (Sites #2, #3, #3A, #7, and #11). After consideration of technical feasibility and environmental constraints, the BLM determined that Site #7 responds to the public request to analyze an alternative substation location further removed from residential areas. Additionally, public safety concerns eliminated Site #8 from further consideration (see Table 1 above).

For the reasons discussed above, the underground distribution line options as part of Alternatives #3 and #3A, respectively, would increase project costs, decrease project lifespan, and increase repair time and subsequent outage duration to EPE's customer base. The underground options would not be consistent with EPE's policies, responsibility to the rate payers and need for justification of cost versus need to the PRC. These underground distribution options would not be practical for the long-term given the burden of maintenance costs and delays indefinitely into the future. However, the BLM is electing to bring this option forward for detailed analysis in the EA in addition to another distribution option for Sites #3 and #3A within the existing transmission corridor.

Figure 2 depicts the alternatives that will be carried forward for detailed analysis and identifies the transmission and distribution line infrastructure that would be required for each. **Table 2** provides a comparison of costs associated with development of the substation and related transmission lines, distribution lines, and access roads for these six alternatives.

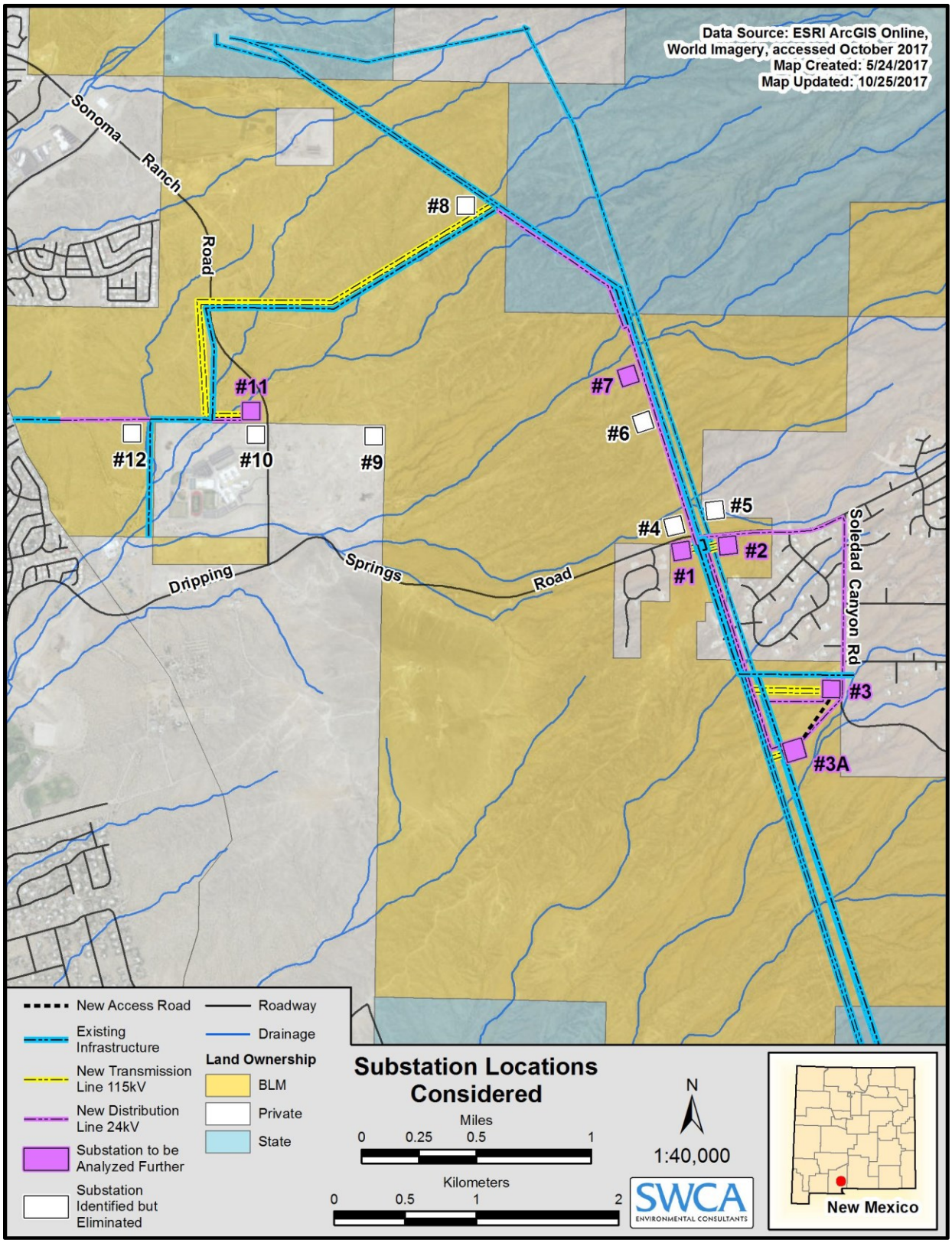

Figure 2. Final substation locations to be retained for detailed analysis.

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Table 2. Cost Comparison for Alternatives under Consideration

Site Location	Substation[1]	Transmission Line[2]	Distribution Line[3]	Access Roads	Total Estimated Cost
1	$5,000,000	2 dead-end structures × $50,000 = $100,000	1.8 miles × $250,000 = $450,000	Access is sufficient off of public roads	$5,550,000
2	$5,000,000	2 dead-end structures × $50,000 = $100,000 PLUS 8 structure modifications × $45,000 = $360,000	1.8 miles × $250,000 = $450,000	Access is sufficient off of public roads	$5,910,000
3	$5,000,000	2 dead-end structures × $50,000 = $100,000 PLUS 8 structure modifications × $45,000 = $360,000 PLUS 0.8 mile of transmission line × $1,100,000 = $880,000 (in & out transmission line construction [0.4 mile each, respectively])	1.8 miles × $250,000 = $450,000 PLUS • Option 3-O (Overhead along Soledad Canyon Rd/Dripping Springs Rd): 0.4 mile × $250,000 = $100,000 • Option 3-U (Underground along Soledad Canyon Rd/Dripping Springs Rd): 0.4 mile × $1,500,000 = $600,000[4] • Option 3-T (Overhead within transmission corridor [private easements required]): 0.4 mile × $250,000 = $100,000	Access is sufficient off of public roads	$6,890,000 (Option 3-O) $7,390,000 (Option 3-U) $7,040,000 (Option 3-T)
3A	$5,000,000	2 dead-end structures × $50,000 = $100,000 PLUS 8 structure modifications × $45,000 = $360,000	1.8 miles × $250,000 = $450,000 PLUS • Option 3A-O (Overhead along Soledad Canyon Rd/Dripping Springs Rd): 1.7 miles × $250,000 = $425,000 • Option 3A-U (Underground along Soledad Canyon Rd/Dripping Springs Rd): 1.7 miles × $1,500,000 = $2,550,000[4] • Option 3A-T (Overhead within transmission corridor [private easements required]): 0.4 mile × $250,000 = $100,000	New access from fire station to substation site: 0.3 mile × $200,000 = $67,500	$6,402,500 (Option 3A-O) $8,527,500 (Option 3A-U) $6,227,500 (Option 3A-T)
7	$5,000,000	2 dead-end structures × $50,000 = $100,000	1.8 miles × $250,000 = $450,000	Option 1: 3,800 feet estimated cost $1,450,620 (4 major drainages) Option 2: 10,000 feet estimated cost $2,221,320 (2 major and 3 minor drainages)	$7,000,620 (Option 1)[5] $7,771,320 (Option 2)[5]
11	$5,000,000	2 dead-end structures × $50,000 = $100,000 PLUS 4 miles of transmission line × $1,500,000 = $6,000,000	Not Applicable	Improvement to Missouri Avenue: 0.25 miles × $200,000 = $50,000	$11,150,000

[1] Cost includes some mitigation and assumes the same for all alternatives.

[2] Estimated by EPE using actual construction costs of 3 recent 115-kV transmission line projects, which were approximately $1,160,000/mile, $1,430,000/mile, and $1,550,000/mile. For this summary, EPE used higher end cost per mile for Site #11 due to anticipated access constraints and soil conditions. For sites located on the east side of the existing transmission line, modifications are needed in order to maintain proper clearances between line and ground level. The general cost for this modification is approximately $45,000/structure. For all locations 2 dead-end structures will be installed into the existing transmission line to connect to the substation. These dead-end structures are approximately $50,000 each installed.

[3] This summary calculates the cost per mile for new double-circuit distribution line and additional new line for each substation site, as all other lines associated with this project are existing and rebuilding maintenance activities will occur regardless of substation location. Construction cost per mile for the overhead distribution line calculated by EPE using actual cost from the TAT-20 distribution line. This project was used as it is a recent distribution line located on BLM land in similar terrain and soils for this entire project. The TAT-20 line was built in 2015–2016 and is within the project area, and the proposed path for Site #11 transmission route. The actual cost for construction of this line was well over EPE's original estimate and typical construction costs due to the terrain, soils, and access restrains. This project had an actual cost of $350,000/mile. For this summary and estimate, EPE uses an estimated cost of $250,000/mile, which is an average of the actual cost of this line, and EPE's typical construction costs. The summary does not include the 0.25-mile new distribution line near the water tank and high school to connect the existing distribution line, because this small section of line will occur, regardless of this Talavera project and the final approved location of the substation site.

[4] Costs associated with the underground options for Alternatives #3 and #3A (Options 3-U and 3A-U, respectively) have been calculated with respect to an average cost difference, specifically that the cost of construction for underground distribution is on average 6 times more expensive than costs associated with overhead distribution construction.

[5] Alternative #7 will have additional costs associated with Clean Water Act permitting and compliance, civil engineering and design of the road, complications and delays to the entire project of 6 to 12 months due to construction of the road, and permitting with U.S. Army Corps of Engineers. The estimated cost for the access road is a high-level brief summary of the route and estimated cost and should be interpreted as the bare minimum estimated cost. Actual costs for the road could be double and add costly delays to the project. Alternative #7 also has an associated risk of difficult access since it crosses major drainage features. If the road fails during a large flood event, EPE will not have a secondary route to access substation. This isolation make this site an extremely risky location and access could be delayed for an extended period of time to perform maintenance on substation and return to service. All other substation sites have multiple access points off of public roads. This risk is unable to be calculated at this time, but is a real true future cost. If selected it would require 2 to 3 months for full engineering and design of a road and develop construction plans. Construction of the road would require 6 to 9 months due to the large amounts of earth moving. This will delay construction of the substation a minimum of 9 months.

Source: EPE (2017).

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9. SUMMARY AND CONCLUSION

Site #1 as originally proposed meets both EPE's purpose and need and was developed to minimize environmental impacts from transmission and access. Sites #2, #3, and #3A, which are in close proximity to Site #1, are also suitable locations for this project and provide very similar amenities to EPE's preferred location. Locating the substation on the east side of the transmission line as identified in Sites #2, #3, and #3A would require some modification to the existing transmission line structures, but they are reasonable and feasible alternatives. Approximate costs for these sites range between $5.5 and $8.5 million. **Sites #1, #2 #3, and #3A will be carried forward for detailed analysis.**

Sites #4 through #8 are less feasible options for installation of a substation. The terrain, access roads, and environmental complications resulting from the natural hydrology of the area will require special building techniques and may result in greater environmental impacts. Site #8 has considerable safety concerns that excluded it from further consideration. Site #7 is anticipated to have fewer topological and other land use challenges than the other alternatives in this group. The approximate cost for Site #7 is estimated at $7 to 7.5 million though that figure does not include potential Clean Water Act permitting and compliance costs. **Site #7 will be carried forward for detailed analysis.**

Locations within the general area of Centennial High School (Sites #9 through #12) are feasible from an engineering aspect but would require more than 2 miles of new additional transmission line to connect to the transmission grid with the associated environmental impacts and increase in capital costs relative to the other alternatives. Site #11 is anticipated to have fewer land use concerns than the other nearby alternatives and is adjacent to an existing distribution line corridor. The cost to develop Site #11 is estimated at approximately $11 million. **Site #11 will be carried forward for detailed analysis.**

NEXT STEPS

The BLM LCDO will direct the third-party contractor, SWCA Environmental Consultants (SWCA), to develop the Draft EA analysis according to the BLM's NEPA Handbook H-1790-1 requirements. The EA will describe the BLM's Purpose and Need and decision to be made; public scoping and resulting issues; the Proposed Action and Alternatives (including the alternatives that were considered but eliminated from detailed analysis); the affected environment and environmental consequences of each alternative; and the consultation and coordination efforts undertaken in support of the project. SWCA will coordinate with EPE and BLM to identify and develop any mitigation measures that will align the project's design and construction with the BLM's agency obligations, land use stipulations, and management objectives.

Once the EA is reviewed and approved by the BLM, the BLM will make a determination as to whether or not the selected alternative will have significant environmental effects. If the selected alternative will have significant environmental effects, the BLM will not approve the action unless it is either analyzed in an EIS or modified to avoid significant effects. If the selected alternative is found not to have significant environmental effects, the BLM will prepare a Finding of No Significant Impact (FONSI). The BLM will release the EA and unsigned FONSI for a 30-day public review period.

After addressing public comments and revising the EA and FONSI as necessary, the BLM will prepare and issue a decision record based on the analysis in the EA and information in the FONSI. The decision record will explain how the selected alternative addresses the purpose and need for action and why it was selected over other alternatives, and include a discussion of comments received on the EA and FONSI and their disposition in the decision record.

10. REFERENCES

Bureau of Land Management (BLM). 1993. *Mimbres Resource Management Plan*. Las Cruces, New Mexico: U.S. Department of the Interior, Bureau of Land Management, Las Cruces District Office, Mimbres Resource Area.

———. 2008. H-1790-1 – *National Environmental Policy Act Handbook*. January 30.

El Paso Electric (EPE). 2017. Talavera Substation Project. Cost/Benefit Analysis. Memorandum sent to Paige Marchus, SWCA Project Manager, from Kenton R. Martin, EPE Environmental Scientist on October 3, 2017.

APPENDIX C. VISUAL CONTRAST RATING FORMS

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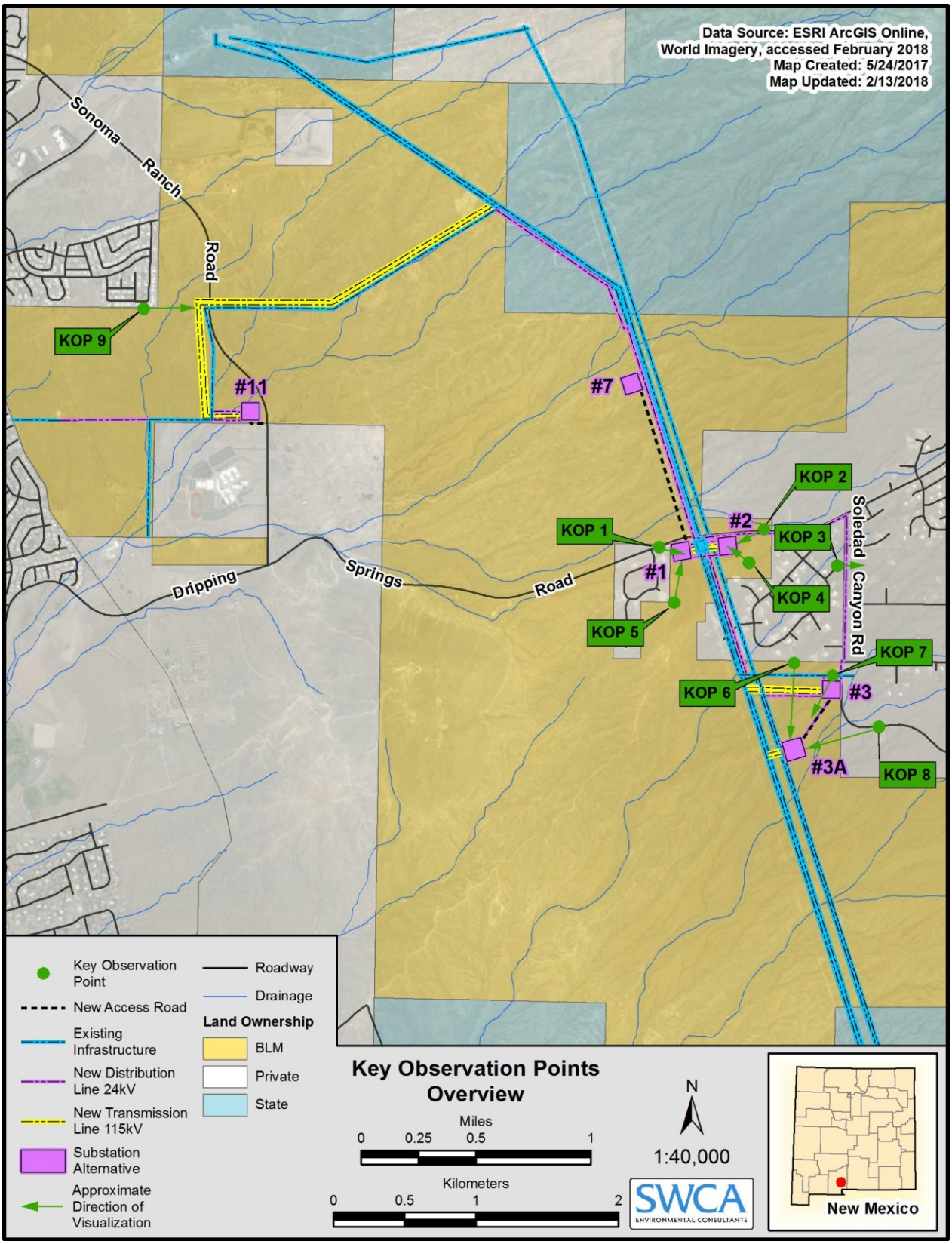

Figure C-1. Key Observation Points Overview

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Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1.Project Name-Talavera Substation and Distribution	4. Location Township: 23 South	5. Location Sketch
2. Key Observation Point 01 – Site 1	Range: 3 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section: 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground/Middleground*: Rolling, curved/ prominent, rugged *Background:* Not visible	*Foreground/Middleground:* Solid, regular *Background:* Not visible	*Foreground/Middleground*: Vertical, horizontal, diagonal *Background:* None visible
LINE	*Foreground/Middleground:* Converging, curving/jagged, complex *Background*: Not visible	*Foreground/Middleground*: Continuous, curving, circular *Background*: Not visible	Foreground/Middleground: Bold, straight/ parallel, perpendicular *Background*: None visible
COLOR	*Foreground/Middleground*: Gray, white, tan//blue-gray *Background*: Not visible	*Foreground/Middleground*: Green, tan, yellow-green *Background*: Not visible	*Foreground/Middleground*: Dark brown *Background*: None visible
TEX-TURE	*Foreground/Middleground*: Fine, even/coarse, matte *Background*: Not visible	*Foreground/Middleground*: Coarse, dense *Background*: Not visible	*Foreground/Middleground*: Smooth, directional *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground/Middleground*: Rolling, curved/ prominent, rugged *Background*: Not visible	*Foreground/Middleground*: Solid, regular *Background*: Not visible	*Foreground/Middleground*: Vertical, horizontal, prominent *Background*: None visible
LINE	*Foreground/Middleground*: Converging, curving/jagged, complex *Background*: Not visible	*Foreground/Middleground*: Continuous, curving, circular *Background*: Not visible	*Foreground/Middleground*: Bold, straight/ parallel, perpendicular *Background*: None visible
COLOR	*Foreground/Middleground*: Gray, white, tan//blue-gray *Background*: Not visible	*Foreground/Middleground*: Green, tan, yellow-green *Background*: Not visible	*Foreground/Middleground*: Dark brown, gray, tan black *Background*: None visible
TEX-TURE	*Foreground/Middleground*: Fine, even/coarse, matte *Background*: Not visible	*Foreground/Middleground*: Coarse, dense *Background*: Not visible	*Foreground/Middleground*: Rough, directional *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM		X				X			X			
	LINE		X				X			X			
	COLOR		X				X				X		
	TEXTURE		X				X				X		

2. Does project design meet visual resource management objectives? ___Yes _X_ No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The line and form of the substation adds strong contrasts to line and form of the existing environment and also adds moderate contrasts of color and texture. The project dominates the view of the casual observer from KOP 1 because of its size and distance from KOP 1. The project introduces unique elements that are not found in the predominant natural features, and does not partially retain the existing character of the landscape, therefore it does not fit within VRM III objectives.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 02 – Site 2	Range 2 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section 18	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground/Middleground*: Flat, smooth and bold, rounded, solid *Background*: Horizontal	*Foreground/Middleground*: Circular, vertical *Background*: Not visible	*Foreground/Middleground*: Diagonal, parallel, straight, vertical, horizontal, trapezoid, directional *Background*: None visible
LINE	*Foreground/Middleground*: Bold, Straight, parallel *Background*: Horizontal	*Foreground/Middleground*: Vertical, circular *Background*: Not visible	*Foreground/Middleground*: Trapezoid, vertical, horizontal, straight *Background*: None visible
COLOR	*Foreground/Middleground*: Gray, yellow, white, tan *Background*: Blue-gray	*Foreground/Middleground*: Green, yellow *Background*: Not visible	*Foreground/Middleground*: White, brown *Background*: None visible
TEX-TURE	*Foreground/Middleground*: Fine and medium, even *Background*: Fine	*Foreground/Middleground*: Rough, even *Background*: Not visible	*Foreground/Middleground*: Smooth, even, directional *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground/Middleground*: Flat, smooth and rough *Background*: Bold, rounded, solid	*Foreground/Middleground*: Circular, vertical *Background*: Not visible	*Foreground/Middleground*: Diagonal, parallel, vertical, horizontal, trapezoid Background: None visible
LINE	*Foreground/Middleground*: Bold, Straight, parallel *Background*: Curving	*Foreground/Middleground*: Vertical, circular *Background*: Not visible	*Foreground/Middleground*: Trapezoid, vertical, horizontal, triangular, straight *Background*: None visible
COLOR	*Foreground/Middleground*: Gray, yellow, white, tan *Background*: Gray	*Foreground/Middleground*: Green, yellow *Background*: Not visible	*Foreground/Middleground*: White, rust, black, gray, tan, brown, white, gray *Background*: None visible
TEX-TURE	*Foreground/Middleground*: Fine and medium, even *Background*: Fine and rough	*Foreground/Middleground*: Rough, even *Background*: Not visible	*Foreground/Middleground*: Uniform, ordered, smooth, even, directional *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

DEGREE OF CONTRAST		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X				X			X		
	LINE			X				X			X		
	COLOR			X				X			X		
	TEXTURE			X				X				X	

2. Does project design meet visual resource management objectives? __X_ Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has transmission and communication towers, buildings and a highway in the foreground/middleground. The addition of the substation and transmission towers repeats the types of lines and forms in the existing environmental, however a moderate contrast is created by the addition of more horizontal and vertical lines and rectangular forms. The land/water and vegetation retain all the elements (line, form, color, texture) from the existing environment except for the project footprint where vegetation would be removed. All contrasts are weak except for the form, line, and color of the structures which have moderate contrasts. The project would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the exiting landscape are repeated and the project does not dominate the view from KOP 02.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Transmission	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 03 – Site 3	Range 3 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Flat, curving *Background*: Rugged, high	*Foreground*/*Middleground*: Circular, regular *Background*: Not visible	*Foreground*/*Middleground*: Straight, vertical, rectangular, triangular, horizontal *Background*: None visible
LINE	*Foreground*/*Middleground*: Bold, curving *Background*: Rugged, vertical	*Foreground*/*Middleground*: Regular, circular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight, diagonal, octagonal *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, gray, white *Background*: Blue-Gray	*Foreground*/*Middleground*: Green, yellow-green, brown *Background*: Not visible	*Foreground*/*Middleground*: White, gray, tan, red, dark brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Smooth, uniform and rough, granular *Background*: Rough, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even, directional *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Flat, curving *Background*: Rugged, high	*Foreground*/*Middleground*: Circular, regular *Background*: Not visible	*Foreground*/*Middleground*: Tall, straight, vertical, rectangular, triangular, horizontal, parallel *Background*: None visible
LINE	*Foreground*/*Middleground*: Bold, curving *Background*: Rugged	*Foreground*/*Middleground*: Regular, circular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight, diagonal, octagonal *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, gray, white *Background*: Blue-Gray	*Foreground*/*Middleground*: Green, yellow-green, brown Background: Not visible	*Foreground*/*Middleground*: White, gray, tan, red, light brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Smooth, uniform and rough, granular *Background*: Rough, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even, directional *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM				X			X			X		
	LINE				X			X		X			
	COLOR				X			X			X		
	TEXTURE				X			X				X	

2. Does project design meet visual resource management objectives? __X_Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has a few utility poles, several buildings, a road intersection, and a stop sign that create vertical lines and rectangular and trapezoidal forms. There are many low-to-medium shrubs and rugged mountains in the foreground/middleground. 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 project 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 exiting landscape are repeated except for the introduction of horizontal line and the project does not dominate the view from KOP 03.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 04 – Site 2	Range 3 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground/Middleground*: Rolling, gentle *Background*: Rugged, steep	*Foreground/Middleground*: Circular, numerous *Background*: Not visible	*Foreground/Middleground*: Diagonal, parallel, straight, vertical, horizontal, tall *Background*: None visible
LINE	*Foreground/Middleground*: Weak, flowing *Background*: Irregular, vertical	*Foreground/Middleground*: Vertical, circular *Background*: Not visible	*Foreground/Middleground*: Vertical, straight, perpendicular *Background*: None visible
COLOR	*Foreground/Middleground*: Light brown, tan *Background*: Blue-gray	*Foreground/Middleground*: Green, sage, brown *Background*: Not visible	*Foreground/Middleground*: Brown *Background*: None visible
TEX-TURE	*Foreground/Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground/Middleground*: Rough, clumped *Background*: Not visible	*Foreground/Middleground*: Smooth, even, directional *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground/Middleground*: Rolling and flat, gentle *Background*: Rugged, steep	*Foreground/Middleground*: Circular, numerous *Background*: Not visible	*Foreground/Middleground*: Straight, vertical, horizontal, tall *Background*: None visible
LINE	*Foreground/Middleground*: Straight, angular *Background*: Irregular, vertical	*Foreground/Middleground*: Vertical, circular *Background*: Not visible	*Foreground/Middleground*: Vertical, straight, perpendicular *Background*: None visible
COLOR	*Foreground/Middleground*: Light brown, tan *Background*: Blue-Gray	*Foreground/Middleground*: Green, sage, brown *Background*: Not visible	*Foreground/Middleground*: Gray, black, brown *Background*: None visible
TEX-TURE	*Foreground/Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground/Middleground*: Rough, clumped *Background*: Not visible	*Foreground/Middleground*: Rough, uniform, ordered, directional *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM		X				X			X			
	LINE		X				X			X			
	COLOR		X					X			X		
	TEXTURE		X				X				X		

2. Does project design meet visual resource management objectives? ___Yes _X_ No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The substation adds moderate contrasts to line, form and texture of the land/water and vegetation. The substation adds strong contrasts to the line and form of the structures element. The project dominates the view of the casual observer from because of its size and the distance from KOP 4. The project introduces unique elements that are not found in the predominant natural features, and it does not partially retain the existing character of the landscape, therefore it does not fit within VRM III objectives.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 05 – Site 1	Range 3 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, gentle *Background*: Not visible	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, parallel, straight, vertical, horizontal, rectangular, directional, tall, trapezoid *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, undulating *Background*: Not visible	*Foreground*/*Middleground*: Vertical, circular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, square, straight *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, tan *Background*: Not visible	*Foreground*/*Middleground*: Green, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: Gray, tan, brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Not visible	*Foreground*/*Middleground*: Rough, scattered *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even, directional (house) and rough and coarse (stone fence) *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, gentle *Background*: Not visible	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, parallel, straight, vertical, horizontal, rectangular, directional, tall, trapezoid *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, undulating *Background*: Not visible	*Foreground*/*Middleground*: Vertical, circular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, square, straight, regular, angular *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, tan *Background*: Not visible	*Foreground*/*Middleground*: Green, gray, brown, reddish-brown *Background*: Not visible	*Foreground*/*Middleground*: Gray, tan, brown, black *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Not visible	*Foreground*/*Middleground*: Rough, scattered *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even, directional (house) and rough and coarse (stone fence); Uniform, directional, ordered (substation) *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM		X					X		X			
	LINE		X					X			X		
	COLOR			X				X			X		
	TEXTURE			X				X			X		

2. Does project design meet visual resource management objectives? _X__Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has a long line of transmission towers and lines along with adobe houses/buildings in the foreground/middleground. Numerous small and medium size natural shrubs dominate the view and there are a few ornamental trees at a residence. The types of lines and forms in the existing environment are repeated but there is an increase in number from the addition of the substation and transition towers. There is a strong contrast to the form and a medium contrast to the texture of the existing environment created by size and orderliness of the fence/wall. The land/water and vegetation retain all the elements (line, form, color, texture) from the existing environment except for the project footprint where vegetation would be removed. The project would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the structures are repeated and the project does not dominate the view from KOP 05.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 06 – Site 3	Range 3 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, gentle *Background*: Smooth, horizontal	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, tall, vertical, horizontal *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, flowing *Background*: Straight, horizontal	*Foreground*/*Middleground*: Vertical, circular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, gray *Background*: Blue-gray	*Foreground*/*Middleground*: Green, yellow, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: Dark brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling and flat, gentle *Background*: Rugged, high	*Foreground*/*Middleground*: Triangular and circular Background: Not visible	*Foreground*/*Middleground*: Diagonal, parallel, straight, vertical, horizontal, directional, triangular *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, flowing *Background*: Rugged	*Foreground*/*Middleground*: Vertical, circular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, gray *Background*: Blue-gray	*Foreground*/*Middleground*: Green, yellow, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: Dark brown, light brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even, directional *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X				X			X		
	LINE			X				X			X		
	COLOR			X				X				X	
	TEXTURE			X				X				X	

2. Does project design meet visual resource management objectives? __X_ Yes ___No (Explain on reverses side)

3. Additional mitigating measures recommended ___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has several transmission towers in the foreground/middleground. The addition of more transmission towers repeats the types of lines and forms in the existing environmental, however a moderate contrast is created because of the increase in towers.. 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 element. The project would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the exiting landscape are repeated and the project does not dominate the view from KOP 06 – Site 3.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 06 – Site 3A	Range 3 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, gentle *Background*: Smooth, pyramidal	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, parallel, straight, vertical, horizontal, trapezoid, directional, tall *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, flowing Background: Weak, continuous	*Foreground*/*Middleground*: Vertical, circular *Background*: Not visible	*Foreground*/*Middleground*: Trapezoid, vertical, horizontal, straight *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, gray *Background*: Blue-gray	*Foreground*/*Middleground*: Green, yellow, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: White, Brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even, directional *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling and flat, gentle *Background*: Rugged, high	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, parallel, straight, vertical, horizontal, triangular, directional, tall and short *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, flowing *Background*: Rugged	*Foreground*/*Middleground*: Vertical, circular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight, rectangular *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, gray *Background*: Blue-gray	*Foreground*/*Middleground*: Green, yellow, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: Dark brown, black, gray *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Medium, directional *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X				X			X		
	LINE			X				X			X		
	COLOR			X				X			X		
	TEXTURE			X				X				X	

2. Does project design meet visual resource management objectives? __X_ Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has several transmission towers in the foreground/middleground. The addition of the substation and transmission towers repeats the types of lines and forms in the existing environmental, however a moderate contrast is created by the addition of more horizontal and vertical lines and rectangular forms. The land/water and vegetation retain all the elements (line, form, color, texture) from the existing environment except for the project footprint where vegetation would be removed. All contrasts are weak except for the form, line, and color of the structures which have moderate contrasts. The project would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the exiting landscape are repeated and the project does not dominate the view from KOP 06 – Site 3A.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Land and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 07	Range 3 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, gentle *Background*: Smooth, horizontal	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, straight, vertical, horizontal, directional, tall *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, flowing *Background*: Straight, horizontal	*Foreground*/*Middleground*: Vertical, circular, triangular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, tan *Background*: Blue-gray	*Foreground*/*Middleground*: Green, yellow, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: Brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even, directional *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Flat and rolling, gentle *Background*: Smooth, horizontal	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, straight, vertical, horizontal, directional, tall *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, straight *Background*: Straight, horizontal	*Foreground*/*Middleground*: Vertical, circular, triangular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, tan *Background*: Blue-Gray	*Foreground*/*Middleground*: Green, yellow, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: Brown, silver, white *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Rough, directional *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_ LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM	X				X				X			
	LINE	X				X				X			
	COLOR	X				X				X			
	TEXTURE	X				X				X			

2. Does project design meet visual resource management objectives? ___Yes __X_ No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has a line of transmission towers, several houses, and low-to-medium green shrubs and grasses in the foreground/middleground. Strong contrasts to the line, color, and texture elements are created from the addition of the substation structure. The substation and its components dominate the landscape because of their close proximity to KOP 7. The project would not fit within VRM Class III objectives because the change to the characteristic landscape is strong, the elements (line, form, color, texture) of the exiting landscape are not repeated and the project dominates the view from KOP 07 at Site 3.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Land and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 07 – Site 3A	Range 3 East	See Figure C-1 in Appendix C of the EA
3. VRM Class III	Section 19	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, gentle *Background*: Smooth, horizontal	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, straight, vertical, horizontal, directional, tall *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, flowing *Background*: Straight, horizontal	*Foreground*/*Middleground*: Vertical, circular, triangular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, tan *Background*: Blue-gray	*Foreground*/*Middleground*: Green, yellow, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: Brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Smooth, even, directional *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/Middleground: Flat and rolling, gentle *Background*: Smooth, horizontal	*Foreground*/*Middleground*: Triangular and circular *Background*: Not visible	*Foreground*/*Middleground*: Diagonal, straight, vertical, horizontal, directional, tall *Background*: None visible
LINE	*Foreground*/*Middleground*: Weak, straight *Background*: Straight, horizontal	*Foreground*/*Middleground*: Vertical, circular, triangular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, straight *Background*: None visible
COLOR	*Foreground*/*Middleground*: Light brown, tan *Background*: Blue-gray	*Foreground*/*Middleground*: Green, yellow, gray, brown *Background*: Not visible	*Foreground*/*Middleground*: Brown, silver, white *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered *Background*: Fine, directional	*Foreground*/*Middleground*: Rough, even *Background*: Not visible	*Foreground*/*Middleground*: Rough, directional *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X				X				X	
	LINE			X				X			X		
	COLOR			X				X			X		
	TEXTURE			X				X			X		

2. Does project design meet visual resource management objectives? _X__Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has a line of transmission towers, several houses, and low-to-medium green shrubs and grasses in the foreground/middleground. Moderate contrasts to the line, color, and texture elements are created from the addition of the substation structure. The fence/wall adds shorter and more solid lines to the landscape. All other feature contrasts are weak. The project would fit within VRM Class III objectives because the change to the characteristic landscape is weak to moderate, the basic vertical form and line elements of the exiting landscape are repeated except for the introduction of low horizontal line of the fence/wall and the project does not dominate the view from KOP 07.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11th, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch See Figure C-1 in Appendix C of the EA
2. Key Observation Point 08 – Site 3A	Range 3 East	
3. VRM Class III	Section 20	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, curved, solid *Background*: Vertical, definite	*Foreground*/*Middleground*: Circular, regular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, trapezoid, rectangular *Background*: None visible
LINE	*Foreground*/*Middleground*: Curving, converging *Background*: Vertical, rugged	*Foreground*/*Middleground*: Continuous, regular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, perpendicular, horizontal *Background*: None visible
COLOR	*Foreground*/*Middleground*: Gray, tan, brown *Background*: Blue-gray	*Foreground*/*Middleground*: Dark green, yellow *Background*: Not visible	*Foreground*/*Middleground*: Dark brown *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Rough, scattered *Background*: Coarse, matte	*Foreground*/*Middleground*: Coarse, dense *Background*: Not visible	*Foreground*/*Middleground*: Smooth, directional *Background*: None visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, curved, solid *Background*: Vertical, definite	*Foreground*/*Middleground*: Circular, regular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, horizontal, rectangular, low *Background*: None visible
LINE	*Foreground*/*Middleground*: Curving, converging *Background*: Vertical, rugged	*Foreground*/*Middleground*: Continuous, regular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, perpendicular, horizontal, continuous *Background*: None visible
COLOR	*Foreground*/*Middleground*: Gray, tan, brown *Background*: Blue-Gray	*Foreground*/*Middleground*: Dark green, yellow *Background*: Not visible	*Foreground*/*Middleground*: Dark brown, white, gray, black *Background*: None visible
TEX-TURE	*Foreground*/*Middleground*: Rough, scattered *Background*: Coarse, matte	*Foreground*/*Middleground*: Coarse, dense *Background*: Not visible	*Foreground*/*Middleground*: Smooth, directional, medium, even *Background*: None visible

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X				X			X		
	LINE			X				X			X		
	COLOR			X				X			X		
	TEXTURE			X				X			X		

2. Does project design meet visual resource management objectives? _X__Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has transmission towers and lines, a communication tower, buildings and a gravel road in the foreground/middleground. The addition of the substation and transmission towers repeats the types of lines and forms in the existing environmental, however a moderate contrast is created by the addition of more horizontal and vertical lines and rectangular form of the fence/wall. The land/water and vegetation retain all the elements (line, form, color, texture) from the existing environment except for the project footprint where vegetation would be removed. All contrasts are weak except for the form, line, and color of the structures which have moderate contrasts. The project would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the exiting landscape are repeated and the project does not dominate the view from KOP 08 – Site 3A.

Additional Mitigating Measures (See item 3)

Form 8400-4

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: November 11, 2017

District/ Field Office: Las Cruces District Office

Resource Area:

Activity (program): Lands and Realty

SECTION A. PROJECT INFORMATION

1. Project Name – Talavera Substation and Distribution	4. Location Township 23 South	5. Location Sketch
2. Key Observation Point 09 – Site 11	Range 2 East	See Figure C-1 in Appendix C of the EA
3. VRM Class	Section 15	

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, gentle and rugged, jagged *Background*: Not visible	*Foreground*/*Middleground*: Circular, low, and medium-high *Background*: Not visible	*Foreground*/*Middleground*: Vertical, directional *Background*: Not visible
LINE	*Foreground*/*Middleground*: Bold, irregular, angular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, circular, triangular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, straight *Background*: Not visible
COLOR	*Foreground*/*Middleground*: Light brown, gray, blue-gray Background: Not visible	*Foreground*/*Middleground*: Green, yellow, brown *Background*: Not visible	*Foreground*/*Middleground*: Brown *Background*: Not visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered, directional *Background*: Not visible	*Foreground*/*Middleground*: Rough, medium *Background*: Not visible	*Foreground*/*Middleground*: Smooth, directional *Background*: Not visible

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	*Foreground*/*Middleground*: Rolling, gentle and rugged, jagged *Background*: Not visible	*Foreground*/*Middleground*: Circular, low, and medium-high *Background*: Not visible	*Foreground*/*Middleground*: Vertical, directional, horizontal *Background*: Not visible
LINE	*Foreground*/*Middleground*: Bold, irregular, angular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, circular, triangular *Background*: Not visible	*Foreground*/*Middleground*: Vertical, straight, horizontal, angular *Background*: Not visible
COLOR	*Foreground*/*Middleground*: Light brown, gray, blue-gray *Background*: Not visible	*Foreground*/*Middleground*: Green, yellow, brown *Background*: Not visible	*Foreground*/*Middleground*: Brown, gray, black *Background*: Not visible
TEX-TURE	*Foreground*/*Middleground*: Coarse, scattered, directional *Background*: Not visible	*Foreground*/*Middleground*: Rough, medium *Background*: Not visible	*Foreground*/*Middleground*: Smooth, directional *Background*: Not visible

SECTION D. CONTRAST RATING __SHORT TERM _X_LONG TERM

1. DEGREE OF CONTRAST		FEATURES: LAND/WATER BODY (1) STRONG	MODERATE	WEAK	NONE	VEGETATION (2) STRONG	MODERATE	WEAK	NONE	STRUCTURES (3) STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM		X					X			X		
	LINE		X					X			X		
	COLOR		X					X			X		
	TEXTURE			X				X				X	

2. Does project design meet visual resource management objectives? _X__Yes ___No
(Explain on reverses side)

3. Additional mitigating measures recommended
___Yes ___No (Explain on reverses side)

Evaluator's Names — Date
Deb Reber, Paige Marchus, and Tony Somers — 11/11/17

SECTION D. (Continued)

Comments from item 2.

The existing landscape has transmission towers and lines and a two-track dirt road in the foreground/middleground. The addition of the transmission towers repeats the types of lines and forms in the existing environmental, however a moderate contrast is created by the addition of more horizontal and vertical lines and the addition of the angular down-drop lines of the towers. The land/water and vegetation retain all the elements (line, form, color, texture) from the existing environment except for the project footprint where vegetation would be removed. The transmission towers and lines run in front of the view of the mountains. All contrasts are weak to moderate. The project would fit within VRM Class III objectives because the change to the characteristic landscape is moderate, the basic elements of the exiting landscape are repeated (except for the addition of horizontal and vertical lines), and the project does not dominate the view from KOP 09.

Additional Mitigating Measures (See item 3)