U.S. Department of the Interior
Bureau of Land Management

Borderlands Wind Project

FINAL ENVIRONMENTAL IMPACT STATEMENT AND PROPOSED RESOURCE MANAGEMENT PLAN AMENDMENT

DOI-BLM-NM-A020-2019-0002-RMP-EIS

Cooperating Agencies:
U.S. Fish and Wildlife Service; U.S. Air Force; Pueblo of Zuni; New Mexico State Land Office; and Catron County, New Mexico

Estimated Lead Agency Total Costs Associated with Developing and Producing this Environmental Impact Statement and Proposed Resource Management Plan Amendment $493,000.

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Final
Environmental Impact Statement and Proposed Resource Management Plan Amendment

DOI-BLM-NM-A020-2019-0002-RMP-EIS

BLM/NM/PL-19-02-1610

Borderlands Wind Project

Prepared by
U.S. Department of the Interior
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March 2020

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
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301 Dinosaur Trail
Santa Fe, New Mexico 87508
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April 10, 2020

In Reply Refer To:
2800 (LLNMA02000)
NMNM136976

Dear Reader:

Enclosed for your review is the Final Environmental Impact Statement (EIS) and Proposed Resource Management Plan Amendment (RMP) for the Borderlands Wind Project (Project). The Final EIS/RMP Amendment was prepared by the Department of the Interior, Bureau of Land Management (BLM) pursuant to the Federal Land Policy and Management Act of 1976 and the National Environmental Policy Act of 1969. Through a right-of-way (ROW) application, the Project includes: the construction, operation, maintenance, and decommissioning of up to a 100-megawatt wind-powered electrical generation facility and associated generation tie-line and access road facilities on approximately 16,648 acres of Federal lands administered by the BLM. Approval of the ROW application by the BLM would also require approving an amendment to the 2010 Socorro Field Office RMP to make the Visual Resources Management classification in the application area compatible with wind development.

In preparing the Final EIS/RMP Amendment, the BLM has developed a range of options to resolve resource conflicts by considering: (1) issues raised through the public scoping and public comment periods and consultation and coordination with participating and cooperating agencies and American Indian tribes; (2) issues raised by agency resource specialists; and (3) applicable resource management planning criteria. This process has resulted in the development of two alternatives in addition to the Proposed Action. The No Action Alternative is also addressed, which constitutes a continuation of current land management in the application area. These alternatives are described in Chapter 2: Proposed Action and Alternatives of the Final EIS/RMP Amendment. The BLM has identified Alternative 2 as the Preferred Alternative, which would consist of 34 constructed turbines including larger turbines having a maximum overall height of up to 630 feet on approximately 16,648 acres of BLM-administered land. Chapter 4: Consultation and Coordination describes the BLM's consultation and coordination efforts throughout the process. Responses to public comments and revisions to the Draft EIS/RMP Amendment are detailed in Appendix G: Comments and Responses to Comments on the Draft EIS.

The Final EIS/RMP Amendment includes land use planning actions. A person who meets the conditions outlined in 43 CFR 1610.5-2 and wishes to file a protest to the RMP Amendment specifically, must do so within 30 days of the date that the Environmental Protection Agency publishes its Notice of Availability in the *Federal Register*. Instructions for filing a protest with the Director of the BLM regarding the Final EIS/RMP Amendment may be found online at https://www.blm.gov/filing-a-plan-protest and at 43 CFR 1610.5-2.

Protests will be accepted from any person who participated in the planning process and has an interest which is or may be adversely affected by the approval of the RMP Amendment. A protest may raise only those issues which were submitted for the record during the planning process. The protest shall be in writing and shall be filed with the BLM Director. The protest shall contain: (1) the name, mailing address, telephone number, and interest of the person filing the protest; (2) a statement of the issue or issues being protested; (3) a statement of the part or parts of the plan or amendment being protested; (4) a copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and (5) a concise statement explaining why the State Director's decision is believed to be wrong.

You may submit protests electronically through the BLM ePlanning project website at https://go.usa.gov/xyFmh.

Protests submitted electronically by any means other than the ePlanning Project website protest section will be invalid unless a protest is also submitted in hard copy. Protests submitted by fax will also be invalid unless also submitted either through the ePlanning Project website protest section or in hard copy. Alternately, written protests can be mailed to one of the following addresses:

- Regular mail: Director (210), Attn: Protest Coordinator, P.O. Box 261117, Lakewood, CO 80226
- Overnight delivery: Director (210), Attn: Protest Coordinator, 2850 Youngfield Street, Lakewood, CO 80215

Before including your address, telephone number, email address, or other personally identifying information in your protest, be advised that your entire protest - including your personal identifying information - may be made publicly available at any time. You may request that the BLM withhold your personal identifying information from public review, but we cannot guarantee we will be able to do so.

The BLM Director will render a written decision on each protest. The decision will be mailed to the protesting party. The decision of the BLM Director shall be the final decision of the Department of the Interior on each protest. Responses to protest issues will be complied and formalized in a Director's Protest Resolution Report made available following issuance of the decision. Upon resolution of all protests, the BLM will issue the record of decision.

All Project documents will be made available electronically on the BLM's ePlanning website at: https://go.usa.gov/xyFmh. Hard copies are available for viewing at the BLM Socorro Field Office, 901 South Highway 85, Socorro, NM 87801, and the BLM New Mexico State Office, 301 Dinosaur Trail, Santa Fe, NM 87508.

Thank you for your continued interest in the Borderlands Wind Project EIS/RMP Amendment.

Sincerely,

Timothy R. Spisak
State Director

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CHAPTER 1. INTRODUCTION

Borderlands Wind, LLC, a subsidiary of NextEra Energy Resources, LLC (Proponent), is proposing development of an up to 100-megawatt (MW) wind-powered electrical generation facility in western Catron County, New Mexico (NM). The Borderlands Wind Project (BLWP) would be built near the Arizona (AZ)–NM border south of U.S. Highway 60 (U.S. 60) (Figure 1-1). Wind turbines and ancillary facilities, such as access roads, underground collection lines, and substation/switchyard areas, would be located on lands administered by the Bureau of Land Management (BLM) Socorro Field Office (SFO), New Mexico State Land Office (NMSLO)-owned lands, and privately owned lands. The Proponent has filed an application with the BLM for a Federal Land Policy and Management Act of 1976 (FLPMA) Right-of-Way (ROW) authorization. The BLM must consider existing resource management plans (RMPs) in the decision to issue a ROW grant, in accordance with 43 Code of Federal Regulations (CFR) Part 1610.0-5(b). The proposed wind development alternatives are not in conformance with the SFO RMP (BLM 2010a); therefore, an amendment to the RMP will be analyzed in this Environmental Impact Statement (EIS). An amendment to the SFO RMP would modify the visual resource management (VRM) classes and ROW avoidance area status.

The BLM's obligations for the proposed project are established by regulatory directives and current energy development trends. BLM's decision-making process will incorporate and consider the following Presidential Executive Orders (EOs): Promoting Energy Independence and Economic Growth (EO 13783), Promoting Agriculture and Rural Prosperity in America (EO 13790), and Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects (EO 13807). Secretarial Order (SO) 3349 (American Energy Independence) provides guidance for the implementation of the Presidential EOs.

The Proponent considered wind generating sites near existing Tucson Electric Power (TEP) transmission lines and avoided areas with existing congestion in the transmission network (such as sites surrounding Albuquerque, NM). Based on these site characteristics, two project areas were identified and initially evaluated for their feasibility for development as a wind energy facility. In addition to the BLWP area (Figure 1-1), an alternate project area was considered that was located approximately 40 miles northwest of the BLWP area in AZ. The AZ project area was not selected for development because the wind resources are of lower quality than at the BLWP area (SWCA Environmental Consultants 2018a). Additionally, this alternative project area had substantially more environmental constraints. There were numerous eagle nests on and within 10 miles of the site, and it was also located near highly sensitive cultural resources for which the Tribes expressed substantial concerns. The Proponent ultimately selected the proposed BLWP area due to the quality of wind resources, proximity to existing TEP transmission lines, relatively limited potential impacts to cultural resources as compared to the AZ project site, and compatibility with existing land uses in the BLWP area, which is predominately cattle grazing (Borderlands Wind, LLC 2020).

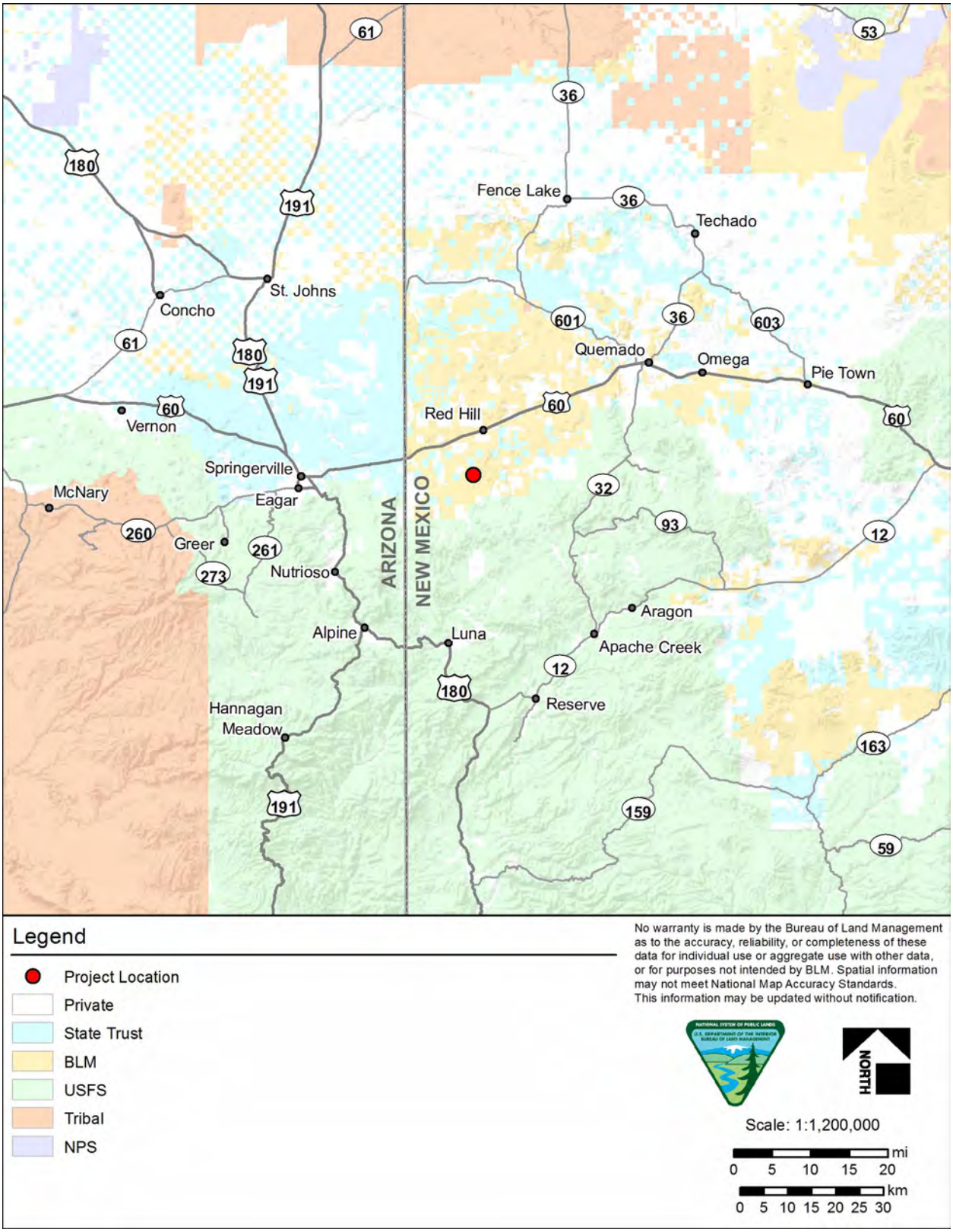

Figure 1-1. BLWP Area

1.1 Purpose and Need

The BLM's purpose and need for the proposed BLWP is established by regulatory obligations and directives and current energy development trends. The BLM's purpose is to respond to a ROW application submitted by the Proponent to construct, operate, maintain, and decommission a wind energy facility and associated infrastructure in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws and policies. The need for the BLM's proposed action arises from FLPMA as amended October 1976 through December 2014, which established a multiple use mandate for management of Federal lands, including "systems for generation, transmission, and distribution of electric energy, except that the applicant shall also comply with all applicable requirements of the Federal Energy Regulatory Commission under the Federal Power Act, including Part I thereof (41 Stat. 1063, 16 United States Code [U.S.C.] 791a-825r)" outlined in Title V of FLPMA. The BLM's action in considering the Proponent's ROW application is provided under the authority of the Secretary of the Interior to "grant issue or renew rights of way ... for generation, transmission, and distribution of electric energy" (43 CFR 2800). The purpose and need is used to formulate a reasonable range of alternatives to be considered in the EIS.

1.2 Proponent's Project Objectives

The Proponent's objective for the BLWP is to respond to a proposal from TEP for a wind project that is directly interconnected to their transmission system and can generate up to 100 MW of power for their customers. TEP, an AZ utility, is responding to market demands generated by the retirements of coal facilities along with transmission lines that deliver power to the Four Corners region (AZ–NM–Colorado–Utah) and to an increased interest in renewable energy to replace this power generation (Borderlands Wind, LLC 2020). Under the Renewable Energy Standard and Tariff that was approved by the AZ Corporation Commission in 2006, regulated utilities, such as TEP, must generate 15 percent of their energy from renewable resources by 2025.

1.3 Decisions to be Made

This EIS provides the information and environmental analysis necessary to inform the BLM's authorized officer and the public about the potential environmental consequences of the BLWP. It tiers to the BLM's *Final Programmatic Environmental Impact Statement for Wind Energy Development on BLM-Administered Lands in the Western United States and Record of Decision* (Final Wind Energy PEIS and ROD [BLM 2005]). The purpose of the BLM's action is to respond to the Proponent's application for use of BLM-administered lands for a ROW. Specifically, the BLM will decide whether to grant, grant with conditions, or deny the application for a ROW. Pursuant to 43 CFR § 2805.10, if the BLM issues a grant, the BLM decision maker may include terms, conditions, and stipulations determined to be in the public interest. If the decision is made to grant the ROW, the BLM also will decide which alternative to select; any mitigation requirements; and the terms, conditions, and stipulations of the grant.

The BLWP, as submitted, will require an SFO RMP amendment (BLM 2010a) if the proposed project is approved or approved with modification, and the BLM NM State Director will make the decision as to whether or not to adopt the RMP amendment. In the ROD, the BLM will clearly distinguish the RMP amendment decision from the selected alternative.

1.4 Land Use Planning

Management direction of public land and resources is provided in land use plans or RMPs for each BLM field office or district office. The BLM must review relevant land use plans and RMPs to determine if a proposed project is in conformance with the management decisions and objectives of those plans. If a

proposed project is not in conformance, the BLM can choose to either deny the project, adjust the project to conform to the RMP, or amend the RMP to address the nonconformance. In this Final EIS, the BLM identified a plan amendment needed for VRM allocations for all of the alternatives that are fully analyzed within the EIS. The development of a wind energy facility, such as the BLWP, must be consistent with the SFO RMP and applicable BLM policy (refer to Section 1.5 Authorizing Laws, Regulations, and Policies). The project, as proposed, does not currently conform to the SFO RMP for VRM objectives and ROW avoidance; therefore, this EIS will analyze an RMP amendment.

In addition, the 2007 Catron County Capital Improvement Plan (CIP)/Comprehensive Plan (Catron County 2007) was considered when evaluating potential impacts to land ownership and use patterns in the project vicinity (refer to Section 3.2 Land Use). The land use designations in the 2007 Catron County CIP/Comprehensive Plan for the BLWP area are "Government Controlled" for the BLM-administered lands and NMSLO lands, and "Rural" for the private lands. The general land use goals identified in Catron County's (County) plan include 1) encouraging local and sustainable growth in the County; 2) protecting existing land uses, natural resources, and related economic activities; and 3) protecting the County's natural beauty.

1.5 Authorizing Laws, Regulations, and Policies

The FLPMA and its implementing regulations provide the legal framework that the BLM uses to manage public lands and assess the effects of its management actions. The BLWP would be required to obtain the applicable authorizations established in the BLM's Final Wind Energy PEIS and ROD (BLM 2005), as well as those from the SFO RMP. This EIS is being prepared by the BLM in compliance with the National Environmental Protection Act (NEPA); FLPMA; and U.S. Department of the Interior (DOI) and BLM policies and manuals, including the BLM NEPA Handbook (BLM 2008b). Table A-1 in Appendix A lists the relevant actions and authorities that must be obtained or considered for the BLWP. Table A-2 in Appendix A provides a partial list and summary of other Federal, State, and County authorities and actions that may be applicable to this EIS.

1.6 Lead Agency and Cooperating Agencies

The BLM through its New Mexico State Office, is the lead Federal agency responsible for preparing this EIS and associated analyses. The Council on Environmental Quality (CEQ) regulations addressing cooperating agencies statuses (40 CFR §§ 1501.6 & 1508.5) implement the NEPA requirement that Federal agencies responsible for preparing NEPA analyses and documentation do so in cooperation with State and local governments and other agencies with jurisdiction by law or special expertise.

The BLM invited various Federal, State, and County agencies and Tribal governments to participate as cooperating agencies in May 2018. Five agencies accepted: U.S. Air Force, U.S. Fish and Wildlife Service (USFWS), NMSLO, Catron County, and the Pueblo of Zuni.

1.7 Issues to Address in the EIS

Public scoping for the BLWP was initiated on November 9, 2018, when the BLM published a Notice of Intent (NOI) to prepare an EIS in the Federal Register. The NOI briefly described the purpose of and need for the BLWP, the proposed project location, and infrastructure associated with the BLWP; and initiated the scoping process and 30-day public comment period to solicit public comments and identify issues. It also served to segregate the public lands from appropriation in accordance with 43 CFR 2091.3-1(e)(1) and 43 CFR 2804.25(f).

The BLM also identified issues through internal scoping among the BLM interdisciplinary staff. The scoping process is described in Chapter 4. The Scoping Report, as well as the BLM's consultation and coordination documentation are available on the project's BLM website.

Of the 51 (47 public and 4 agency) comment submissions (comment letters and/or emails), five people sent in the same comments twice and one organization sent the same comments from two different individuals, which resulted in 45 unique letters and/or emails. There were two comments in support of the renewable energy project. A summary of issues that were raised most frequently during the public scoping period is provided below:

- *Socioeconomics* – Residents or private property owners in the adjacent Red Hill/Cimarron Ranch Subdivision noted issues related to property values, noise, and human health effects. Comments made noted the lack of local economic benefits, specifically loss of revenue from hunting and tourism; increased fire danger and added burden to local firefighters; and the change from a natural landscape to an industrial setting.

- *Biological Resources* – Numerous issues identified in public comments focused on impacts to biological resources, particularly eagles and other special status species, as well as bat and avian species. Other comments focused generally on the loss of vegetation, wildlife, and habitat; habitat disturbance and fragmentation; loss of elk habitat and migration path disruption; and ability for successful revegetation and restoration after project construction and decommissioning.

- *Visual Resources* – Comments on visual resources focused primarily on effects to views and the visibility of project facilities from nearby residences, places of traditional cultural importance, and recreational resources. Other comments were noted on the degradation of panoramic views, the night sky, and the landscape's natural character.

- *Cultural Resources* – Most of the comments on cultural resources indicated concern for impacts to archaeological resources and places of traditional cultural importance, such as Zuni Salt Lake.

- *Land Use, Recreation, and Transportation* – Some comments on land use identified effects to livestock grazing during the construction and revegetation process. Other comments questioned the impact to recreation and hunting use, and how the recreation experience would change in terms of the addition of a wind facility to the area. Comments were also received noting the potential degradation of U.S. 60 during construction by heavy equipment and increased volume of project-related vehicles. Additionally, driver distraction concerns were noted from the strobe effects of the wind turbine blade's movement during operation.

- *Military Training Routes* – Concerns were noted regarding the possible effects to military training flight paths, but with no distinct issue identified or responsive statement made.

Scoping comments raised that were not related to resources or uses included requests for information and to be added to the mailing list. Several comments asked for more advance notification for subsequent public meetings on the project and at a location closer to the Red Hill/Cimarron Ranch Subdivision. Commenters also requested formal presentations and the ability to make verbal comments at future BLWP public meetings.

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVES

This chapter describes the BLWP's Proposed Action, Alternative 1, Alternative 2, and the No Action Alternative. A detailed description of the construction, operation and maintenance (O&M), and decommissioning of the proposed wind energy facility is provided in Section 2.2 Project Elements Common to All Build Alternatives and the BLWP Plan of Development[1] (POD) (Borderlands Wind, LLC 2020; Appendix C).

2.1 Best Management Practices

All phases of the BLWP would be subject to the BLM's best management practices (BMPs), which are designed to guide project planning, construction activities, development of facilities, O&M, and decommissioning in order to minimize environmental and operational impacts. The BLWP would develop wind energy resources in compliance with the BMPs and other design features that were evaluated in the BLM's Final Wind Energy PEIS and ROD (BLM 2005). The applicable BMPs and other design features are included in Appendix B of this EIS.

2.2 Project Elements Common to All Build Alternatives

2.2.1. Right-of-Way Application

Under the Proposed Action and Alternatives 1 and 2 (build alternatives[2]), the Applicant is seeking a ROW for development of the project.

2.2.2. Resource Management Plan Amendment

The build alternatives include amending the VRM Class II objective in the SFO RMP to VRM Class III objective and VRM Class III objective to Class IV objective (refer to Table 3-24 and Table 3-25) for the proposed management activities. A ROW avoidance area was delineated along U.S. 60 to protect the VRM Class II allocation and would no longer be applicable if the VRM Class II allocation was removed.

2.2.3. Project Components

Details regarding the Proposed Action and Alternatives 1 and 2 are drawn from the BLWP POD (see Appendix C), clarification meetings between the BLM and the Proponent, and other agencies, as appropriate. The Proponent has a Power Purchase Agreement with TEP. The Point of Interconnect for all build alternatives would tie into the existing TEP 345-kilovolt (kV) transmission line. The Proponent selected the BLWP area based on the quality of available wind resources, proximity to existing transmission lines and compatibility with the current grazing use. Subject to the BLM's approval of the ROW application (with or without modification), the wind energy facility would operate year-round for up to 35 years. Analysis and surveys conducted within the BLWP area were applied to all alternatives.

Three models of wind turbine generators are proposed for the BLWP (Table 2-1). For all models, the turbine tower would be a tapered tubular steel structure manufactured in multiple sections depending on

[1]The calculations for acreages and mileages provided in this EIS, in some cases, may not match the BLWP POD calculated acreages and mileages due to differences in data projections and coordinate systems. This EIS uses the North American Datum (NAD) 1983 Albers projected coordinate system, as requested by the BLM SFO and the BLWP POD uses the NAD 1983 Universal Transverse Mercator Zone 12 North projected coordinate system.

[2] The term "build alternatives" is interchangeable and used synonymously with "Proposed Action and Alternatives 1 and 2" throughout the document to encompass the alternatives that would require construction, O&M, and decommissioning of the BLWP. This is in contrast to the No Action Alternative, which would not involve any development of a wind generation facility.

tower model height. The tower base would be approximately 15 feet in diameter, and the tower would be painted per Federal Aviation Administration (FAA) requirements (FAA 2018).

The nacelle sits on top of the tower and houses the main mechanical components of the wind turbine, drive train, gearbox, and generator. The nacelle would be equipped with an anemometer and a wind vane that signals wind speed and direction information to an electronic controller. The hub attaches the blades to the rotor shaft and is covered by a nose-cone structure to streamline the airflow and protect the equipment. The hub also contains the mechanisms that allow the blades to pitch in response to wind, temperature, and air density conditions. As noted in the descriptions of the alternatives below, the number and size of the turbines to be constructed would depend on the alternative. Based on the turbines considered, the blades would turn at no more than 18 revolutions per minute depending on wind conditions. Turbines would also have a braking system to allow the controller to stop the rotor. Each turbine would be equipped with a computer control system to monitor variables consisting of wind speed and direction, air and machine temperatures, electrical voltages, currents, vibrations, blade pitch, and yaw (side-to-side) movement (BLM 2013a).

Table 2-1. Proposed Wind Turbine Generator Model Characteristics

Turbine Component	GE 2-MW Platform 2.3 MW (feet)	GE 2-MW Platform 2.5 MW (feet)	GE 2-MW Platform 3.03 MW (feet)
Hub height	262	295	322 - 384
Rotor/blade radius	190	190	230
Rotor/blade diameter	380	381	459
Ground clearance	72	84	92 - 154
Maximum overall height	453	499	up to 630

Table Abbreviations: GE = General Electric; MW = megawatt
Note: Technical data represent the maximum worst-case design characteristics for each model, based on available manufacturer specifications (Borderlands Wind, LLC 2020)

Each turbine would have a pad-mounted transformer box at the base. Each wind turbine, through its associated transformer, would collect electricity and transfer it to a collector substation via the electrical collection system. The transformer at each wind turbine would increase the voltage for efficiency. The collection system would consist of underground cables connecting individual wind turbine generators together and then transporting the electrical power to the BLWP substation. Voltage at the substation would be increased from 34.5 kV to the interconnection voltage of 345 kV. In addition to wind turbines, numerous ancillary project components and activities would be associated with the construction, O&M, and decommissioning of the BLWP (Table 2-2; Appendix C). See Table 2-2 below for a detailed comparison of the components for the Proposed Action and Alternatives 1 and 2.

2.2.4. Project Construction

Site preparation would be the first phase of construction, including clearing and grading of the temporary laydown areas, turbine foundation, trenching for electrical cabling, and access roads. Any limitations of areas to be disturbed would be clearly defined prior to construction of roads, collection systems, and turbine locations. The Flagging, Fencing, and Signage Plan included in the BLWP POD further details site preparation, surveying, and staking. Site grading and clearing would be performed in accordance with BLM policies and the State-approved Stormwater Pollution Prevention Plan (Borderlands Wind, LLC 2020).

Delivery vehicles would be directed to a single point of access at the U.S. 60 and Bill Knight Gap Road intersection. During construction, the peak volume of trips generated along U.S. 60 is estimated at approximately 500 trips per day (based on 160 construction personnel and 50 delivery trucks leaving and

Table 2-2. Comparison of Proposed Action, Alternative 1, and Alternative 2

Component	Description	Proposed Action	Alternative 1	Alternative 2
Wind Turbines and Pad-mounted Transformers[1]	Construction and installation of wind turbines to generate up to 100 MW of power. Each turbine would be mounted on a concrete pedestal, supported by a permanent underground concrete foundation with a tubular steel tower.	• 46 turbines permitted • 40 turbines constructed (36 GE 2.5 MW & 4 GE 2.3 MW) • 6 alternative locations • Temporary disturbance: – 1.6 acres/turbine – 74.5 acres total • Permanent disturbance: – 0.2 acre/turbine – 9.2 acres total	• 44 turbines permitted • 40 turbines constructed (36 GE 2.5 MW & 4 GE 2.3 MW) • 4 alternative locations • Temporary disturbance: – 6.5 acres/turbine – 286.6 acres total • Permanent disturbance: – 0.1 acre/turbine – 4.8 acres total	• 44 turbines permitted • 34 turbines constructed (30 GE 3.0 MW & 4 GE 2.5 MW) • 10 alternative locations • Temporary disturbance: – 6.5 acres/turbine – 286.6 acres total • Permanent disturbance: – 0.1 acre/turbine – 4.8 acres total
Electrical Interconnection Substation and Switchyard	The BLWP substation would be located where all underground electrical collection lines would terminate. The substation would step up the electricity generated by the BLWP to the voltage necessary to transmit it across the transmission system. The BLWP substation would include a power transformer, breakers, feeder breakers, switches, control house, and a substation superstructure. Exterior lighting at the substation would be down-shielded. The switchyard would be connected to, and in close proximity to, the BLWP substation. The switchyard would integrate the electricity generated by the BLWP onto the existing transmission system and may include circuit breakers, switches and controls, and a control building. Emergency backup power to the substation control house would be provided by connecting into Socorro Electric's existing distribution line.	emporary disturbance: – 7 acres total ermanent disturbance: – 7 acres total	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action
Underground Electric Collection System and Communication Lines	Each wind turbine would be connected to the substation by underground power and communication cables (i.e., the collection lines). Trenching for the underground collection lines would be approximately 4 feet wide and 3 feet deep. Where underground collection lines and access roads are co-located, trenching would occur adjacent to the roadbed, an average of 2 to 4 feet from the roadbed. It is anticipated that 60 feet of temporary workspace would be needed for trenching.	• Temporary disturbance: – 29.7 miles (213.7 acres) total • Permanent disturbance: – 0 acres; all temporary areas of disturbance would be reclaimed	• Temporary disturbance: – 30.4 miles (203.5 acres) total • 11 junction boxes within the footprint of the O&M building; no additional disturbance Permanent disturbance:	• Temporary disturbance: – Same as Alternative 1 • Permanent disturbance: – Same as Alternative 1

Component	Description	Proposed Action	Alternative 1	Alternative 2
	Additionally, 11 junction boxes would be required throughout the proposed project area for Alternatives 1 and 2. A junction box is where all electrical wires meet, connect, and are protected before being routed to other locations in the proposed project. Each junction box location is estimated to be 6 feet long, 4 feet wide, 4 feet deep below the surface, and would be visible as a 3 by 3–foot square aboveground. Each junction box would have a 1-foot gravel ring around it as there is some grounding copper buried under and around the box.		– 0.1 acre for junction boxes; all other areas would be reclaimed	
O&M Facility	The 2,500-square-foot single-story O&M building would provide a home base for maintenance services and operational on-site monitoring. It would be a pre-manufactured building assembled on a concrete slab foundation. The O&M building would contain offices; restrooms; a kitchen/breakroom; a room to house the control system for the turbines; and a warehouse area that would store spare parts, tools, and maintenance equipment. Outside the O&M building would be a gravel parking area and outdoor storage area. Electricity to the O&M facility would be provided by connecting into Socorro Electric's existing distribution line. A 1,000-gallon septic tank would also be constructed as part of the O&M facilities, if feasible. If construction of a septic tank would not be possible, either a holding tank would be constructed that would be pumped periodically or porta-potties would be placed near the O&M building.	• Temporary disturbance: – 5 acres total • Permanent disturbance: – 5 acres total	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action
Distribution Line	An approximately 12-kV, single-phase line would be made of 45-foot-tall wooden poles. The poles would span approximately 250 feet. The distribution line would connect to an existing regional transmission line to deliver BLWP power to TEP.	• Temporary disturbance: – 1.8 miles long; 100 feet wide (22.7 acres) • Permanent disturbance: – 1.8 miles long; 100 feet wide (22.7 acres)	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
Access Roads	Existing roads would be used to the extent feasible and would be improved by regrading and filling the surface to allow for all-weather access. Roads would be graded, include sufficient drainage, and be surfaced with an aggregate surface material. During construction, roads would be contained within the 150-foot-wide temporary disturbance corridor to accommodate construction activities. In the event that the access road would intersect with grazing fences, gates or cattle guards would be constructed and any damaged fencing would be repaired/replaced. Bill Knight Gap Road, from the intersection of U.S. 60, would be the primary access road to the BLWP. Improvements would be needed at the intersection of U.S. 60 and Bill Knight Gap Road. Permanent improvements to this intersection would include the widening of U.S. 60 to the north to construct: 1) an approximate 1,225-foot-long westbound deceleration lane, left-turn lane with storage, and associated taper, 2) an approximate 1,000-foot-long eastbound deceleration lane with storage and associated taper, and 3) apron improvements for turning movement. Hooper Ranch Road, from the intersection of U.S. 60 south to the O&M building, would be a secondary access used only if the primary access is not available. A portion of Hooper Ranch Road (approximately 1.8 miles) would need to be improved between the interconnection and substation to allow for construction of the distribution line.	• Temporary disturbance: – 48.1 miles total, including 41.3 miles of new roads – 872.7 acres • Permanent disturbance: – 48.1 miles total, including 40.3 miles of new roads and 1 mile of Bill Knight Gap Road reroute – 16 feet wide for all except Bill Knight Gap Road, which would be 24 feet wide (6.8 miles) – 101 acres	• Temporary disturbance: – 47.9 miles total, including 37.9 miles of new roads – 845.1 acres • Permanent disturbance: – 47.9 miles total including 36.9 miles of new roads; and 1 mile of Bill Knight Gap Road reroute – 16 feet wide for all except Bill Knight Gap Road, which would be 24 feet wide (6.8 miles) – 97.5 acres	• Temporary disturbance: – Same as Alternative 1 • Permanent disturbance: – Same as Alternative 1

Component	Description	Proposed Action	Alternative 1	Alternative 2
Fencing	The substation/switchyard and the O&M facility are the only areas that would be permanently fenced. The substation/switchyard fence would consist of an 8-foot-tall chain-link structure with 1 foot of three-strand barbed wire on top, resulting in a total height of 9 feet. The O&M facility would be fenced with a 6-foot-tall chain-link fence with 1 foot of three-strand barbed wire on top, for a total height of 7 feet. The maximum depth of the fencing would be 4 inches. Facility fence gates would be locked when the facility is unattended. Temporary fencing would be used around areas of vegetation restoration. This fencing would be on previously disturbed lands and no additional ground disturbance is anticipated.	• Temporary disturbance: – Within the footprint of the substation/ switchyard and the O&M facility, no additional disturbance • Permanent disturbance: – Within the footprint of the substation/ switchyard and the O&M facility, no additional disturbance	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action
Construction Laydown/ Staging Areas	Three secure areas for temporary construction offices, construction vehicle parking, equipment and construction materials storage, and stockpiled soil storage would be developed. The laydown areas would be cleared and graded by bulldozers, road graders, or other standard earth moving equipment. At the end of construction, these areas would be reclaimed and revegetated. Electricity to the construction laydown/staging areas would be provided by on-site generators.	• Temporary disturbance: – 60.8 acres total • Permanent disturbance: – 0 acres; all temporary areas would be reclaimed	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
Construction Concrete Batch Plant	The temporary concrete batch plant would be co-located within one of the construction laydown/staging areas. The plant would supply the concrete needed for project components (e.g., turbine foundations). The batch plant and associated facilities would include silos to contain fly ash, lime, and cement; aboveground storage tanks for water storage; and outside storage areas for sand- and gravel-mixing equipment. The heights of these facilities generally range from 30 to 50 feet. A washout area would be located within the laydown/staging area, with the concrete removed and reclaimed when the washout area is no longer needed. Electricity to the batch plant would be provided by on-site generators; one 500-kilowatt generator for the batch plant and two 60-kilowatt generators for the other facilities.	• Temporary disturbance: – 2 acres within the footprint of the laydown/staging area, no additional disturbance • Permanent disturbance: – 0 acres; all temporary areas would be reclaimed	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action
Water	Construction activities would require approximately 26 million gallons of water and would be pumped from a permitted private well and conveyed through aboveground piping. Water rights would remain with the private well owner. A new 5- to 6-gallon per minute well would be drilled for O&M water use; estimated withdrawal at 140,800 gallons per year. The new well would be located next to the O&M building. Until the new well adjacent to the O&M is fully functional, water may either be pumped from an existing domestic well and conveyed through aboveground piping to storage tanks, or trucked in and held in the storage tanks. O&M water use would be limited to restroom and kitchen use for staff. A domestic water use permit would be acquired for the O&M building well with water rights appropriated to the Proponent for the life of the BLM ROW grant. Water rights would be conveyed to the BLM once the BLWP is decommissioned.	• Temporary disturbance: – 1.5 miles of water line would follow access road disturbance; no new disturbance – 0 acres for new well construction within the footprint of the O&M building; no additional disturbance • Permanent disturbance: – 0 acres; all temporary areas would be reclaimed – 0 acres for new well; within the footprint of the O&M building; no additional disturbance	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
Aviation Lighting	The turbines and meteorological (MET) towers would have medium-intensity, red strobe warning lights attached to the nacelles of the turbines. The FAA would make the final determination as to which turbines would require nighttime lights. If approved by FAA, the turbines and MET towers would have the Aircraft Detection Lighting System (ADLS), which would automatically be illuminated when aircraft are detected. Lighting would also be compatible with night vision goggles, as necessary for military training exercises.	No temporary or permanent ground disturbance	No temporary or permanent ground disturbance	No temporary or permanent ground disturbance
Meteorological (MET) Tower	Four MET tower locations would be considered, only two MET towers would be needed during operations. The MET tower would be no more than 361 feet tall and lighted with the ADLS, if approved by the FAA. Data collected from the MET tower would be transmitted wirelessly to an off-site location; frequent access to the tower would not be needed. It is anticipated that personnel would visit the MET tower one or two times a year to perform routine maintenance.	• Temporary disturbance: – 14.0 acres total • Permanent disturbance: – 0.1 acre total	• Temporary disturbance: – Same as the Proposed Action • Permanent disturbance: – Same as the Proposed Action	• Temporary disturbance: – Same as the Proposed Action • Permanent disturbance: – Same as the Proposed Action
ADLS Radar Units and Associated Server Rack Houses	This system would require two radar units and associated server rack houses. The radar units would be no more than 33 feet tall and the server rack house units would be no more than 6 feet tall.	• Temporary disturbance: – all temporarily disturbed areas for the radar system installation would be within the footprint of the access road temporary disturbance; no additional disturbance • Permanent disturbance: – 0.1 acre total	• Temporary disturbance: – Same as the Proposed Action • Permanent disturbance: – Same as the Proposed Action	• Temporary disturbance: – Same as the Proposed Action • Permanent disturbance: – Same as the Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
Waste/ Hazardous Materials	Minimal hazardous materials are expected to be used, stored, transported, or disposed of as a result of the project. The Waste and Hazardous Materials Management and a Spill Prevention, Control, and Countermeasure plans in the BLWP POD address non-hazardous waste-stream composition, lubricant spills and cleanup procedures, and protocols for identifying hazardous waste.	No temporary or permanent ground disturbance	No temporary or permanent ground disturbance	No temporary or permanent ground disturbance
Fire Protection	The Emergency Preparedness and Response Plan and Fire Protection and Prevention Plan are included in the BLWP POD to prevent and manage fire during construction and operation of the proposed wind facility.	No temporary or permanent disturbance	No temporary or permanent disturbance	No temporary or permanent disturbance

Table Abbreviations: ADLS = Aircraft Detection Lighting System; BLWP = Borderlands Wind Project; FAA = Federal Aviation Administration; GE = General Electric; kV = kilovolt; MW = megawatt; NMDOT = New Mexico Department of Transportation; O&M = operation and maintenance; POD = Plan of Development; TEP = Tucson Electric Power
Source: Borderlands Wind, LLC 2020
Note: The numerical values in this EIS including those provided in tables, are shown to one decimal place. The data used to generate the values was maintained to 10 decimal places in order to capture small values in the analysis. In the EIS tables, the resultant outputs are rounded to one decimal place to make the values readable; therefore, totals and subtotals found in the tables may not appear to sum precisely.
[1] Acreages of temporary and permanent disturbance and miles/number of components provided in the table represent the construction of the total number of permitted turbines. The actual amount of disturbance and miles/number of components would be less because the number of turbines constructed would be less than the number of turbines permitted. The final turbine array layout would not be determined until final design, which means the associated components such as the alignment of the collection system would also not be decided until final design.

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entering the project site). A Road Design, Traffic, and Transportation Plan is included in BLWP POD (Borderlands Wind, LLC 2020). The next phase of construction would include construction of the switchyard, O&M building, and substations; installation of the electrical hardware; and construction of the turbines. A bulldozer or road grader would clear the area for excavation in order to prepare for each concrete foundation. If the subsurface is too hard to excavate, blasting would be conducted. Blasting may also be required for some select areas of the roads and collection line cable trenches. The BLM would require a Blasting Plan, Hazard Communication Plan, and Safety Plan to be in place before any blasting occurs. Blasting is anticipated to occur for about 1.5 seconds, 2 to 4 times per day, over a 40- to 50-day period. The project would require 18,000 cubic yards of concrete for construction, which would be supplied by the on-site concrete batch plant. The processing area and materials stockpiling area would be located at the batch plant. The batch plant and any excess concrete elements would be removed after the concrete placing phase and could be recycled or reused on other projects. Stockpiles for aggregate and sand would be constructed near the batch plant in a manner that would minimize wind exposure.

After project construction is completed, the site would be cleaned up and restored to facilitate O&M activities. Waste, debris, and equipment used during construction would be removed from the site. Assisted revegetation with native plant materials would occur on all major staging and laydown areas. The BLWP's roadway footprint would be reduced by decreasing the width of the majority of construction roadways, and revegetating any areas disturbed during construction that would not be retained for operations. The BLWP would be commissioned once the construction of the wind energy facility is done. Detailed inspection and testing procedures would be provided after final turbine commissioning.

2.2.5. Construction Workforce Numbers, Vehicles, Equipment, and Time Frames

Project construction would require at least 50 to 70 workers at any given time, and a maximum of 250 workers would be required during peak construction. Construction is anticipated to be completed in11 to 12 months. Depending on the weather, construction crews would work 8- to 12-hour work days, 6 days per week. Construction-phase vehicles and heavy equipment would be required for construction of the project (Table 2-3).

Table 2-3. Construction Use Areas and Activities

Vehicles	Use Areas	Activities
Bulldozers and excavators	Turbine locations and major earthwork locations	Clearing, grading, excavating, and moving large quantities of soil
Crane and forklifts	Turbine locations, O&M, and substation/switchyard	Lifting and erecting turbine components and unloading and placement of equipment and materials
Graders	Access roads, O&M, turbine locations, and substation/switchyard	Clearing, finish grading, and moving small amounts of soil
Trenchers and backhoes	Turbine locations and collection system	Small area and trench excavation and backfill
Delivery trucks and semi-trucks	Access roads and all major construction areas and the concrete batch plant	Delivery of finished concrete, aggregate, cement, water, steel, cable, and other bulk construction items
Pick-up trucks and sport-utility vehicles	Access roads and all construction areas	Worker and small equipment transport

Table Abbreviations: O&M = operation and maintenance
Source: Borderlands Wind, LLC 2020

The equipment would be delivered to the site by flatbed combination truck, and most equipment would remain on site until construction is finalized. Construction materials that would be transported to the BLWP site include gravel, rock, and sand, all of which should be locally available.

2.2.6. Operation and Maintenance

Once construction is finalized, on-site personnel would operate and maintain the wind energy facility. Personnel from the wind turbine supplier would also be on-site as needed to perform warranty maintenance and operations servicing. System operations, routine performance checks, troubleshooting malfunctions, turbine system checks, shut down and restart of facilities, and security would be the responsibility of O&M staff. Up to five full-time wind turbine technicians, administrative personnel, operations personnel, and managers would be employed to operate and manage the BLWP. Staff would be working at various times and days for the life of the project. Staff might not be present 24 hours per day, but operations would be monitored continually through the Supervisory Control and Data Acquisition (SCADA) system from a Proponent-operated remote location. Staff would be headquartered at the on-site O&M facility and travel around the site when necessary. During site operations, two to three service vehicles may be used, as crews would work and travel in pairs.

Training would be provided to each staff regularly regarding best practices of health, safety, and environmental protection services. Additionally, any equipment used during the BLWP's operations would be maintained and regularly inspected by authorized and trained personnel. A complete maintenance schedule would be developed prior to starting operations.

When the initial startup period has concluded, the wind turbines would be serviced at regular intervals. Overhaul maintenance service would also need to be performed annually; servicing would be on site. Occasional blade cleaning may be necessary if debris reduces the turbine's aerodynamic performance. Water would be used to spray wash the blades using a high-pressure sprayer. Access roads for the BLWP would be graded periodically and compacted to maintain integrity, safety, and environmental requirements for the life of the project. New gravel may periodically be needed to maintain the integrity of the access roads. Maintenance of cut-and-fill slopes, culverts, grade separations, and drainage areas would be performed as needed to control and correct erosion issues and manage functionality of drainage structures.

2.2.7. Decommissioning

The BLWP would have a life expectancy of up to 35 years, based on electrical demand, maintenance, and the expected life of the project facilities and major components. At some period in the future, the BLWP may no longer be cost-effective to continue operation. At that time, the BLWP would be decommissioned and all project facilities would be dismantled and removed in accordance with applicable County, State, and Federal laws. BLM would require receipt of a performance bond to ensure the costs of decommissioning are available. However, underground distribution cables, foundations, and structures would remain in place except as noted in the Decommissioning Plan in the BLWP POD (Borderlands Wind, LLC 2020). To minimize impacts during the decommissioning phase of the project, BMPs and other design features would be implemented (Appendix B).

2.3 Proposed Action

The Proposed Action would be built on 43,528 acres in western Catron County, NM. The Proposed Action area (Figure 2-1) consists of approximately 30,338 acres of public lands administered by the BLM SFO, 5,693 acres of lands managed by the NMSLO, and 7,497 acres of privately owned lands (Table 2-4). Forty wind turbine generators and associated facilities would deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States.

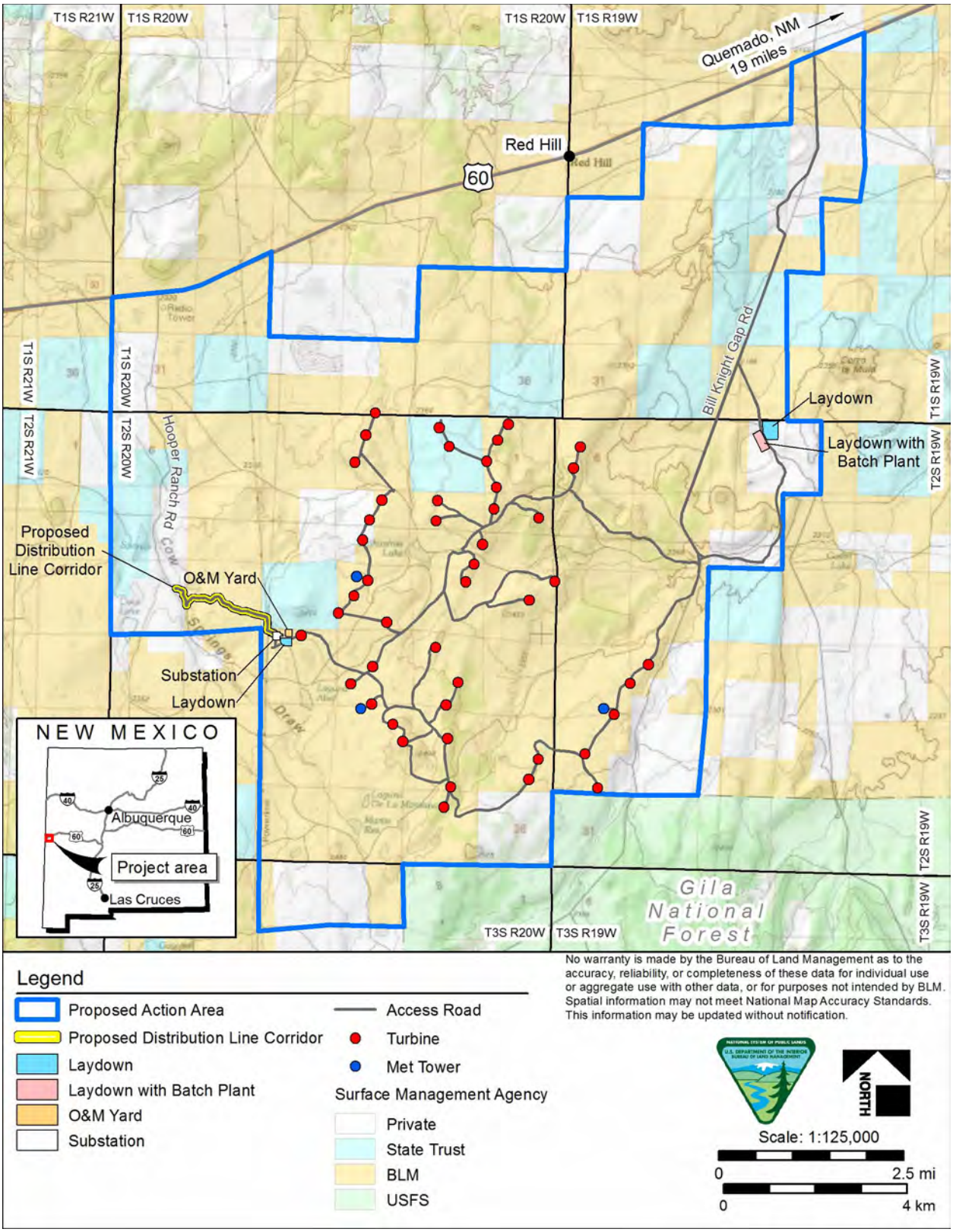

Figure 2-1. Proposed Action

Table 2-4. Proposed Action Area Location: Township, Range, Section

Township/ Range	Sections
T1S, R19W	SE1/4 SE1/4 of Sec. 3, Sec. 10, 15, 16, 17, 19, 20, 21, W1/2 of Sec. 22, 28, 29, 30, 31, 32, 33
T1S, R20W	Sec. 25, 26, S1/2 NW1/4, NE1/4 NW1/4, E1/2, SW1/4 of Sec. 29, S1/2 NE1/4, S1/2 of Sec. 30, 31, 32, 33, 34, 35, 36
T2S, R19W	Sec. 4, 5, 6, 7, 8, 9, 17, 18, 19, 20, 29, 30
T2S, R20W	Sec. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36
T3S, R20W	Sec. 3, 4

Table Abbreviations: NE = northeast; NW = northwest; R = range; S = south; SE = southeast; Sec. = section; SW = southwest; T = township; W = west
Note: Cadastral locations are relative to the New Mexico Principal Meridian, NM

The Proposed Action would consist of 40 constructed turbines, including 36 General Electric (GE) 2.5 MW and 4 GE 2.3 MW turbines (Figure 2-1). The GE 2.5 MW turbines have a maximum overall height of 49 feet, and the GE 2.3 MW turbines have a maximum overall height of 453 feet. The Proponent has identified 46 turbine locations in the Proposed Action area in case turbine locations are determined not suitable during construction. This EIS evaluates all 46 turbine locations for the Proposed Action because the final turbine array layout would not be determined until construction. As a result, the potential disturbance and associated impacts on resources/uses within the Proposed Action area are greater than what the total impacts would be as constructed. In addition to the turbines, project components and ancillary facilities for the Proposed Action are discussed in Section 2.2.

2.4 Alternative 1

Under Alternative 1, the wind energy generating facility would encompass 16,648 acres of lands, with 13,859 acres being public lands administered by the BLM SFO (Figure 2-2 and Table 2-5). The remaining lands in the Alternatives 1 and 2 area are managed by NMSLO (1,168 acres) or by private landowners (1,621 acres). This alternative would reduce the total project boundary acreage by 26,880 acres, including 16,479 acres of BLM-administered public lands, 4,525 acres of NMSLO-managed lands, and 5,876 acres of privately owned lands.

Table 2-5. Alternatives 1 and 2 Area Location: Township, Range, Section

Township/ Range	Sections
T1S, R19W	E1/2 W1/2, NW1/4 NW1/4 of Sec.10, E1/2 NW1/4, SW1/4 of Sec. 15, E1/2 NE1/4, E1/2 SE1/4, of Sec. 21, W1/2 NW1/4, NE1/4 NW1/4, NW1/4 SW1/4 of Sec. 22, NE1/4, W1/2 SE1/4, E1/2 SW1/4 of Sec. 28, S1/2, S1/2 NW1/4, NE1/4 NW1/4, SW1/4 NE1/4 of Sec. 33
T1S, R20W	SE1/4 SW1/4, SW1/4 SE1/4 of Sec. 34
T2S, R19W	SW1/4 NW1/4, SW1/4 of Sec. 3, Sec. 4, E1/2 NE1/4, SE1/4 of Sec. 5, S1/2 NW1/4, SW1/4of Sec. 6, W1/2, SE1/4, S1/2 NE1/4, NW1/4 NE1/4 of Sec. 7, E1/2, SW1/4, SW/14 NW1/4 of Sec. 8, Sec. 9, W1/2, NE1/4, NW1/4 of SE1/4 of Sec. 17, Sec. 18, 19, NW1/4, NW1/4 SW1/4 of Sec. 20, NW1/4, NW1/4 SW1/4, E1/2 SW1/4, W1/2 E1/2, NE1/4 NE1/4 of Sec. 30
T2S, R20W	NW1/4, W1/2 SW1/4 of Sec. 1, Sec. 2, NW1/4 SW1/4, E1/2 W1/2, W1/2 E1/2, SE1/4 SE1/4 of Sec. 3, Sec. 10, 11, 12, 13, 14, E1/2, SW1/4, S1/2 NW1/4, NE1/4 NW1/4 of Sec. 15, E1/2 SE1/4, SW1/4 SE1/4, S1/2 SW1/4 of Sec. 16, SE1/4, S1/2 NW1/4, N1/2 SW1/4, of Sec. 17, SE1/4 NE1/4, NE1/4 SE1/4 of Sec. 18, N1/2 N1/2, NE1/4 SE1/4, SE1/4 NE1/4 of Sec. 21, Sec. 22, 23, 24, 25, 26, NE1/4 NW1/4, N1/2 NE1/4, SE1/4 NE1/4, NE1/4, SE1/4 of Sec. 27, W1/2 NE1/4, E1/2 NW1/4 of Sec. 35

Table Abbreviations: E = east; N = north; NE = northeast; NW = northwest; R = range; S = south; SE = southeast; Sec. = section; SW = southwest; T = township; W = west

Note: Cadastral locations are relative to the New Mexico Principal Meridian, NM

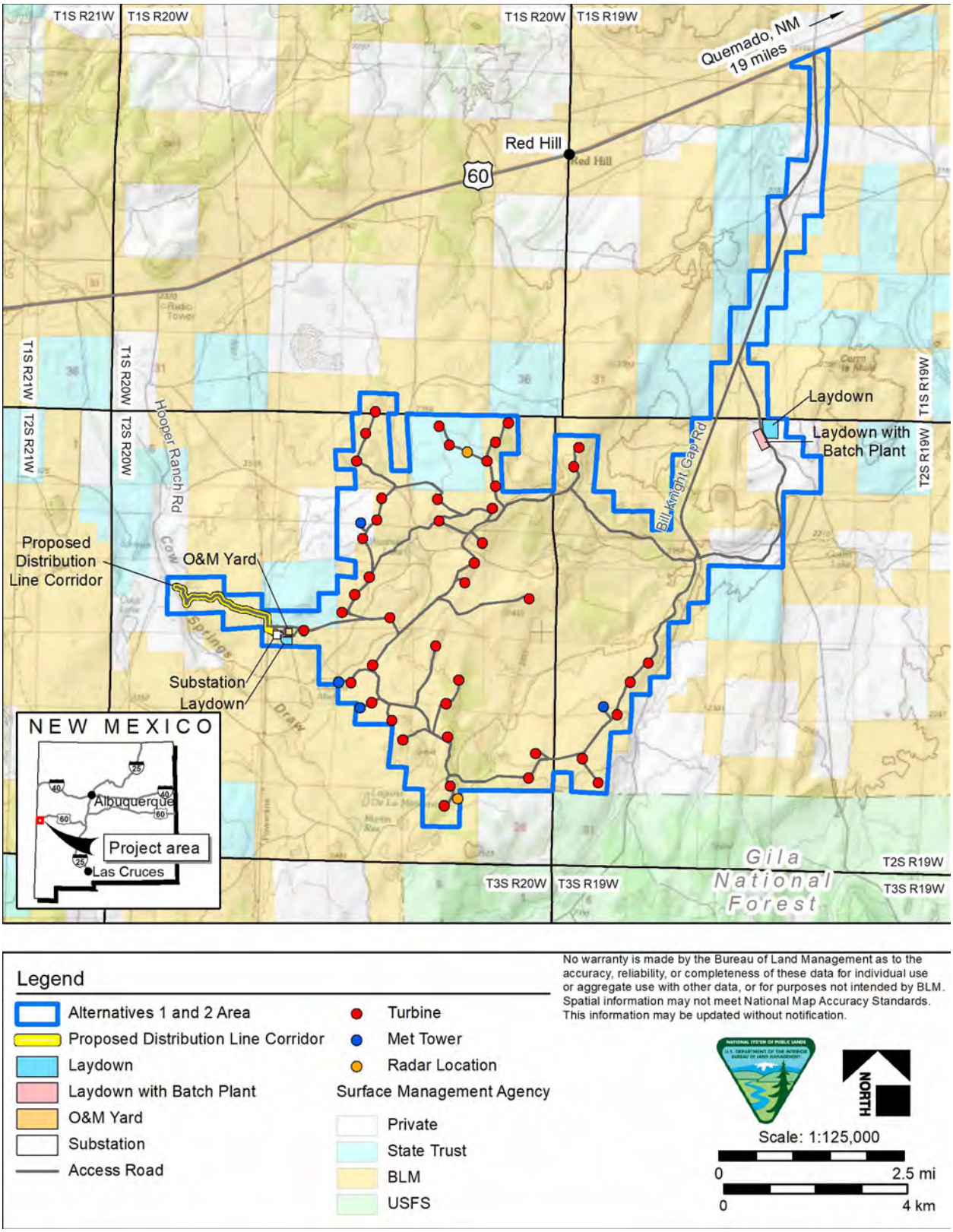

Figure 2-2. Alternatives 1 and 2

Alternative 1 would consist of 40 constructed turbines, including 36 GE 2.5 MW and 4 GE 2.3 MW turbines (Figure 2-2). This alternative would consist of the same number and type of turbines as the Proposed Action. The Proponent has identified 44 turbine locations in the Alternative 1 area in case turbine locations are determined not suitable during construction. This EIS evaluates all 44 turbine locations for Alternative 1 because the final turbine array layout would not be determined until construction. As a result, the potential disturbance and associated impacts on resources/uses within the Alternative 1 area are greater than what the total impacts would be as constructed.

This alternative would slightly shift the locations of some of the project infrastructure (turbines, roads, collection lines) as compared to the Proposed Action to minimize impacts to sensitive environmental resources where feasible. In addition to the turbines, project components and ancillary facilities for Alternative 1 are discussed in Section 2.2.

2.5 Alternative 2

Alternative 2 has the same 44 turbine locations, ancillary facilities, and project boundary/legal description as Alternative 1 (Figure 2-2; Table 2-2). Alternative 2 would consist of 34 constructed turbines, including 30 GE 3.03 MW and 4 GE 2.5 MW turbines (Figure 2-2). The GE 3.03 MW turbines have a maximum overall height of up to 630 feet and the GE 2.5 MW turbines have a maximum overall height of 499 feet. This EIS evaluates all 44 turbine locations for Alternative 2 because the final turbine array layout would not be determined until construction. As a result, the potential disturbance and associated impacts on resources/uses within the Alternative 2 area are greater than what the total impacts would be as constructed. In addition to the turbines, project components and ancillary facilities for Alternative 2 are discussed in Section 2.2.

2.6 No Action Alternative

Under the No Action Alternative, the BLM would not grant a ROW for construction and operation of the proposed project, and it would not amend the SFO RMP. The project facilities would not be built and existing land uses and present activities in the BLWP area would continue. The land on which the proposed project is located would be available to other uses that are consistent with the SFO's land use plan (BLM 2010a). Arizona's renewable energy goals and the Federal mandates would have to be met using other alternative energy projects at other locations.

2.7 Alternatives Considered but Eliminated from Detailed Analysis

The following alternatives were considered by the Proponent, but not analyzed in detail in this EIS.

2.7.1. Visual Resource Management IV Turbine Array Layout Alternative

Under this alternative, all turbines would be located within the allocated VRM Class IV area in the southern end of the BLWP area near the Gila National Forest. The VRM Class IV area management objectives would allow for a high level of change to the characteristic landscape, which would be in compliance with the SFO RMP. Additionally, this alternative would minimize potential impacts to an eagle nest located in the northeast corner of the BLWP area. The VRM IV Turbine Array Layout Alternative would not provide the standard amount of land and spacing required for commercial energy projects of this size. Fewer wind turbines would be used for the project and the project would not be able to meet the 100 MW required to satisfy the Power Purchase Agreement between TEP and NextEra Energy Resources, LLC. This alternative was eliminated from further analysis in the EIS because it would be economically infeasible.

2.8 Federal Lead Agency Preferred Alternative

Under NEPA, the "preferred alternative" is a preliminary indication of the lead agency's preference of action among the Proposed Action and alternatives. The lead agency may select a preferred alternative for a variety of reasons, including the agency's priorities, in addition to the environmental considerations discussed in the EIS. In accordance with NEPA (40 CFR 1502.14[e] and 43 CFR 1610.4-7), the BLM has identified Alternative 2 as the preferred alternative.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

The information in this chapter describes the affected (existing) environment in the BLWP area and presents the potential effects of the Proposed Action, Alternatives 1 and 2, and the No Action Alternative. Measures to avoid or minimize impacts have also been identified and are listed at the end of each resource discussion. The terms "impacts" and "effects" are used interchangeably, and the terms "increase" and "decrease" are used for comparison purposes. Direct, indirect, and cumulative impacts are described in this chapter. Potential impacts are described in terms of duration, intensity, and context. Definitions of impact terms are provided below.

- ***Direct:*** caused by the action, same time and place.
- ***Indirect:*** caused by the action, but later in time or further in distance, but still reasonably foreseeable.
- ***Cumulative:*** caused by the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions.

For the purposes of this analysis, duration (temporal scale) of the direct or indirect effects of the analysis is defined as follows. These durations would apply to each of the resources/uses that are analyzed in this EIS but may vary slightly depending on the resource/use. Forty years would include the expected duration of the life of the wind energy facility (35 years) and an additional five years would allow for site restoration after decommissioning.

- ***Short-term/Temporary*:** impacts that would be less than 5 years in duration.
- ***Long-term*:** impacts that would be between 5 to 40 years.
- ***Permanent***: impacts that would be longer than 40 years.

For the purposes of this analysis, intensity or severity of the impact is defined as follows:

- ***Negligible*:** changes would not be detectable and/or measurable. The resource/use would be essentially unchanged or unaltered.
- ***Minor*:** changes would be detectable and/or measurable and would have a slight change or alteration to the resource/use.
- ***Moderate*:** changes would be clearly detectable, measurable, and/or have an appreciable effect on the resource/use. The resource/use would be notably changed or altered and the effect is apparent. Project activities could change the indicator over a small area or to a lesser degree.
- ***Major*:** changes would be readily detectable, and/or have a severe effect on the resource. The resource/use would be substantially changed or altered over a large area or to a large degree.

Context is the setting within which an impact is analyzed. For the purposes of this analysis, the contexts are defined as follows:

- ***Local:*** within and immediately adjacent to the BLWP area.
- ***Regional:*** remaining area outside of but within 30 miles of the BLWP area.

Appendix 1 of BLM's NEPA Handbook (H-1790-1) identifies supplemental authorities that contain requirements specified by statute or EO and must be considered in all BLM environmental documents (BLM 2008a). The supplemental authorities and other resources and uses that are not present within the BLWP area or would not be impacted by the Proposed Action and alternatives include farm lands, lands with wilderness characteristics, wild and scenic rivers, wild horses and burros, wilderness, and wilderness study areas (WSAs). These authorities and resources/uses are not further evaluated in the EIS in accordance with the BLM NEPA Handbook Section 6.4.1(BLM 2008a). Table 3-1 identifies the

supplemental authorities and resources or uses in the BLWP area and states the rationale for the exclusion of a detailed analysis in the EIS per Section 6.4.2 of the BLM NEPA Handbook (BLM 2008a). The supplemental authorities and other resources or uses that may be affected by the Proposed Action and/or alternatives are further described in the EIS as noted in Table 3-1.

Several geographic areas are discussed in this chapter, including the BLWP, Proposed Action, and Alternatives 1 and 2 areas. The BLWP area refers to the general location that is proposed for the BLWP (refer to Chapter 1, Figure 1-1). The Proposed Action area refers to the 43,528-acre area that would encompass the BLWP components associated with the Proposed Action (refer to Chapter 2, Figure 2-1). The Alternatives 1 and 2 area refers to the 16,648-acre area that would encompass the BLWP components of both Alternatives 1 and 2 (refer to Chapter 2, Figure 2-2). All three alternative areas are in the same general location (BLWP area) but include varying acreages of land.

Table 3-1. Determination and Rationale for Detailed Analysis by Resource/Use

Resource/Use	Additional Analysis Determination and Rationale
Air Quality	The proposed BLWP area lies within the Southwestern Mountains-Augustine Plains Intrastate Air Quality Control Region 156 (New Mexico Environment Department [NMED] 2018). The Final Wind Energy PEIS (BLM 2005: pp. 5-13 through 5-20) provides a detailed analysis of potential air quality impacts associated with the construction, O&M, and decommissioning of a wind facility. According to this analysis, the potential impacts from a wind facility on local and regional air quality would be minor with the implementation of BMPs and would not require additional measures to avoid and/or minimize impacts (BLM 2005). Since 1992, Catron County has been below (attained) the U.S. Environmental Protection Agency (U.S. EPA) air pollutant standards for criteria pollutants (U.S. EPA 2019). Any additional emissions associated with the alternatives would be associated with construction and decommissioning activities. The main source of fugitive dust (particulates) in the vicinity of the BLWP area would include vehicular traffic on unpaved roads and windblown dust. Fugitive dust on unpaved roads would be reduced through watering the roads or other dust control measures. The operation of the concrete batch plant would require an air quality permit from the NM Air Quality Bureau. During the construction and decommissioning activities of the BLWP, there would be short-term, localized minor increases in vehicle emissions and fugitive dust. Once these activities are completed (construction activities are estimated to take up to 12 months), there would be long-term negligible increases in emissions from a limited amount of vehicle traffic into and out of the BLWP area. The build alternatives would not result in greater impacts than previously disclosed in the Final Wind Energy PEIS (BLM 2005). The Proponent is not proposing activities different from those analyzed in the Final Wind Energy PEIS, and all BMPs are included as part of the Proposed Action and Alternatives 1 and 2 design features (Appendix B). The build alternatives are not expected to contribute to measurable or detectible impacts to air quality. There is no potential for new or modified impacts that have not been disclosed in prior environmental documentation, so this issue is not discussed further in this EIS.
Areas of Critical Environmental Concern (ACECs)	There are two ACECs in the vicinity of the BLWP area: Cerro Pomo and Zuni Salt Lake; both are located north of U.S. 60 and would not be physically disturbed by the build alternatives. Impacts to existing ACECs are discussed in Section 3.5 Cultural Resources and in Section 3.9 Visual Resources.

Resource/Use	Additional Analysis Determination and Rationale
Climate Change/ Greenhouse Emissions	The proposed BLWP area (Southwestern Mountains-Augustine Plains Intrastate Air Quality Control Region 156) where the wind turbines would be located is in attainment for all regulated criteria pollutants. The NMED has prepared an Inventory of Greenhouse Gas Emissions: 2000-2013, updated in 2016 (NMED 2016), for the State of NM. This inventory is a statewide compilation and analysis of greenhouse gas (GHG) emissions data and provides information for decision makers about the relative contribution of each sector as it relates to the State's GHGs. The evaluation of GHG emissions on a production basis considers the total direct emissions from the activities of all sources in the State. New Mexico production-based analysis does not take into consideration the GHG emissions produced during the manufacture and transportation of products to the State, or adjust for the GHG emissions associated with electricity imported or exported across State lines (NMED 2016). The BLWP GHG emissions in of itself would not be a major contribution to climate change as a result of using greenhouse gases as a proxy in determining climate change impacts. The life cycle emissions of the material used in this project includes raw mineral extraction, steel production, manufacturing, transportation and use phases and then end of life, which includes potential re-use and/or recycling. At each stage there are regulatory mechanisms and thresholds in place that permit, report and mitigate emissions from the various activities related these upstream and midstream sources. The BLWP would generate direct GHG emissions during construction, O&M, and decommissioning. Direct GHG emissions during construction would be generated from use of off-road equipment (such as graders, cranes, and excavators) and from on-road construction vehicle trips. Additionally, emissions would be generated from heavy haul trips and other construction materials like water, aggregate and cement for concrete production, and commute driving by construction employees. Direct emissions would be generated onsite during concrete production. The New Mexico Air Quality Bureau typically requires an air quality permit for concrete batch operations. The NMED regulates and issues general construction permits based on certain conditions such as; site setbacks from occupied structures and recreational areas, production limits, operating hours and emissions limits. The Proponent would need to meet any state permitting requirements. As a wind energy project, the BLWP would have no primary direct carbon dioxide emissions from electricity production during operation; however, there are other minor sources of GHG emissions that would result from site O&M activities, including the use of off-road equipment; on-road vehicles used for inspection, maintenance, and personnel commuting; and minor leakage from electrical equipment (insulation materials, circuit breakers, etc.) to manage high voltages. During operation, BLWP is expected to result in an indirect reduction in GHG emissions due to the displacement of electricity generated by fossil fuel-fired power plants, which contributes to GHG emissions at much higher levels; this would be partially offset by a small indirect increase in GHG emissions due to the loss of carbon uptake from the removal of vegetation for the BLWP. The BLWP GHG emissions would result in minuscule short-term incremental additions to the existing air quality as well as the future state and is limited to the construction phase. More information on criteria and hazardous pollutants as well as climate change and greenhouse gases can be found in latest version of the BLM's Air Resources Technical Report document and is herein incorporated by reference (BLM 2018a). No additional analysis in this EIS is warranted.
Cultural Resources	See detailed analysis in Section 3.5 Cultural Resources.
Environmental Justice	In compliance with Executive Order 12898, the BLM used the most current available demographic data to determine if minority or low income populations were present in the area of analysis, and would be disproportionately and adversely impacted by the Proposed Action. Analyses showed no such populations were present within the area of analysis. Consequently, there are no disproportionate impacts to environmental justice populations, and no further analyses are required.

Resource/Use	Additional Analysis Determination and Rationale
Fire Management	Development of the BLWP would slightly reduce the long-term potential for wildland fires in the area by temporarily removing the fuel source (vegetation) on approximately 140 acres for the Proposed Action and 133 acres for Alternatives 1 and 2. The alternatives would slightly increase the likelihood for ignitions (such as from vehicles parked over dry vegetation) that could increase the frequency of fire. Wildland fire management would not change with implementation of the Proposed Action. The implementation of the Fire Protection and Prevention Plan included in the BLWP POD (Borderlands Wind, LLC 2020 would minimize the potential for the spread of fire. New access roads in the BLWP area could aid suppression efforts of wildland fires. Potential fire ignition from turbine lubricants would be negligible since limited quantities would be stored or maintained on site during the construction, O&M, and decommissioning phases. Fire-resistant hydraulic fluids and lubricant oils would be used to reduce the likelihood of a fire (Jennifer Field, personal communication, 2019). Therefore, the build alternatives would have negligible impacts to wildland fire and fire management. No detailed analysis in this EIS is warranted.
Floodplains	EO 11988, Floodplain Management, requires an evaluation of impacts to floodplains for all Federal actions and directs Federal entities to reduce impacts to floodplains and minimize flood risks to human safety. The Proposed Action and Alternatives 1 and 2 would not involve any modification of a floodplain that would impede or redirect flood flows that would result in property damage or risk to human safety on- or off-site. The existing flood-carrying capacity of the floodplain, pattern, or magnitude of the flood flow would not be affected. No additional analysis in this EIS is warranted.
Forest Resources	The BLWP area does contain some woodland areas. Some clearing of pinyon-juniper woodlands may be required for the construction of new roads, turbine foundations, substations, and utility lines. This would result in an approximately 0.2 percent long-term reduction of woodlands within the Proposed Action and Alternatives 1 and 2 areas. This equates to a 0.001 percent reduction of woodlands within a 30-mile radius of the BLWP in NM for all alternatives. The build alternatives would result in negligible impacts to forest resources from the reduction of woodland areas. No additional analysis is warranted in this EIS.

Resource/Use	Additional Analysis Determination and Rationale
General Wildlife	The BLWP area is a relatively undisturbed and unaltered landscape that provides diverse habitat conditions for a wide variety of wildlife, which includes big game, small game, furbearers, and non-game wildlife species. Game species known to occur in the BLWP area include mule deer, elk, pronghorn, wild turkey, black bear, mountain lion, Mearn's quail, Gambel's quail, mourning dove, and various waterfowl. Furbearers that occur in this area include gray fox, kit fox, bobcat, badger, coyote, and skunk. A variety of other non-game species that are present include reptiles, amphibians, and rodents. The Final Wind Energy PEIS (BLM 2005) evaluates potential impacts to wildlife from construction activities (pp. 5-41 through 5-45), O&M (pp. 5-53 through 5-75), and decommissioning (p. 5-77) of a wind facility (e.g., injury or mortality; habitat loss, degradation, and fragmentation; disturbance/displacement; collision with turbines, towers, and transmission lines). The implementation of BMPs and other design features would minimize the direct and indirect impacts that may occur during construction, O&M, and decommissioning; however, some of these impacts (e.g., habitat loss and fragmentation) would be unavoidable even with the application of the project BMPs and design features. Wildlife species that rely on shrubland and grassland habitats (the most prevalent habitats within the Proposed Action and Alternatives 1 and 2 areas), especially during critical times of the year such as birthing/calving or overwintering, would be impacted the most. The SFO RMP includes a BMP to avoid surface-disturbing activities during these critical time periods, which would minimize impacts of the Proposed Action and Alternatives 1 and 2 on big game. Big game species associated with the Proposed Action and Alternatives 1 and 2 areas are highly mobile and would be expected to move out of the BLWP area during construction when outside of these critical time periods and would be expected to continue use of the available habitat in the BLWP area once construction activities have ceased and the BLWP is operational. In addition to the direct impacts to wildlife from habitat loss, there would be indirect impacts from habitat fragmentation and degradation resulting from the construction of access roads, and disturbance/displacement associated with an increase in human presence. These indirect impacts would extend across an area larger than the actual project footprint, and wildlife species that are more sensitive to fragmentation and disturbance may shift their habitat use to other areas. The impacts of habitat loss and fragmentation are greatest when the affected habitats are in short supply. The habitat types and general wildlife that are present within the BLWP area are relatively common within the region. The estimated long-term loss of habitat is approximately 140 acres for the Proposed Action and 133 acres for Alternatives 1 and 2, both of which represent less than 0.01 percent of similar habitat within the NM region (within 30 miles from the BLWP area within NM). While some smaller or less mobile species or individuals may be displaced by the BLWP, the majority of the wildlife that would be impacted by construction, O&M, and decommissioning of the BLWP would continue to use the area, and there are no known wildlife movement or migration corridors present in the BLWP area that would be impacted by the proposed project. Therefore, the Proposed Action and Alternatives 1 and 2 would result in short- and long-term, minor impacts to general wildlife. The Proposed Action and Alternatives 1 and 2 would have a negligible contribution to the cumulative effects to general wildlife because the habitat types and general wildlife species are common to the local area as well as to the region. No additional analysis in this EIS is warranted.

Resource/Use	Additional Analysis Determination and Rationale
Invasive Plant Species and Noxious Weeds	Surface disturbing activities that would be created by the build alternatives would provide an opportunity to introduce noxious weeds. The SFO RMP (BLM 2010a) outlines the processes and procedures for the management and prevention of noxious and invasive weeds. Any invasive plant and noxious weed populations would be managed in compliance with the SFO RMP. The BLWP POD would include BMPs to reduce the potential spread and/or introduction of noxious and invasive weed populations (Appendix C). Standard operating procedures from the recent BLM Vegetation Management EISs for noxious weed control would be followed to minimize the spread of invasive plant species and noxious weeds (BLM 2007 and 2016; BLM Integrated Vegetation Management Handbook 1740-2). Herbicides would be used where needed after approval from the BLM. Therefore, the build alternatives are anticipated to have negligible impact to the spread or introduction of invasive plant species and noxious weeds from the alternatives. No additional detailed analysis in this EIS is warranted.
Land Use	See detailed analysis in Section 3.2 Land Use.
Livestock Grazing	There are six authorized grazing allotments within the BLWP area. Four of the allotments—including Vevarosa (#10011), Red Hill South (#10038), Red Hill North (#10062), and Florenio Orona (#00099)—would incur temporary or permanent impacts, depending on the alternative. Any existing range improvements would be rehabilitated if disturbed by the BLWP. The existing grazing lease authorizations would remain the same as the current use. There would be temporary access restrictions during the 11- to 12-month construction period. There would be no permanent access limitations or grazing rotation restrictions anticipated with the alternatives. Portions of the BLWP area, including the O&M facility and the substation, would be fenced to keep livestock out. These areas, as well as the direct impact acreage for the turbines, would reduce the amount of available forage. Forage availability and production would be permanently reduced by 0.4 percent and temporarily reduced by 3.1 percent of the total allotted acreage within the Proposed Action area (permanent disturbance of 116.8 acres and temporary disturbance of 892.0 acres of grazing allotments). For Alternatives 1 and 2, forage availability and production would be permanently reduced by 0.8 percent and temporarily reduced by 7.0 percent of the total allotted acreage (permanent disturbance of 110.0 acres and temporary disturbance of 969.6 acres of grazing allotment). Eliminating forage needed to feed grazing livestock (i.e., animal unit months [AUMs]) would be required; however, it is not anticipated to be substantial enough to affect this use of the land. The loss of forage acres can be translated to a decrease in AUMs on the permit. A 116.8- or 110.0-acre loss of foraging within alternatives is potentially 17.5 to 16.5 AUMs total reduction. The build alternatives would result in short- and long-term, negligible impacts to livestock grazing because of the limited reduction in available forage and temporary access restrictions during construction. No further analysis on impacts to grazing resources in this EIS is warranted.
Military Training Airspace	See detailed analysis in Section 3.2 Land Use.
Migratory Birds	See detailed analysis in Section 3.7 Special Status Plant and Wildlife Species.
Minerals	The Proponent would obtain borrow material from a private landowner; no mineral material permit from the BLM would be needed by the Proponent. No detailed analysis of minerals in this EIS is warranted.

Resource/Use	Additional Analysis Determination and Rationale
Native American Religious Concerns	There are known Native American Religious Concerns associated with the Zuni Salt Lake Proprietary ACEC and specifically the Zuni Salt Lake. Identification of other Native American religious concerns associated with the BLWP area is pending results of Tribal consultation. The potential for additional concerns to be present would be identified through consultation. Once consultation is complete, text will be revised to reflect findings.
Noise	The Final Wind Energy PEIS (BLM 2005:pp. 5-20 through 5-27) provides a detailed analysis of potential noise impacts associated with the construction, O&M, and decommissioning of a wind facility. The primary noise source around the BLWP area includes noise caused by vehicle traffic along U.S. 60 and high wind speeds. The Final Wind Energy PEIS (BLM 2005) evaluates the impacts from construction and O&M, including the use of heavy equipment, vehicular traffic, blasting, and substation activities. Noise from the turbines themselves is dependent on the type of turbine, array, site conditions, weather, and temperature. Above wind speeds of 17.7 mph, noise level generated from the turbine itself is difficult to determine because the background wind-generated noise masks the wind turbine noise. As a result, noise issues are more commonly a concern at lower wind speeds. The Proponent would implement applicable BMPs and other design features associated with construction and operational noise to reduce potential noise-related impacts (Appendix B). For a typical rural environment, background noise is expected to be approximately 40 dB(A) during the day and 30dB(A) at night (BLM 2005). There are no Catron County policies/statutes that regulate noise in the BLWP area. However, the U.S. EPA has published a guideline that specifically addresses issues of community noise (U.S. EPA 1974). This guideline suggests goals for noise levels affecting residential land use for the Day-Night Average Sound Level (L_{dn}) <55dB(A) for exterior levels and L_{dn} <45dB(A) for interior levels. The U.S. Department of Housing and Urban Development Noise Guidebook also recommends following the U.S. EPA guideline of 55 dB(A) L_{dn} but indicates that a noise level of up to 65 dB(A) L_{dn} could be considered acceptable (24 CFR Section 51.101(a)(8)). The nearest sensitive receptor (seasonal recreation use) would be approximately 0.8 mile away from the nearest turbine in the BLWP area. At this distance, noise impacts generated from construction and decommissioning (e.g., heavy equipment use), would be negligible to minor and short-term depending on the activities. Noise impacts during O&M would be below the noise thresholds recommended in the U.S. EPA guidelines and below the level of the background noise because of the distance to the nearest receptor (BLM 2005; Kellner 2014). In addition, the build alternatives would not result in greater noise impacts than previously disclosed in the Final Wind Energy PEIS (BLM 2005). Because noise levels would be below U.S. EPA guidelines and there is no potential for new or modified impacts that have not been disclosed in prior environmental documentation; noise is not further discussed in this EIS.
Paleontological	A paleontological assessment of the BLWP area was conducted to meet requirements under NEPA and FLPMA. The BLM statewide paleontological locality database was used to determine if known localities were present in the BLWP area, and none were identified. The BLM's Potential Fossil Yield Classification (PFYC) database was also examined to determine if geologic units present in the BLWP area have a higher potential to contain fossils of scientific interest. The PFYC system is ranked from Class 1 (Very Low Potential) to a Class 5 (Very High Potential). The geologic units exposed in the BLWP area are volcanic and igneous rock units that have a low to very low potential to contain paleontological resources. The northern section of the BLWP area consists of a basalt and andesite flows dating to the Miocene and is ranked as PFYC 1, which does not require mitigation. The southern section of the BLWP area consists of basaltic and andesitic volcanics interbedded with Pleistocene and Pliocene sedimentary units and is ranked as PFYC 2. Based on the lack of known paleontological localities in the area and the low PFYC values assigned to the affected geologic units, no additional analysis in the EIS is warranted for the build alternatives.

Resource/Use	Additional Analysis Determination and Rationale
Recreation	There are no designated recreation facilities, such as trails, known to occur in the BLWP area. However, there are opportunities for dispersed recreation activities, such as motorized and non-motorized activities, wildlife viewing, hunting, camping, hiking, and off-highway vehicle (OHV) use. During construction and decommissioning, construction activities and traffic may reduce the appeal for dispersed recreational activities, resulting in a direct and indirect, short-term, negligible effect. During O&M, the BLWP would not prohibit hunting or other dispersed recreation activities. There may be the potential for unauthorized OHV use and illegal dumping with the construction of new roads. New roads would provide access for dispersed recreation, hunting, and additional recreational opportunities, resulting in long-term direct and indirect, negligible effects to recreation resources associated with the Proposed Action and Alternatives 1 and 2. No analysis in this EIS is warranted.
Socioeconomics	See detailed analysis in Section 3.3 Social and Economic Conditions.
Soils	Soils in the BLWP area fall within the Mollisols soil classification by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS). Mollisols are the soils of grassland ecosystems and are characterized by a thick, dark surface horizon. The majority of the BLWP area contains Cabezon-Thunderbird-Celsosprings, Rudd-Modyon, Datil-Dioxice Smilo-Adman, and Albinas-Datil complex soil series (91 percent of the Proposed Action area and 96 percent of Alternatives 1 and 2 area). These soils are one of the most productive soils and support a variety of plant communities, including grasslands, chaparral-mountain shrub, and forests. The Cabezon-Thunderbird-Celsosprings is the most prevalent soil within the BLWP area and is considered to have a low susceptibility to wind erosion and high susceptibility of the soil to rill and sheet erosion by rainfall (University of California, Davis 2019). The Final Wind Energy PEIS (BLM 2005:p. 6-3) states that the impacts to soil from wind facilities would be minimal to negligible because BMPs and other design features would be followed to prevent or address potential increases in soil erosion. Implementation of the BMPs and other design features for the build alternatives would reduce the potential impacts to soils including around the playas to minimize erosion and sedimentation (refer to Appendix B). The build alternatives would result in short-term, minor impacts and long-term negligible impacts to soils. No additional analysis in this EIS is warranted.
Special Status Plant and Wildlife Species	See detailed analysis in Section 3.7 Special Status Plant and Wildlife Species.
Threatened or Endangered Species	See detailed analysis in Section 3.6 Federally Listed Species.
Transportation and Travel Management	See detailed analysis in Section 3.4 Transportation and Travel Management.

Resource/Use	Additional Analysis Determination and Rationale
Vegetation	Vegetation in the Proposed Action area consists of 26 percent sparse short-grass grassland interspersed with less than one percent of rock outcrops and playas, 65 percent shrubland, and 8 percent dense patches of pinyon-juniper. For the Alternatives 1 and 2 area, vegetation consists of 22 percent sparse short-grass grassland interspersed with less than one percent of rock outcrops and playas, 65 percent shrubland, and 13 percent dense patches of pinyon-juniper woodland. These general vegetation communities occur throughout the region and are well represented in the surrounding area. The cliff/rock outcrop areas are much less common in the region and the playas within the build alternatives do not contain riparian or emergent wetland habitat. The estimated long-term loss of vegetation is approximately 140 acres for the Proposed Action and 133 acres for Alternatives 1 and 2, each of which represents less than 0.01 percent of similar vegetation communities within the NM region (i.e., 30miles from the BLWP area within NM). Shrublands would be affected the most, with a permanent loss of approximately 85 acres and 79 acres for the Proposed Action and Alternatives 1 and 2, respectively, each of which represents a 0.02 percent reduction of shrublands within the NM region. The implementation of BMPs and other design features would prevent or minimize impacts that may occur during construction, O&M, and decommissioning, such as the removal of vegetation, introduction of invasive vegetation, and potential for wildland fire (Appendix B). The BMPs and other design features include revegetation, soil stabilization, and erosion reduction measures that would be implemented to ensure that all temporary use areas are restored. Therefore, the Proposed Action and Alternatives 1 and 2 would result in localized and regional negligible impacts to general vegetation. No additional analysis in this EIS is warranted.
Visual Resources	See detailed analysis in Section 3.9 Visual Resources.
Wastes, Hazardous or Solid	The Final Wind Energy PEIS (BLM 2005:pp. 5-30 through 5-32) provides a detailed analysis of potential hazardous materials impacts associated with the construction, O&M, and decommissioning of a wind facility. Potential impacts would be associated with the release of hazardous materials to the environment from the improper use, storage, or disposal of hazardous materials such as fuels (e.g., gasoline, diesel fuel), lubricants, cleaning solvents, paints, herbicides, and explosives. As outlined in the BLWP POD, applicable BMPs associated with hazardous materials and wastes to reduce or prevent environmental impacts would be implemented. Prior to the installation of a septic/waste water system, all State and County permits would be acquired. The Proposed Action and Alternatives 1 and 2 would not result in greater impacts than previously disclosed in the Final Wind Energy PEIS. The Proponent is not proposing activities different from those analyzed in the Final Wind Energy PEIS, and all BMPs are included as part of the Proposed Action and Alternatives 1 and 2 design features (Appendix B). There is no potential for new or modified impacts that have not been disclosed in prior environmental documentation. No additional analysis in this EIS is warranted.

Resource/Use	Additional Analysis Determination and Rationale
Water Quality (Surface/Ground)	There are no perennial surface water features within the BLWP area. During the winter or episodes of monsoonal rains, there may be intermittent or ephemeral flows within streams or standing pools of water. During construction of wind turbines and associated facilities, BMPs and other design features would be followed in order to ensure that any surface water is not affected (Appendix B). Well water would be used during construction and O&M. Construction activities would require approximately 26 million gallons of water and would be pumped from a permitted private well and conveyed through aboveground piping. Based on 2015 Catron County water use data, the amount of water anticipated for use during construction represents 0.09 percent of the water the County uses in a year (USGS 2015). According to analyses conducted by the BLM NMSO (BLM 2020), if, during construction, the BLWP were to use 26 million gallons of water during construction over a five-month period (the maximum impact scenario), the estimated maximum drawdown at the well location would be approximately 45.7 feet. However, the impact of pumping would be quickly reduced with increased distance from the well, as the results of the analysis estimated that at a distance of one mile from the well location, the drawdown would be less than 0.001 foot for the maximum impact scenario. With the estimated 11-12 month construction schedule, the estimated drawdown would be less (Appendix H). There are two populated places adjacent to the permitted well, Manuelito Place (2.6 miles away), and Red Hill (5.9 miles away). The results of these calculations indicate that there would be a negligible impact on the aquifer in the vicinity of these populated places, or any other location over one-mile from the well. A new 5- to 6-gallon per minute well would be drilled for the O&M water use; estimated withdrawal at 140,800 gallons per year, which would be less than a four-person household annual water use. The Proponent would apply for a domestic water use permit for use during O&M in compliance with the NM State Engineer requirements. Once the BLWP is decommissioned, BLM would assume authority over the well, including the water rights for the well. Documentation that a permit to drill has been issued would be provided to the BLM. The amount of groundwater used would be negligible to minor, specifically over the long term. Therefore, the Proposed Action and Alternatives 1 and 2 would have both short- and long-term, direct, negligible impacts to surface water quality. No additional analysis for surface water or groundwater is warranted in this EIS.
Wetlands/Riparian Zones	There is a small area of emergent herbaceous wetlands mapped in the western portion of the Proposed Action area along Cow Springs Draw that would not be impacted during construction, O&M, or decommissioning. There are a number of playas present within the Proposed Action area and the surrounding area; these seasonally inundated depressions are considered riparian habitats by the BLM, though they are generally vegetated with the same species as the surrounding areas. There are no components of the project infrastructure that would be placed within the mapped boundaries of these playas; however, some of the turbines, collector lines, and access roads would be constructed within 0.25 miles of four of the mapped playas. The Proposed Action would have both short- and long-term, direct and indirect, negligible impacts to these playas and their associated riparian vegetation due to the potential for alterations to the natural hydrology of the ephemeral drainages that feed into the playas, which could result in erosion or sedimentation. No additional analysis is warranted in this EIS.

Table Abbreviations: ACEC = Area of Critical Environmental Concern; AUM = animal unit month; BLWP = Borderlands Wind Project; BLM = Bureau of Land Management; BMP = best management practice; CFR = Code of Federal Regulations; CT = Census Tract; dB(A) A-weighted decibel; EIS = Environmental Impact Statement; EO = Executive Order; FLPMA = Federal Land Policy and Management Act; GHG = greenhouse gas; L_{dn} = Day-Night Average Sound Level; mph =miles per hour; NEPA = National Environmental Policy Act; NMED = New Mexico Environment Department; OHV = off-highway vehicle; O&M = operation and maintenance; PEIS = Programmatic Environmental Impact Statement; PFYC = Potential Fossil Yield Classification; POD = Plan of Development; RMP = Resource Management Plan; SFO = Socorro Field Office; TCP = Traditional Cultural Property; USACE = U.S. Army Corps of Engineers; U.S. EPA = U.S. Environmental Protection Agency.

3.2 Land Use

This section describes existing land use conditions in the BLWP area and surrounding region (30-mile radius from the BLWP area), and the effects that may occur with the implementation of the Proposed Action, Alternatives 1 and 2, and the No Action Alternative. Land use is assessed here by analyzing current land activities, land ownership, and land use designations in adopted plans and policies. An assessment of land use must also consider legal guarantees or limitations, such as those provided by easements, deeds, ROWs, claims, leases, licenses, and permits. Lands administered by BLM are not zoned, but they may be encumbered by easements, ROWs, mining claims, and permits.

3.2.1. Affected Environment

3.2.1.1 Regional Land Use Conditions

Located in western NM, Catron County is the largest county in the State. Land within the County is owned, managed, and/or administered by the BLM, U.S. Forest Service (USFS), National Park Service (NPS), State of NM, Native American Tribes, and private landowners. Catron County encompasses 6,898 square miles with approximately 25.6 percent under private ownership. Federal agencies administer 61.6 percent of the land within the County, Indian Tribes 0.3 percent, and the State of NM 11.5 percent (Catron County 2006 and 2007). Approximately 3,725 people make up the County population (U.S. Census Bureau 2018). In the 2007 Catron County CIP/Comprehensive Plan (Catron County 2007), the County identified three land uses, categorized as government controlled (lands managed by State or Federal agencies), rural areas (private lands), and community nodes. A community node is a concentration of commercial, governmental services, and/or residential uses. Reserve, the Catron County seat, is the largest town and only incorporated community in the County; the town has a population of about 289. The adjacent Apache County in eastern AZ is 11,174 square miles; the County seat is St. Johns with a population of 71,518. Only 13 percent of Apache County is privately owned, more than 65 percent is covered by American Indian Reservations, and 21 percent is in public ownership (i.e., USFS, BLM, and AZ State Land Department) (USFS 2017). Major communities within the vicinity of the BLWP area are described in Table 3-2.

The NMSLO has not established a specific land use management plan for State Trust land in the vicinity of the BLWP area, but they do have goals, policies, and programs in place to manage and provide support for resource conservation programs for the well-being of the public and the State's natural environment, including recreation and livestock grazing.

Table 3-2. Communities within the BLWP Region

Communities	Description
Red Hill/Cimarron Ranch Subdivision, NM	The 2,431-acre Cimarron Ranch Subdivision is located in Red Hill, a dispersed, unincorporated community that consists entirely of private owners, just north of the BLWP area on the north side of U.S. 60 and includes the Quemado Volunteer Fire Station No. 2. The subdivision was platted in 1992 and contains 228 parcels ranging in size from approximately 5 to 26 acres. The population of the subdivision is estimated at approximately 50 individuals, based on verbal information from Catron County (Keith Riddle, personal communication, 2019).
Quemado, NM	Located approximately 18.8 miles east of BLWP area, Quemado had a population of 228 with a total of 135 housing units in 2010. Quemado supports the surrounding area with both an elementary and a high school.
Escudilla Bonita, NM	Between the BLWP area and the AZ–NM state line, and south of U.S. 60, is the community of Escudilla Bonita. The community has a population of 119 with a total of 152 housing units in 2010. No commercial services are provided in Escudilla Bonita.

Communities	Description
Springerville, AZ	Located approximately 17.5 miles west, the Town of Springerville is in Apache County, AZ, and had a population of 1,961 with a total of 954 housing units in 2010. The town provides community services, K-12 school, and a community college.
Eagar, AZ	Located directly adjacent to the south of Springerville in Apache County, AZ, Eagar had a population of 4,885 with a total of 2,045 housing units in 2010. The town provides a library, fire and police departments, and a full service hospital.
Coyote Creek Development, AZ	This planned development is adjacent to the AZ–NM state line, approximately six miles west of the BLWP area. It contains 316 acres and has not yet been platted. There are no residences within the Coyote Creek Development as of this time.

Table Abbreviations: AZ = Arizona; BLWP = Borderlands Wind Project; NM = New Mexico
Source: Census Viewer 2018; Arizona Commerce Authority 2017; Riddle 2019

Two national forests are located with the region: Gila National Forest in NM and the Apache-Sitgreaves National Forests in AZ. The Gila National Forest consists of 3.3 million acres in western NM and is known for the Gila Wilderness, which was the first wilderness designated in the United States. It is considered one of the more remote and least developed national forests. Recreation facilities in the Gila National Forest include the Quemado Lake Recreation Area, Armijo Springs Campground, and the Head of the Ditch Campground (USFS 2018a). The Apache-Sitgreaves National Forests in east-central AZ cover over two million acres. These national forests have over 200,000 acres of wilderness and primitive areas, including the Escudilla Wilderness that encompasses the notable landmark Escudilla Mountain and the Escudilla National Recreation Trail. Other recreation facilities in the region include the Nelson Reservoir Campground, Alpine Divide Campground, and the Coronado Trail National Scenic Byway (USFS 2018b).

3.2.1.2 Regional Aviation Uses

There are five regional airport facilities within approximately 30 miles of the BLWP area: Quemado Airport, Springerville Municipal Airport, St. Johns Industrial Airpark, Jewett Mesa, and Reserve Airport. Quemado Airport is an unattended airport located one mile west of Quemado, NM approximately 18 miles from the BLWP area (Catron County 2007). It has one dirt runway and is available for private use only (AirNav 2019a). Springerville Municipal Airport is a town-owned public-use airport located 1.15 miles west of Springerville, AZ, and 19 miles west of the BLWP area. The airport has two paved runways and provides services including aircraft parking and hangar leasing. In addition to its use by the public for general purposes, the Springerville Municipal Airport also serves as an emergency transportation hub for the local area residents, providing air ambulance service, and as a seasonal base for fire services for the Apache-Sitgreaves National Forests (Springerville Municipal Airport 2018). St. Johns Industrial Airpark is a city-owned, public-use airport located 1 mile north of St. Johns, AZ and 32 miles northwest of the BLWP area. The airport has two paved runways and provides services including aircraft parking and fuel (AirNav 2019b).

There are two airports in the area owned by USFS. Jewett Mesa is a USFS-owned, public-use airport located 26 miles southwest of Quemado, NM and 8 miles southeast of the BLWP area. The airport has one unpaved (dirt) runway and is only open May through September. The Jewett Mesa Airport has no additional services (AirNav 2019c). The Reserve Airport is also a USFS-owned, public-use airport; it is located 5 miles southwest of Reserve, NM and 25 miles south of the BLWP area. This airport has one paved runway in fair condition and offers tie downs for parking (AirNav 2019d).

Three military installations have military training routes (MTRs) over the BLWP area: Holloman, Kirtland, and Cannon Air Force Bases (AFBs). Holloman AFB, located in Otero County, NM, southeast of Catron County, is an Air Combat Command base that supports national security objectives with its rapid

mobility capability (Military.com 2018a, 2018b). The 49th Wing (host wing at Holloman Air Force Base) supports national security objectives by deploying worldwide to support peacetime and wartime contingencies. The 49th Wing is the Air Force's premier MQ-9 Reaper and F-16 Fighting Falcon training wing for pilots and sensor operators. Additionally, the wing delivers Air Transportable Clinics and Basic Expeditionary Airfield Resources while providing support to more than 10,000 military and civilian personnel (Jay Nash, personal communication, 2019). Kirtland AFB, located near Albuquerque, NM, hosts the 58th Special Operations Wing that trains warfighters,) and Cannon AFB in eastern NM, is an Air Force Special Operations Command base. According to information provided by Holloman AFB, MTRs are flight corridors used to practice high-speed, low-altitude training that generally occurs below 10,000 feet above mean sea level at speeds in excess of 250 nautical miles per hour. The MTRs are described by a centerline, with defined horizontal limits on either side of the centerline and vertical limits expressed as minimum and maximum altitudes along the flight track. Visual Routes (VR) are MTRs flown under FAA visual flight rules, where the military conducts operational and training flights.

Helispots and helicopter traffic in this region provide emergency medical transportation for Catron County due to the travel distance to local hospitals. In addition, helispots can be used as necessary during fire and police emergencies.

3.2.1.3 Regional Special Management Designations

Special management designations provide additional protection for areas with unique natural, historic, scenic, or recreational resources. Special designations include Areas of Critical Environmental Concern (ACECs), National Historic or Scenic Trails (NHTs/NSTs), National Recreation Trails, Scenic Byways, WSAs, and wilderness areas. The special management designations within 30 miles of the BLWP area are described in Table 3-3 and illustrated in Figure 3-1.

Table 3-3. Special Management Designations in the Region

Special Management Designations	Description
Cerro Pomo ACEC	This ACEC is located north of the BLWP, entirely within the Eagle Peak WSA and includes 28,248 acres. It contains scenic and significant cultural values, as well as diverse wildlife, vegetation, and landforms; it encompasses the former Mogollon Pueblo Special Management Area (BLM 2010a).
Continental Divide NST	This NST climbs and descends the peaks of the Rocky Mountains from Canada to Mexico. Two segments of this trail are located within Catron County, but only one is located on BLM-administered land. The Continental Divide NST is managed for recreational use and to protect scenic values on the 34 miles of its length within the BLM's SFO planning area (BLM 2010a).
Coronado Trail National Scenic Byway	Designated in 2005, the Coronado Trail stretches from Morenci, AZ to Springerville, AZ in Greenlee and Apache counties and lies almost entirely within the Apache-Sitgreaves National Forests in AZ. Routed along U.S. 191 and U.S. 180, the 123-mile-long byway travels through a region characterized by rolling foothills, high rugged mountain peaks, and steep narrow canyons (Federal Highway Administration 2018).
Eagle Peak WSA	This 43,960-acre WSA has diverse landforms ranging from sandstone mesas and volcanic cinder cones to gently rolling hills and lava flows. It has numerous topographic features and contains significant archaeological values (from circa 6000 BC) (BLM 1985).
Escudilla National Recreation Trail	Located in Apache County, AZ within the Apache-Sitgreaves National Forests and Escudilla Wilderness Area, the trail is 5.9 miles in length with a total elevation gain of 1,499 feet (BLM 2010a).

Special Management Designations	Description
Escudilla Wilderness Area	Located within the Apache-Sitgreaves National Forests in AZ, the Escudilla Wilderness was designated in 1984 and has a total of 5,158 acres. The wilderness area encompasses the upper reaches of Escudilla Mountain, which is visible from just about anywhere in eastern AZ and western NM (Wilderness Connect 2018). Three wilderness study areas (referred to as the northeast, southeast, and west additions) are currently under evaluation by the Apache Sitgreaves National Forest Alpine Ranger District that would be added to the Escudilla Wilderness Area for a total of 7,684 acres (Apache-Sitgreaves National Forest 2009a, b, and c).
Mesita Blanca WSA	Located north of the BLWP area, Mesita Blanca WSA contains 19,414 acres. This WSA includes a high density of archaeological sites and the notable natural landmark of the 500-foot-high Red Hill Cinder Cone. This classic volcanic cinder cone and lava flow covers approximately 2,000 acres within the WSA (BLM 1985).
Mile Creek WSA	Approximately 6 miles north northeast of Alpine, AZ in the Apache-Sitgreaves National Forests, the area is characterized by steep, dissected, conifer-covered terrain. Elevations range from 7,600 feet to over 8,800 feet. The potential wilderness includes Watts, Hulsey, and Milk Creeks (Apache-Sitgreaves National Forest 2009d).
White Mountain Scenic Road	Designated in 1993, the scenic road follows State Routes 260, 262, and 273 between Alpine and Hon Dah on the White Mountain Apache Indian Reservation in AZ. It winds through AZ's largest mountain range, the White Mountains, for a distance of 55 miles in Greenlee and Apache counties (Arizona Department of Transportation 1993).
Zuni Salt Lake Proprietary ACEC	This ACEC is located northwest of the BLWP area and includes 46,746 acres. It holds traditional religious significance to the Zuni Tribe and to other Native American groups in the Southwest. The lake itself lies in a volcanic crater and contains highly saline water (BLM 2010a).

Table Abbreviations: ACEC = Area of Critical Environmental Concern; AZ = Arizona; BLM = Bureau of Land Management; BLWP = Borderlands Wind Project; NM = New Mexico; NST = National Scenic Trail; SFO = Socorro Field Office; WSA = Wilderness Study Area

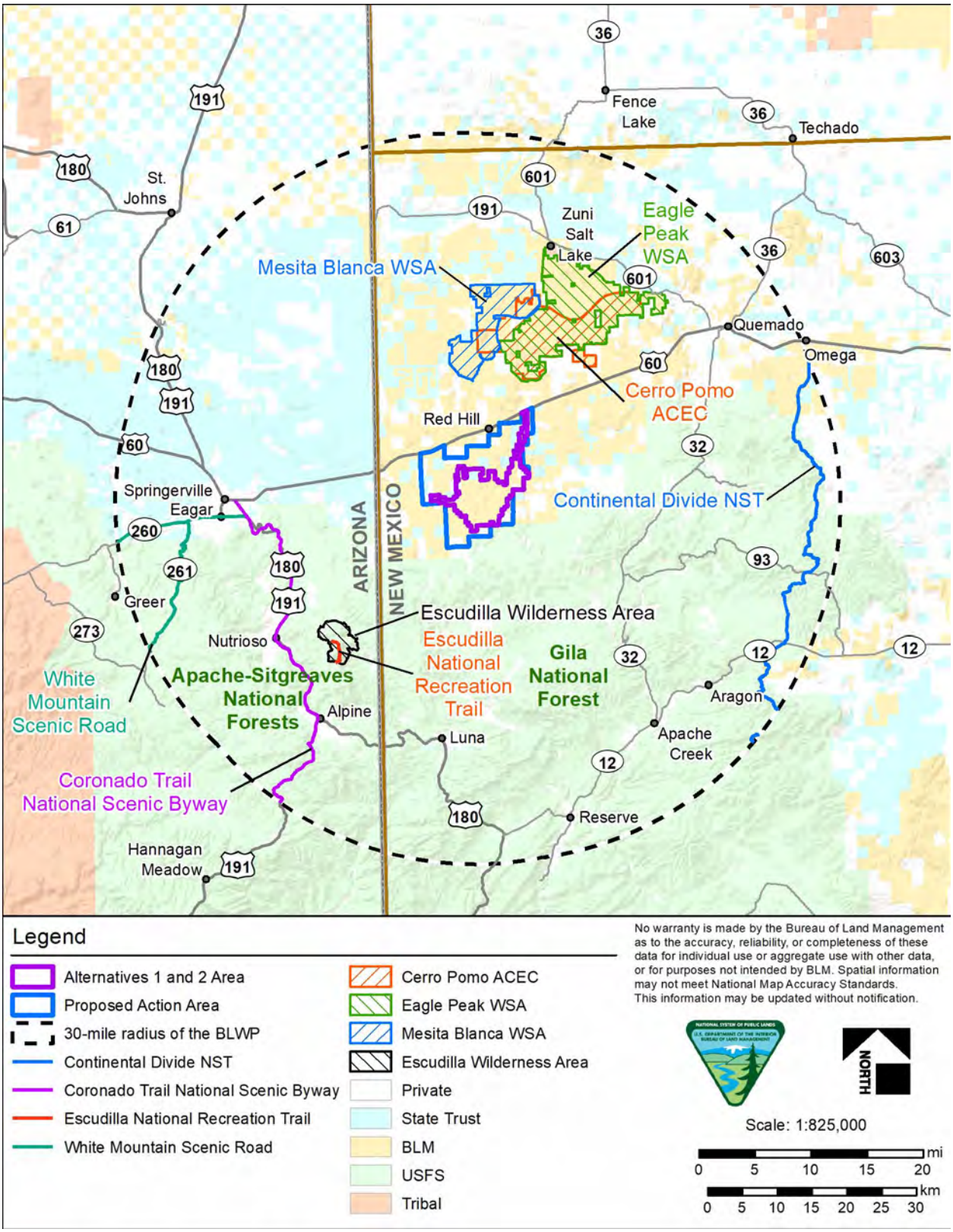

Figure 3-1. Special Management Designations in the Region

3.2.1.4 Regional Recreation

The SFO RMP provides opportunities for dispersed recreation including motorized and non-motorized activities for people from nearby communities. Recreation opportunities in the region include photography, backpacking, wildlife viewing, picnicking, hunting, camping, hiking, scenic driving, and off-highway vehicle (OHV) use. According to the 2010 BLM SFO RMP, all motorized vehicle use is limited to designated routes. Special Recreation Permits (SRPs) are BLM-granted land use authorizations that allow specified recreational uses of public lands. The SFO BLM currently has 49 SRPs issued to hunters and hunting guide outfitters (BLM 2010a). Recreation facilities in the region include 10 campgrounds, such as the Quemado Lake Campground in NM and the Nelson Reservoir Campground in AZ. Lyman Lake State Park is located just north of Springerville in AZ. There are numerous designated trails located within the Gila and Apache-Sitgreaves National Forests in addition to the Continental Divide NST and the Escudilla National Recreation Trail. Scenic driving occurs on the designated Coronado Trail National Scenic Byway and White Mountain Scenic Road.

The NM Department of Game and Fish and the AZ Game and Fish Department manage hunting and trapping throughout their respective States including areas in and around the BLWP area. The NM Game Management Units 12 and 15, and AZ Game Management Units 1, 27, 2CD, and 2E are located in the BLWP region. Wildlife species hunted within these units include pronghorn antelope, elk, mountain lion, mule deer, javelina, and upland game bird species such as dove and quail. In Catron County in 2013, there were 12,406 hunting licenses issued with elk, deer, and turkey as the most targeted species (Southwick Associates 2014).

3.2.1.5 Regional Livestock Grazing

Grazing permits are required for livestock use on public lands. Grazing allotments on public lands in the region are classified according to the type of forage available for livestock. Rangeland improvements such as springs, wells, storage tanks, and dirt tanks have been developed in the region to provide water for livestock and wildlife. Within the SFO, there are 263 grazing permits on BLM-administered lands encompassing 1,492,301 acres (BLM 2018b).

3.2.1.6 BLWP Area Land Use Conditions

The proposed BLWP would be located on BLM-, State-, and County-administered lands in western Catron County. Figure 3-2and Figure 3-3 show the current land ownership within the boundaries of the Proposed Action and Alternatives 1 and 2 areas, respectively; Table 3-4 provides the acres in both areas. Land uses in the BLWP area consist of ranching, livestock grazing, and utility corridors. The BLWP area is not in a mining district and there are no active or pending mining claims within the BLWP area. Hunting, OHV use, and hiking recreation uses are known to occur on BLM-administered lands; however, there are no designated recreation facilities such as trails within the BLWP area.

Table 3-4. Proposed Action and Alternatives Land Ownership

Land Ownership	Proposed Action Area (acres)	Alternatives 1 and 2 Area (acres)
BLM	30,338	13,859
State	5,693	1,168
Private	7,497	1,621
Total	**43,528**	**16,648**

Source: BLM 2018b

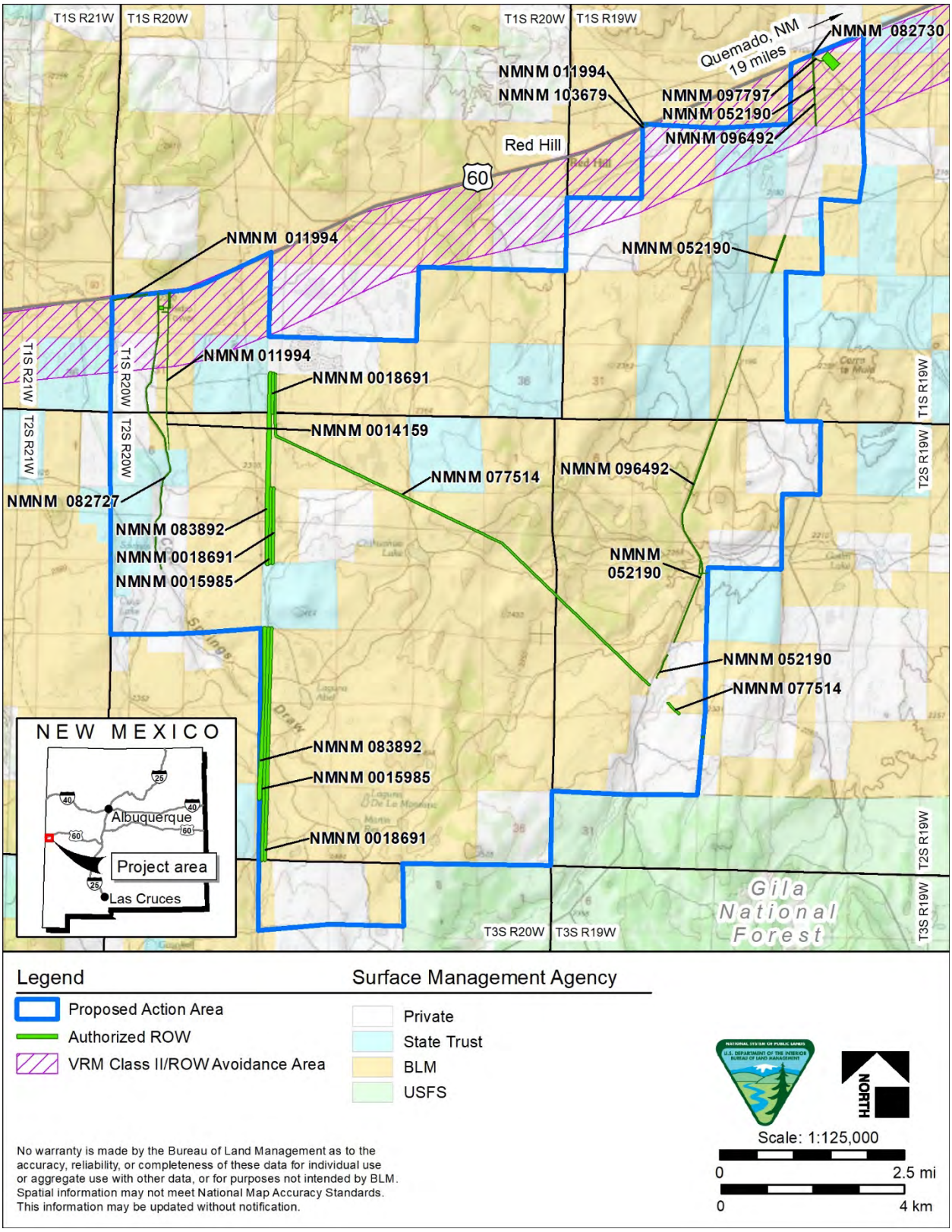

Figure 3-2. Avoidance Area and Authorized ROWs within the Proposed Action Area

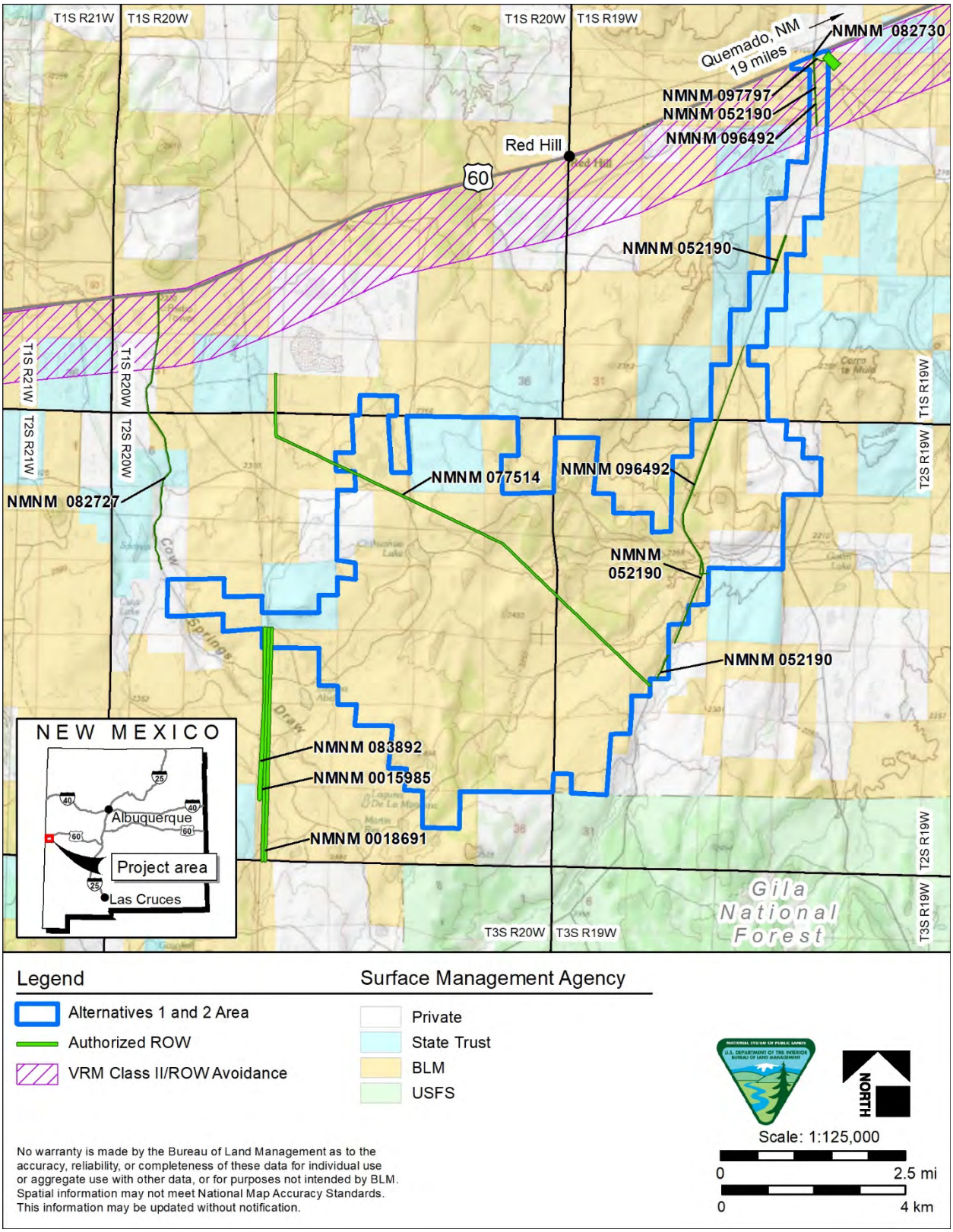

Figure 3-3. Avoidance Area and Authorized ROWs within the Alternatives 1 and 2 Area

Socorro Field Office Resource Management Plan. The SFO RMP, approved by the ROD dated August 20, 2010, provides management guidance for the public land and resources under the BLM's jurisdiction in Socorro and Catron Counties, NM. The SFO oversees approximately 1.5 million surface acres of public land, and the RMP guides the management of diverse multiple uses over these lands for a 20-year time period. The RMP does not include any specific management plans or special land use designations such as an ACEC or WSA in the BLWP area. A ROW avoidance area has been designated along the south side of U.S. 60 from just west of Quemado, NM to the AZ–NM border because of the VRM Class II allocation (Figure 3-2 and Figure 3-3).

New Mexico State Land Office. The NMSLO's mission is to optimize revenues generated from State Trust lands to support the beneficiaries of the State Land Trust while ensuring proper land management and restoration to continue the legacy for future generations (NMSLO 2016). The NMSLO has not established a specific land use management plan for State Trust land in the vicinity of the BLWP. The NMSLO has about nine million acres of land available for lease to renewable energy companies. Renewable energy leasing is expected to be the largest growth area for commercial leasing (NMSLO 2018).

Catron County Comprehensive Land Use Plan. Private lands in the vicinity of the BLWP area are under the jurisdiction of Catron County and are subject to the policies set forth in the Catron County CIP/Comprehensive Plan (Catron County 2007). The County's Plan includes existing and anticipated conditions affecting the County; establishes goals, policies, and implementation measures that guide the County's future actions; and describes actions to take to achieve the County's desired future. Lands within the BLWP area are designated as government-controlled for the Federal- and State-managed lands and as rural for the private lands according to the County's Plan. Catron County has no zoning ordinances in place.

3.2.1.7 BLWP Area Grazing Allotments

Portions of six grazing allotments are located on BLM lands within the BLWP area (Table 3-5; Figure 3-4 and Figure 3-5). The majority of the BLM lands in the BLWP area are within the Red Hill North grazing allotment (BLM 2018b).

Table 3-5. Grazing Allotments within BLM Lands in the BLWP Area

Allotment Name	Total Allotment Acreage	Allotment Acreage within Proposed Action Area	Allotment Percentage (%) within Proposed Action Area[1]	Allotment Acreage within Alternatives 1 and 2 Area	Allotment Percentage (%) within Alternatives 1 and 2 Area[2]
Vevarosa	16,463.39	6,060.45	36.82	2,978.67	18.09
Red Hill South	17,085.95	4,632.80	26.21	291.70	1.71
Florenio Orona	4,013.99	2,805.60	69.91	2,482.38	61.84
Red Hill North	21,300.07	12,917.47	57.79	8,104.07	38.05
Cow Springs	10,219.93	3,639.71	29.24	0	0
Heavenly Acres	2,412.54	264.03	10.95	0	0
Total	**71,495.87**	**30,320.06**	**42.41**	**13,856.82**	**19.38**

Source: BLM 2018b

[1] Percent references the portion of the total allotment that is located on BLM lands within the Proposed Action Area.

[2] Percent references the portion of the total allotment that is located on BLM lands within the Alternatives 1 and 2 Area.

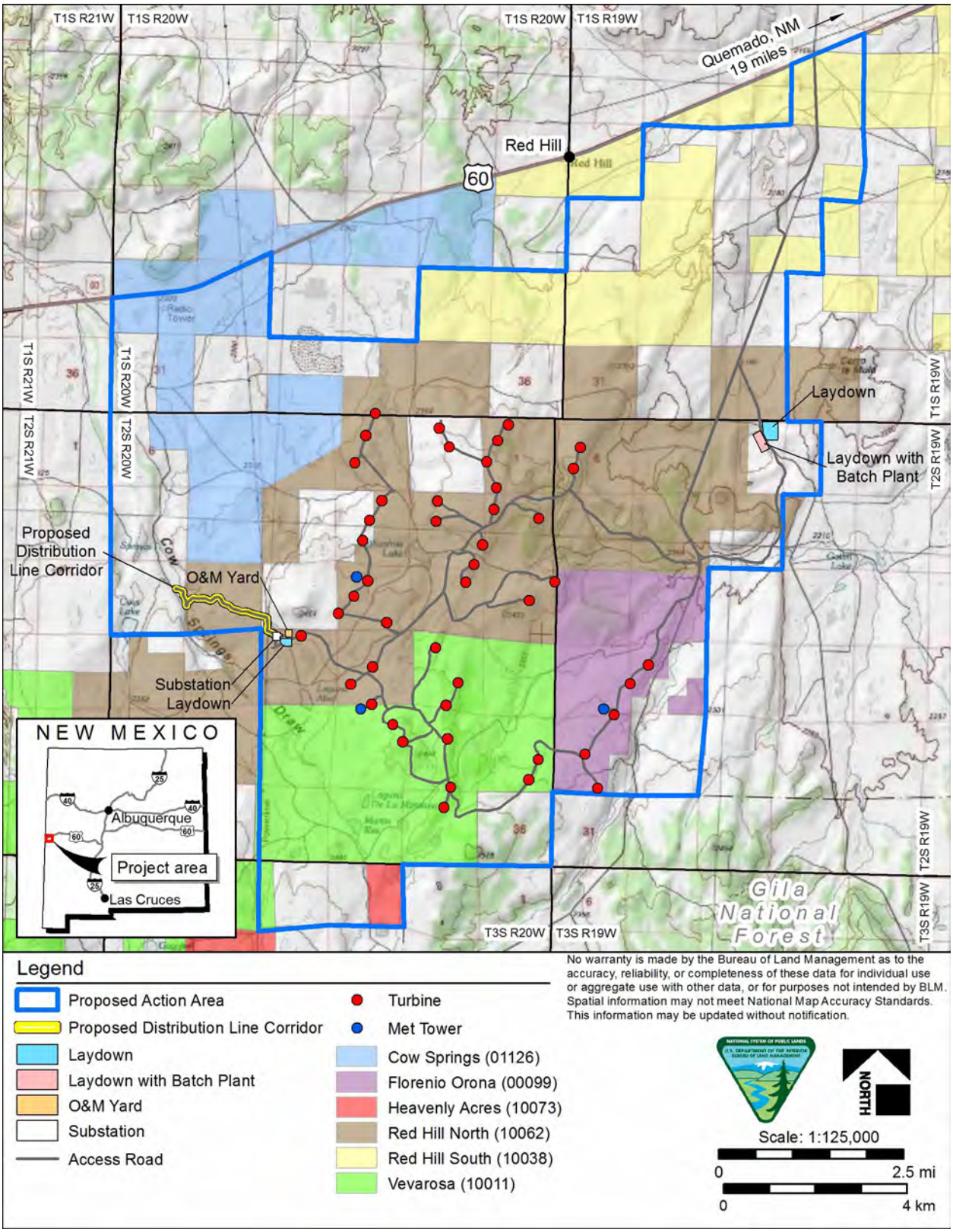

Figure 3-4. Grazing Allotments within the Proposed Action Area

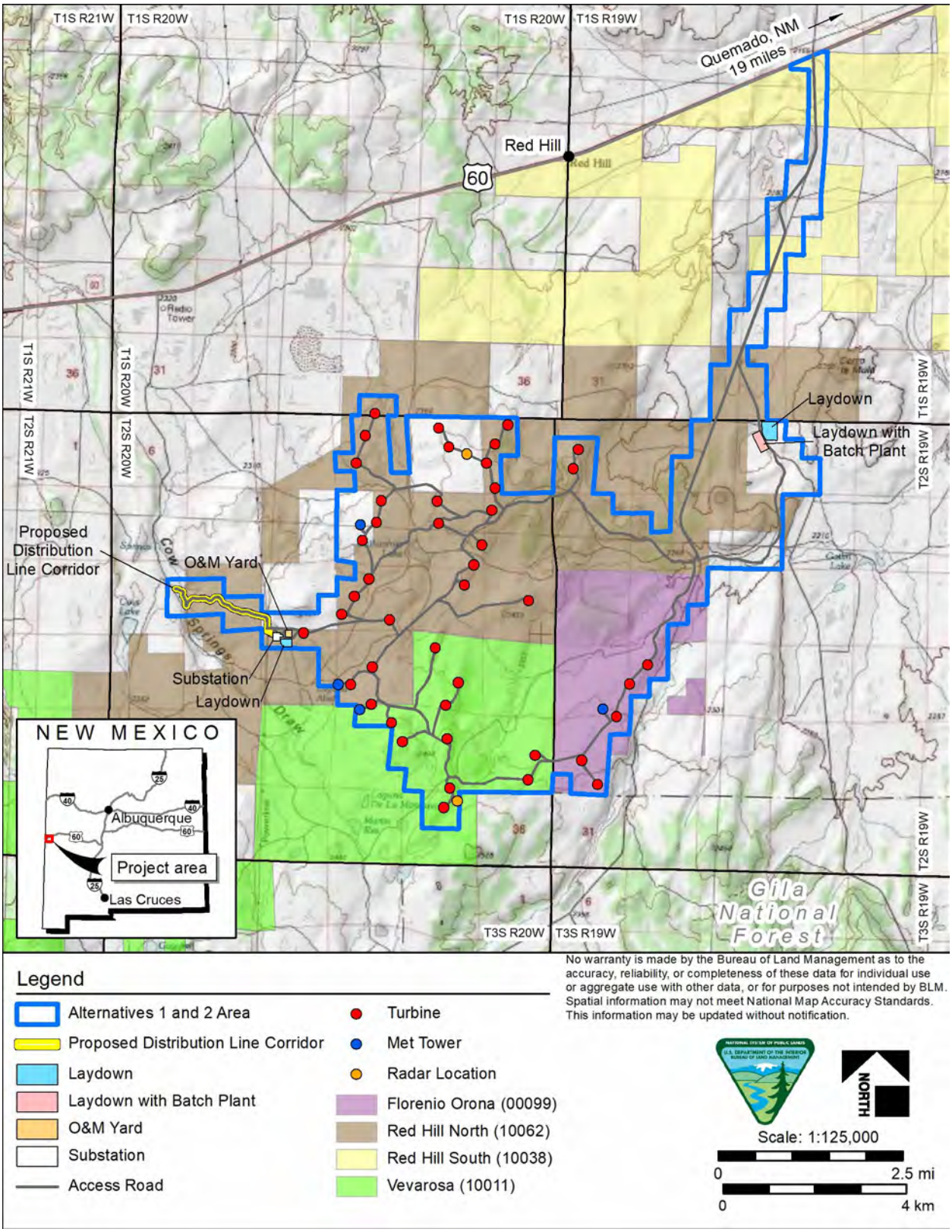

Figure 3-5. Grazing Allotments within the Alternatives 1 and 2 Area

3.2.1.8 BLWP Area Authorized ROWs

Existing ROW authorizations within the BLWP area include overhead electrical transmission and distribution lines, a sand and gravel pit, fiber optic and telephone facilities, and roads (Figure 3-2 and Figure 3-3; Table 3-6). There are two parallel TEP 345-kV transmission lines, the Springerville-Luna lines, on metal frame structures within the BLWP area. The El Paso Electric Company's Harlosa-Springerville 345-kV overhead lines are on wooden "H-frame" poles. The Socorro Electrical Cooperative has a single wood pole 14.4/24.9-kV distribution line, where the main distribution line is 24.9 kV and the lines to the residences are 14.4 kV. Qwest Corporation and Western New Mexico Telephone Company also have authorized ROW within the BLWP area. In the northeast portion of the BLWP area, a small sand and gravel pit is operated by the NMDOT. There is also a Federal-Aid Highway Program authorization for the portion of U.S. 60 that passes over BLM-administered lands.

3.2.1.9 BLWP Area Aviation Use

Two military low-level MTRs (slow route [SR]-201 and VR-176) currently cross the BLWP area (Figure 3-6). The width of the two MTRs vary from 10 to 45 miles and penetrate the military airspace with the planned turbines encumbering approximately 20 percent of the military training route width. Holloman AFB MTR VR-176 encompasses all alternatives. Kirtland AFB MTR SR-201 covers the northern portion including roughly 17,120 acres or 39 percent of the Proposed Action area and 3,991 acres or 24 percent of the Alternatives 1 and 2 areas. SRs flown by C130s airplanes directly go over the BLWP area and airplanes can fly below 500 feet, but no lower than 250 feet above ground level. Additionally, both TEP and El Paso Electric Company conduct routine flights for inspection and maintenance of their overhead power lines.

3.2.2. Environmental Consequences

This section discusses the lands and realty impacts that would occur with implementation of the Proposed Action, Alternatives 1 and 2, and the No Action Alternative. The Proposed Action and Alternatives 1 and 2 would affect land use within the BLWP area and vicinity if they: 1) conflict with existing Federal, State, or local land use plans or policies; 2) conflict with existing BLM land use authorizations; or 3) change public land disposition. Surface or mineral ownership would not be impacted under any alternatives because surface jurisdiction and mineral ownership would not change.

3.2.2.1 Direct and Indirect Impacts of the Proposed Action

The Proposed Action would be constructed on public lands administered by the BLM or NMSLO. No privately owned land would be acquired for the construction, O&M, or decommissioning of the Proposed Action.

Electrical generation facilities are an allowable land use under FLPMA, and with issuance of the ROW grant, the Proposed Action would be in compliance with FLPMA and would not conflict with the 2007 Catron County CIP/Comprehensive Plan. The construction and O&M of the wind turbines and ancillary facilities would require a plan amendment for the Proposed Action to be in conformance with the existing SFO RMP (BLM 2010a). The Proposed Action is located in an area segregated from mining claim entries. Development of a wind farm would not prohibit other permitted uses such as grazing, use of existing ROWs, and dispersed recreation. Indirect land use impacts would not be expected because it is anticipated that a wind energy development project would not substantially induce or reduce regional growth to the extent that it would change off-site land uses (BLM 2005).

Table 3-6. Authorized ROW within the Proposed Action Area and Alternatives 1 and 2 Area[1]

Serial Number	Holder Name	ROW Width (feet)	Acres within Proposed Action Area	Length within Proposed Action Area (miles)	Acres within Alternatives 1 and 2 Area	Length within Alternatives 1 and 2 Area (miles)
NMNM 082730	Catron County	60	0.09	0.01	0.01	0
NMNM 082727	Catron County	60	28.51	3.92	0	0
NMNM 077514	El Paso Electric Company	135–150	132.03	7.21	94.71	5.21
NMNM 097797	NMDOT (access road to the Red Hills Community Pit)	14	0.29	0.17	0.29	0.17
NMNM 011994	Qwest Corporation	40	12.13	2.51	0	0
NMNM 0014159	Socorro Electric Cooperative	30	1.95	0.53	0	0
NMNM 018691	TEP	220	127.27	4.67	7.17	0.25
NMNM 015985	TEP	220	112.35	4.15	7.17	0.25
NMNM 083892	TEP	330	190.27	4.86	11.08	0.25
NMNM 103679	Western New Mexico Telephone Company	30	0.03	0.01	0	0
NMNM 096492	Western New Mexico Telephone Company	30	17.85	4.90	17.81	4.89
NMNM 052190	Western New Mexico Telephone Company	30	18.65	5.11	17.29	4.75
NMNM 002666	NMDOT	Varies	0 (adjacent)	0 (adjacent)	0 (not adjacent)	0 (not adjacent)
NMNM 0558313	NMDOT	Varies	0 (adjacent)	0 (adjacent)	0 (not adjacent)	0 (not adjacent)
NMNM 0057985	NMDOT	Varies	0 (adjacent)	0 (adjacent)	0 (adjacent)	0 (adjacent)
NMNM 109246	Western New Mexico Telephone Company	Varies	0 (adjacent)	0 (adjacent)	0 (adjacent)	0 (adjacent)
Total Area/Length	-	-	**641.42**	**38.05**	**155.53**	**15.77**

Source: BLM 2018b and 2018c

[1] Analysis area includes the U.S. 60 ROW where construction-related activities would be necessary.

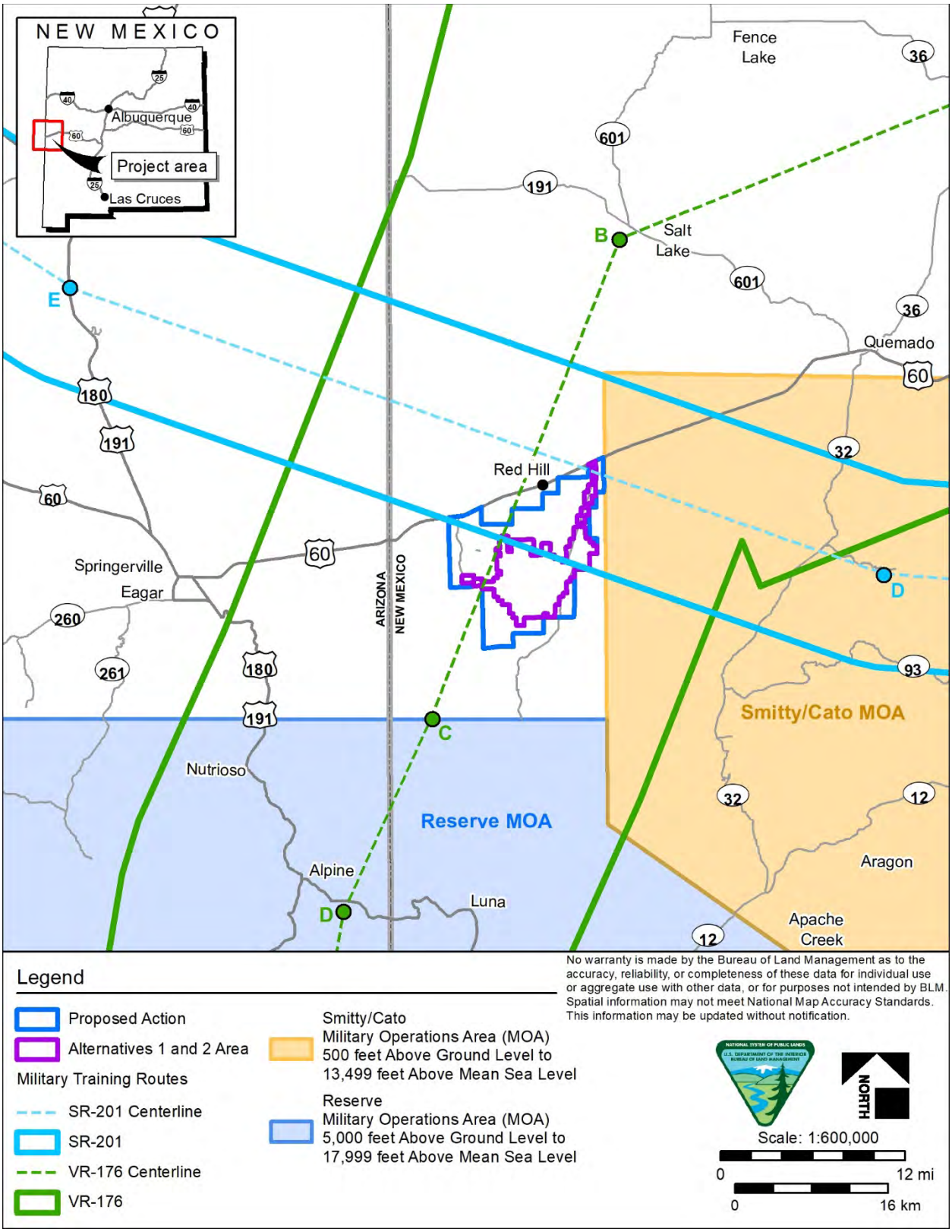

Figure 3-6. Military Low-Level Military Training Routes

Construction

In the Proposed Action, the approximately 1.8-mile distribution line would be run from the electrical interconnection switchyard and substation to the Socorro Electrical Cooperative 14.4/24.9-kV distribution line near Cow Springs and west of the Proposed Action area. Using the existing designated utility corridor and transmission lines in the vicinity of the Proposed Action area would not result in a change in land use. Construction of turbines and other related facilities (including switchyards, MET towers, staging areas, O&M facilities, and access roads) would not impact existing transmission lines or utility corridors.

There are six authorized grazing allotments within the BLWP area. Four of the allotments—including Vevarosa (#10011), Red Hill South (#10038), Red Hill North (#10062), and Florenio Orona (#00099)—would have temporary impacts. The remaining two grazing allotments would not be impacted. Any existing range improvements would be rehabilitated if disturbed by the BLWP during construction. The existing grazing lease authorizations would remain the same as the current use. There would be temporary access restrictions during the 11- to 12-month construction period. Livestock may get out of the pasture or allotment and produce additional workload and/or cost of retrieving and sorting animals. Construction activities could also create stress on the livestock. Depending on the options available to the grazing permittee, they may be able to shift livestock to pastures outside of the construction area.

The BLWP design features (Appendix B) would include notifying the permit holders of all major construction milestones so that they are informed as to the time and location of potential disturbances. Construction activities would result in the loss of or damage to vegetation, which could impact livestock forage availability in localized areas in the Proposed Action area. Construction vehicle traffic could result in minor short-term livestock displacement in localized areas. Construction activities and equipment could also increase the potential for the establishment of invasive and noxious weeds that could indirectly affect forage quantity. Dust created by vehicle traffic and construction activities could indirectly result in a temporary reduction of forage quantity in localized areas. BMPs would be implemented to control dust and reduce the establishment of invasive species and noxious weeds.

Access to the ranching areas could be temporarily restricted during construction in site-specific areas. The oversized loads and slow-moving equipment on public roads and highways could result in temporary delays for local users. Dust and additional vehicle traffic could impact traffic movement adjacent to the Proposed Action area over the short-term; these impacts would be minimized through design features such as the application of water or other dust suppressants. Any residual impacts would be temporary, occurring for a few months during construction, in specific areas such as the proposed access road corridors.

Existing roads would be upgraded and new roads would be constructed, which could temporarily affect local transportation and public access. The main access point for the Proposed Action would be at the intersection of U.S. 60 and Bill Knight Gap Road. Improvements at the intersection would include permanent deceleration and acceleration lanes for both directions at the intersection to accommodate turning radius needs for turbine delivery. The SFO RMP would need to be amended in order to construct the intersection improvements in the designated ROW avoidance area along the south side of U.S. 60.

Operations and Maintenance

Facility O&M, including the repair of wind turbines, ancillary facilities, and transmission line facilities, would not result in impacts to utility corridors or ROWs, although the transmission line interconnection would reduce the capacity to add more power to the selected transmission line from other energy generation projects. Currently, there are no planned future residential developments in the BLWP area, but the presence of turbines and O&M activities could indirectly result in a shift in the location or siting of future residential developments on private land. ROWs are non-exclusive and any new applications

for ROWs in the project area would be analyzed on a case-by-case basis for compatibility with the existing wind facilities.

The Proposed Action would require a Determination of No Hazard to Air Navigation (NOHA) from the FAA for each turbine. The presence of turbines, permanent MET towers, and overhead transmission lines associated with the Proposed Action, as well as the use of drones during O&M activities, could add constraints to military testing and training operations that may occur at low altitudes. Aircraft would no longer be able to operate at the current levels within the airspace over the BLWP area because of the wind turbine obstructions. However, according to Holloman AFB, the pilots would be able to fly around the turbines that create vertical obstructions for aircrafts between segments B and C (Figure 3-6) and still accomplish their training requirements. The turbines' height would require markings or lights per FAA Guidelines (FAA 2007) to provide visible warning to pilots. The planned turbines would encumber approximately 20 percent of the route width. Impacts to military flying operations are mitigatable by flying in the remaining 80 percent of the route width. Turbines along this route would use lighting compatible with night vision goggle (NVG) for safe operations and identification of the turbines when aircrews are conducting NVG training.

The addition of approximately 40 miles of new access roads would provide access for dispersed recreation, hunting, and grazing and livestock management because motorized (and non-motorized) vehicle access would be allowed on new roads established in the Proposed Action area, except those within restricted facility areas.

There would be no grazing rotation restrictions anticipated with the Proposed Action. Portions of the BLWP area, including the O&M facility and the substation, would be fenced to keep livestock out. These areas, as well as the direct impact acreage for the turbines, would reduce the amount of available forage. Forage availability and production would be permanently reduced by 0.4 percent and temporarily reduced by 3.1 percent of the total allotted acreage within the Proposed Action area (permanent disturbance of 116.8 acres and temporary disturbance of 892.0 acres of grazing allotments).

Revegetation with native species in areas disturbed by construction could restore and improve forage resources for livestock grazing. Eliminating forage needed to feed grazing livestock would be required; however, it is not anticipated to be substantial enough to affect this use of the land. The loss of forage acres can be translated to a decrease in animal unit months (AUMs) on the permit. A minor reduction of 17.5 AUMs from the total of 4,336 AUMs would occur from the loss of 116.8 acres of permanent foraging; this represents less than 0.4 percent of the total allotment acreage within the Proposed Action area. The volume of vehicle traffic associated with O&M activities on new access roads would be substantially less than traffic associated with construction but could result in localized impacts to livestock and livestock management.

Decommissioning

Decommissioning activities would cause temporary, localized disturbances to land use similar to those described under the Construction section above. Decommissioning would require coordination similar to that performed during construction where the activities under the Proposed Action would overlap existing uses (including roads and transmission lines). Land use plans, policies, or regulations may have changed by the time the Proposed Action would be decommissioned. As such, the decommissioning plan would ensure that decommissioning is conducted in accordance with then-current land use plans, policies, laws, or regulations. Project features such as turbines, substations, the switchyard, O&M building, and related facilities would be removed at the end of the operational life of the Proposed Action. If access roads are left in place, they would continue to provide access to some recreational users (e.g., hunters). Decommissioning the Proposed Action would have similar impacts to livestock grazing as described for construction. Additionally, previously restored areas could be re-disturbed

resulting in short-term loss of available forage and a decrease in forage quality. Decommissioning and restoring disturbed areas with native soils and plants would improve forage availability.

Additional Measures to Avoid and/or Minimize Impacts

Along with the implementation of the BMPs and other design features in Appendix B, the BLM recommends the additional measures below to avoid and/or minimize impacts to land use from the Proposed Action:

- Turbines along this route would use lighting compatible with night vision goggles (NVGs) for safe operations and identification of the turbines when aircrews are conducting NVG training.
- The Proponent would be required to coordinate with the U.S. Air Force if drones would be used.
- No existing authorized BLM range improvement should be removed, altered, or left inoperable without prior consultation and written agreement with the grazing allottee and the BLM SFO.

3.2.2.2 Direct and Indirect Impacts of Alternatives 1 and 2

Like the Proposed Action, Alternatives 1 and 2 would be constructed on public lands administered by the BLM or NMSLO. No privately owned land would be acquired for the construction, O&M, or decommissioning of either of these two alternatives. With the issuance of the ROW grant, these alternatives would also be in compliance with FLPMA and would not conflict with the 2007 Catron County CIP/Comprehensive Plan. A plan amendment would be required for the alternatives to be in conformance with the 2010 SFO RMP. Alternatives 1 and 2 would reduce the total project boundary acreage by 26,880acres (61.8 percent) as compared to the Proposed Action, with 16,479 acres (54.3 percent) being reduced from public lands administered by the BLM, 4,525 acres (79.5 percent) being reduced from the NMSLO-managed lands, and 5,876 acres (78.4 percent) being reduced from private landowners.

Construction

The construction effects associated with Alternative 1 would be essentially the same as for the Proposed Action because the same number of turbines would be built under the Proposed Action and Alternative 1. Under Alternative 2, there would be six less turbines (34 instead of 40 turbines) built with similar but slightly less impacts from the fewer number of turbines, access roads, and underground electric collection system and communication lines built. Because of the smaller construction footprint associated with Alternative 2, livestock grazing allotments within and adjacent to the BLWP area would be less affected by the construction activities as compared to the Proposed Action and Alternative 1.

The temporary traffic delays from oversized loads and slow-moving equipment on public roads and highways from the construction of Alternatives 1 or 2 would be equal or similar to the Proposed Action. The main access point for either of the alternatives would be the same as the Proposed Action: at the intersection of U.S. 60 and Bill Knight Gap Road. The SFO RMP would also need to be amended for Alternatives 1 and 2 in order to construct the intersection improvements in the designated avoidance area.

Operations and Maintenance

Potential direct and indirect impacts from O&M activities under Alternatives 1 and 2 would result in the same or similar impacts to the utility corridors and ROWs as the Proposed Action. Both Alternatives 1 and 2 would have the same FAA requirements as the Proposed Action. The presence of either alternative could add constraints similar to the Proposed Action to military testing and training operations that may occur at low altitudes.

New access roads would provide access for dispersed recreation, hunting, and grazing and livestock management because motorized (and non-motorized) vehicle access would be allowed on new roads established in either alternative, except those within restricted facility areas. The amount of new roads

associated with Alternatives 1 and 2 would be approximately eight percent less than the Proposed Action.

For Alternatives 1 and 2, forage availability and production would be permanently reduced by 0.8 percent and temporarily reduced by 7.0 percent of the total allotted acreage (permanent disturbance of 110.0 acres and temporary disturbance of 969.6 acres of grazing allotment). The volume of vehicle traffic associated with O&M activities under Alternatives 1 and 2 could result in less localized impacts to livestock and livestock management than the Proposed Action.

Decommissioning

Decommissioning activities from Alternatives 1 and 2 would cause temporary, localized disturbances to land use and livestock grazing similar to those described under the Proposed Action. If access roads are left in place, they would continue to provide access for some recreational users (e.g., hunters). Additionally like the Proposed Action, previously restored areas could be re-disturbed resulting in short-term loss of available forage and a decrease in forage quality in Alternatives 1 and 2. Decommissioning and restoring disturbed areas with native soils and plants would improve forage availability.

Additional Measures to Avoid and/or Minimize Impacts

With the implementation of the BMPs and other design features in Appendix B, the BLM recommends the additional measures below to avoid and/or minimize impacts to land use from Alternatives 1 and 2.

- Turbines along this route would use lighting compatible with night vision goggles (NVGs) for safe operations and identification of the turbines when aircrews are conducting NVG training.
- The Proponent would be required to coordinate with the U.S. Air Force if drones would be used.
- No existing authorized BLM range improvement should be removed, altered, or left inoperable without prior consultation and written agreement with the grazing allottee and the BLM SFO.

3.2.2.3 Direct and Indirect Impacts of the No Action Alternative

Under the No Action Alternative, the BLWP would not be constructed and there would be no impacts to land use within the BLWP area.

3.3 Social and Economic Conditions

3.3.1. Affected Environment and Socioeconomic Study Area

The nearest named communities to the BLWP area include Red Hill, NM located immediately north of the BLWP area; Quemado, NM approximately 19 miles east and slightly north of the BLWP area; Escudilla Bonita, NM approximately 2.5 miles west of the BLWP area; and the towns of Springerville and Eagar, AZ approximately 17.5 miles west of the BLWP area (for additional information refer to Table 3-2). Catron County is the largest county in NM in geographic area (6,929 square miles), but is one of the least populated in the State (Southwest New Mexico Council of Governments 2015) with a total County population under 4,000 individuals. Given the low population density of Catron County, the socioeconomic study area (SESA) for the BLWP encompasses the entire County, and also includes Springerville and Eagar in Apache County, AZ as these towns are the nearest population centers able to provide additional housing and services.

This section addresses population, housing, income, employment, and relevant industry in the BLWP SESA. In addition to traditional market values for goods, housing, and services, this section will also analyze nonmarket values and ecosystem services that may be impacted by the BLWP. Natural resource development, ranching, and recreational uses are the primary economic activities that have shaped the social and economic landscape of the BLWP's SESA.

3.3.1.1 Demographics, Income, Industry, and Employment

The total population of the County was 3,725 as of the 2010 decennial census, but recently declined to 3,547 as of 2017 based on the annual American Community Survey (ACS) estimated data (U.S. Census Bureau 2010 and 2017). The U.S. Census Bureau designated one census tract (9674) that encompasses the entire County and identified Quemado and Escudilla Bonita as Census Designated Places (CDPs) (Figure 3-7). Quemado CDP is the second largest populated area in the County (after Reserve, NM) with a population of 228 people. Escudilla Bonita CDP had a population of 118 in 2010. The Red Hill/ Cimarron Ranch Subdivision population is estimated to be around 50 based on verbal information from Catron County (Keith Riddle, personal communication, 2019). In Catron County in 2010, 92.7 percent of the population identified as white and similarly, the majority of the population in Quemado and Escudilla Bonita CDPs were also white (76.3 percent and 95.8 percent, respectively; Table 3-7). The 2010 Native American population consisted of 5.0 percent of the population in Catron County, 21.1 percent in Quemado CDP, and 7.6 percent in Escudilla Bonita CDP. Hispanics/Latinos made up 19.0 percent of the total population in Catron County, 23.7 percent in Quemado CDP, and 7.6 percent in Escudilla Bonita in 2010.

In AZ, the towns of Springville and Eagar consist of three census tracts (9703, 9705.1, and 9705.2) and five block groups. Eagar has a higher population (4,885), but the towns account for a combined population of 6,132 individuals as of the 2010 census. As of 2017, ACS estimates the population slightly increased in Eagar (4,894) and decreased in Springerville (1,751). In both Eagar and Springerville, the majority of the population identified as white (90.5 percent and 87.3 percent, respectively). The 2010 Native American population consisted of 7.3 percent of the population of Springerville and 4.9 percent of the population in Eagar. Hispanics/Latinos made up 24.6 percent of Springerville's population and 18.8 percent of Eagar's population in 2010.

Major employment sectors in Catron County include 39.2 percent in management, business, science, and arts; 29.6 percent in sales and office jobs; and 17.4 percent in natural resources, construction, and maintenance. The per capita income for Catron County in 2017 was $22,487, with a median household income of $42,047 (Table 3-8). Approximately 21.5 percent of the people in Catron County were below the poverty level in 2017 (U.S. Census Bureau 2017). According to the New Mexico Department of Workforce Solutions, Catron County had an unemployment rate of 7.4 percent in February of 2019.

In Quemado CDP, major employment sectors include 43.6 percent in natural resources, construction, and maintenance; 36.6 percent in sales and office jobs, and 19.8 percent in service jobs (U.S. Census Bureau 2017). Recent unemployment estimates are not available for this community. Sales and office jobs accounted for the entire workforce of Escudilla Bonita CDP, by 2015 ACS estimates. No industry or employment data is available for the Red Hill/Cimarron Ranch subdivisions.

Major employment sectors in Springerville include 24.3 percent in management, business, science, and arts; 24.8 percent in sales and office jobs; 17.6 percent in production, transportation, and material moving jobs; 24.5 percent in service jobs; and 8.7 percent in natural resources, construction, and maintenance. The per capita income for Springerville in 2017 was $18,996 with a median household income of $38,333. Approximately 36.6 percent of the people in Springerville were below the poverty level in 2017 (U.S. Census Bureau 2017). The unemployment rate reported through ACS 5-year estimates was 10.3 percent. Major employment sectors in Eagar included 34.5 percent in management, business, science, and arts; 14.8 percent in sales and office jobs; 14.1 percent in production, transportation, and material moving jobs; 27.4 percent in service jobs; and 9.2 percent in natural resources, construction, and maintenance. The per capita income for Eagar in 2017 was $20,982 with a median household income of $57,931. Approximately 11.9 percent of the people in Eagar were below the poverty level in 2017 (U.S. Census Bureau 2017). The unemployment rate reported through ACS 5-year estimates was 8.8 percent.

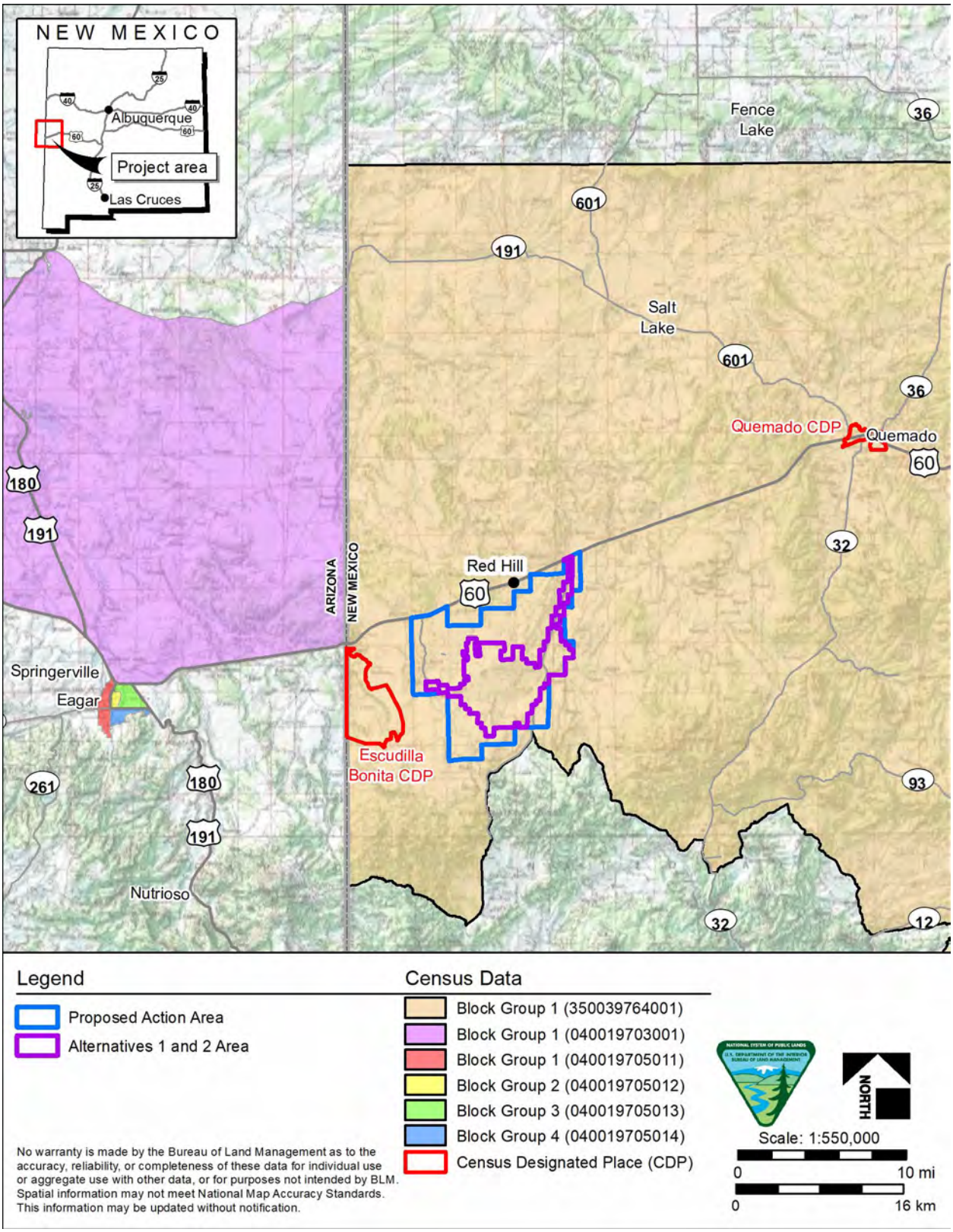

Figure 3-7. Census Block Groups and CDPs for the BLWP SESA

Table 3-7. BLWP SESA's Population by Age, Ethnic, and Racial Groups

Location	Population (number of individuals)	Elderly Population (age 65 and over)	White	Black/ African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other	Hispanic/ Latino Ethnicity
Quemado CDP, NM	228	44 (19.3%)	174 (76.3%)	5 (2.2%)	48 (21.1%)	0 (0.0%)	0 (0.0%)	9 (3.9%)	54 (23.7%)
Escudilla Bonita CDP, NM	119	27 (22.7%)	114 (95.8%)	0 (0.0%)	9 (7.6%)	1 (0.8%)	0 (0.0%)	3 (2.5%)	9 (7.6%)
Springerville, AZ	1,961	311 (15.9%)	1,712 (87.3%)	13 (0.7%)	143 (7.3%)	24 (1.2%)	1 (0.1%)	143 (7.3%)	482 (24.6%)
Eagar, AZ	4,885	639 (13.1%)	4,420 (90.5%)	63 (1.3%)	241 (4.9%)	26 (0.5%)	7 (0.1%)	284 (5.8%)	916 (18.8%)
Catron County, NM	3,725	1,041 (27.9%)	3,454 (92.7%)	22 (0.6%)	185 (5.0%)	12 (0.3%)	1 (<0.1%)	172 (4.6%)	709 (19.0%)
Apache County, AZ	71,518	8,268 (11.6%)	17,674 (24.7%)	476 (0.7%)	53,273 (73.5%)	315 (0.4%)	72 (0.1%)	1,178 (1.6%)	4,113 (5.8%)
NM	2,059,179	272,255 (13.2%)	1,473,005 (71.5%)	57,040 (2.8%)	219,512 (10.7%)	40,456 (2.0%)	4,698 (0.2%)	346,627 (16.8%)	953,403 (46.3%)
AZ	6,392,017	881,831 (13.8%)	4,852,961 (75.9%)	318,665 (5.0%)	353,386 (5.5%)	230,907 (3.6%)	25,106 (0.4%)	846,031 (13.2%)	1,895,149 (29.6%)

Table Abbreviations: AZ = Arizona; BLWP = Borderlands Wind Project; CDP = Census Designated Place; NM = New Mexico; SESA = socioeconomic study area
Source: U.S. Census Bureau 2010
Note: Individuals may identify with multiple racial groups.

Table 3-8. Income and Poverty Rates based on 2013-2017 ACS 5-year Estimates within the BLWP SESA

Location	Per Capita Income	Median House hold Income	Poverty Rate[1]
Quemado CDP, NM	$21,275	NA	31.4%
Escudilla Bonita CDP, NM	$23,232	NA	NA
Springerville, AZ	$18,996	$38,333	36.6%
Eagar, AZ	$20,982	$57,931	11.9%
Catron County, NM	$22,487	$42,047	21.5%
Apache County, AZ	$13,865	$32,360	35.9%
NM	$25,257	$46,718	20.6%
AZ	$27,964	$53,510	17.0%

Table Abbreviations: ACS = American Community Survey; AZ = Arizona; BLWP = Borderlands Wind Project; CDP = Census Designated Place; NA = not applicable; NM = New Mexico; SESA = socioeconomic study area
Source: U.S. Census Bureau 2017
Note: Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. In addition to sampling variability, the ACS estimates are subject to nonsampling error.
[1] Poverty Rate reflects "All people whose income in the past 12 months is below the poverty level.

3.3.1.2 Housing Characteristics and Property Values

Housing characteristics were obtained using the 2010 census data and median property value using the 2017 ACS 5-year estimates. In NM, an estimated 901,390 housing units existed as of 2010, including a reported 87.8 percent occupied units and 12.2 percent vacant units (Table 3-9). The median value of owner-occupied homes in NM was not reported in the 2010 census, but in the 2017 ACS, the median value was estimated to be $163,900. An estimated 3,289 housing units existed in Catron County as of 2010, including a reported 54.3 percent occupied units and 45.7 percent vacant units. More than a third of vacant units were described as vacant due to seasonal, recreational, or other use (34.1 percent). The median value of owner-occupied homes in Catron County was not reported in the 2010 census, but in the 2017 ACS, the median value was estimated to be $164,600. The number of housing units reported for Quemado CDP in 2010 was 135 units, with 63.7 percent of units occupied and 36.3 percent vacant. A smaller portion of housing units (13.3 percent) were described as vacant due to seasonal, recreational, or other use. The number of housing units reported for Escudilla Bonita CDP in 2010 was 125 units, including 44.0 percent occupied units and 56.0 percent vacant units. Similar to Catron County, more than a third (40.8 percent) of units were described as vacant due to seasonal, recreational, or other use. No housing units, occupancy data, or median house values are available for the Red Hill/Cimarron Ranch subdivision.

In Springerville, AZ a reported 954 units housing units existed in 2010, including 81.2 percent occupied units and 18.8 percent vacant units. Only 4.2 percent of housing units were reported to be vacant due to seasonal, recreational, or other use. The median value of owner-occupied homes in Springerville was not reported in the 2010 census, but in the 2017 ACS, the median value was estimated to be $105,600. The number of housing units reported in Eagar, AZ in 2010 was 2,045, with 84.8 percent of units occupied and 15.2 percent vacant. The median value of homes in Eagar was not reported in the 2010 census, but in the 2017 ACS, the median value was $165,400.

Table 3-9. BLWP SESA's Housing Characteristics

Location	Total Housing Units (number)	Occupied Housing Units (number/percent)	Unoccupied Housing Units (number/percent)	Median Home Value[1]
Quemado CDP, NM	135	86/63.7%	49/36.3%	NA
Escudilla Bonita CDP, NM	125	55/44%	70/56%	NA
Springerville, AZ	954	775/81.2%	179/18.8%	$105,600
Eagar, AZ	2,045	1,734/84.8%	311/15.2%	$165,400
Catron County, NM	3,289	1,787/54.3%	1,502/45.7%	$164,600
Apache County, AZ	32,514	22,771/70%	9,743/30%	$72,800
NM	901,388	791,395/87.8%	109,993/12.2%	$163,900
AZ	2,884,526	2,380,990/83.7%	463,536/16.3%	$193,200

Table Abbreviations: AZ = Arizona, CDP = Census Designated Place, NA= data not available, NM = New Mexico
Source: 2010 Census
Note: Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. In addition to sampling variability, the ACS estimates are subject to nonsampling error.
[1] Data only available in 2013-2017 ACS 5-Year Estimates.

3.3.1.3 Agriculture, Ranching, and Recreation

The industries that are the largest contributors to income in Catron County include agriculture, ranching, and recreation (e.g., fishing and hunting). Agriculture and ranching activities account for a market value

of $12.74 million for products sold. The majority (99.0 percent) of products sold are attributed to livestock sales (U.S. Department of Agriculture 2012). Cattle and calves are the primary commodity, accounting for $11.6 million. The 2012 Census of Agriculture reported 351 farms/ranches in Catron County with an average size of 3,070 acres. Overall, 1,077,534 acres of land are attributed to farms/ranches within the County. For a related discussion of land use for livestock grazing on public lands, see Section 3.2 Land Use.

Recreation activities in the County make a substantial economic contribution and include common outdoor activities, such as hiking, fishing, trapping, and hunting. Among NM residents, walking/hiking, and running; hunting, fishing, shooting, and wildlife watching; and camping are the most common outdoor activities (New Mexico State Parks Division 2015). Catron County is ranked among the top three hunting destination counties in NM with a reported 9,648 residents and 2,758 non-residents participating annually. Table 3-10 shows the annual economic contributions of fishing, hunting, and trapping for the County as reported for 2013. The majority of economic contributions from hunting are associated with hunting for elk, deer, and small game (i.e., quail, duck, and squirrel).

Table 3-10. Economic Contributions of Fishing, Hunting and Trapping in Catron County and NM

Activity	Jobs (Catron County)	Labor Income	Contribution to NM Gross Domestic Product	State and County Tax Revenues
Fishing	21	$368,329	$1,000,258	$165,450
Hunting	237	$3,318,008	$9,468,383	$1,405,967
Trapping	1	$17,469	$41,759	$8,116

Table Abbreviations: NM = New Mexico
Source: Southwick Associates 2014.

Catron County contains 12 Game Management Units (GMUs), which are geographic subdivisions used by the NM Department of Game and Fish for the management of big game species. The Proposed Action and Alternatives 1and 2 areas are located within GMU 15, but also include a small portion of GMU 12 (approximately 10.6 acres). Of the deer licenses sold in Catron County, 381 licenses (5.2 percent) were sold for GMU 15 in 2017–2018. There were 2,464 elk licenses (25.6 percent) sold for GMU 15 in 2017-2018 (NM Department of Game and Fish 2018). The Proposed Action area would include 43,517.0 acres of GMU 15 (4.2 percent of the total unit area). The Alternatives 1 and 2 area would account for 16,647.9 acres of GMU 15 (1.6 percent of the total unit area).

3.3.1.4 Rural Prosperity and Nonmarket Values

Based on its land use planning authority provided in Section 202 of FLPMA, the BLM manages public lands for both the preservation and use of natural resources to serve both local communities and the broader public. *Executive Order 13790, Promoting Agriculture and Rural Prosperity in America* (April 25, 2017), directs agencies of the Federal government to (among other things):

- Further the Nation's energy security by advancing traditional and renewable energy production in the rural landscape; and
- Address hurdles associated with access to resources on public lands for the rural communities that rely on cattle grazing, timber harvests, mining, recreation, and other multiple uses.

The BLM must consider these directives during planning. The BLWP advances the development of renewable energy production on the rural landscape, and does not substantially impede public access to economically important natural resources, such as grazing lands, and recreational opportunities. To reach this conclusion, BLM analyzed impacts to both market and non-market values.

One of the ways that people evaluate the importance of natural resources is through perceived non-market values. Nonmarket values are assigned to natural resources by people. These non-market values may not be quantifiable, such as certain communities placing a high value on perceptions of landscapes and rural lifestyles. Different communities and individuals may assign different values to a natural resource, dependent on their specific circumstances. For example, the ranching community in the area of the Proposed Action would place a different value on open, grassy rangelands, than would people who value the views and wildlife associated with woodlands.

Many residents in the SESA place a high value on rural landscapes and rural lifestyles. As noted during the public scoping period, local residents value open space and rural viewscapes, as well as the lifestyles associated with ranch operations, livestock grazing, and recreational (hunting) opportunities. They tend to prefer land uses that conserve or enhance these values. Ranchland in NM is part of a broader cultural landscape that encompasses many of the nonmarket values that ranchers hold in high regard, such as sense of place and purpose. As a result, ranchers in NM can develop a sense of attachment to the landscapes that visitors, recreationists, and others may not. The value of these rangelands, as perceived by the ranching community, are generally not reflected in market prices.

Recreation is an important resource use in the SESA by both local residents and nonlocal visitors. The benefits people obtain from recreating are personal, with different people obtaining different benefits from the same piece of land. Scenery is an important component of non-market valuation associated with landscapes. Sometimes referred to as scenic quality or landscape character, visual appreciation of the environment is a well-recognized and accepted dimension of aesthetic appreciation. The scenery associated with a landscape contributes to community identity and sense of place. Additionally, wildlife provides a variety of benefits to the public. When consumed as food, certain species may be considered important for reasons of traditional use and recreation, and when hunted for sport or viewed by recreationists, the same species are considered important contributors to local economies. Some wildlife also hold non-use values; for example, when people do not use wildlife but recognize that future generations may value specific wildlife species or the fact that wildlife exists (USFS 2014). Within the BLWP area, deer, elk, and other game species would be considered to be important for both economic and non-market reasons, while eagles, prairie dogs, wolves, and other sensitive species also contribute to the non-market perceptions of the area by both local and non-local users.

3.3.2. Environmental Consequences

3.3.2.1 Direct and Indirect Impacts of the Proposed Action and Alternatives 1 and 2 – Market Values

Construction

The project construction phase is estimated to take 11 to 12 months, with approximately 200 to 250 workers onsite during peak construction and an average of 50 to 70 workers onsite daily. Total income for all construction workers is estimated to range from $1.5 to $3.0 million (R. Stephens, personal communication, 2019).

Construction of the BLWP would result in hiring local and non-local construction workers, as well as expenditures for local goods and services. Some of the labor to construct the BLWP would be specialized and would be sourced from outside the SESA. These workers are anticipated to be temporary residents that would only reside in Catron County during construction of the BLWP. The projected local workforce used during construction would be approximately 10 to 25 workers. The Proponent would hire as many local workers as possible; however, due to the remote project location, qualified workers may come from areas within a two-hour driving distance from the BLWP area.

While housing choice by construction workers depends on the type and quality, as well as the quantity of available housing, it is expected that project-related housing demand would be met by the existing housing and hotel supply based on the diversity of choices available between Quemado and Springerville/Eagar, AZ and the BLWP area. Therefore, no new housing is expected to be built for workers during the construction of the BLWP. The increased demand for short-term housing from BLWP construction workers would have no effect on housing market prices because of the availability of nearby hotels and short construction timeframe (12 months or less).

Indirect effects would result from additional local jobs that would be supported by BLWP-related expenditures on goods and materials, such as construction materials and supplies. During construction, these related expenditures would come from non-local workers staying in local motels/hotels/campgrounds, buying gas and food locally, and frequenting local restaurants. Meals, food, and lodging could contribute an estimated $750,000 to the local economy during construction (Jennifer Field, personal communication, 2019).

Short-term employment opportunities may be generated in other sectors of the Catron County economy through spending by workers that are supported directly or indirectly by the BLWP construction. Increased spending by local construction worker households may also generate additional employment in the County. The majority of this employment and income is anticipated to be in service sectors and would be a negligible to minor contribution to the County economy during the 11- to 12-month period of construction.

Major economic drivers in the BLWP area are primarily related to recreation/hunting and ranching and the livestock industry. These activities may be displaced during construction of the BLWP. The Proposed Action area and Alternatives 1 and 2 area would include approximately 4.2 percent and 1.6 percent of GMU 15, respectively. Based on the number of elk and deer licenses issued for the BLWP area during the 2017–2018 season, the number of affected hunters is expected to be limited to less than 200, primarily during the project construction phase (NM Department of Game and Fish 2018). Because of the relatively short construction schedule, any loss of hunting opportunities would also depend on what time of year the proposed BLWP is actually under construction. Since approximately two-thirds of the hunters in NM are local residents rather than non-residents, there would be negligible, if any, reduction in related expenditures, such as for lodging from non-resident hunters in the BLWP area, under any of the alternatives. Construction of the BLWP would result in the temporary reduction of forage availability in six grazing allotments under the Proposed Action and four grazing allotments under Alternatives 1 and 2.

In 2017, the total revenue for Catron County was $5.4 million. The Proponent estimates that they would pay approximately $1.1 million of sales tax to the State and $115,000 to Catron County during the construction phase of the project. If the County's revenue remained the same as it was in 2017, this would be an increase of approximately 2.0 percent of revenue for the County (Stone, McGee and Co. 2017).

The BLWP may impact adjacent property values. Numerous conflicting economic studies have analyzed the effect of wind farm development on private property values. One recent review of research findings on the impact of wind power projects on residential property values in the United States stated that there is no consistent, statistically significant effect on home sale prices with a view of wind facilities or those in close proximity to wind facilities (Thayer 2017). Other research done in 2014 by the London School of Economics cites that properties located within approximately 9 miles of a wind farm can have a 12 percent reduced value. The various studies suggest there are several qualitative and quantitative factors that influence property values adjacent to announced or operating wind generating facilities other than the presence of the facility. These factors include the sale price of nearby comparable

properties; the property's square footage, age, and number of bedrooms/bathrooms; and the quality metrics of the property such as the condition of the home and location specific variables.

The BLWP may impact private property values of residences and/or vacant parcels within the Red Hills/Cimarron Ranch Subdivision and on other adjacent private properties. However, the magnitude and duration of such impacts on property values solely attributed to the presence of the BLWP would be specific to the individual property at the time of the sale and would not be consistent across the entire Red Hills/Cimarron Ranch Subdivision or across other adjacent private residential and non-residential properties. This lack of consistency makes it difficult to provide an accurate estimate of impacts to property values.

Operations and Maintenance

Operation of the BLWP would result in the long-term reduction of approximately 116.8 acres of forage production under the Proposed Action and approximately 110.0 acres of forage production under Alternatives 1 and 2 through the life of the project. Table 3-11 identifies the percent reduction within each of the allotment carrying capacity within the Proposed Action area and Alternatives 1 and 2 area, and the reduction in each permittee's entire allotment.

Table 3-11. Reduction in Grazing Allotments within the Proposed Action and Alternatives 1 and 2 Areas

Allotment Name	Proposed Action Allotment Acreage Reduction	Proposed Action Allotment % Reduction[1]	Alternatives 1 & 2 Allotment Acreage Reduction	Alternatives 1 & 2 Allotment % Reduction[2]
Vevarosa	16.69	0.10	14.40	0.09
Red Hill South	4.31	0.03	4.34	0.03
Florenio Orona	9.36	0.23	8.58	0.21
Red Hill North	86.42	0.41	82.67	0.39
Cow Springs	0.0	0.00	0.00	0.00
Heavenly Acres	0.0	0.00	0.00	0.00
Total	116.79	0.39	109.99	0.79

Table Abbreviations: BLM = Bureau of Land Management; BLWP = Borderlands Wind Project
Source: BLM 2018b
[1] Percent references the reduction in the portion of the total allotment acreage that is located on BLM lands within the Proposed Action area (30,320.06 total acres; see Table 3-5).
[2] Percent references the reduction in the portion of the total allotment acreage that is located on BLM lands within the Alternatives 1 and 2 area (13,856.82 total acres; see Table 3-5).

The BLM indicated that there is an average of 0.15 AUMs[3] per acre of SFO grazing land (Matt Atencio, personal communication, 2019). If the total grazing area is reduced by 116.8acres in the Proposed Action and 110.0 acres in Alternatives 1 and 2, the rancher would potentially lose income from the reduction in the number of cattle that could be raised, resulting in an economic impact, if other grazing lands cannot be secured. There would be a reduction of approximately 17.5 AUMs (116.8 acres x 0.15 AUMs) every year for the life of the Proposed Action, and 16.5 AUMs (110.0 acres x 0.15 AUMs) with Alternatives 1 and 2, which would be a 0.4 percent and 0.8 percent decrease in the AUMs for the grazing allotments within the BLWP area, respectively. The economic impacts on livestock grazing during the life of the BLWP for any of the alternatives would result in a less than one percent reduction in AUMs, and is therefore anticipated to be a negligible impact.

[3] There are 1,492,301 BLM acres of public lands open to grazing with 226,818 active AUMs or 0.15 AUM per grazing acre in the SFO (Matt Atencio, personal communication, 2019).

During the 35-year operational period, approximately 5 jobs would support an additional $7.9 to $8.8 million in household income. It is assumed that O&M would be conducted by employees hired locally, or employees that would relocate and settle locally in Catron County. Expenditures of wages by BLWP employees and supporting industry employees in the local economy would also support local employment.

Long-term population impacts on Catron County would be less than 5 people, for which there are adequate available, vacant housing units and/or property for sale. Therefore, no new housing is expected to be constructed as a result of the BLWP and no effect on housing prices is expected because of the small number of permanent jobs associated with the BLWP's O&M.

Other economic benefits to the local government would be annual payments as part of the Industrial Revenue Bond structure. The Proponent would make annual payments in lieu of tax to Catron County in the amount $397,800 per year for 30 years. Over 30 years, those payments would total $11,934,000. If the County's revenue remained the same as it was in 2017, this would be an increase of approximately 7.0 percent of revenue to the County annually over the 30-year payment structure.

Decommissioning

Decommissioning would require labor to remove the wind turbines, electrical system, structural foundations, and roads. In addition, labor would be required to regrade, recontour, and revegetate areas to be restored. It is not known how many employees the BLWP would directly or indirectly support during decommissioning. It is anticipated that the local labor and income effects would be relatively minor as the decommissioning period is temporary. No new housing is expected to be constructed as a result of BLWP decommissioning, and no effect on housing prices is expected.

3.3.2.2 Direct and Indirect Impacts of the Proposed Action and Alternatives 1 and 2 – Nonmarket Values

Construction

During the construction of the BLWP, some short-term impacts on quality of life for local residents may result due to increased BLWP-related traffic, potential impacts on air quality and habitat, and potential increased prevalence of invasive species. Increased traffic on existing roads, including U.S. 60 and Bill Knight Gap Road, may result in increases to travel time and travel hazards for local residents.

Construction-related emissions and dust may reduce air quality in the Proposed Action and Alternatives 1 and 2 areas due to increases in PM10 (particulate matter that is 10 micrometers or less in size). PM10 can reduce visibility and negatively affect health. The potential consequences of these impacts vary by location and would be relatively low in the area due to the existing good air quality and low population density. Total groundwater pumping withdrawals for dust control and concrete production represent a small percentage of depletion and is unlikely to affect the overall groundwater supply. Habitat areas disturbed by the BLWP construction may be more susceptible to invasive species, the treatment of which may have potential costs to landowners or public agencies. The seasonal recreation use (closest sensitive noise receptor) in proximity to the Proposed Action and Alternatives 1 and 2 areas would not be expected to experience construction or operation noise impacts based on the distance from the nearest turbine.

Local residents and visitors that recreate in the Proposed Action and Alternatives 1 and 2 areas may be affected by construction activities. Construction of the BLWP may potentially impact the value of the recreation experience for visitors and residents; hunters would be deterred from the Proposed Action and Alternatives 1 and 2 areas during the 11- to 12-month construction period. Short-term impacts would include the loss of access to wildlife for hunting and/or viewing opportunities, as well potential dispersal of wildlife (including sensitive species) from the area during construction of the BLWP. The

effect on recreationists, specifically hunters, is expected to be limited, as recreation use in the BLWP area is estimated to be relatively low (NM Department of Game and Fish 2018).

As described in the visual resources section (refer to Section 3.9 Visual Resources), some of the residents in the Red Hill/Cimarron Ranch Subdivision would have unobstructed views of all of the BLWP turbines.

Operations and Maintenance

The type of expected impacts on quality of life for local residents during O&M would be similar to impacts in the construction period, but effects to some nonmarket values would be smaller in magnitude due to reduced activity in the Proposed Action and Alternatives 1 and 2 areas (and associated lower emissions and traffic). Impacts on habitat and recreation would likewise be less, as less area would be disturbed by BLWP-related O&M activities compared to construction activities. The potential increase in the number and quality of public routes constructed by the BLWP could be perceived as a positive impact for recreationists and hunters. Sensitive wildlife species that were dispersed during construction may return to the area as the restoration of disturbed areas is completed. However, the presence of the wind turbines and associated increase in sustained human activity over the life of the project would negatively impact the public's opportunity for watching wildlife and harvesting game species.

The visibility of wind turbines to residents and recreationists in and near the BLWP area would impact the scenic values and recreation experience as compared to existing conditions. As noted in the visual resource analysis (refer to Section 3.9 Visual Resources), the presence of the wind turbines would alter the existing character of the landscape, lower the scenic quality, and create strong visual contrast in the setting. For these reasons, the impact to nonmarket values associated with scenic values from the O&M of the BLWP would be a long-term major negative impact.

Decommissioning

Decommissioning activities would cause temporary, localized disturbances similar to those described under the Construction section above. It is anticipated that impacts to nonmarket values would be relatively minor as the decommissioning period is temporary.

Additional Measures to Avoid and/or Minimize Impacts

With the implementation of the BMPs and other design features in Appendix B, the BLM recommends one additional measure to avoid and/or minimize negative impacts to social and economic conditions from the Proposed Action or Alternatives 1 and 2:

- Thirty days prior to commencing construction, the contractor would post a construction schedule along Bill Knight Gap Road and where dictated by the BLM SFO to alert hunters of upcoming construction vehicle traffic and activities.

3.4 Transportation and Travel Management

This section discusses effects to transportation and travel management that may occur with the implementation of the Proposed Action, Alternatives 1and 2, and the No Action Alternative.

3.4.1. Affected Environment

Access to the BLWP area is from U.S. 60, a two-lane paved highway. U.S. 60 is classified as a principal arterial; it serves statewide travel, links urban areas, and provides mobility through rural areas (Federal Highway Administration 2017, NMDOT 2015). Approximately 187.7 miles of unimproved and improved unpaved routes within the BLWP area provide access for the public and private landowner vehicles

(BLM 2018b). Bill Knight Gap Road is an improved, unpaved route that runs along the eastern portion of the BLWP area and provides access to the Gila National Forest and to the community of Luna, NM from U.S. 60. In addition, there are several utility lines in the BLWP area that have unimproved access roads to provide access for periodic routine inspections, maintenance, and repairs. Other known users of these unimproved routes are hunters and local landowners. Overall, vehicle volume is relatively low due to the rural nature of the area.

The BLM designates the public lands it administers as open, limited, or closed to OHVs. Additionally, the SFO RMP identifies that land classified as 'limited' can either be limited to existing or designated routes. The BLM objectives for OHV management are to protect the resources of public lands, promote the safety of all users of those lands, and minimize conflicts among the various uses of those lands (BLM 2010a). All BLM land in the BLWP area is classified for OHV use as limited to designated routes. During the planning process for the SFO RMP, a definitive route inventory and route designation could not be completed except for in the WSA. Until the final travel management network is established, motorized travel is limited to designated routes within the BLM's Planning Area, unless specifically identified otherwise.

3.4.2. Environmental Consequences

Any roads constructed by the alternatives would be built to the BLM Gold Book Standards, minimally, and in compliance with the BLM Roads Design Handbook 9113-1 (DOI and U.S. Department of Agriculture 2007, BLM 2011).

3.4.2.1 Direct and Indirect Impacts of the Proposed Action

Construction

The Proposed Action is estimated to generate a peak of approximately 500 trips per day on U.S. 60 (based on 160 construction personnel and 50 delivery trucks leaving and entering the BLWP site). During construction, 48.1 miles of roadway would be necessary, including 6.8 miles of existing road and 41.3 miles of new road. A Road Design, Traffic, And Transportation Plan would be prepared by the Proponent and included in the BLWP POD. Temporary traffic delays would occur during the construction of improvements to U.S. 60. An increase in travel time for U.S. 60 motorists would also occur because of the presence of slower moving construction vehicles and an increase in the number of delivery trucks and workers' vehicles. Construction of the Proposed Action is estimated to take up to 12 months with construction crews working 8- to 12-hour work days, 6 days per week (Borderlands Wind, LLC 2020). These traffic delays would result in minor impacts to local traffic during construction activities.

The Proposed Action area currently contains approximately 25.6 miles of BLM-designated open routes that would be closed intermittently during construction. Any of the new access roads constructed for the Proposed Action would be open to public use after construction. It is not known if there would be an increase in vehicle traffic from the public interested in viewing the wind farm construction, but all vehicle traffic would be limited in the same manner during construction (Borderlands Wind, LLC 2020).

Operation and Maintenance

The total length of access roads for O&M of the 40 proposed turbines would be less than 48.1 miles (6.8 miles of existing road and 41.3 miles of new road), which would be the total mileage needed to support all 46 permitted turbine locations. Following construction, the addition of new access roads would provide access for dispersed recreation, hunting, and livestock management because motorized (and non-motorized) vehicle access would be allowed on new roads established in the BLWP area, except within the fenced areas for the switchyard, substations, and O&M building. Improved access within the Proposed Action area could create opportunities for unauthorized OHV use on previously inaccessible areas of BLM lands. While new access roads could provide a local impact from the

increase in available travel routes, additional unauthorized OHV use could indirectly affect travel and transportation in these areas.

Decommissioning

Decommissioning activities would cause temporary disturbances similar to those described under the Construction section above. These activities would require coordination similar to that performed during construction where the activities under the Proposed Action would overlap existing road uses. Decommissioning the facility would require removing all new access roads built to serve the facility and removing the aggregates, re-contouring the surface, and seeding until native species become re-established. Oversized loads and slow-moving equipment on roads within the Proposed Action area and along U.S. 60 could result in temporary delays for local motorists. If access roads are left in place at the direction of the BLM, they would continue to provide access for recreational users (e.g., hunters), as well as for livestock management.

Additional Measures to Avoid and/or Minimize Impacts

With the implementation of the BMPs and other design features in Appendix B, no additional measures to minimize impacts to transportation and travel management from the Proposed Action are recommended.

3.4.2.2 Direct and Indirect Impacts of the Alternatives 1 and 2

Construction

During the construction of Alternatives 1 and 2, 47.9 miles of roadway would be necessary including 10.0 miles of existing road and 37.9 miles of new road. The Alternative 1 and 2 area currently contains approximately 21.7 miles of BLM-designated open routes that would be closed intermittently during construction. Alternative 1 is expected to generate the same peak number of construction vehicle trips per day on U.S. 60 and create the same level of impact from construction traffic delays for motorists as the Proposed Action since the same number of turbines would be constructed in both alternatives and the construction period would be the same as well. With six less turbines being constructed for Alternative 2 as compared to the Proposed Action and Alternative 1, Alternative 2 would generate a slightly lower number of construction vehicle trips per day on U.S. 60 and a shorter construction timeframe by up to two weeks. Alternative 2 would also slightly decrease the temporary traffic delays as compared to the Proposed Action and Alternative 1 because there would be fewer construction vehicles, delivery trucks, and workers' vehicles. Potential traffic delays along U.S. 60 from the construction of the acceleration and deceleration lanes on the highway would be the same for all alternatives. These traffic delays along U.S. 60 for all alternatives would result in minor impacts to local traffic during construction activities.

As stated in the Proposed Action, it is not known if there would be an increase in vehicle traffic from the public interested in viewing the wind farm construction, but all vehicle traffic would be limited in the same manner during construction for all alternatives (Borderlands Wind, LLC 2020).

Operation and Maintenance

The exact number of miles of access roads (new or existing that would be used for O&M of the facility) for each of the alternatives is not known since the selection of the final turbine locations would be made during construction to account for specific site conditions. In general, Alternative 1 would provide the same amount of access for dispersed recreation, hunting, and livestock management as the Proposed Action because motorized (and non-motorized) vehicle access would be allowed on new roads established in the BLWP area, except within the fenced areas for the switchyard, substations, and O&M building. Comparatively, the level of access for recreation, hunting, and livestock management would be less in Alternative 2. For all alternatives, the new access roads would provide a local impact from the increase in available travel routes.

Decommissioning

The impacts from decommissioning activities as described for the Proposed Action would be the same or similar for Alternatives 1 and 2. Alternative 2 would have six fewer turbines, so the timeframe to complete the decommissioning would be slightly less compared to the Proposed Action and Alternative 1.

Additional Measures to Avoid and/or Minimize Impacts

With the implementation of the BMPs and other design features in Appendix B, no additional measures to minimize impacts to transportation and travel management from Alternatives 1 and 2 are recommended.

3.4.2.3 Direct and Indirect Impacts of the No Action Alternative

The No Action Alternative would result in no change to the existing transportation and travel network; therefore, no impacts would occur to those resources.

3.5 Cultural Resources

The classification of a "cultural resource" for purposes of the BLWP EIS includes all districts, sites, buildings, structures, objects, and landscapes that have been created by or are associated with humans and are considered to have historical or cultural value. This section of the EIS discusses the presence of cultural resources within the BLWP area and the impacts that the Proposed Action, Alternatives 1 and 2, and the No Action Alternative would have on those resources. The analysis area consists of the area of potential effects (APE), which is a geographic area or areas in which cultural resources may be affected by the BLWP. The APE for the BLWP was defined by the BLM in consultation with the NM State Historic Preservation Office (SHPO) and other consulting parties, including Native American Tribes.

3.5.1. Affected Environment

3.5.1.1 Cultural Setting

Paleoindian Tradition (ca. 10,000–5500 BC)

The Paleoindian tradition dates from roughly 12,200 BC to approximately 5500 BC. In the Southwest, Paleoindian sites are identified by distinctive projectile points that have been recovered in association with the remains of large Pleistocene mammals. Paleoindians were highly mobile and low population densities prevailed. As a result, Paleoindian sites are rare and have low archaeological visibility. Evidence for Paleoindian use in west-central NM near the BLWP area is also rare, although a small number of Paleoindian points have been documented at sites in the Quemado area (Gerow 1994) and a number of Paleoindian sites have been found on the Plains of San Augustin east of the BLWP area (Jenks and Leckman 2009).

Archaic Tradition (ca. 5500 BC–AD 200)

Spanning roughly 6,000 years, the Archaic tradition is generally divided into three distinct periods: the Early (5500–3200 BC), Middle (3200–1800 BC), and Late Archaic (1800 BC–AD 200). Overall, the Archaic period is characterized by three broad demographic and settlement trends: population growth, decreases in residential mobility, and economic intensification. Archaeologically, these trends are evidenced by an increase in the frequency and density of sites, the appearance of structures and storage pits, the increasing regionalization of artifact styles, and the appearance and spread of ground-stone implements and domesticated maize. Artifacts and features associated with subsistence intensification also appear and include pit ovens, knives, scrapers, drills, perforators, and stemmed and notched projectile points.

Archaic populations exhibited a fair amount of diversity across western NM, as local populations adapted to a wide variety of terrain, climates, and resources. A number of Archaic sites have been recorded in the general area between and around Reserve and Quemado, including more than 50 from the Salt River Project (Hogan 1985) north of Quemado, a number from the Largo and Agua Fria drainages (Kayser 1972, 1973), almost a dozen from the Chihuahua Lake and Tularosa Canyon areas (Fowler 1990), and 21 sites in the White Snake Burn Project immediately to the south of the BLWP area (Jenks and Leckman 2009). Many of the known Archaic-period sites in the vicinity of the BLWP area are located on low ridges and date to the Early and Middle Archaic periods.

Formative Period (ca. AD 200–1600)

The Formative period in the Southwest is characterized by an increased reliance on agricultural subsistence, increasing populations, decreasing mobility, and the introduction and adoption of ceramic technology. The BLWP area lies along the intersection of two major Formative-period Southwestern cultural traditions: the Ancestral Puebloan to the north and the Mogollon to the south. In the area near Quemado and surrounding the BLWP area, both Mogollon and Ancestral Puebloan sites have been identified. Mogollon and Ancestral Puebloan sites in this region are typically distinguished primarily by their differences in pottery technology (brown ware ceramics and white or grey ware ceramics, respectively) and architectural features, although other attributes such as site layout, burial practices, and cradleboard technology have also been used to differentiate the two traditions (Jenks and Leckman 2009). Within west-central NM, the Formative period is divided into several periods: Basketmaker II (AD 1–500), Basketmaker III–Pueblo I (AD 500–900), Pueblo II (AD 900–1100), Pueblo III (AD 1100–1300), and Pueblo IV (AD 1300–1600).

Generally speaking, the Basketmaker II period is characterized by pre-ceramic communities of atlatl-using, basket-making horticulturalists (Kidder 1927; Matson 1991). Few sites in the west-central NM have been dated to the Basketmaker II period. A handful of pre-ceramic agricultural sites have been excavated in the region (ZCRE 2000), as well as a few Archaic sites that may include early Basketmaker components (Jenks and Leckman 2009).

The Basketmaker III and Pueblo I periods are distinguished from the Late Archaic and Basketmaker II periods by the rapid proliferation of ceramics and the appearance of black-on-white painted pottery. A small number of Basketmaker III period sites have been investigated in the area around the BLWP and near Quemado (Danson 1957), which lies approximately 25 miles northeast of the BLWP area. Some of these sites contain attributes of both Mogollon and Ancestral Puebloan traditions (Bullard 1962). Pueblo I-period Ancestral Puebloan sites were recorded on Mariana Mesa north of Quemado and Mogollon sites were recorded just to the south of Quemado.

The Pueblo II period saw a shift from pit structures to aboveground habitations and an increased quantity of decorated pottery and corrugated vessels (Jenks and Leckman 2009). Over one hundred Pueblo II-period Ancestral Puebloan/Mogollon sites have been recorded on Mariana Mesa (Danson 1957). Ancestral Puebloan sites have been recorded in large numbers around Quemado (Gerow 1994; Hogan 1985). Several large sites have been identified to the north of the BLWP area, including Cox Ranch Pueblo and Cerro Pomo (Duff 2003; Duff and Robinson 2004). Pueblo II-period Mogollon sites have also been identified east of the BLWP area near Largo Creek (Kayser 1973) and Tularosa Canyon (Fowler 1990), as well as further south near Reserve (Bluhm 1957; Martin and Rinaldo 1950; Martin et al. 1949).

The Pueblo III period is characterized by distinctive, regional ceramic types, increased site size (most having at least 20 masonry rooms), and larger and more elaborate public architecture (Danson 1957; Hogan 1985; Jenks and Leckman 2009). To the north of the BLWP area, large sites such as Goesling Ranch Pueblo are known (Duff 2002). Although several large villages were occupied at the end of Pueblo

III in the Quemado area, all were abandoned by about AD 1350 (Lekson 1996). In the Reserve area to the south, prehistoric populations had entirely abandoned the area by AD 1300. It is likely that the inhabitants of the lands around the BLWP area relocated north to the Zuni and El Morro areas (Gerow 1994).

Historic Tradition

After AD 1350, west-central NM was not used for permanent habitation until AD 1850. Archaeological remains from this 500-year-long period are rare, although oral traditions and a few artifacts tell of the use of the region for resource procurement by several Native American groups (Van West and Greenwald 2005). Historical-period use of the BLWP area and its surrounding vicinity was by Western Pueblo, Navajo, and Apache groups, as well as Hispanic and Anglo ranchers (Jenks and Leckman 2009). Sites associated with Pueblo, Navajo, and Apache groups have been identified in the Quemado area. Such sites often consist of historical-period pottery, petroglyphs, temporary camp sites, hogans, and historic trails associated with travel to the Salt Lake (Van West and Greenwald 2005). Euro-American settlement in the Quemado area did not occur until the late 1800s and the initial settlement was largely by Hispanic sheepherders, which was soon followed by Anglo ranchers (Gerow 2003). By the late 19th century, Hispanic sheepherders and Anglo cattle ranchers began to file for homesteads in the Quemado area (Merlan 2010). Homesteading increased after the passage of the Stock-Raising and Homestead Entry Act of 1916 (Gerow 2003) and more settlers came in the later 1920s and 1930s, many of them farmers escaping the "Dust Bowl" (Vogt 1955). Detailed discussions pertaining to the Hispanic settlement of west-central NM can be found in Wozniak (1985), Kelley (1988), and Gerow (2003).

3.5.1.2 Area of Potential Effects

The APE for physical effects applies to all land ownership types within the BLWP area. The APE for visual effects is defined as areas visible within 5 miles of any project component or to the visual horizon, whichever is closer. The APE for visual effects is based upon the BLM's method of subdividing landscapes for visual resource inventories into three distance zones based upon relative visibility of project components: foreground-middleground, background, and seldom seen. The foreground-middleground extends between 3 and 5 miles from the project area and is where project components might be seen in detail. Outside of 5 miles, the details, texture, and form are no longer as apparent and in some cases, atmospheric conditions can reduce visibility (BLM 1984).

The APE for physical effects consists of the following areas.

- **Turbines**: a minimum 500-foot radius from the center of the turbine footprint, plus areas of disturbance or surface modification (such as erosion control features or fill slopes) extending beyond 500 feet of the turbine footprint.
- **Access roads (new or improved):** a minimum of 300 feet from either side of the centerline of the roadway, plus areas of disturbance or surface modification (such as erosion control features or fill slopes) extending beyond 300 feet of the centerline of the roadway.
- **Access roads (existing with no modification):** a minimum of 100 feet from either side of the centerline of the roadway, plus areas of ground disturbance or surface modification (such as erosion control features or fill slopes) extending beyond 100 feet of the centerline of the roadway.
- **Electrical collection lines:** 200 feet from each side of the centerline of the collector trench unless placed within an area previously surveyed for access roads. Collector trenches placed on the perimeter of the area surveyed for the access road have an additional 100-foot APE extending beyond the perimeter.
- **Associated facilities (including facilities such as laydown yards, substations, and the O&M facility):** 200 feet beyond the perimeter of the footprint of all proposed ground disturbance or surface modifications.

The incorporated buffers account for areas where potential impacts due to increased erosion and unauthorized artifact collection and vandalism might occur.

Within the APE for visual effects, archaeological sites that are significant only for their potential to yield important information generally would not be affected by changes to their visual setting, but setting might be an important element of the historical values of other types of resources, such as historic trails and roads, historic buildings and structures, and traditional cultural properties (TCPs).

3.5.1.3 Identification of Cultural Resources

A Class III systematic pedestrian survey was completed in the BLWP area and covered approximately 9 square miles (5,889.8 acres). Shovel tests were conducted on a site-only basis, as needed to determine the presence or absence of buried cultural deposits or to support or negate recommendations of its eligibility to be listed in the National Register of Historic Places (NRHP). As part of the cultural resources analysis, the Pueblo of Zuni conducted an ethnographic and ethnohistoric study to further investigate traditional Tribal cultural use of the APE, to inventory and evaluate TCPs, and to establish any cultural concerns.[4] The BLM will identify TCPs in the BLWP area through consultation with the Pueblo of Zuni and other tribes.

Archaeological and Historical Resources

The Class III cultural-resources inventory and a pre-field records search resulted in the identification of numerous archaeological and historical sites within the physical-effects APE and within the immediate vicinity of the physical-effects APE. Cultural resources date to the Archaic, Formative, and Historic periods. Resource types include mainly prehistoric artifact scatters, artifact scatters with associated features, and historic roads. Lithic scatters are the most abundant resources and are believed to be associated with lithic procurement, tool production, and subsistence-processing activities of mobile hunter-gatherers during the Archaic period and of agricultural groups in the Formative period. Formative-period resources include sites affiliated with both the Ancestral Puebloan and Mogollon archaeological cultures. Historic sites are rare and reflect sheep-herding and cattle-ranching activities, and roads (including a segment of U.S. 60). Out of the 128 sites in the Class III survey area, the BLM has determined that there are 40 sites eligible for inclusion in the NRHP, 52 have been determined not eligible for inclusion in the NRHP, and the NRHP-eligibility statuses of 36 sites have not been evaluated.

Cultural resources that might be subject to visual impacts to the visual setting were also identified by reviewing records available on the New Mexico Cultural Resources Information System (NMCRIS). These efforts identified 265 cultural resources within the visual-effects APE, and the majority (87 percent) are archaeological prehistoric sites such as artifact scatters and artifact scatters with features that are not sensitive to visual impacts. A review of NMCRIS data indicated that there are 28 sites with historic-age components or of unknown age with structural components; however, in all cases, these structural features consist of remains of log cabins, barns, etc. As such, their NRHP-eligibility or potential NRHP-eligibility lies in their information potential, and they are not sensitive to visual impacts to setting. Six historic-age linear structures were also identified within the visual-effects APE, including segments of historical roads. With the exception of U.S. 60, these resources are dirt roads depicted on historical maps; some are currently abandoned while others remain in-use. The dirt roads are not sensitive to visual impacts to setting, and they have been determined to be not eligible for inclusion in the NRHP. The segment of U.S. 60 identified within the visual-effects APE has been determined to be non-contributing to the road's NRHP-eligibility, and as such, is not sensitive to visual

[4] Ethnography is a branch of anthropology that investigates specific human cultures, and ethnohistory combines ethnography and history.

impacts. In addition to these sites, one TCP is known in the vicinity of the BLWP area, but outside of the visual-effects APE (see discussion below).

An NHPA Section 106 Programmatic Agreement (PA) is being developed by the BLM in consultation with NM SHPO, Tribes, the Proponent, and other consulting parties. The PA will provide guidance on how adverse impacts to NRHP-eligible cultural resources resulting from project construction activities would be avoided, minimized, or mitigated. In order to avoid any direct or indirect impacts on NRHP-eligible cultural resources from project construction, monitoring is recommended if construction activities occur within 100 feet of these sites. The PA stipulates that a Historic Properties Treatment Plan (HPTP) that would include procedures for data recovery, site-avoidance marking, and monitoring would be prepared and implemented prior to construction. The HPTP may also include measures to minimize or mitigate visual impacts, if feasible. Additional supplemental surveys may be required as more detailed construction plans are developed and would be conducted in accordance with the PA.

Traditional Cultural Properties

The BLM is consulting with nine Tribes regarding the identification of cultural resources including TCPs. The Pueblo of Zuni conducted ethnographic research to identify cultural resources that could be impacted by the Proposed Action and Alternatives 1 and 2. The Hopi Tribe has deferred to the Pueblo of Zuni, but requested that the BLM continue to consult and provide them copies of cultural resources reports. The BLM received no other responses from the other Tribes. The BLM will continue to consult with Tribes pursuant to the PA in order to identify TCPs.

3.5.2. Environmental Consequences

This section assesses the impacts on cultural resources that would result from the construction, O&M, and decommissioning of the Proposed Action and Alternatives 1 and 2. Impacts on cultural resources are considered for those resources that are listed in the NRHP, NRHP-eligible, or potentially NRHP-eligible (i.e., those sites for which NRHP-eligibility recommendations or determinations have not been made). For the purpose of this analysis, cultural resources of indeterminate NRHP-eligibility were treated as if they were eligible for inclusion in the NRHP.

The analysis of potential impacts to cultural resources utilized the criteria defined by the regulations for Protection of Historic Properties (36 CFR Part 800), which implement Section 106 of the NHPA. An effect is defined as a direct or indirect alteration to the characteristic(s) of a cultural resource that qualify it for inclusion in the NRHP. Effects are adverse when the alterations diminish the integrity of a cultural resource's location, design, setting, materials, workmanship, feeling, or association. For cultural resources, effects could be the result of ground disturbances; visual or audible disturbances; increased erosion; or changes in public access, traffic patterns, or land use. For this EIS, there would be effects on cultural resources when a site 1) falls within the temporary disturbance footprint[5] of the Proposed Action and Alternatives 1 and 2 and/or 2) lies outside but within a 100-foot buffer of the temporary disturbance footprint of the Proposed Action and Alternatives 1 and 2. There will be effects to cultural resources that are sensitive to visual impacts when the turbines can be seen from a site and the turbines dominate the landscape.

3.5.2.1 Direct and Indirect Impacts of the Proposed Action

Construction

Construction activities that disturb or excavate soils may impact cultural resources by destroying intact archaeological features of deposits. Construction activities that modify the slope of the natural terrain

[5] The temporary disturbance footprint would include the permanent disturbance footprint in the Proposed Action and Alternatives 1 and 2 (Table 2-2).

or compact soils have potential to increase erosion, which might affect the integrity of cultural resources. Because construction activities would comply with regulations regarding the control of stormwater discharges, there is only minor potential for increased soil erosion to damage cultural resources. Such secondary impacts would likely be confined to the immediate vicinity of construction zones.

The Proposed Action would involve the construction of new roads and improvements to existing roads. Studies have demonstrated that, in rural settings, the integrity of archaeological and historical sites near roads is much more likely to have been diminished by unauthorized artifact collection and vandalism than sites in more remote settings (Ahlstrom et al. 1992; Nickens et al. 1981; Simms 1986; Spangler 2006; Spangler et al. 2006). The impacts of unauthorized collection and vandalism vary with distances from roads, but the types and visibility of sites also are important factors. For example, historic structures are more vulnerable than artifact scatters.

The cultural resource sites that would fall within the temporary disturbance footprint (see Table 2-4) and/or the 100-foot-wide buffer of the temporary disturbance footprint of the Proposed Action are listed in Table 3-12. Assuming that all construction activities would be confined to the surveyed portion of the temporary disturbance footprint, construction of the Proposed Action would have impacts on a total of 29 cultural resource sites based upon available information. Some of the sites listed in Table 3-12 may be avoided through the implementation of the PA and HPTP; furthermore, additional sites may be identified that could be impacted by construction resulting from any supplemental cultural resources inventories stipulated by the PA.

Table 3-12. Cultural Resource Sites within Proposed Action Permanent and Temporary Disturbance Areas and 100-foot Temporary Disturbance Buffer

Site	Period	Site Type	NRHP-Eligibility Status	Permanent Disturbance Footprint	Temporary Disturbance Footprint	100-Foot-Wide Buffer of Temporary Disturbance Footprint
LA 130639	Prehistoric	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 179855	Historic	Road	Eligible	-	-	Yes
LA 192148	Prehistoric	Artifact Scatter	Eligible	-	Yes	Yes
LA 192151	Prehistoric	Artifact Scatter	Eligible	-	Yes	Yes
LA 192160	Unknown	Artifact Scatter	Eligible	-	-	Yes
LA 192161	Unknown	Artifact Scatter	Unevaluated	Yes	Yes	-
LA 192164	Unknown	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 192167	Prehistoric	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 192168	Unknown	Artifact Scatter	Eligible	-	Yes	Yes
LA 192173	Prehistoric	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 192176	Prehistoric	Artifact Scatter	Unevaluated	-	Yes	Yes
LA 192178	Unknown	Artifact Scatter	Eligible	-	Yes	Yes
LA 192181	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 192187	Unknown	Artifact Scatter	Unevaluated	-	-	Yes

Site	Period	Site Type	NRHP-Eligibility Status	Permanent Disturbance Footprint	Temporary Disturbance Footprint	100-Foot-Wide Buffer of Temporary Disturbance Footprint
LA 192193	Prehistoric	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 192196	Prehistoric	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 192200	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 192201	Unknown	Artifact Scatter	Unevaluated	-	-	Yes
LA 192205	Unknown	Artifact Scatter	Eligible	-	-	Yes
LA 192206	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 192209	Prehistoric and Historic	Artifact Scatter and Feature	Unevaluated	Yes	Yes	Yes
LA 192211	Prehistoric	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 192214	Unknown	Artifact Scatter	Unevaluated	-	Yes	Yes
LA 192218	Prehistoric	Artifact Scatter and Feature	Unevaluated	-	Yes	Yes
LA 192222	Unknown	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 192223	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 192226	Unknown	Artifact Scatter	Eligible	Yes	Yes	-
LA 192228	Prehistoric	Artifact Scatter and Features	Eligible	-	Yes	Yes
LA 192234	Prehistoric	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 192235	Prehistoric and Historic	Artifact Scatter	Eligible	-	-	Yes
LA 192236	Prehistoric	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 192238	Prehistoric	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 192244	Unknown	Artifact Scatter	Unevaluated	-	Yes	Yes
LA 192246	Unknown	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 192314	Unknown	Artifact Scatter	Unevaluated	-	-	Yes
LA 192315	Prehistoric	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 55990	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 66745	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 66750	Unknown	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 66751	Prehistoric	Artifact Scatter	Eligible	-	Yes	Yes
LA 66752	Prehistoric	Artifact Scatter	Eligible	Yes	Yes	Yes

Site	Period	Site Type	NRHP-Eligibility Status	Permanent Disturbance Footprint	Temporary Disturbance Footprint	100-Foot-Wide Buffer of Temporary Disturbance Footprint
LA 71685	Prehistoric	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 89082	Prehistoric	Artifact Scatter	Eligible	-	-	Yes

Table Abbreviations: NRHP = National Register of Historic Places

In addition to the 29 cultural resource sites that lie within the temporary disturbance footprint, 17 cultural resource sites are located outside but within 100 feet of the temporary disturbance footprint of the Proposed Action, and these sites could potentially be subject to indirect impacts (Table 3-12). Indirect impacts from project construction could include increased alluvial erosion at NRHP-eligible sites. These effects would be minor and short-term. Once collector-line areas have been reseeded and vegetation re-established, alluvial erosion would be considerably less; therefore, no further management is recommended. In addition, increased unauthorized visitation could indirectly affect NRHP-eligible sites as a result of the increased access to the area. Most of the NRHP-eligible sites known in the area are artifact scatters, which are less visible and less likely to attract the attention of unauthorized collectors or vandals.

The Zuni Salt Lake is not within the APE for visual effects; however, given its status as a TCP, and based upon concerns raised by the Pueblo of Zuni, potential visual effects to this important cultural resource were evaluated (see Section 3.9 Visual Resources). It was determined that the Proposed Action would not be visible from the Zuni Salt Lake. However, a portion of the blades from approximately 26 turbines would be visible from the top of the landform surrounding the Zuni Salt Lake. Due to distance (approximately 21 miles) and atmospheric conditions, the portion of the turbines visible would be visually subordinate in the landscape and would create low contrast with elements and features in the landscape. The Pueblo of Zuni has also provided two locations along a pilgrimage trail to the Zuni Salt Lake that are significant to the overall eligibility of the TCP. The first location along the pilgrimage trail is 30.3 miles from the nearest proposed turbine location in the Proposed Action. A portion of the blades of the turbines would be visible. A casual observer at this location would not likely notice the turbines because of the expansive views, variable atmospheric conditions, time of day, and variety of the landforms in the landscape. The second location along the pilgrimage trail is 20.6 miles from the nearest turbine location in the Proposed Action. No turbines would be visible from this location, because existing landforms would block any view of the turbines. No other NRHP-eligible cultural resources that are sensitive to potential visual impacts were identified within the APE for visual effects.

Operation and Maintenance and Decommissioning

Ground disturbing activities associated with O&M and decommissioning of the Proposed Action would be confined to areas in the temporary disturbance footprint created during construction of the BLWP. No additional impacts on cultural resources are expected from O&M or decommissioning activities.

Additional Measures to Avoid and/or Minimize Impacts

Adverse impacts to NRHP-eligible cultural resources resulting from construction of the Proposed Action would be mitigated in accordance with the project NHPA Section 106 PA. To avoid any direct or indirect impacts on these sites from project construction, monitoring is recommended if construction activities occur within 100 feet of these sites. The PA stipulates that an HPTP, which would include procedures for data recovery, site avoidance marking, and monitoring, would be prepared and implemented prior to construction. The HPTP may also include measures to minimize or mitigate visual impacts, if feasible. Additional supplemental surveys may be required as more detailed construction plans are developed and would be conducted in accordance with the PA.

3.5.2.2 Direct and Indirect Impacts of Alternatives 1 and 2

Construction

Alternatives 1 and 2 were developed, in part, to minimize impacts to cultural resources. The types of direct and indirect impacts on cultural resource sites associated with Alternatives 1 and 2 would be similar to the impacts from the Proposed Action although the number of potential sites affected would be different for each alternative. The cultural resource sites listed in Table 3-13 are those that may be impacted by Alternatives 1 and 2 based upon current information. Some of the sites listed in Table 3-13 may be avoided through the implementation of the PA and HPTP; furthermore, additional sites may be identified that could be impacted by construction resulting from any supplemental cultural resources inventories stipulated by the PA. Based upon current information, a total of six cultural resource sites lie within the temporary disturbance footprint of Alternatives 1 and 2. In addition, 22 cultural resource sites are located outside but within 100 feet of the temporary disturbance footprints of Alternatives 1 and 2 (Table 3-13). Indirect effects from construction of Alternatives 1 and 2 would be the same as those indirect effects resulting from the Proposed Action. Visual impacts to the Zuni Salt Lake and the two locations on the pilgrimage trail would be the same as the impacts associated with the Proposed Action.

Table 3-13. Cultural Resource Sites within Alternatives 1 and 2 Permanent and Temporary Disturbance Areas and 100-foot Temporary Disturbance Buffer

Site	Period	Site Type	NRHP-Eligibility Status	Permanent Disturbance Footprint	Temporary Disturbance Footprint	100-Foot-Wide Buffer of Temporary Disturbance Footprint
LA 130639	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 179855	Historic	Road	Eligible	-	-	Yes
LA 192151	Prehistoric	Artifact Scatter	Eligible	-	Yes	Yes
LA 192161	Unknown	Artifact Scatter	Unevaluated	-	-	Yes
LA 192167	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 192176	Prehistoric	Artifact Scatter	Unevaluated	-	-	Yes
LA 192203	Prehistoric	Artifact Scatter	Eligible	-	Yes	Yes
LA 192206	Prehistoric	Artifact Scatter	Eligible	-	Yes	Yes
LA 192209	Prehistoric and Historic	Artifact Scatter and Feature	Unevaluated	-	-	Yes
LA 192218	Prehistoric	Artifact Scatter and Feature	Unevaluated	-	-	Yes
LA 192222	Unknown	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 192223	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 192228	Prehistoric	Artifact Scatter and Features	Eligible	-	-	Yes
LA 192234	Prehistoric	Artifact Scatter	Unevaluated	-	-	Yes
LA 192235	Prehistoric and Historic	Artifact Scatter	Eligible	-	-	Yes

Site	Period	Site Type	NRHP-Eligibility Status	Permanent Disturbance Footprint	Temporary Disturbance Footprint	100-Foot-Wide Buffer of Temporary Disturbance Footprint
LA 192236	Prehistoric	Artifact Scatter	Eligible	Yes	Yes	Yes
LA 192238	Prehistoric	Artifact Scatter	Unevaluated	Yes	Yes	Yes
LA 192246	Unknown	Artifact Scatter	Unevaluated	-	-	Yes
LA 192314	Unknown	Artifact Scatter	Unevaluated	-	-	Yes
LA 55990	Prehistoric	Artifact Scatter	Eligible	-	-	Yes
LA 66746	Unknown	Artifact Scatter	Eligible	-	-	Yes
LA 89082	Prehistoric	Artifact Scatter	Eligible	-	-	Yes

Table Abbreviations: NRHP = National Register of Historic Places

Operation and Maintenance and Decommissioning

Ground disturbing activities associated with O&M and decommissioning activities associated with Alternatives 1 or 2 would be confined to areas in the temporary disturbance footprint created during construction. No additional impacts on NRHP-eligible cultural resources are expected from O&M or decommissioning activities.

Additional Measures to Avoid and/or Minimize Impacts

Adverse impacts to NRHP-eligible cultural resources resulting from construction of Alternatives 1 and 2 would be mitigated in accordance with the project NHPA Section 106 PA. To avoid any direct or indirect impacts on these sites from project construction, monitoring is recommended if construction activities occur within 100 feet of these sites. The PA stipulates that an HPTP, which would include procedures for data recovery, site avoidance marking, and monitoring, be prepared and implemented prior to construction. The HPTP may also include measures to minimize or mitigate visual impacts, if feasible. Additional supplemental surveys may be required as more detailed construction plans are developed and would be conducted in accordance with the PA.

3.5.2.3 Direct and Indirect Impacts of the No Action Alternative

Under the No Action Alternative, the BLWP would not be constructed, and no impacts on cultural resources within the BLWP APE would occur.

3.6 Federally Listed Species

This section identifies federally listed species that have the potential to occur within the BLWP area and assesses the potential impacts on them from the Proposed Action, Alternatives 1 and 2, and the No Action Alternative. The Endangered Species Act of 1973 (ESA), as amended, protects listed species and their habitat by prohibiting "take." Section 7 of the ESA requires Federal agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of threatened or endangered species, or result in the destruction or adverse modification of their critical habitats.

3.6.1. Affected Environment

An official list of threatened, endangered, and proposed species and critical habitats that may occur within the Proposed Action area was obtained from the USFWS on January 21, 2020. A total of 13 species were included on the list. Table D-1 in Appendix D provides information on the 13 species'

habitat associations and their potential to occur within the BLWP area. There is no critical habitat that has been designated or proposed for any federally listed species within the Proposed Action or Alternatives 1 and 2 areas.

The potential occurrence of federally listed species in the BLWP area was discussed during a meeting with the USFWS on March 7, 2018, and it was determined that the Mexican spotted owl and Mexican wolf could potentially occur within the BLWP area and be affected by the BLWP. There is no suitable habitat present in the BLWP area for the remaining 11 species that were included on the USFWS list, so these species were not carried forward for further analysis. A detailed description of both species and their habitat requirements is provided in the Biological Assessment for this project (BLM 2020).

3.6.1.1 Mexican Spotted Owl (Strix occidentalis lucida)

The Mexican spotted owl was listed as endangered in 1995 and critical habitat was designated in 2004; a revised recovery plan was finalized in 2012 (USFWS 2012). In total, 2,089,523 acres of critical habitat were designated in 20 critical habitat units throughout NM (USFWS 2004). The nearest critical habitat unit is approximately 3.5 miles southwest of the Proposed Action area and 5.9 miles southwest of the Alternatives 1 and 2 area.

Mexican spotted owls are characterized by patchy distribution in isolated mountain ranges and canyon systems across southern Utah, Colorado, AZ, NM, western Texas, and northern Mexico. The forested mountains and canyonlands they inhabit throughout their range are broken into ten Ecological Management Units (EMUs) in the United States and Mexico (USFWS 2012). The BLWP area is located within the Upper Gila Mountains EMU. The Mexican spotted owl is highly selective in its nesting and roosting habitats, which are comprised primarily of mixed conifer forests. Migrating/wintering and dispersing Mexican spotted owls have been documented in other habitats, including sparse ponderosa pine and pinyon-juniper woodlands (USFWS 1995); topography may be an important additional component of the habitats that are used by Mexican spotted owls during dispersal.

The Proposed Action and Alternatives 1 and 2 areas do not contain closed-canopy forests with a high percentage of ground litter and woody debris, which are characteristic of preferred Mexican spotted owl foraging, roosting, and nesting habitat (USFWS 1995). Data provided by Natural Heritage New Mexico (NHNM) indicates that there are documented occurrences of Mexican spotted owl on Gila National Forest lands to the south of the BLWP area (NHNM 2017), which corresponds with the nearest suitable habitat for the species. There are Mexican spotted owl Protected Activity Centers (PACs) and designated critical habitat on the Gila National Forest; however, there are no PACs or areas of designated critical habitat within the Proposed Action or Alternatives 1 and 2 areas.

The Proposed Action and Alternatives 1 and 2 areas do not overlap with any known Mexican spotted owl home ranges or any hypothetical home range centered on the nearest sight records. Mexican spotted owls are not expected to occur within the Proposed Action or Alternatives 1 and 2 areas due to the lack of their preferred foraging, roosting, and nesting habitat. While migrating/wintering or dispersing, Mexican spotted owls are occasionally found in pinyon-juniper habitats and could occur infrequently and for short periods of time within the Proposed Action or Alternatives 1 and 2 areas, the abundant and widespread pinyon-juniper woodlands in the region are not limiting habitats for migrating/wintering or dispersing Mexican spotted owls. Any Mexican spotted owl occurrence in the Proposed Action or Alternatives 1 and 2 areas would be sporadic at most.

3.6.1.2 Mexican Wolf (Canis lupus baileyi)

The Mexican wolf was listed as endangered in 1976 and the USFWS has recently revised the recovery plan for the species (USFWS 2017); no critical habitat has been proposed or designated. The Mexican

wolf is the rarest, smallest, southernmost, and most genetically distinct of the five subspecies of gray wolves that once inhabited most of North America. The subspecies was reintroduced into AZ and NM under a special designation that established a "nonessential experimental population" in this area. The special designation gives agencies more flexibility in managing wolf populations and allows them to take action when there are conflicts with human activities such as ranching.

Under the reintroduction program, captive-bred Mexican wolves have been released within the Mexican Wolf Experimental Population Area (MWEPA). The BLWP area is located within the MWEPA. As of February 2019, the current documented wild population of Mexican wolves in the United States includes 64 individuals in eastern AZ and 67 in western NM based on ground and aerial surveys (USFWS 2019a). The Proposed Action area would comprise 0.39 percent of the current occupied range of the Mexican wolf; the Alternatives 1 and 2 area would comprise 0.17 percent of the species' current occupied range (USFWS 2019b).

Suitable habitat for the Mexican wolf has few roads and minimal human development or sources of anthropogenic disturbance given the species' tendency to avoid these elements. Mexican wolves are associated with montane woodlands characterized by sparsely to densely forested mountainous terrain consisting of evergreen oak and juniper woodlands to higher elevation pine forests, mixed conifer forests, and adjacent grasslands at mid- to high elevations where ungulate prey are abundant. The species reportedly avoids desert scrub and semi-desert grasslands that provide little cover, food, or water. The primary large prey within the BLWP area are elk and deer. Cattle, which occur throughout the BLWP area, are also targeted as prey on occasion.

The USFWS, working jointly with other State and Federal agencies, as well as the White Mountain Apache Tribe, has been collecting data, monitoring, and managing the free-ranging Mexican wolf population in AZ and NM. The Mangas wolf pack is known to occupy Gila National Forest lands south of the Proposed Action and Alternatives 1 and 2 areas based on telemetry data. Consistent with the wide-ranging movements of this species, there are a number of other packs that have been recently documented within 30 miles of the Proposed Action and Alternatives 1 and 2 areas (e.g., San Mateo, Leon, Iron Creek, Elkhorn, Hoodoo, Saffel, Single, Sierra Blanca, Frieborn, Prime Canyon, Squirrel Springs, and Copper Creek). Mexican wolves typically prefer to locate their home ranges in forested areas, near water, and far away from sources of human disturbance such as roads and farms. Passoni (2015) also found that most wolf denning and rendezvous sites were very close to or inside forested areas. Several observations of wolves in the Proposed Action and Alternatives 1 and 2 areas have been reported by a biologist conducting wildlife surveys, hunters, and a local rancher (SWCA Environmental Consultants 2018a). The USFWS considers the Proposed Action and Alternatives 1 and 2 areas to be within occupied habitat for the Mexican wolf, though wolves are not known to concentrate their activities in this area and there are no known den sites in the area (Susan Pruitt, personal communication, 2018). Currently, there are high levels of wolf use and livestock depredation in the neighboring grazing allotments to the south of the Proposed Action and Alternatives 1 and 2 areas (Carlos Madril, personal communication, 2019).

3.6.2. Environmental Consequences

3.6.2.1 Direct and Indirect Impacts of the Proposed Action

Mexican Spotted Owl (*Strix occidentalis lucida*)

Construction

The Proposed Action would not impact Mexican spotted owl PACs or areas of designated critical habitat, directly or indirectly, during construction or any other phase of the project. The incidental occurrence of Mexican spotted owls in the Proposed Action area cannot be ruled out; however, the

overall risk of direct impacts on the Mexican spotted owl from wind energy developments is low (USFWS 2005). Noise and visual disturbance from heavy equipment use and surface disturbance during construction of the BLWP would have a negligible impact on Mexican spotted owls due to the availability of extensive pinyon-juniper habitats in the surrounding area.

Operation and Maintenance
As noted in the USFWS's *Biological Opinion for Likely Effects of BLM's Proposed Wind Energy Development Program* (USFWS 2005), the risk of Mexican spotted owls colliding with wind turbines is extremely low because turbines are typically located outside of suitable nesting and roosting habitat. Direct effects on Mexican spotted owls from the Proposed Action are not anticipated during O&M of the proposed wind facility due to the lack of suitable Mexican spotted owl habitat in the Proposed Action area. Indirect effects on Mexican spotted owls from noise, human activity, and traffic are also not expected due to the distance to areas of suitable habitat. Although wildland fire has been identified as one of the primary threats to the species, the BLWP is not anticipated to contribute to the threat of large-scale wildfires because implementation of the *Emergency Preparedness and Response Plan* and *Fire Protection and Prevention Plan* in the BLWP POD provides fire prevention and control measures during construction, O&M, and decommissioning of the BLWP (Borderlands Wind, LLC 2020).

Decommissioning
Potential impacts during decommissioning would be similar to those described for the construction phase, though to a lesser extent. After reclamation of disturbed areas, vegetation would be restored to pre-construction conditions over the long-term. Human activity in the Proposed Action area would decrease after decommissioning and the removal of wind energy generating facilities, although activities such as hunting and ranching would continue.

Effects Determination for the Mexican Spotted Owl
The Proposed Action would not impact any Mexican spotted owl PACs or result in any loss of suitable nesting or foraging habitat. Additionally, the Proposed Action would not affect the ability of Mexican spotted owls to move through the Proposed Action area (unlikely as it may be to occur), or result in reduced prey availability. The Proposed Action could result in localized negligible impacts on Mexican spotted owls and would not have regional impacts on the Mexican spotted owl. The more detailed analysis presented in the Biological Assessment has led to the determination that the Proposed Action "may affect, but is not likely to adversely affect" the Mexican spotted owl.

Additional Measures to Avoid and/or Minimize Impacts
With the implementation of the BMPs and other design features in Appendix B, no additional measures to avoid and/or minimize impacts on Mexican spotted owls from the Proposed Action are recommended.

Mexican Wolf (*Canis lupus baileyi*)

Construction
Construction of the Proposed Action would result in minor habitat loss, degradation, and fragmentation for the Mexican wolf because wolves are not known to concentrate their activities in this area and there are no known den sites in the area. Construction activities would result in increased noise, human disturbance, and vehicle traffic, which could discourage adult or dispersing juvenile wolves from traveling through or foraging within the Proposed Action area. There would be localized short-term, minor impacts on Mexican wolves during the construction of the Proposed Action and no regional impacts because of the absence of breeding habitat, the relatively short construction time frame (less than one year), and the infrequent presence of the species.

Operation and Maintenance
Similar to construction impacts, noise and disturbance associated with human activities and vehicle traffic would occur during O&M of the proposed wind facility, but to a lesser extent. The approximately 41.3 miles of new access roads within the Proposed Action area would give the public more access to the area, which would increase the potential for disturbance to Mexican wolves that may travel in the vicinity of the Proposed Action area. The Proposed Action would have minor localized impacts and no regional impacts on the Mexican wolf during the O&M phase due to the minimal use of the area by this species.

Decommissioning
Short-term localized impacts during decommissioning would be similar to those from construction because of the increase in human presence, elevated noise levels, and additional vehicles. Human activity in the Proposed Action area would decrease after decommissioning with the removal of wind energy generating facilities, although activities such as hunting and ranching would continue. Reclamation of access roads would decrease the potential for disturbance to the Mexican wolf after decommissioning of the wind facility.

Effects Determination for the Mexican Wolf
The Proposed Action would result in localized minor impacts on the Mexican wolf and would not have regional impacts on this federally listed species. The more detailed analysis presented in the Biological Assessment has led to the determination that the Proposed Action "may affect, but is not likely to adversely affect" the Mexican wolf. Mexican wolves that may occur in the Proposed Action area are part of a nonessential experimental population as characterized under Section 10(j) of the ESA, and in this context the Mexican wolf is considered a proposed threatened species for the purposes of ESA consultation. Therefore, the determination with regard to the 10(j) population is that the Proposed Action is not likely to jeopardize the continued existence of the Mexican wolf.

Additional Measures to Avoid and/or Minimize Impacts
With the implementation of the BMPs and other design features in Appendix B, no additional measures to avoid and/or minimize impacts on Mexican wolves from the Proposed Action are recommended.

3.6.2.2 Direct and Indirect Impacts of Alternatives 1 and 2

Mexican Spotted Owl (*Strix occidentalis lucida*)
The potential impacts of Alternatives 1 and 2 on Mexican spotted owls would be similar to the Proposed Action. Shifting the number/locations of wind turbines or other project infrastructure within the Alternatives 1 and 2 area, as proposed under Alternatives 1 and 2, would not substantially add to or reduce the potential impacts on Mexican spotted owls from construction, O&M, or decommissioning of the BLWP as compared to the Proposed Action.

Additional Measures to Avoid and/or Minimize Impacts
With the implementation of the BMPs and other design features in Appendix B, no additional measures to avoid and/or minimize impacts on Mexican spotted owls are recommended for Alternatives 1 or 2.

Mexican Wolf (*Canis lupus baileyi*)
The potential impacts of Alternatives 1 and 2 on the Mexican wolf would be similar to the Proposed Action. Shifting the number/locations of wind turbines or other project infrastructure within the Alternatives 1 and 2 area would not substantially add to or reduce the potential impacts on the Mexican wolf from construction, O&M, or decommissioning of the BLWP as compared to the Proposed Action.

Additional Measures to Avoid and/or Minimize Impacts
With the implementation of the BMPs and other design features in Appendix B, no additional measures to avoid and/or minimize impacts on Mexican wolves are recommended for Alternatives 1 or 2.

3.6.2.3 Direct and Indirect Impacts of the No Action Alternative

Under the No Action Alternative, no new impacts on the Mexican spotted owl or Mexican wolf would occur within the BLWP area. Existing impacts on federally listed species within the BLWP area are primarily associated with relatively low levels of human disturbance (e.g., ranching, hunting, and vehicle/OHV use) that could result in localized negligible impacts related to the noise and visual disturbance to Mexican spotted owls and Mexican wolves that may move through the area on occasion. The No Action Alternative would not result in regional impacts on either federally listed species because of the relatively low levels of human disturbance in the BLWP area.

3.7 Special Status Plant and Wildlife Species

This section discusses effects on special status species (excluding federally listed threatened and endangered species, which are addressed in Section 3.6 Federally Listed Species) that may occur with the implementation of the Proposed Action, Alternatives 1 and 2, and the No Action Alternative. The term special status species as used in this EIS includes BLM sensitive species along with other species of concern such as State-listed species and USFWS's Birds of Conservation Concern. Special status species that are known to occur or could potentially occur in the BLWP area include:

- BLM sensitive species
- USFS sensitive species
- Birds of Conservation Concern (BCCs)
- NM State-listed threatened and endangered species
- NM rare plants
- Species of Greatest Conservation Need (SGCN) in NM
- Species of Economic and Recreational Importance (SERI) in NM

Potential impacts on migratory birds also are discussed in detail in this section; however, impacts specifically on bald and golden eagles are discussed in Section 3.8 Bald and Golden Eagles. In addition to the consideration of impacts on migratory birds in general, the USFWS recommends that agencies evaluate the effects of their actions on BCCs (USFWS 2008). The USFWS's designation of BCCs is specific to each Bird Conservation Region (BCR); the BLWP area is located in two BCRs (BCR 16: Southern Rockies and Colorado Plateau, and BCR 34: Sierra Madre Occidental). The information presented in this section was compiled from a literature review, agency coordination, and resource reports provided by the Proponent.

3.7.1. Affected Environment

There are 57 special status species (8 plant, 11 terrestrial wildlife, and 38 bat and bird species) that are known to occur or could potentially occur within the BLWP area (Table 3-14 through Table 3-16). For additional information on each of the species listed below, as well as other special status species that were initially considered but determined unlikely to occur in the BLWP area, see Table E-1 in Appendix E.

Table 3-14. BLM Sensitive Species and Other Species of Concern—Plants

Common Name *Scientific Name*	**Habitat Association**	**Status**
Apache milkvetch *Astragalus nutriosensis*	Volcanic silty clay soils in grasslands and pinyon-juniper woodlands	NMRP SS

Common Name *Scientific Name*	Habitat Association	Status
Bog alkaligrass *Puccinellia parishii*	Alkaline springs, seeps, and seasonally wet areas such as playas	BLM S, NM-E, NMRP E
Goodding's bladderpod *Lesquerella gooddingii*	Open pinyon-juniper woodlands and ponderosa pine forests	NMRP SS
Groundcover milkvetch *Astragalus humistratus* var. *crispulus*	Sandy, volcanic soils in pinyon juniper woodlands and ponderosa pine forest	USFS SS, NMRP SS
Mogollon Mountain draba *Draba mogollonica*	Volcanic soils on moist mountain slopes in oak-pine woodlands and mixed conifer forests	NMRP SS
White Mountain clover *Trifolium neurophyllum*	Wet meadows, springs, and riparian corridors in conifer forests	NMRP SS
Wright's catchfly *Silene wrightii*	Cliffs and rocky outcrops in ponderosa pine forests	NMRP SS
Zuni milkvetch *Astragalus accumbens;* syn: *Astragalus missouriensis* var. *accumbens*	Alkaline soils in pinyon-juniper woodlands	NMRP SS

Table Abbreviations: BLM S = BLM sensitive species; E= Endangered; NM-E = New Mexico Endangered - Endangered species are those in jeopardy of extinction or extirpation from the state; NMRP E = New Mexico Rare Plant Endangered; NMRP SS = New Mexico Rare Plant Strategy Species; USFS SS = USFS sensitive species.

Table 3-15. BLM Sensitive Species and Other Species of Concern—Terrestrial Wildlife Species

Common Name *Scientific Name*	Species Type	Habitat Association	Status
Arizona montane vole *Microtus montanus arizonensis*	Mammal	Wet meadows, playas, seeps, springs, and drainages with tall grass, sedges, or cattails	USFS SS, NM-E, SGCN
Black bear *Ursus americanus*	Mammal	Forests and woodlands	SERI
Cougar *Puma concolor*	Mammal	Mountainous areas with broken terrain and steep slopes in deserts, woodlands, and forests	SERI
Elk *Cervus canadaensis*	Mammal	Forests, woodlands, and grasslands	SERI
Gunnison's prairie dog *Cynomys gunnisoni*	Mammal	Grasslands and shrublands	BLM S, USFS SS, SGCN
Mule deer *Odocoileus hemionus*	Mammal	Wide range of habitats from desert scrub up to montane forests	SERI
Arizona tree frog *Hyla wrightorum*	Amphibian	Near pools and streams in ponderosa pine and mixed conifer forests	SGCN
Arizona black rattlesnake *Crotalus cerberus*	Reptile	Open, rocky slopes and rocky drainages with water in a wide range of habitats including pinyon-juniper woodlands and ponderosa pine forests	SGCN
Sonora mud turtle *Kinosternon sonoriense*	Reptile	Aquatic habitats including streams, rivers, ponds, stock tanks, and ditches in a range of habitats including desert scrub, grasslands, and pinyon-juniper woodlands	SGCN

Common Name *Scientific Name*	Species Type	Habitat Association	Status
Monarch butterfly Danaus plexippus plexippus	Insect	Wide range of habitats; presence of suitable host plants (milkweeds) required for breeding.	BLM S
Clam shrimp *Elumnadia follisimilis*	Crustacean	Potentially in a wide range of aquatic habitats, has been documented in stock tanks and ponds in NM.	BLM S, SGCN

Table Abbreviations: NM-E = New Mexico Endangered - Endangered species are those in jeopardy of extinction or extirpation from the state; SERI=Species of Economic and Recreational Importance; SGCN = Species of Greatest Conservation Need - species that are indicative of the diversity and health of the state's wildlife; USFS SS = USFS sensitive species.

Table 3-16. BLM Sensitive Species and Other Species of Concern—Bird and Bat Species

Common Name *Scientific Name*	Species Type	Habitat Association	Status
Spotted bat *Euderma maculatum*	Bat	Desert scrub up to ponderosa pine and mixed conifer forests; roosts in rock crevices, cliff faces, caves, and buildings	BLM S, NM-T, SGCN
Townsend's big-eared bat *Corynorhinus townsendii*	Bat	Desert scrub up to ponderosa pine and mixed conifer forests; roosts in caves, mines, buildings, and tree cavities	BLM S, USFS SS, SGCN
Bendire's thrasher *Toxostoma bendirei*	Bird	Desert scrub, shrubland, grassland, and pinyon-juniper woodland	BLM S, BCC (BCR 16, 34), SGCN
Black-chinned sparrow *Spizella atrogularis*	Bird	Shrublands and chaparral	BCC (BCR 34), SGCN
Black-throated gray warbler *Setophaga nigrescens*	Bird	Pine-oak woodlands, pinyon-juniper woodlands, and ponderosa pine forests	BCC (BCR 34), SGCN
Brewer's sparrow *Spizella breweri*	Bird	Desert scrub, shrublands, pinyon-juniper woodlands, and ponderosa pine forest	BCC (BCR 16)
Burrowing owl *Athene cunicularia*	Bird	Sparsely vegetated grassland, steppe, and desert biomes	BLM S, BCC (BCR 16), USFS SS, SGCN
Canyon towhee *Melozone fusca*	Bird	Desert grasslands, pinyon-juniper woodlands, and pine-oak forests	BCC (BCR 34)
Cassin's finch *Haemorhous cassinii*	Bird	Pinyon-juniper woodlands, ponderosa pine forests, and mixed conifer forests	BCC (BCR 16), SGCN
Cassin's sparrow *Peucaea cassinii*	Bird	Grasslands	SGCN
Chestnut-collared longspur *Calcarius ornatus*	Bird	Grasslands	BLM S, BCC (BCR 16, 34), SGCN
Clark's nutcracker *Nucifraga columbiana*	Bird	Pinyon-juniper woodlands, ponderosa pine forests, and mixed conifer forests	SGCN
Common nighthawk *Chordeiles minor*	Bird	Grasslands, shrublands, and open woodlands	SGCN
Eared grebe *Podiceps nigricollis*	Bird	Shallow lakes and ponds	SGCN
Elf owl *Micrathene whitneyi*	Bird	Desert woodlands, oak woodlands, pinyon-juniper woodlands, and riparian forest	BCC (BCR 34), SGCN
Evening grosbeak *Coccothraustes vespertinus*	Bird	Pine-oak woodlands, pinyon-juniper woodlands, ponderosa pine forests, and mixed conifer forests	SGCN

Common Name *Scientific Name*	Species Type	Habitat Association	Status
Ferruginous hawk *Buteo regalis*	Bird	Grasslands, shrublands, pinyon-juniper woodlands, and sparse riparian forests	BCC (BCR 16)
Flammulated owl *Psiloscops flammeolus*	Bird	Ponderosa pine forests	BCC (BCR 16, 34), SGCN
Grace's warbler *Setophaga graciae*	Bird	Pine-oak, ponderosa pine, and mixed conifer forests	BCC (BCR 16, 34), SGCN
Gray vireo *Vireo vicinior*	Bird	Chaparral and pinyon-juniper woodlands	BCC (BCR 16, 34), USFS SS, NM-T, SGCN
Juniper titmouse *Baeolophus ridgwayi*	Bird	Pinyon-juniper woodlands	BCC (BCR 16), SGCN
Lark bunting *Calamospiza melanocorys*	Bird	Grasslands and shrublands	BCC (BCR 34)
Lewis's woodpecker *Melanerpes lewis*	Bird	Pinyon-juniper woodlands, ponderosa pine forests, and riparian forests	BCC (BCR 16, 34), SGCN
Loggerhead shrike *Lanius ludovicianus*	Bird	Desert scrub, shrubland, woodlands and riparian areas	SGCN
Long-billed curlew *Numenius americanus*	Bird	Short-grass prairie and wetlands	BCC (BCR 16), SGCN
McCown's longspur *Calcarius mccownii*	Bird	Short-grass plains and prairies, agricultural fields, and desert scrub	BLM S, SGCN
Mexican whip-poor-will *Antrostomus arizonae*	Bird	Pine-oak, pine-juniper-oak, and ponderosa pine woodlands	BLM S, SGCN
Mountain bluebird *Sialia currucoides*	Bird	Grasslands, shrublands, and pinyon-juniper woodlands	SGCN
Mountain plover *Charadrius montanus*	Bird	Shortgrass prairie and fallow or recently tilled agricultural fields	BCC (BCR 16, 34), SGCN
Olive-sided flycatcher *Contopus cooperi*	Bird	Open conifer forests	SGCN
Peregrine falcon *Falco peregrinus*	Bird	Cliffs and open landscapes	BCC (BCR 16, 34), USFS SS, NM-T, SGCN
Pinyon jay *Gymnorhinus cyanocephalus*	Bird	Pinyon-juniper woodlands	BLM S, BCC (BCR 16, 34), SGCN
Pygmy nuthatch *Sitta pygmaea*	Bird	Ponderosa pine and mixed conifer forests	SGCN
Red-faced warbler *Cardellina rubrifrons*	Bird	Pine-oak, ponderosa pine, and mixed conifer forests	BCC (BCR 34), SGCN
Vesper sparrow *Pooecetes gramineus*	Bird	Grasslands, shrublands, and woodlands	SGCN
Virginia's warbler *Oreothlypis virginiae*	Bird	Pinyon-juniper and oak woodlands	BLM S, SGCN

Common Name *Scientific Name*	Species Type	Habitat Association	Status
Western bluebird *Sialia mexicana*	Bird	Grasslands, pinyon-juniper woodlands, ponderosa pine forests, and mixed conifer forests	SGCN
Williamson's sapsucker *Sphyrapicus thyroideus*	Bird	Pine-oak woodlands, pinyon-juniper woodlands, ponderosa pine forests, mixed conifer forests, and riparian forests	SGCN

Table Abbreviations: BCC = Birds of Conservation Concern; BCR 16 = Bird Conservation Region 16 Southern Rockies/Colorado Plateau; BCR 34 = Bird Conservation Region 34 Sierra Madre Occidental; BLM S = BLM sensitive species; NM-T = New Mexico Threatened - Threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of their range in the state; SERI = Species of Economic and Recreational Importance; SGCN = Species of Greatest Conservation Need - species that are indicative of the diversity and health of the state's wildlife; USFS SS = USFS sensitive species.

3.7.1.1 Ecological setting

The BLWP area is located within the AZ–NM Mountains Ecoregion, which is a rugged landscape that is dominated by forested mountains and plateaus, but also includes grasslands, shrublands, and riparian forests (Bell et al. 1999). The topography in the BLWP area is primarily characterized by hills and rolling plains; however, a narrow, linear escarpment, rocky outcrops, and a depression/crater are located in the northeastern portion of the site.

Vegetation in the BLWP area consists of sparsely vegetated short-grass grassland interspersed with rock outcrops in the northeastern portion, which transitions to semi-desert grassland/shrub steppe/juniper savanna with scattered and locally dense patches of pinyon-juniper woodland in the central and southern portions. Ponderosa pine trees are intermixed with the pinyon-juniper and grassland habitat in the southern portion of the BLWP area. Ponderosa pine forest occurs on the mountainous terrain to the south of the BLWP area within the Gila National Forest. Dominant plant species within the BLWP area include blue grama, broom snakeweed, rubber rabbitbrush, one-seed juniper, and two-needle pinyon pine.

General land cover types that have been identified in the Proposed Action and Alternatives 1 and 2 areas for the purpose of evaluating potential impacts on special status wildlife habitat include shrubland, grassland, pinyon-juniper woodland, cliff/rock outcrop, playa, and emergent herbaceous wetland (Table 3-17; Figure 3-8 and Figure 3-9). The shrubland, grassland, and pinyon-juniper woodland in the Proposed Action and Alternatives 1 and 2 areas occur throughout the region and are well represented in the surrounding area. The cliff/rock outcrop areas are much less common in the region; these areas are used as nesting substrates for raptors and also provide roosting habitat for many bat species. There are many Gunnison's prairie dog colonies that provide an abundant food source for raptors in the Proposed Action and Alternatives 1 and 2 areas.

Table 3-17. Land Cover Types within the Proposed Action and Alternatives 1 and 2 Areas

Land Cover Type	Proposed Action Area (acres/percent)	Alternatives 1 and 2 Area (acres/percent)
Shrubland	28,448/65%	10,763/65%
Grassland	11,255/26%	3,665/22%
Pinyon-Juniper Woodland	3,577/8%	2,190/13%
Playa	125/<1%	20/<1%
Bare Ground/Cliff/Rock Outcrop	119/<1%	9/<1%
Emergent Herbaceous Wetland	4/<1%	0/0
Total	43,528	16,648

Note: Based on the National Land Cover Database (Homer et al. 2011)

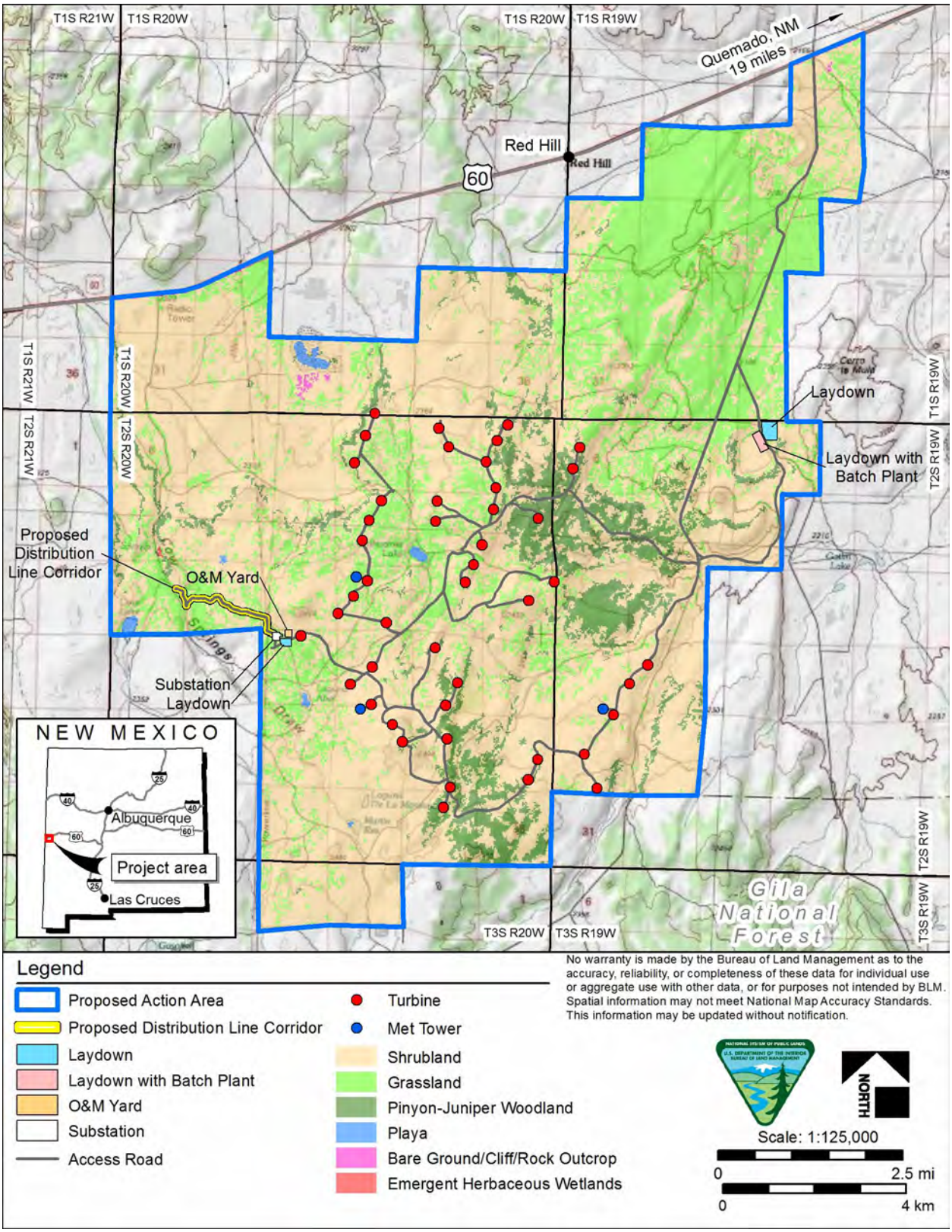

Figure 3-8. Land Cover Types within the Proposed Action Area

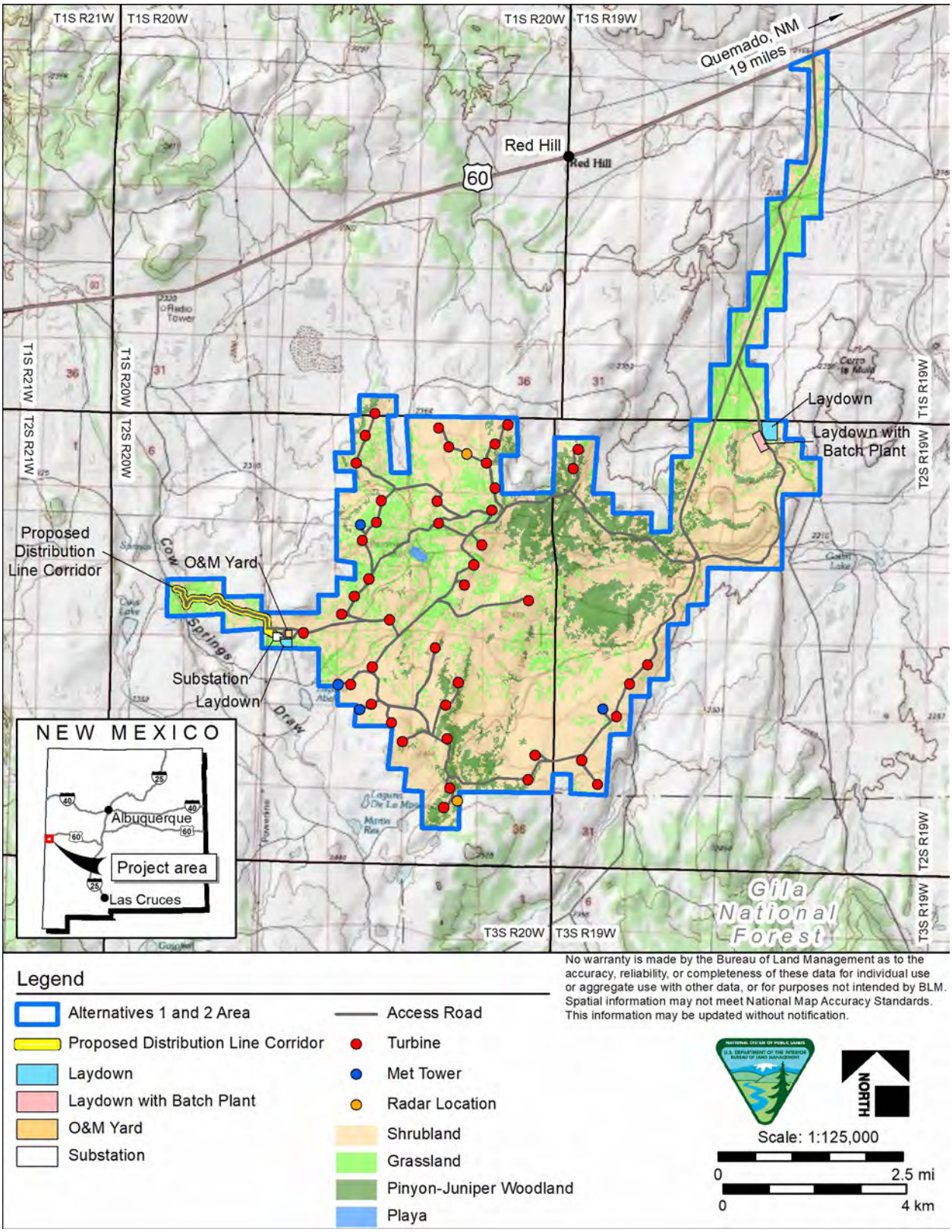

Figure 3-9. Land Cover Types within the Alternatives 1 and 2 Area

There are 20 “playas of wildlife value” within the Proposed Action area, along with a number of stock tanks; there are two “playas of wildlife value” within the Alternatives 1 and 2 area along with six or more stock tanks in each of the alternative areas. Most of these playas are seasonally wet areas and less than 3 acres in size when full. Four playas are larger—up to 220 acres in size when full—and provide water sources for wildlife, as well as temporary habitats for waterfowl and shorebirds. The playas are considered riparian habitats by the BLM, though they are generally vegetated with the same species as the surrounding areas.

3.7.1.2 Results of Site Investigations

Various site investigations have been conducted to characterize plant and animal populations and patterns of use in the Proposed Action and Alternatives 1 and 2 areas. The results of these site investigations have been used to help inform siting decisions and various plans, including a project-specific Bird and Bat Conservation Strategy that would be implemented as part of the selected alternative (Borderlands Wind, LLC 2020).

Special Status Plants

A 100 percent survey for special status plant species was conducted within the disturbance footprint for the Proposed Action and Alternatives 1 and 2 in July and August 2018. Although there are previously documented occurrences of Apache milkvetch within the Proposed Action and Alternatives 1 and 2 areas, and in the surrounding area, none of the eight special status plants that could potentially occur within the Proposed Action area were observed within the project footprint during the 2018 survey. It is possible that one or more special status plant species could be found within the project footprint at a later date given that environmental conditions such as drought can affect germination and growth in any particular year, and there was little precipitation in the region leading up to the 2018 survey.

Gunnison’s Prairie Dog Colonies

Gunnison’s prairie dogs form loosely organized colonies and restrict most of their interactions to family groups, with minimal spatial overlap or interaction with members of different family groups.
A Gunnison's prairie dog colony may contain several hundred individuals comprised of many family groups, though colonies with as few as 1-3 individuals were documented within the BLWP area during onsite surveys. The Gunnison’s prairie dog colonies within the Proposed Action area, along with other prairie dog colonies that may exist in the surrounding area, comprise the local population for the purposes of analysis in this EIS.

In July 2018, targeted surveys were conducted to locate and delineate Gunnison's prairie dog colonies 1) in the vicinity of incidental observations collected over two years of site resource investigations and 2) within 0.5 mile of project facilities (i.e., wind turbines, access roads, collection lines, and substation). Thirty-one distinct, occupied prairie dog colonies containing up to 192 individuals in each colony were documented within the Proposed Action area (Figure 3-10). The total acreage of mapped prairie dog colonies at the time of the survey was 2,284 acres (SWCA Environmental Consultants 2018b); however, a 100 percent survey of the BLWP area was not conducted, so this total does not account for the total number of colonies that may be present within the Proposed Action or Alternatives 1 and 2 areas. The largest colonies, by size and number of detected individuals, are situated in the northeastern, southwestern, and western portions of the Proposed Action and Alternatives 1 and 2 areas. Seventeen of the 31 prairie dog colonies are located (entirely or partially) within the Alternatives 1 and 2 area (Figure 3-11).

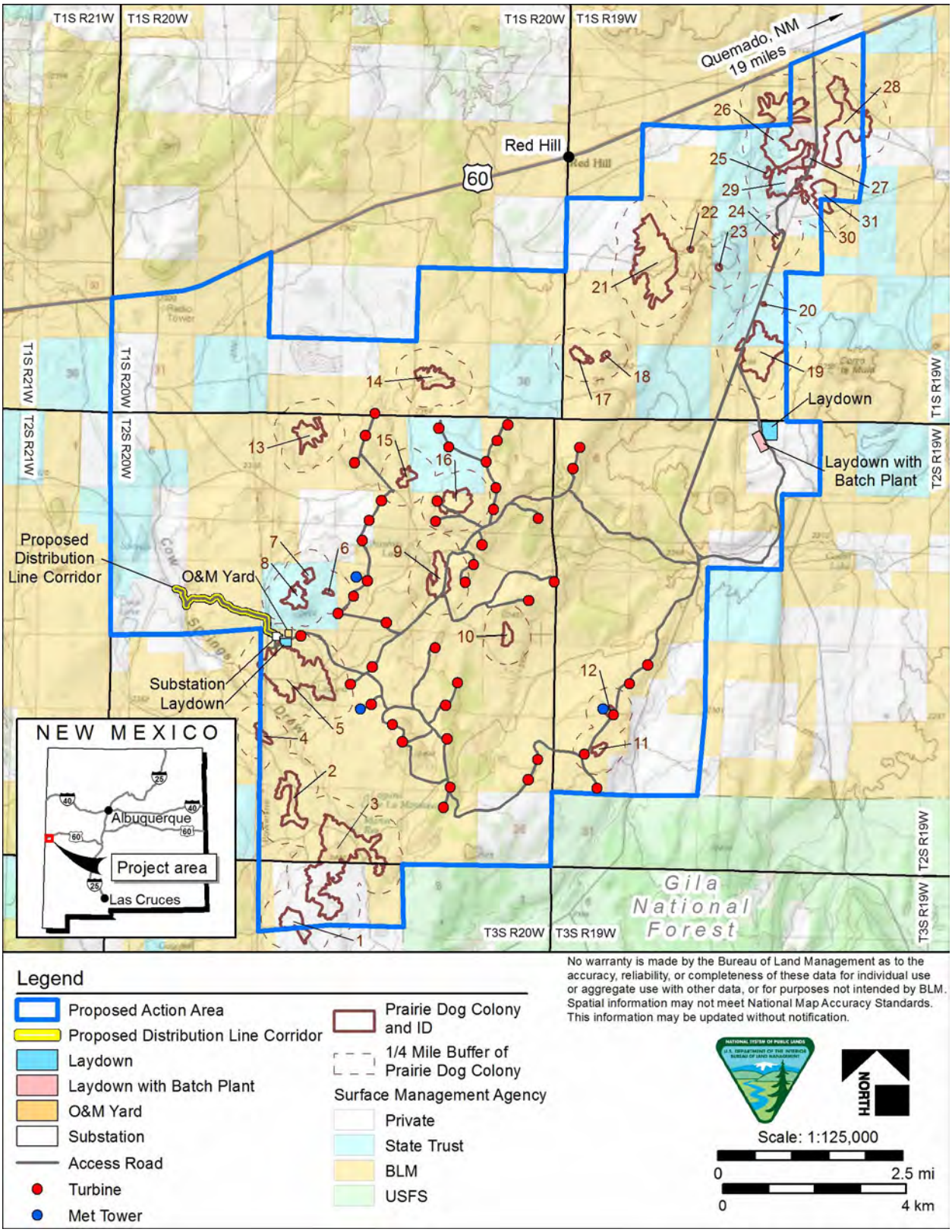

Figure 3-10. Gunnison's Prairie Dog Colonies within the Proposed Action Area

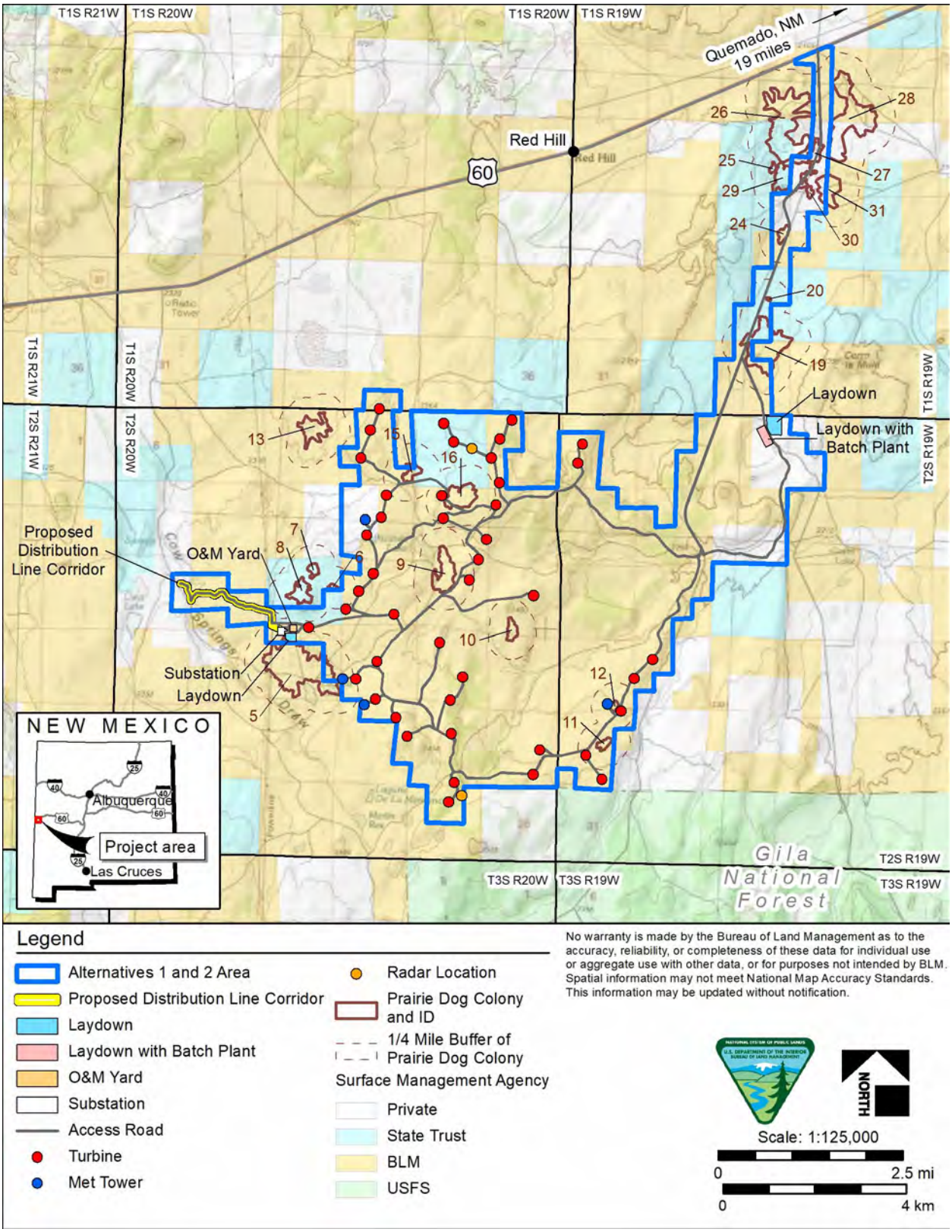

Figure 3-11. Gunnison's Prairie Dog Colonies within the Alternatives 1 and 2 Area

Special Status Bats

Bat activity at the BLWP area was monitored at two monitoring stations from September 2017 through November 2018 (SWCA Environmental Consultants 2018a). Special status bat species that are known to occur in the BLWP area or could potentially occur based on the species' known ranges and habitat requirements are noted in Table E-1 in Appendix E.

Special Status Birds

Avian surveys were conducted to characterize species composition and patterns of use in the BLWP area in accordance with the USFWS's *Land-Based Wind Energy Guidelines* (USFWS 2012). The resulting information, along with findings from other surveys and studies including the locations of a possible golden eagle nest, a ferruginous hawk nest, prairie dog colonies, and playas, have been used to inform siting decisions such as the ultimate placement of wind turbines and other infrastructure. Avian use surveys were conducted on-site, twice per month, starting in March 2017 and continued through March 2019. Eagle-focused nest surveys were conducted within 10 miles and a raptor nest survey was conducted within 1 mile of the Proposed Action and Alternatives 1 and 2 areas. Special status bird species that are known to occur in the BLWP area based on the avian surveys and incidental observations are noted in Table E-1 in Appendix E.

A total of 108 nests associated with non-eagle species (e.g., common raven, great horned owl, red-tailed hawk) were recorded within 10 miles of the BLWP area during aerial nest surveys and ground-based surveys (point counts) in 2017 and 2018; 16 of those nests were located within 1 mile of the BLWP area. One ferruginous hawk nest was recorded within the Proposed Action area, just outside the Alternatives 1 and 2 area; the ferruginous hawk is a BCC that receives special protection in the SFO RMP.

3.7.2. Environmental Consequences

3.7.2.1 Direct and Indirect Impacts of the Proposed Action

The Final Wind Energy PEIS (BLM 2005) identifies and discusses potential impacts on vegetation and wildlife during construction activities (pp. 5-38 through 5-45), O&M (pp. 5-50 through 5-75), and decommissioning (p. 5-77) of a wind facility (e.g., habitat loss, degradation, and fragmentation; disturbance/displacement; collision with turbines, towers, and transmission lines). These impacts would generally also apply for special status plant, terrestrial wildlife, and bird and bat species that occur within the Proposed Action area and, with regard to some indirect impacts, species that may be present in the adjacent lands surrounding the Proposed Action area. Construction, O&M, and decommissioning of the BLWP would result in short-term ground disturbance of approximately 2.6 percent (1,131 acres) and long-term vegetation loss (until decommissioning) of approximately 0.3 percent (140 acres) of the 43,528-acre Proposed Action area based on the total number of proposed turbine locations. The various plans that would be implemented to address impacts on resources such as vegetation (e.g., Weed Management Plan) and wildlife (e.g., Bird and Bat Conservation Strategy) would help to reduce the potential localized impacts on special status species.

Special Status Plant Species

Construction

No special status plant species were observed during the 2018 survey of the disturbance footprint of the Proposed Action; however, pre-construction surveys would be conducted to identify the presence of any special status plants and verify the results of the 2018 survey. Prior to the start of construction, the boundaries of any special status plant populations that are found would be delineated with flagging or fencing. Flagged and fenced areas would be avoided to the extent practicable during construction activities. There would be negligible direct impacts from construction of the BLWP because

construction activities would only disturb a relatively small portion of the Proposed Action area and special status plant species that may be found within the limits of the Proposed Action disturbance footprint during the pre-construction survey would be protected in place to the extent practicable.

Potential indirect impacts on individual sensitive plant species such as the Apache milkvetch may occur from the introduction or spread of noxious or invasive weeds in the newly disturbed areas, as well as potentially outside of the BLWP's disturbance footprint. No noxious weed species were documented within the disturbance footprint during the July and August 2018 survey by the Proponent. BMPs that are implemented during the construction phase and implementation of a Weed Management Plan would minimize the potential for introduction or spread of noxious or invasive weeds within the BLWP disturbance footprint and adjacent areas. Restoration in accordance with the BLWP's Integrated Reclamation Plan would reduce the amount of disturbed habitat at any one time, which would reduce the potential for the introduction of noxious or invasive weeds. As a result, there would be negligible indirect effects on special status plant species during construction.

Operation and Maintenance
Direct impacts on special status plant species are not likely to occur during the O&M phase of the Proposed Action due of the lack of any observed species within the project disturbance footprint. Activities such as the maintenance or repair of project infrastructure (e.g., wind turbines, access roads) would result in limited ground disturbance that could impact special status plants, if present (i.e., if they establish or are later found to occur). Ground-disturbing activities during the O&M phase would generally occur in areas that were previously disturbed during construction.

During the O&M phase, the potential for introducing or spreading noxious or invasive weeds within the Proposed Action area would decrease since fewer vehicles and people would be present onsite as compared to the amount during construction. Previous areas of temporary disturbance would be revegetated. Continued implementation of BLWP's Weed Management Plan during O&M would minimize the potential for noxious or invasive species to establish within the Proposed Action area.

Decommissioning
Decommissioning would result in potential impacts on sensitive plant species similar to those described for the construction phase in that there would be some re-disturbance (e.g., vegetation removal, soil compaction, fugitive dust) of previously reclaimed and revegetated areas during the process of removing the turbines and other aboveground project components. Ground disturbance during decommissioning would again increase the potential for introduction and spread of noxious and invasive weeds that could degrade special status plant habitats. Weed management activities would continue throughout the decommissioning phase, which would minimize the potential for noxious or invasive species to establish within the Proposed Action area.

Special Status Terrestrial Wildlife Species

Construction
The Gunnison's prairie dog is known to occur throughout the Proposed Action area and surrounding lands. The SFO RMP includes a BMP that calls for restricting land use activities within active/occupied prairie dog colonies, as well as a 0.25-mile buffer zone surrounding occupied prairie dog colonies. The locations of the various Proposed Action facilities have been sited to mostly avoid occupied prairie dog colonies; however, the primary access road (Bill Knight Gap Road) passes through four prairie dog colonies, and various project components (e.g., access roads, collector lines, turbines, laydown yard, substation, O&M yard, MET towers) would be constructed within prairie dog colonies or within the 0.25-mile buffer zone (Table 3-18). The direct impacts to individual prairie dog colonies are noted in Table 3-19.

Table 3-18. Proposed Action and Alternatives 1 and 2 Project Components within Gunnison's Prairie Dog Colonies and Buffer Zones

Project Component	Proposed Action	Alternative 1	Alternative 2
Turbines within occupied prairie dog colonies	0 turbines	Same as Proposed Action	Same as Proposed Action
Turbines within 0.25-mile buffer zone	7 turbines	5 turbines	Same as Alternative 1
Length of road within occupied prairie dog colonies	1.60 miles	0.74 mile	Same as Alternative 1
Length of road within 0.25-mile buffer zone	11.25 miles	11.59 miles	Same as Alternative 1
Length of collection lines within occupied prairie dog colonies	0.97 mile	0.14 miles	Same as Alternative 1
Length of collection lines within 0.25-mile buffer zone	7.85 miles	8.54 miles	Same as Alternative 1
Temporary disturbance within occupied prairie dog colonies	34.77 acres	13.85 acres	Same as Alternative 1
Temporary disturbance within 0.25-mile buffer zone	268.03 acres	279.75 acres	Same as Alternative 1
Permanent disturbance within occupied prairie dog colonies	3.75 acres	2.02 acres	Same as Alternative 1
Permanent disturbance within 0.25-mile buffer zone	40.44 acres	40.53 acres	Same as Alternative 1

Note: Assumes all turbine locations would be constructed. Actual impacts would be less due to fewer turbines actually being constructed.

Table 3-19. Proposed Action and Alternatives 1 and 2 Impacts to Individual Gunnison's Prairie Dog Colonies

Prairie Dog Colony ID[1]	Total Colony Area (acres)	Temporary Disturbance Proposed Action (acres/percent)	Permanent Disturbance Proposed Action (acres/percent)	Temporary Disturbance Alternatives 1and 2 (acres/percent)	Permanent Disturbance Alternatives 1 and 2 (acres/percent)
5	278.58	5.04/1.81	0.13/0.05	0/0.00	0/0.00
9	72.85	9.58/13.15	0.9/1.24	0.04/0.06	0/0.00
12	7.07	1.9/26.83	0.21/2.91	0.08/1.09	0/0.00
15	23.64	0.86/3.66	0/0.00	0.03/0.14	0/0.00
16	65.3	4.57/6.99	0.49/0.75	2.59/3.97	0.26/0.40
19	166.52	2.14/1.29	0.34/0.21	2.21/1.33	0.35/0.21
24	14.23	2.07/14.57	0.3/2.10	1.28/8.97	0.17/1.20
27	24.25	4.34/17.91	0.7/2.87	4.32/17.79	0.69/2.85
29	94.39	4.27/4.52	0.68/0.72	3.31/3.50	0.54/0.58
Total[2]	746.83	34.77/1.52	3.75/0.16	13.85/0.61	2.02/0.09

Note: Assumes all turbine locations would be constructed. Actual impacts would be less due to fewer turbines actually being constructed.

[1] Refer to Figure 3-10 and Figure 3-11.

[2] Total for all of the affected prairie dog colonies.

Construction activities that occur within prairie dog colonies or in their vicinity could result in direct impacts (such as injury or mortality) or indirect impacts (such as habitat loss and fragmentation), although these effects would be minimized through the implementation of species-specific BMPs for the Gunnison's prairie dog (Appendix B). Fragmentation of prairie dog populations is listed as a primary threat to the species in the *Draft Conservation Plan for Gunnison's Prairie Dog in New Mexico* (NM Department of Game and Fish 2008). Disturbance from human activities and construction noise could alter the patterns of Gunnison's prairie dog use across the site, though other factors such as soil conditions and vegetation would also influence habitat selection and use by this species. Construction of the overhead distribution line may also alter patterns of prairie dog use in the immediate area as raptors are likely to utilize the new infrastructure for perching and hunting.

The project infrastructure has been sited to avoid the seasonally wet playa areas where the Arizona montane vole and Arizona tree frog could occur, which reduces the potential for direct or indirect impacts. The stock tanks within the Proposed Action area that provide potential habitat for Sonora mud turtles would be avoided during construction where feasible. The Arizona black rattlesnake prefers rocky habitats but could be encountered anywhere within the Proposed Action area, resulting in potential direct impacts during construction. Short-term impacts on special status terrestrial wildlife species would include potential injury or death from interactions with the increased number of vehicles traveling on access roads and/or ground disturbance and underground burrow destruction by heavy equipment during construction activities. There would be no direct or indirect regional impacts on special status terrestrial wildlife species because of the presence of similar habitat within the region of the Proposed Action and the limited area within the Proposed Action area that would be affected (1,131 acres or approximately 2.6 percent of the 43,528-acre Proposed Action area) during construction.

There is suitable habitat for the four SERI identified in the New Mexico Crucial Habitat Assessment Tool for this area (i.e., black bear, cougar, elk, and mule deer). Elk have been observed at various times during site resource investigations, and a cougar was also suspected to be denning in the BLWP area. Mule deer and black bears may also incidentally occur in the BLWP area. Habitat use in the BLWP area may be variable for each of these species depending on their life history and seasonal habitat needs. There are no known wildlife movement or migration corridors present in the BLWP area that would be impacted by the Proposed Action. Increased noise and visual disturbance from human activity during construction would likely cause these species to avoid foraging within the Proposed Action area and the area immediately surrounding the BLWP. None of these species are likely to be injured or killed as a result of the Proposed Action and no population-level effects would occur.

Provisions of the Integrated Reclamation Plan would minimize the potential for introduction or spread of noxious or invasive weeds within the Proposed Action area and adjacent lands, which would minimize habitat degradation. The Proposed Action would have minor short-term direct impacts on local special status terrestrial wildlife species with the exception of the Gunnison's prairie dog. Even with the implementation of BMPs and species-specific mitigation measures/design features, the Proposed Action would result in localized short- and long-term, moderate impacts on prairie dogs.

Operation and Maintenance

Potential impacts on special status terrestrial wildlife species during the O&M phase of the Proposed Action would include various types of disturbance associated with human activities (e.g., vehicle use, maintenance activities) and wind turbine operation (e.g., noise, vibration, flicker/shadows cause by moving blades). Over time, individual animals may become acclimated to the disturbance or shift their habitat use to avoid areas with undesirable levels of disturbance. The reclamation and revegetation of disturbed areas during the O&M phase would allow for previously displaced individuals to potentially reestablish use of the habitat.

Potential impacts would be reduced compared to the construction phase because of the lower volume of vehicles traveling on access roads and fewer people needed to operate and maintain the BLWP. Special status terrestrial wildlife species would still be able to move through the Proposed Action area following construction of the wind facility, and the open landscape in the surrounding area allows for relatively unrestricted wildlife movement, so there would be negligible localized impacts on wildlife movement. Construction of new project access roads would fragment prairie dog habitats and could also lead to an increase in recreational shooting, which may impact the local Gunnison's prairie dog population. The Proposed Action could result in a downward trend and/or contribute to the loss of viability of the local Gunnison's prairie dog population. There would be no regional impacts on special status terrestrial wildlife species during the O&M phase of the Proposed Action due to the general availability of similar habitats within the region and the limited area within the Proposed Action area that would be affected in the long term (140 acres or approximately 0.3 percent of the 43,528-acre Proposed Action area).

Decommissioning

Potential impacts during the decommissioning phase would be similar to those described for the construction phase, though to a lesser extent. Direct impacts on special status terrestrial wildlife species, including injury or mortality of individual animals, may occur during decommissioning. Much of the potential habitat for special status reptiles and amphibians (i.e., playas and stock tanks) would be avoided. Ground-disturbing activities associated with the removal of turbines and other infrastructure would create areas of degraded habitat, which may be of marginal value until these areas are reclaimed and vegetation communities restored. An Integrated Reclamation Plan would be implemented as part of the decommissioning effort to direct and aid in the revegetation efforts. Although revegetation may take several decades for the structure and composition to resemble current conditions, a limited area of the Proposed Action area (140 acres or approximately 0.3 percent of the 43,528-acre Proposed Action area) would be disturbed. The Proposed Action's decommissioning activities would result in localized long-term, direct, minor impacts on special status terrestrial wildlife species.

Special Status Bird and Bat Species

Construction

Potential impacts associated with the construction of project infrastructure (e.g., turbines, collection lines, access roads) would include habitat loss, degradation, and fragmentation, as well as noise and visual disturbances. Vegetation clearing would remove foraging habitat for special status birds and bats and could result in direct impacts on nesting birds and tree-roosting bats. Impacts on bird species that are less tolerant of the disturbance associated with noise and human activity would extend further than the actual disturbance footprint and may extend to lands outside of the Proposed Action area. The one ferruginous hawk nest that was documented within the Proposed Action area would be avoided and any construction activities would occur outside of a 0.5-mile buffer of the nest to minimize disturbance at the nest site.

There are no known features, such as caves or mines that would provide communal roost or maternity sites for large numbers of bats within the Proposed Action area. Bat use of this area would consist of opportunistic foraging (including drinking at available water sources) and roosting by individual bats or small groups of bats in cliffs/rock outcrops, buildings, and trees. The foraging and roosting habitats for bats within the Proposed Action area are fairly widespread in the region. Construction-related activities would have negligible impacts on bats that may fly through or forage within the Proposed Action area or surrounding area at night.

Operation and Maintenance

Birds and bats are vulnerable to injury and mortality from collisions with wind turbine blades. Wind turbines mainly pose a threat to these species when the rotor is spinning; the area where the individuals

can be struck by the rotor/blades is termed the rotor-swept area. The wind turbines that are proposed for the BLWP have rotor diameters from 380 to 381 feet. At this size, the revolutions-per-minute are lower than with smaller turbines, but the speed of the rotor tips is still very high. The numerous Gunnison's prairie dog colonies and seasonally-inundated playas in the Proposed Action area are hunting grounds for various predators, and the availability of prey in the this area is associated with increased use of the area by raptors. Passerines (small birds) are most commonly reported as collision fatalities, followed by diurnal raptors; although fatality rates for raptors may be lower compared to passerines, raptors are especially vulnerable to collisions due to their flight behaviors (USFWS 2020). For birds, adjusted fatality rates from most studies range from three to six birds per turbine-generated MW per year for all species combined, and no publicly available study has reported more than 15 bird fatalities per turbine-generated MW per year (American Wind Wildlife Institute [AWWI] 2018).

Bat fatalities associated with wind turbines can be higher than the bird fatalities on the same wind farm, and it is difficult to predict the level of impact on bats even with acoustic monitoring data from preconstruction surveys. Bats fly around to forage at night and mainly during low wind speeds; raising cut-in speeds (i.e., the lowest wind speeds at which turbine rotors begin rotating) at night can be an effective way of minimizing bat mortality. Reductions in local bat populations can be magnified at the regional scale because bats are wide-ranging and have a low reproductive rate. On average, reported bat fatality rates are substantially lower at facilities in the western United States compared to those in the eastern part of the country (AWWI 2018). The potential threat to special status birds and bats from wind turbines at the BLWP would exist during the anticipated 35-year life of the project and the Proposed Action could have a long-term, minor to moderate effect on these species.

Distribution lines and other project facilities would be designed to discourage their use as perching or nesting substrates by birds, and to minimize collisions and electrocutions (e.g., by constructing power lines to Avian Power Line Interaction Committee standards). Two permanent MET towers would be needed during operations. The MET towers would be no more than 361 feet high with side guy wires extending from each tower on two sides. Bird flight diverters or high visibility marking devices would be used to reduce the potential for collision with the guy wires, though they would not entirely eliminate the potential impacts on birds. Impacts on special status bird and bat species, including fatalities resulting from the operation of wind turbines, would not be avoidable under the Proposed Action.

Decommissioning

Potential impacts on special status birds during decommissioning would be similar to construction, though to a lesser extent assuming some degree of acclimation to disturbance by resident birds during the O&M phase. Impacts on special status bird and bat species from collisions with wind turbines would cease when operation of the BLWP is discontinued and the turbines, overhead distribution lines, and MET towers are removed. Long-term, localized effects on foraging and nesting habitat for some special status species would occur because it may take years or decades for the vegetative structure and composition of disturbed areas to be restored to current conditions. However, the areas requiring revegetation would only be 0.3 percent of the Proposed Action area (140 acres) and an Integrated Reclamation Plan would be implemented during decommissioning to guide the revegetation efforts.

Migratory Birds

Potential impacts on migratory birds during construction, O&M, and decommissioning activities would be the same as noted above for other special status birds. There are no Important Bird Areas designated within the BLWP area and, with the exception of seasonal playas, the BLWP area does not contain habitats that would concentrate migrating birds, such as large bodies of water, wetlands or riparian areas, or mountain ridges that would provide updrafts for migrating raptors. However, there are many Gunnison's prairie dog colonies that provide an abundant food source for raptors in the Proposed Action area.

The nearest major waterways likely to be used by migratory birds include the Little Colorado River (approximately 15 miles to the west), the San Francisco River (approximately 20 miles to the south), and the Rio Grande (approximately 110 miles to the east). Migrating birds may pass over or stop to forage or rest in the BLWP area as they travel between these major corridors. While there would be short- and long-term, minor impacts on the existing habitats within the Proposed Action area, the grassland, shrubland, and pinyon-juniper cover types that would be affected by the project are abundant habitats in the lands surrounding the Proposed Action area and within BCRs 16 and 34. The Proposed Action would result in short- and long-term, direct and indirect, moderate, local and regional impacts to migratory birds. A Bird and Bat Conservation Strategy would be implemented along with BMPs and other design features as part of the Proposed Action to minimize potential impacts on migratory birds and provide for adaptive management during the O&M phase.

Additional Measures to Avoid and/or Minimize Impacts

With the implementation of the BMPs and other design features in Appendix B, no additional measures to avoid and/or minimize impacts on special status plant and wildlife species are recommended for the Proposed Action.

3.7.2.2 Direct and Indirect Impacts of Alternatives 1 and 2

The potential impacts of Alternatives 1 and 2 on special status plant, terrestrial wildlife, and bird and bat species would be similar to the Proposed Action, with minor differences in the overall acreages that would be disturbed during construction and decommissioning of the BLWP. Construction, O&M, and decommissioning of the BLWP under Alternatives 1 and 2 would result in short-term ground disturbance of approximately 7.2 percent (1,202 acres) and long-term vegetation loss (until decommissioning) of approximately 0.8 percent (133 acres) of the 16,648-acre Alternatives 1 and 2 area.

Special Status Plant Species

The impacts of Alternatives 1 and 2 on special status plant species would be similar to those under the Proposed Action. The effects associated with Alternative 1 would be essentially the same as for the Proposed Action because the same number of turbines would be built under both alternatives. Under Alternative 2, there would be six fewer turbines (34 instead of 40 turbines) built with similar but slightly less impacts since there would be fewer turbines, access roads, and underground electric collection system and communication lines built. Because of the smaller construction footprint associated with Alternative 2, impacts to special status plant species would be slightly reduced compared to the Proposed Action and Alternative 1. Shifting the number/locations of wind turbines or other project infrastructure within the Alternatives 1 and 2 area would not substantially add to or reduce the potential impacts on special status plant species from construction, O&M, or decommissioning of the BLWP as compared to the Proposed Action.

Special Status Terrestrial Wildlife Species

The impacts of Alternatives 1 and 2 on special status terrestrial wildlife species would be similar to the Proposed Action Alternative. The locations of various project components that are within occupied prairie dog colonies or within the 0.25-mile buffer zone surrounding occupied prairie dog colonies under Alternatives 1 and 2 are noted in Table 3-18. Shifting the number/locations of wind turbines or other project infrastructure as proposed under Alternative 1 or Alternative 2 would not substantially add to or reduce the potential impacts on special status terrestrial wildlife species from construction, O&M, or decommissioning of the BLWP as compared to the Proposed Action.

Special Status Bird and Bat Species

The impacts of Alternatives 1 and 2 on special status bird and bat species would be similar to those under the Proposed Action. The wind turbines that are proposed for the BLWP under Alternative 2 would have larger rotor diameters (381 to 459 feet) compared to the Proposed Action and Alternative 1 (380 to

381 feet), resulting in a larger rotor swept area for each turbine; however, there would be fewer turbines constructed under Alternative 2 (34 turbines) compared to the Proposed Action and Alternative 1 (40 turbines). Shifting the number/locations of wind turbines or other project infrastructure as proposed under Alternative 1 or Alternative 2 would not substantially add to or reduce the potential impacts on special status bird and bat species from construction, O&M, or decommissioning of the BLWP as compared to the Proposed Action.

Migratory Birds

The impacts of Alternatives 1 and 2 on migratory birds would be similar to those under the Proposed Action. Shifting the number/locations of wind turbines or other project infrastructure as proposed under Alternatives 1 and 2 would not substantially add to or reduce the potential impacts on migratory birds from construction, O&M, or decommissioning of the BLWP as compared to the Proposed Action.

Additional Measures to Avoid and/or Minimize Impacts

With the implementation of the BMPs and other design features in Appendix B, no additional measures to avoid and/or minimize impacts on special status plant and wildlife species are recommended for Alternatives 1 and 2.

3.7.2.3 Direct and Indirect Impacts of the No Action Alternative

Under the No Action Alternative, the BLWP would not be constructed, and no additional impacts on special status species within the BLWP area would occur. Existing impacts on special status species within the BLWP area are primarily associated with recreational shooting of prairie dogs, vehicle (including OHV) use that results in minor noise and visual disturbance, and occasional injury or mortality to wildlife from collisions with vehicles or, for special status birds and bats, the existing transmission lines and structures that cross the area.

3.8 Bald and Golden Eagles

The Bald and Golden Eagle Protection Act (Eagle Act) is the overarching law that protects bald and golden eagles; it prohibits anyone without a permit from "taking" eagles, their parts, eggs, or nests[6]. The Eagle Act's definition of "take" does not include habitat destruction or alteration, unless such damage disturbs an eagle. Disturb is defined as "to agitate or bother to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In 2009, the USFWS promulgated regulations (i.e., the Eagle Rule) that established two new permit types authorizing: 1) purposeful take (removal, relocation, or destruction) of eagle nests under limited circumstances, and 2) incidental take that results from, but is not the purpose of, an otherwise lawful activity. In 2016, the USFWS revised the regulations for eagle incidental take permits, allowing developers to obtain a 30-year permit subject to mitigation and monitoring, among other requirements. The 2016 Eagle Rule Revision also removed the distinction between standard permits (that address one-time effects from a project) and programmatic permits (that authorize recurring take from a project), and modified their definition of the "preservation standard" so that any authorized take must be

[6] The Bald and Golden Eagle Protection Act, originally passed in 1940, provides for the protection of the bald eagle and the golden eagle (as amended in 1962) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 U.S.C. 668(a); 50 CFR 22). "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb (16 U.S.C. 668c; 50 CFR 22.3).

consistent with the goals of maintaining stable or increasing breeding populations in all eagle management units, and the persistence of local populations throughout the geographic range of each species.

In 2017, the BLM issued IM 2017-040 Bald and Golden Eagle Protection Act—Eagle Incidental Take Permit Guidance for Renewable Energy Development on the processing of ROW applications for wind and solar development projects on BLM-managed lands that have the potential to result in take of eagles. The BLM's IM 2017-040 identifies the coordination and surveys that are required in order to determine whether take of eagles is likely, as well as stipulations that would be included with ROW grants.

This section assesses the potential impacts on bald and golden eagles from the Proposed Action, Alternatives 1 and 2, and the No Action Alternative.

3.8.1. Affected Environment

The USFWS's *Eagle Conservation Plan Guidance* (USFWS 2013a) and *Programmatic EIS for the Eagle Rule Revision* (USFWS 2016a) recommend that siting decisions for project infrastructure, such as wind turbines, be informed first by eagle exposure (related to eagle sightings during avian surveys) and then by the presence of important eagle use areas such as occupied nests or foraging areas. Avian use surveys have been conducted twice per month within the Proposed Action area (which encompasses the Alternatives 1 and 2 area) from March 2017 through March 2019. Eagle-focused nest surveys were also conducted within 10 miles of the area and a raptor species nest survey was also conducted within 1 mile of the Proposed Action area. The USFWS has determined that there are important eagle-use areas within the Proposed Action area based on food resources such as the prairie dog colonies and golden eagle telemetry data. Information on bald and golden eagles and their occurrence in the Proposed Action area is provided below.

3.8.1.1 Golden eagle

Golden eagles occur across most of the northern hemisphere and throughout the Southwest where there are suitable nest sites and available prey. Year-round residents occur throughout NM and migrants from northern latitudes are also present during the winter months. Golden eagles typically select nest sites on tall cliffs or large trees near the open areas where they hunt for small to mid-sized mammals such as ground squirrels, jackrabbits, and prairie dogs. They can also prey upon some larger waterfowl species and opportunistically feed upon carrion, including ungulate carcasses. Additional information on the life history and status of the golden eagle, as well as known threats to the species, is included in the USFWS's *Programmatic EIS for the Eagle Rule Revision* (USFWS 2016a) and *Bald and Golden Eagles: Population demographics and estimation of sustainable take in the United States, 2016 update* (USFWS 2016b).

There is telemetry data supporting the occurrence of golden eagles in the project vicinity; an immature golden eagle that was tagged in the northeastern portion of the Proposed Action area in 2015 has continued to occupy the BLWP area year-round, though a single eagle's use patterns should not be extrapolated to describe overall eagle use of an area. Eagle use surveys conducted for the BLWP have documented golden eagles flying through the Proposed Action area (which encompasses the Alternatives 1 and 2 area) on five occasions during the period from March 2017 through March 2019. A total of 16 "eagle minutes" were documented at survey points during that period. Eagle minutes are only recorded during the eagle use surveys and are specifically used to assess potential impacts to eagles; there were also incidental observations of golden eagles on 19 occasions from March 2017 through March 2019.

Multiple golden eagle breeding attempts were documented during nest surveys conducted within a 10-mile buffer of the Proposed Action area in 2017 and 2018. Golden eagle nesting substrate in the Proposed Action area is limited to a narrow, linear escarpment and small rock outcrops located in the northeastern portion, and transmission towers along a north-south utility corridor located on the western edge of the Proposed Action area. Golden eagles use an average of two to three alternate nests, with some territories containing only one nest. The 47 nest structures identified as golden eagle nests (28 nests) or possible golden eagle nests (19 nests) during surveys were assigned to nine golden eagle and seven potential golden eagle territories/breeding areas. In 2017, four of the breeding areas had nests where eggs, nestlings, or an adult in an incubation posture were observed, and five contained nests where eagles were present but were not observed engaging in breeding activities. In 2018, two of the territories had active breeding attempts and six contained occupied nests only (e.g., adults perched on or near the nest, recent greenery, sticks, whitewash, or feathers). One potential golden eagle breeding area (i.e., Luna Tank) and its associated nest are located within the northeastern portion of the Proposed Action area; all of the other territories/breeding areas are located within a 10-mile buffer surrounding the Proposed Action area. The Luna Tank nest has not been observed to be active or confirmed as being used by golden eagles during project surveys (i.e., no eggs or young were observed in the nest); however, a golden eagle was observed in the vicinity of the nest in March 2017.

Surveys were also conducted to locate and delineate Gunnison's prairie dog colonies within 0.5 miles of proposed project facilities (e.g., turbines, access roads, collection lines, the substation), as golden eagles are attracted to these colonies for prey. Thirty-one distinct, occupied prairie dog colonies containing up to 192 individuals in each colony were documented within the Proposed Action area. The total acreage of mapped prairie dog colonies at the time of the survey was 2,284 acres; however, surveys were only conducted in proximity to areas that would be disturbed by project infrastructure, so this total does not account for the total number of colonies present within the Proposed Action or Alternatives 1 and 2 areas. The largest colonies, by size and number of detected individuals, were situated in the northeastern, southwestern, and western portions of the Proposed Action and Alternatives 1 and 2 areas (refer to Figure 3-10 and Figure 3-11 in Section 3.7 Special Status Plant and Wildlife Species). In addition to open habitats throughout the BLWP area and Gunnison's prairie dog colonies that provide foraging opportunities for golden eagles, eagles may also feed upon animal carcasses that they find within the Proposed Action and Alternatives 1 and 2 areas.

3.8.1.2 Bald eagle

Bald eagles occur throughout North America and typically build stick nests in large trees or on cliffs near open water (lakes and rivers) to be close to their preferred food sources (fish and waterfowl). With the exception of the desert nesting population occurring in AZ, bald eagles are migratory and many individuals in northern latitudes fly south to overwinter. Juvenile bald eagles may also range widely during dispersal, though both wintering and juvenile bald eagles are still typically associated with breeding habitats (i.e., lakes and rivers). Additional information on the life history and status of the bald eagle, as well as known threats to the species, is included in the USFWS's *Programmatic EIS for the Eagle Rule Revision* (USFWS 2016a) and *Bald and Golden Eagles: Population demographics and estimation of sustainable take in the United States, 2016 update* (USFWS 2016b).

Bald eagles have been observed in the Proposed Action area on three separate occasions during avian point count surveys: in January 2018, December 2018, and February 2019. Bald eagle use of the Proposed Action area is expected to be infrequent and sporadic, and more likely to occur outside of the breeding season (i.e., late August–February) when wintering birds from colder northern climates and dispersing juveniles are present in the region.

There is a general lack of bald eagle nesting habitat and limited foraging habitat for bald eagles in the area. Animal carcasses provide an intermittent source of carrion that could be utilized by bald eagles. The seasonally inundated playas that are present may, particularly in wet years, also provide temporary habitats where waterfowl or shorebirds could congregate and provide hunting opportunities for bald eagles. The nearest preferred foraging areas for bald eagles are Becker Lake (21 miles to the west), Quemado Lake (21 miles to the east), and Lyman Lake (28 miles to the northwest). There is marginal roosting habitat for bald eagles within the Proposed Action area due to the general lack of tall trees; there are young ponderosa pine trees interspersed with the pinyon-juniper and grassland habitat in the southern portions of the area, with larger trees found further to the south on the Gila National Forest.

3.8.2. Environmental Consequences

3.8.2.1 Direct and Indirect Impacts of the Proposed Action

The Final Wind Energy PEIS (BLM 2005) identifies and discusses potential impacts on wildlife including eagles during construction activities (pp. 5-41 through 5-45), O&M (pp. 5-53 through 5-75), and decommissioning (p. 5-77) of a wind facility (e.g., habitat loss, degradation, and fragmentation; disturbance/displacement; collision with turbines, towers, and transmission lines). Potential impacts on bald and golden eagles from the Proposed Action including "take" are likely to occur from the construction, O&M, and decommissioning of the BLWP. Measures that have been developed to avoid and/or minimize adverse impacts on eagles are identified in Appendix B; additional measures would be identified in an Eagle Management Plan (which is not the same as an Eagle Conservation Plan that would be required by the USFWS as part of an application for a take permit) that will be included in the Final POD prior to publication of the Final EIS. These measures would include the ongoing removal of large mammal carcasses (e.g., dead cattle) and roadkills within the Proposed Action area to avoid attracting eagles. The BLWP-specific design features and BMPs would be incorporated into each phase of the project to minimize these potential impacts to the extent practicable. The various plans that would be implemented to address impacts on resources such as vegetation (e.g., Weed Management Plan, Integrated Reclamation Plan) and wildlife (e.g., Bird and Bat Conservation Strategy) would also help to reduce the potential impacts on eagles.

Construction

Construction of the BLWP would result in the loss, degradation, and fragmentation of golden eagle foraging habitat. Approximately 2.6 percent (1,131 acres) of the 43,528-acre Proposed Action area would be impacted by construction activities, which represents a localized, minor impact on golden eagle habitat. The disturbance footprint and location of various infrastructure (e.g., wind turbines, access roads, and collection lines) have been sited to minimize impacts on eagle use areas including the Luna Tank potential breeding area and within a 0.25-mile buffer around active Gunnison's prairie dog colonies that are hunting grounds for golden eagles. Construction activities that occur in the vicinity of prairie dog colonies may prevent golden eagles from foraging in these areas. Given the number of prairie dog colonies in the Proposed Action area and the surrounding area, there would be a moderate direct impact on golden eagles from construction-related disturbance near foraging habitats.

Bald eagles are expected to occur infrequently and sporadically in the Proposed Action area given the lack of nesting and roosting habitat, and the limited foraging habitat that is present (i.e., seasonally inundated playas and incidental occurrence of carrion). While wintering and dispersing bald eagles can range widely, they generally focus their activities at lakes and along rivers where there is suitable prey. There would be a negligible loss of foraging habitat for bald eagles given that the BLWP area does not contain this species' preferred foraging habitat.

Disturbance from human activities and noise during construction could alter the patterns of eagle use across the site, including the areas used for foraging, roosting, and nesting. The primary access road

(Bill Knight Gap Road) would be located approximately 3,500 feet from the Luna Tank nest. While this is greater than the 0.5-mile buffer distance that is typically recommended by the USFWS, disturbance to nesting golden eagles during construction activities or vehicle/equipment access along Bill Knight Gap Road could potentially occur. Disturbance from human activities and noise during construction would have a localized, short-term, minor to moderate impact on any bald eagles that may be present in the BLWP area during the construction phase, depending on the timing and season of construction.

Roadwork and vehicle use on the primary access road during construction could result in disturbance to nesting golden eagles and a decrease in productivity (i.e., the number of eagles that are fledged from the nest) or nest abandonment. Any reduction in golden eagle nest success resulting from the Proposed Action would be a localized and regional, short- and long-term, major impact on golden eagle populations.

Operations and Maintenance

There would be less on-site activity during the O&M phase of the BLWP than during construction. As a result, there would be less noise and visual disturbance to eagles from human activities (e.g., road maintenance), though potential impacts such as those identified for the construction phase could similarly occur during the O&M phase. Wind turbines have been sited outside of a 3.9-mile buffer around the Luna Tank nest to minimize impacts on nesting golden eagles.

Distribution lines and other project facilities would be designed to discourage their use as perching or nesting substrates. Overhead power lines would be constructed to Avian Power Line Interaction Committee standards to reduce the risk of electrocution and collisions. Bird flight diverters or high visibility marking devices would be installed on MET tower guy wires to reduce the potential for collisions with guy wires. These measures would reduce the potential risks to eagles, though the proposed project infrastructure would still pose an ongoing threat to eagles from collisions with distribution lines or MET tower guy wires over the life of the project.

The USFWS evaluated the risk of golden eagles colliding with rotors during operation of the BLWP based on two years of pre-construction data collected in the Proposed Action area. The results of the USFWS's analysis indicate that a golden eagle fatality is predicted to occur at an annual rate of 0.261 eagles per year (with an 80 percent confidence level based on statistical analysis). The USFWS predicted there would be a cumulative take of two golden eagles over a five-year period. The potential threat to eagles from collisions with wind turbines at the BLWP would exist during the anticipated 35-year life of the project. The USFWS typically re-evaluates the potential for take every 5 years based on post-construction monitoring data and documented fatalities, so an assessment of eagle take for the 35-year life of the project is not currently available. Mortality of golden eagles that may result from the Proposed Action would constitute localized and regional, short- and long-term, major impacts on golden eagle populations.

As previously mentioned, bald eagles are expected to occur infrequently and sporadically in the BLWP area, and noise and visual disturbance resulting from human activities and turbine operation during the O&M phase may cause bald eagles to avoid the Proposed Action area. Animal carcasses that could potentially attract bald eagles would be subject to ongoing removal under the Proposed Action, per the Draft Eagle Management Plan (Borderlands Wind, LLC 2020), which would reduce the likelihood of bald eagles foraging in the Proposed Action area. For these reasons, take of bald eagles at the BLWP is considered less likely to occur than take of golden eagles. However, the USFWS does not have sufficient data in the form of onsite bald eagle observations for the Proposed Action area, and as a result, it is currently not possible to generate a fatality estimate for bald eagles. Mortality of bald eagles that may result from the Proposed Action would constitute localized and regional, short- and long-term, major impacts on bald eagle populations.

Decommissioning

The extent of noise and visual disturbance to eagles during decommissioning of the BLWP would be similar to the construction phase and there would likely be impacts on patterns of eagle use established during the O&M phase, such as the areas used for foraging, roosting, or nesting. As the various aboveground infrastructure across the site is removed and disturbed areas are rehabilitated and restored over time, there would likely be an increase in prey species (e.g., prairie dogs) that is commensurate to the loss experienced during construction of the BLWP.

The project BMPs and other design features, and the stipulations that would be included in the BLM ROW authorization would minimize the potential short- and long-term impacts on eagles. However, the Proposed Action is still anticipated to result in both short- and long-term, direct and indirect, major local and regional impacts on bald and golden eagles.

Bald and Golden Eagle Protection Act (Eagle Act)

The USFWS has determined that the take of eagles is likely to occur under the Proposed Action. The annual golden eagle fatality estimate (0.261 eagles per year) is equivalent to 0.78 percent of the estimated local area population of 396 golden eagles. A fatality estimate for bald eagles is not possible at this time due to the lack of sufficient data; however, take of bald eagles under the Proposed Action is considered less likely to occur than take of golden eagles. Based on the USFWS determination, the Proposed Action is considered a Category 2 project under the USFWS's *Eagle Conservation Plan Guidance*, indicating that there is a high or moderate risk to eagles with the opportunity to avoid or mitigate impacts. This is due to: 1) the presence of important eagle use areas, and 2) an annual fatality estimate between 0.03 percent and 5 percent of the estimated local area population size.

Based on the Proponent's decision not to seek an incidental take permit, the BLM would follow "Option 2" as identified in BLM's IM 2017-040. According to the general ROW stipulations identified in BLM's IM 2017-040, after the USFWS has determined that take of eagles at a project is likely to occur (according to the methodology outlined in the *Eagle Conservation Plan Guidance* [USFWS 2013a] and the Final Eagle Rule [USFWS 2016c]), the BLM would include stipulations in the ROW grant requiring the grant holder to monitor its project regularly for eagle fatalities using USFWS-approved standards throughout the life of the grant. The USFWS has recommended post-construction mortality monitoring during the first two years of operation and, depending on the results from the first two years of monitoring, one year of monitoring at least every five years. Operational eagle mortality monitoring (i.e., monitoring that is conducted by project personnel) would be required for the duration of the project. These stipulations would be incorporated in the ROW grant, regardless of whether the ROW applicant elects to apply for a take permit (see Appendix B for more details on monitoring requirements).

According to the ROW stipulation under Option 2, the ROW grant would also specify that, if an eagle is taken without a take permit, the Proponent would be required to immediately notify the BLM and the USFWS. After consultation with the BLM and the USFWS, the Proponent would implement reasonable specific actions to avoid further unpermitted take of eagles. Any take of bald or golden eagles resulting from the Proposed Action may result in enforcement actions by the USFWS.

Additional Measures to Avoid and/or Minimize Impacts

The Proponent included a commitment in their Draft Eagle Management Plan to provide voluntary compensatory mitigation to offset the anticipated impacts on eagles. The voluntary compensatory mitigation that was initially proposed by the Proponent consisted of $165,000 in funding that would be contributed to the National Fish and Wildlife Foundation's Eagle Mitigation Account or to a mitigation banking or in-lieu fee credit program. However, this funding amount has not been updated following the receipt of additional information on turbine specifications that lowered the anticipated take of golden eagles from 0.44 eagles per year to 0.261 eagles per year, according to the USFWS. As a result of the

decrease in anticipated take of eagles, the funding amount that would be provided by the Proponent if the Proposed Action Alternative were to be selected and approved would likely be reduced from the $165,000 that was initially proposed.

The BLWP would not be permitted for the take of eagles under an incidental take permit, so the process[7] for ongoing re-evaluation of eagle take and adjustment of the compensatory mitigation that is needed to achieve no net loss of eagles would not be available to the BLM. It is therefore uncertain whether the amount of funding that is provided for voluntary compensatory mitigation by the Proponent would be sufficient to result in no net loss of eagles.

3.8.2.2 Direct and Indirect Impacts of Alternatives 1 and 2

The impacts of Alternatives 1 and 2 on bald and golden eagles would be similar to the Proposed Action. The wind turbines that are proposed for the BLWP under Alternative 2 would have larger rotor diameters (381 to 459 feet) compared to the Proposed Action and Alternative 1 (380 to 381 feet), resulting in a larger rotor swept area for each turbine; however, there would be fewer turbines constructed under Alternative 2 (34 turbines) compared to the Proposed Action and Alternative 1 (40 turbines). Shifting the number/locations of wind turbines or other project infrastructure within the Alternatives 1 and 2 area as proposed would not substantially add to or reduce the potential impacts on bald or golden eagles from construction, O&M, or decommissioning of the BLWP as compared to the Proposed Action. For example, the results of the USFWS's analysis of Alternative 2 indicate that a golden eagle fatality is predicted to occur at an annual rate of 0.313 eagles per year and a predicted cumulative "take" of two golden eagles over a five year period, compared to an annual fatality rate of 0.261 eagles per year and cumulative take of two golden eagles over five years under the Proposed Action and Alternative 1.

Additional Measures to Avoid and/or Minimize Impacts

The measures that would be implemented to avoid and/or minimize impacts on eagles under Alternatives 1and 2 would be similar to the proposed action; however, under Alternative 2 the funding amount for the voluntary compensatory mitigation that is currently proposed by the Proponent in their Draft Eagle Management Plan would total $120,000.

3.8.2.3 Direct and Indirect Impacts of the No Action Alternative

Under the No Action Alternative, the BLWP would not be constructed, and there would be no additional impacts on bald and golden eagles beyond those associated with the current uses of the BLWP area. Existing impacts on bald and golden eagles within the BLWP area are primarily associated with transmission lines and structures that pose risks to eagles (i.e., potential for collisions or electrocution) and low levels of human activity (e.g., ranching, hunting, vehicle/OHV use) that may result in minor noise and visual disturbance to eagles.

[7] For wind energy projects that are permitted for the take of eagles under an incidental take permit that is issued by the USFWS, the USFWS ensures that authorized activities ultimately result in "no net loss" of eagles by requiring compensatory mitigation that either reduces another form of mortality to a level equal to or greater than the unavoidable mortality, or leads to an increase in carrying capacity and/or productivity that allows the eagle population to grow by an equal or greater amount. For permitted projects with 30-year incidental take permits, the USFWS re-evaluates take at the project every five years over the course of a 30-year permit, and authorization may be amended based on the five-year reviews. Compensatory mitigation is not calculated over 30 years from the initial pre-construction fatality estimate as post-construction monitoring data and documented fatalities are used to inform the fatality estimate. A permit review is conducted every five years and, based on estimated actual take during the preceding five years, the USFWS may adjust predicted take for the next five-year period. Once the five-year review is complete, the USFWS may also adjust compensatory mitigation requirements.

3.9 Visual Resources

The term "visual resources" refers to the composite of basic terrain, geologic, and hydrologic features; vegetative patterns; and built features that influence the visual appeal of a landscape. Visual impacts are defined as the change to the visual environment resulting from the introduction of modifications to the landscape. This section describes the existing context of the visual environment and assesses the potential impacts from the Proposed Action, Alternatives 1 and 2, and the No Action Alternative within the visual resource impact analysis area, which includes the area within 30 miles of the Proposed Action area, including Alternatives 1 and 2 area, but excluding the National Forest system lands.

3.9.1. Affected Environment

The visual resource impact analysis area lies within the southeastern portion of the Colorado Plateau physiographic province (U.S. EPA 2010). The Colorado Plateau consists of an uplifted, eroded, and deeply dissected tableland. Its benches, mesas, buttes, salt valleys, cliffs, and canyons are formed in and underlain by thick layers of sedimentary rock. Precipitous sidewalls mark abrupt changes in local relief, often of 1,000 to 2,000 feet or more. The region is dominated by a mix of pinyon-juniper and grasslands.

The BLM uses the VRM System to classify and manage visual resources on lands under its jurisdiction. The VRM System involves inventorying scenic values, establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives (BLM 1984). The BLM's VRM System incorporates scenic quality, viewer sensitivity, and visual distance zones to identify overall visual resource inventory (VRI) classes. These classes (I, II, III, and IV) represent the relative value of the existing visual landscape, as well as the visual resource baseline from which to measure impacts that a proposed project may have on these values. A VRI is not currently available for the SFO. To effectively evaluate impacts to scenic values within the area, a project-level VRI was conducted in June 2018 within a 30-mile distance of the BLWP within the SFO covering approximately 656,731 acres. The VRI area was defined as the area of visibility up to 30 miles from the location of BLWP wind turbines. This area was determined following research conducted by Argonne National Laboratory and the results found within *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes* (Sullivan, R., et al. 2012).

The scenic quality[8] of the VRI area regardless of jurisdiction/ownership was inventoried as part of the VRI. Each scenic quality rating unit received a rating that relates to its inherent aesthetic value based on the key factors of landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications, which are used to evaluate the scenic quality of a landscape. Within the VRI area, 212,558 acres were evaluated as Scenic Quality B and 444,172 acres as Scenic Quality C. Mapping related to scenic quality is located in Appendix F.

Visual sensitivity reflects attitudes and perceptions held by people regarding the landscape and, in general, reflect the public's level of sensitivity for noticeable change to the landscape. Visual sensitivity levels for the VRI area ranged from high to low. High levels of sensitivity, located within approximately

[8]Scenic or visual quality is the visual appeal of a landscape. The landscape is measured in terms of its distinctiveness (or memorability), scarcity, and variety of the landform, vegetation, water, color, adjacent scenery, and man-made features and how well these features fit together. The relative scenic quality (A, B, or C) is assigned to a landscape by rating the scenic quality evaluation key factors of landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications on a numerical scale. Landscapes considered to have the highest scenic value have a scenic quality rating of A; those with a rating of C are considered to be more common, less distinct landscape (BLM 1986b).

225,027 acres, are located along major roadways such as U.S. 60 and the co-aligned Magdalena Stock Driveway, as well as populated areas such as Quemado where the public views the landscape consistently and has concern for the preservation of the existing scenic quality. Moderate areas of sensitivity to change in scenic quality, located within approximately 361,034 acres, occur north of U.S. 60 in more remote and less populated areas where modifications to the landscape occur and changes in scenic quality are not as high of concern. Low areas of sensitivity, located within approximately 70,670 acres, are located south of U.S. 60 adjacent to Gila National Forest in remote areas where changes in scenic quality are not perceived by the public due to limited access. Mapping related to visual sensitivity is located in Appendix F.

The analysis of distance zones as part of the VRI considers the distance from which areas are commonly viewed (viewing platforms). The VRI area is subdivided into three distance zones: foreground-middleground (FM), background (BG), and seldom seen (SS) per BLM M-8400, based on viewing platform selections and Geographic Information System (GIS) modeling. Within the VRI area, approximately 314,673 acres occur within the FM distance zone, primarily along major roadways and communities, 71,470 acres occur in the BG distance zone, and 270,588 acres occur in the SS zone. Mapping related to visual distance zones is located in Appendix F.

Within the VRI area, 63,377 acres are classified as VRI Class I (10 percent of the VRI area), 34,762 acres (5 percent of the VRI area) as VRI Class II; 189,084 acres (29 percent of the VRI area) as Class III; and 369,508 acres (56 percent of the VRI area) as VRI Class IV. Approximately 21,930 acres (50 percent) occurs on VRI Class III and 21,598 acres (50 percent) occurs on VRI Class IV within the Proposed Action area (43,528 acres). Within the Alternatives 1 and 2 area (16,648 acres), approximately 3,978 acres (24 percent) occurs on VRI Class III and 12,669 acres (76 percent) occurs on VRI Class IV. Mapping related to VRI Classes is located in Appendix F.

In its planning process, the BLM weighs visual and competing resource values to allocate the VRM classes with associated management class objectives for a given area's visual setting. The SFO RMP identifies approximately 28,533 acres (2 percent of the total SFO acreage) to be managed as VRM Class I and 520,024 acres (36 percent of the total SFO acreage) to be managed as VRM Class II. The remainder of the SFO is to be managed as VRM Class III (448,910 acres/28 percent) and Class IV (509,432 acres/34 percent) (BLM 2010a).

There are 30,338 acres and 13,859 acres of lands administered by the BLM within the Proposed Action and Alternatives 1 and 2 areas, respectively. Within the Proposed Action area, approximately 2,044 acres (7 percent) occur on lands managed as VRM Class II; 15,026 acres (50 percent) occur on VRM Class III; and 13,267 acres (44 percent) occur on VRM Class IV. Within the Alternatives 1 and 2 area, approximately 167 acres (1 percent) occur on lands managed as VRM Class II; 4,752 acres (34 percent) occur on VRM Class III; and 8,939 acres (65 percent) occur on VRM Class IV. Figure 3-12 and Figure 3-13 show the VRM classes allocated by the SFO within the Proposed Action and Alternatives 1 and 2 areas, respectively.

The existing landscape character and condition of the visual resource impact analysis area are identified in terms of general landforms, vegetation, built features, and land use by visual analysis units (VAUs). The VAU delineations, similar to Scenic Quality Rating Units, are based on areas with common landform patterns and features, vegetation communities and patterns, built features, land use patterns, scarcity, and/or surface water resources in relation to the Colorado Plateau Ecoregion. Two VAUs were delineated within the Proposed Action and Alternatives 1 and 2 areas (Figure 3-14 and Figure 3-15, respectively). Detailed description of the VAUs are provided in Appendix F.

Key sensitive viewing platforms or key observation points (KOPs) were selected within and adjacent to the Proposed Action and Alternatives 1 and 2 areas (Figure 3-16 and Figure 3-17, respectively) that represent viewing locations where the public would view the proposed BLWP both from a stationary (e.g., scenic overlook or residential area) or a linear (e.g., highway or trail) location. The KOPs that were selected include the Cimarron Ranch Subdivision, U.S. 60, Bill Knight Gap Road, Coronado Trail National Scenic Byway, and Zuni Salt Lake Proprietary ACEC. Table 3-20 provides the rationale and type of each viewing platform. For linear platforms such as U.S. 60, the entire length of the route within the visual resource impact analysis area was evaluated, not just from a single viewing location. In addition, the Pueblo of Zuni have provided the BLM with two stationary locations that are used on their pilgrimage route to the Zuni Salt Lake. These locations are considered sensitive and are not shown on the figures in this EIS.

Table 3-20. Sensitive Viewing Platform Selection Rationale

Sensitive Viewing Platform	Platform Type	Rationale for Platform Selection
Cimarron Ranch Subdivision	Stationary	The Cimarron Ranch Subdivision sensitive viewing platform was selected due do the number of residences and potential views from residences. The platform is located approximately 4.5 miles north of the nearest visible turbine.
Zuni Salt Lake Proprietary ACEC	Stationary	The Zuni Salt Lake Proprietary ACEC sensitive viewing platform was selected due do the cultural importance of this location to Native American Tribes in the area. The stationary platform is located approximately 21 miles north of the nearest visible turbine at the top of the landform surrounding the Zuni Salt Lake; the BLWP would not be visible from the water body itself.
U.S. 60	Linear	The U.S. 60 sensitive viewing platform was selected due do the large amount of vehicular traffic associated with this highway. This platform also has some historical significance and is identified as the Ocean to Ocean Highway as well as an alignment associated with the Magdalena Stock Driveway[1]. The platform is located approximately 2.5 miles north of the nearest visible turbines and intersects project infrastructure (transmission lines).
Bill Knight Gap Road	Linear	Bill Knight Gap Road is a north-south connector route between U.S. 60 and Luna, NM. This linear platform parallels and is adjacent to the turbines proposed along the east side of the alternatives.
Coronado Trail National Scenic Byway/U.S. 191	Linear	The Coronado Trail National Scenic Byway (U.S. 191) is located approximately 16 miles from the nearest visible wind turbines. The angle of observation from this platform would be predominately head-on views and viewer position would be predominately neutral.

Table Abbreviations: ACEC = Area of Critical Environmental Concern; NM = New Mexico

[1] The Magdalena Stock Driveway was a 125-mile long corridor that was used for movement of cattle and sheep to Magdalena, New Mexico for shipping in the late 1800's until the 1970's and is of historical importance in the region.

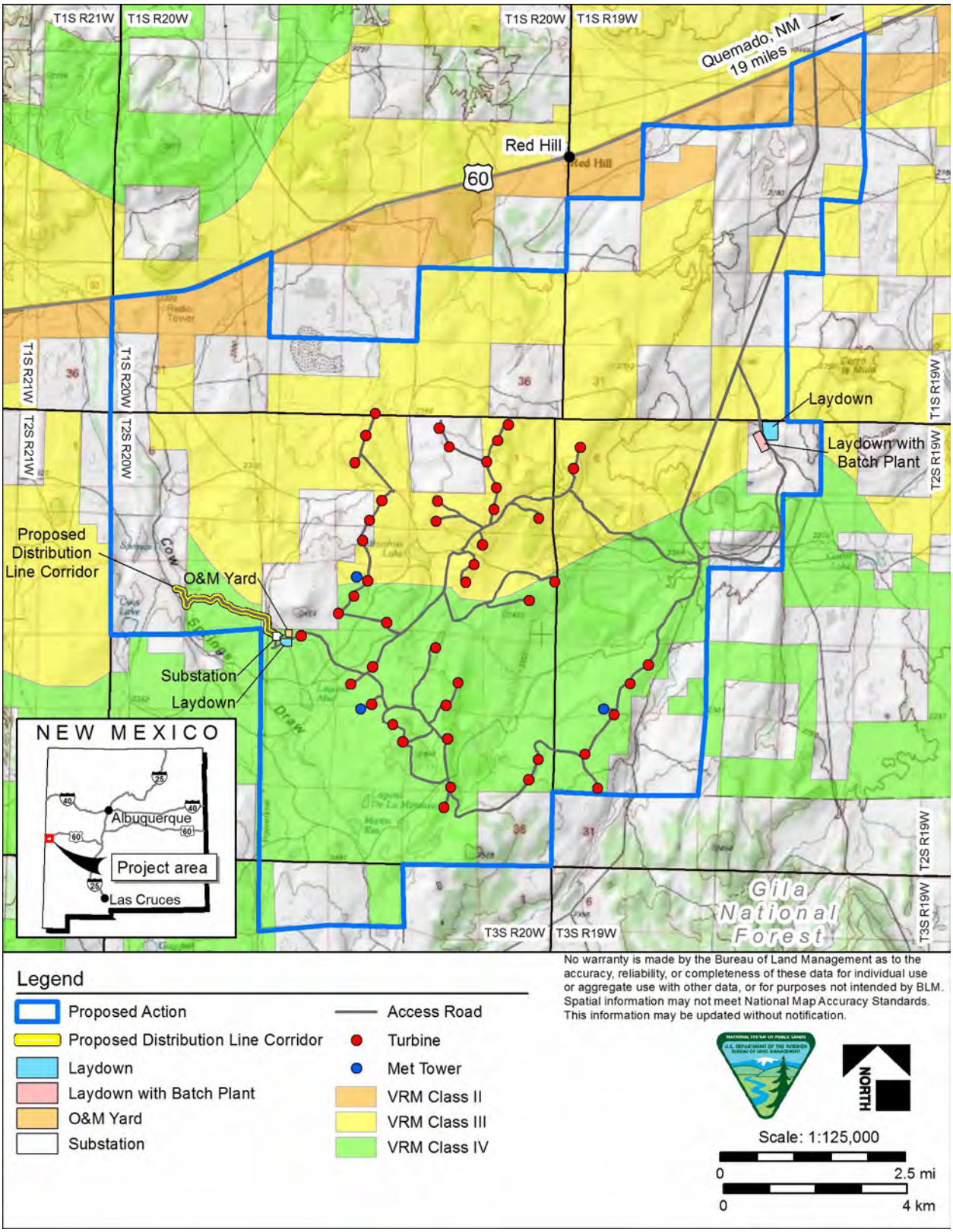

Figure 3-12. VRM Classes within the Proposed Action Area

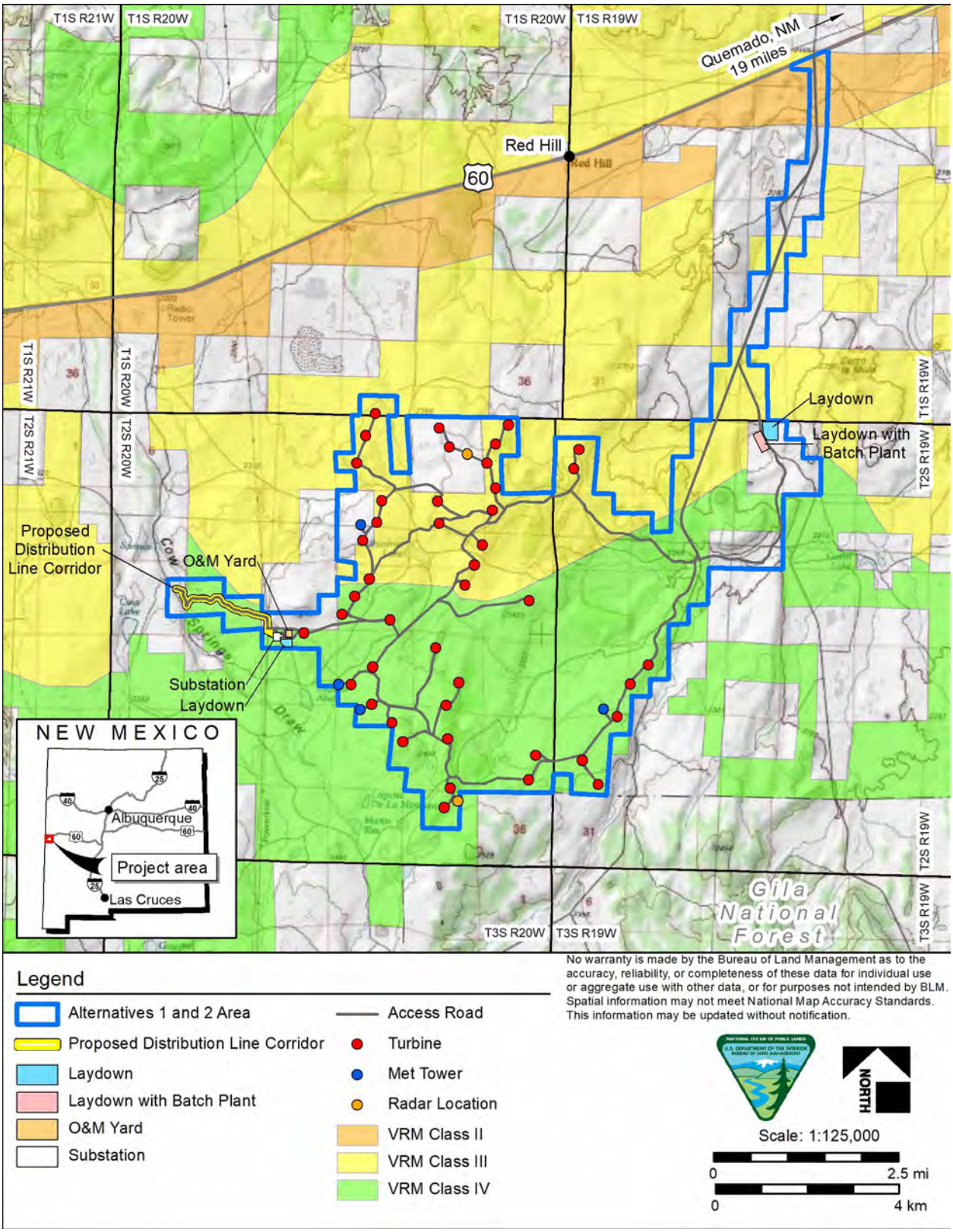

Figure 3-13. VRM Classes within Alternatives 1 and 2 Area

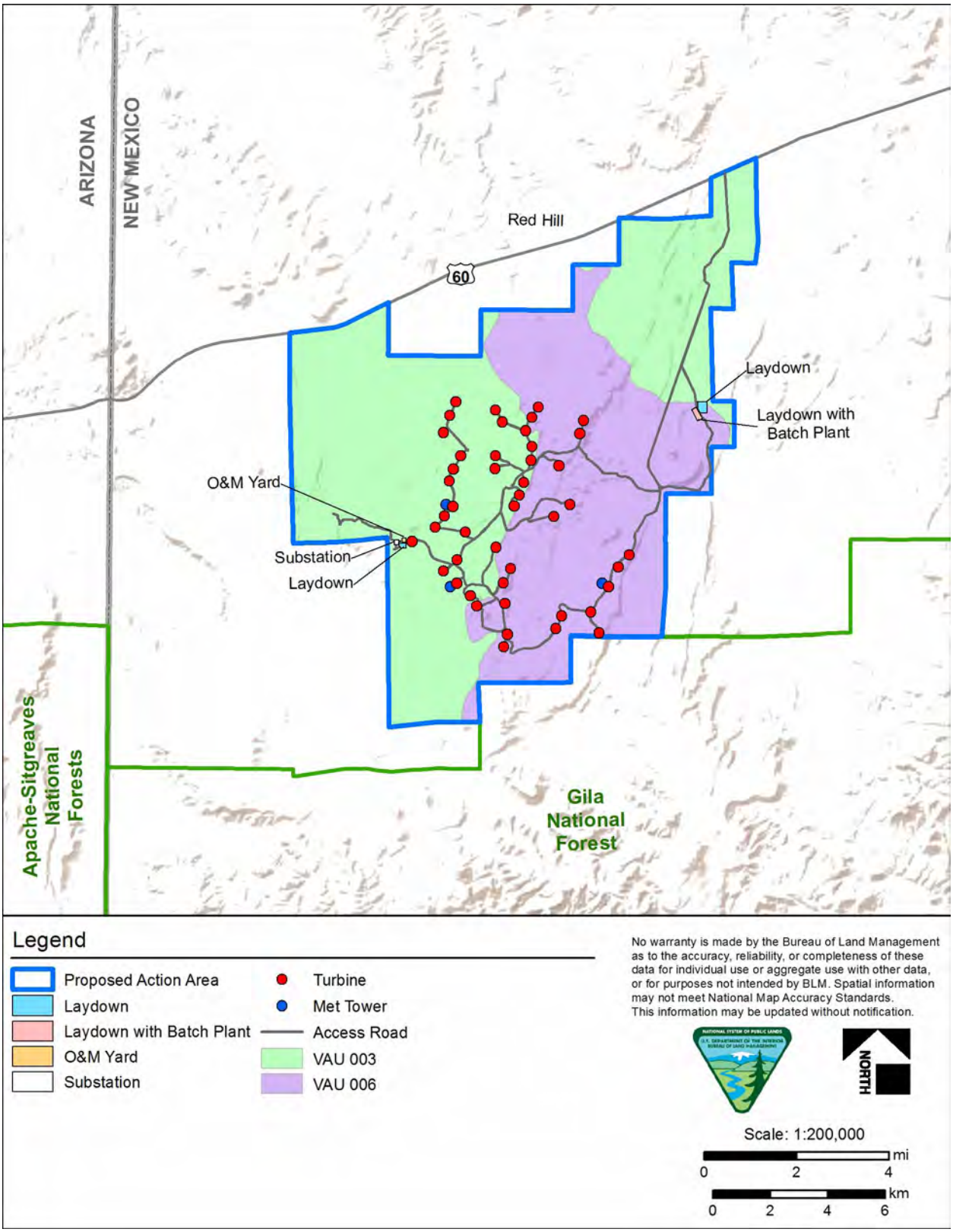

Figure 3-14. Visual Analysis Units within the Proposed Action Area

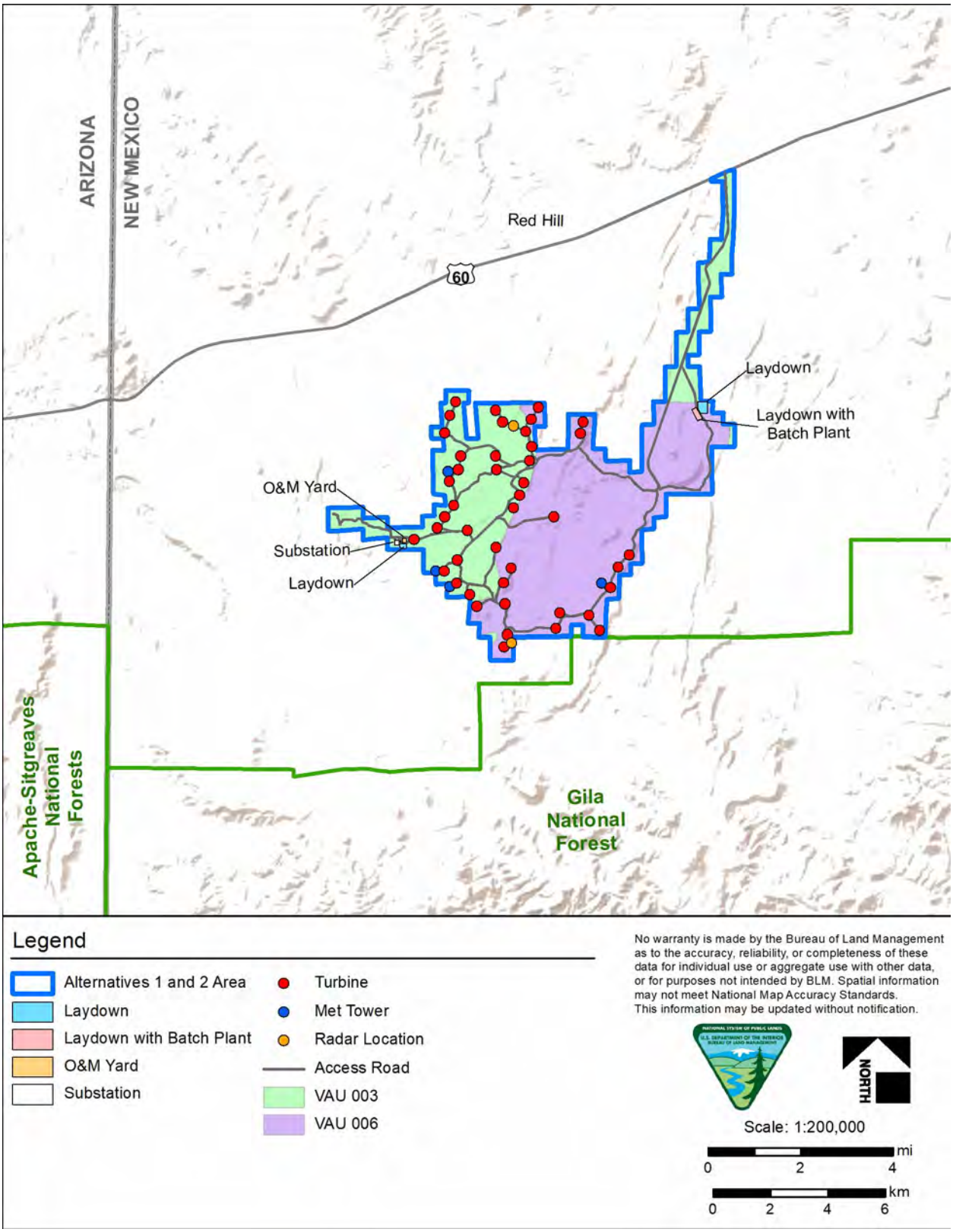

Figure 3-15. Visual Analysis Units within Alternatives 1 and 2 Area

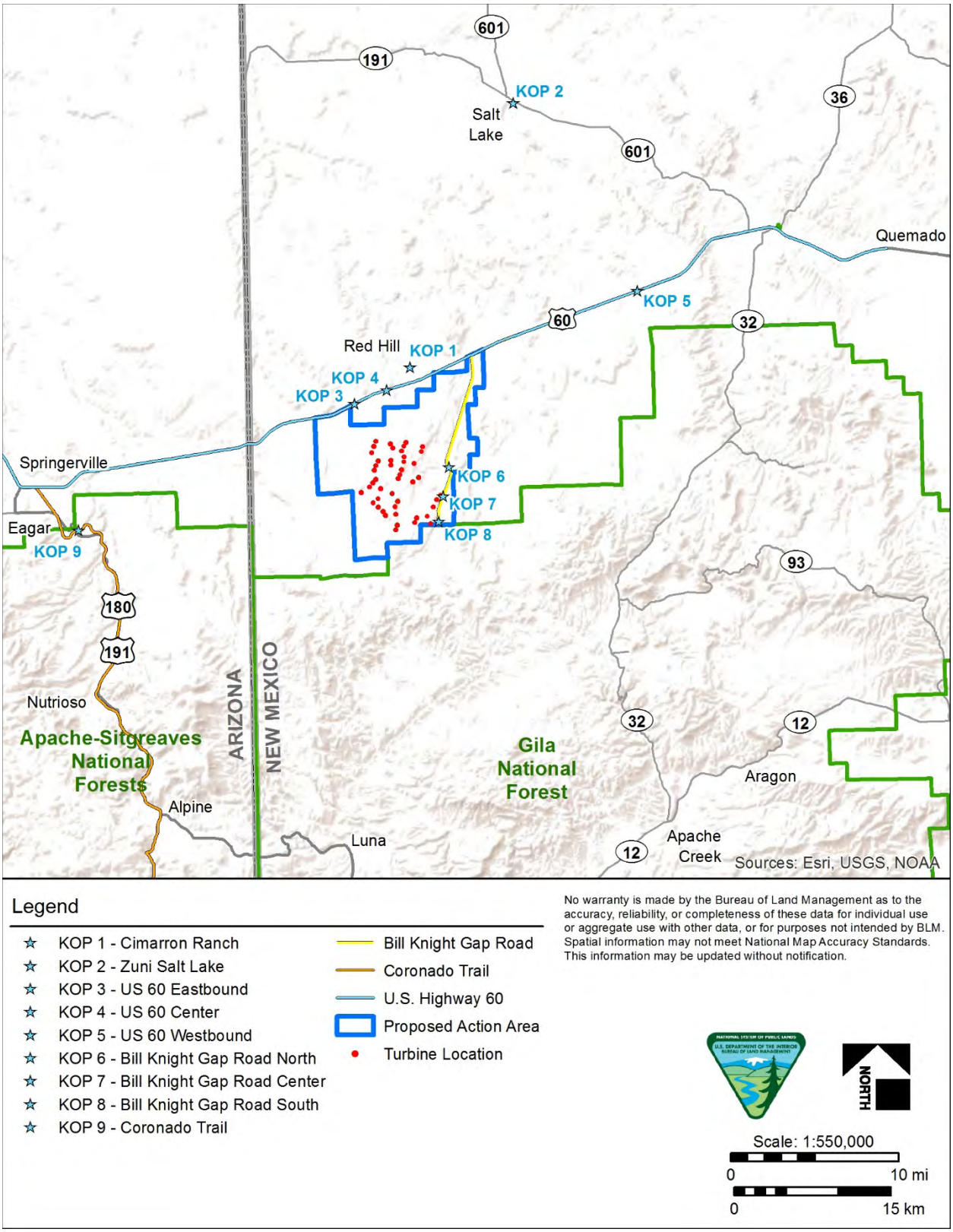

Figure 3-16. Key Observation Point Locations for the Proposed Action

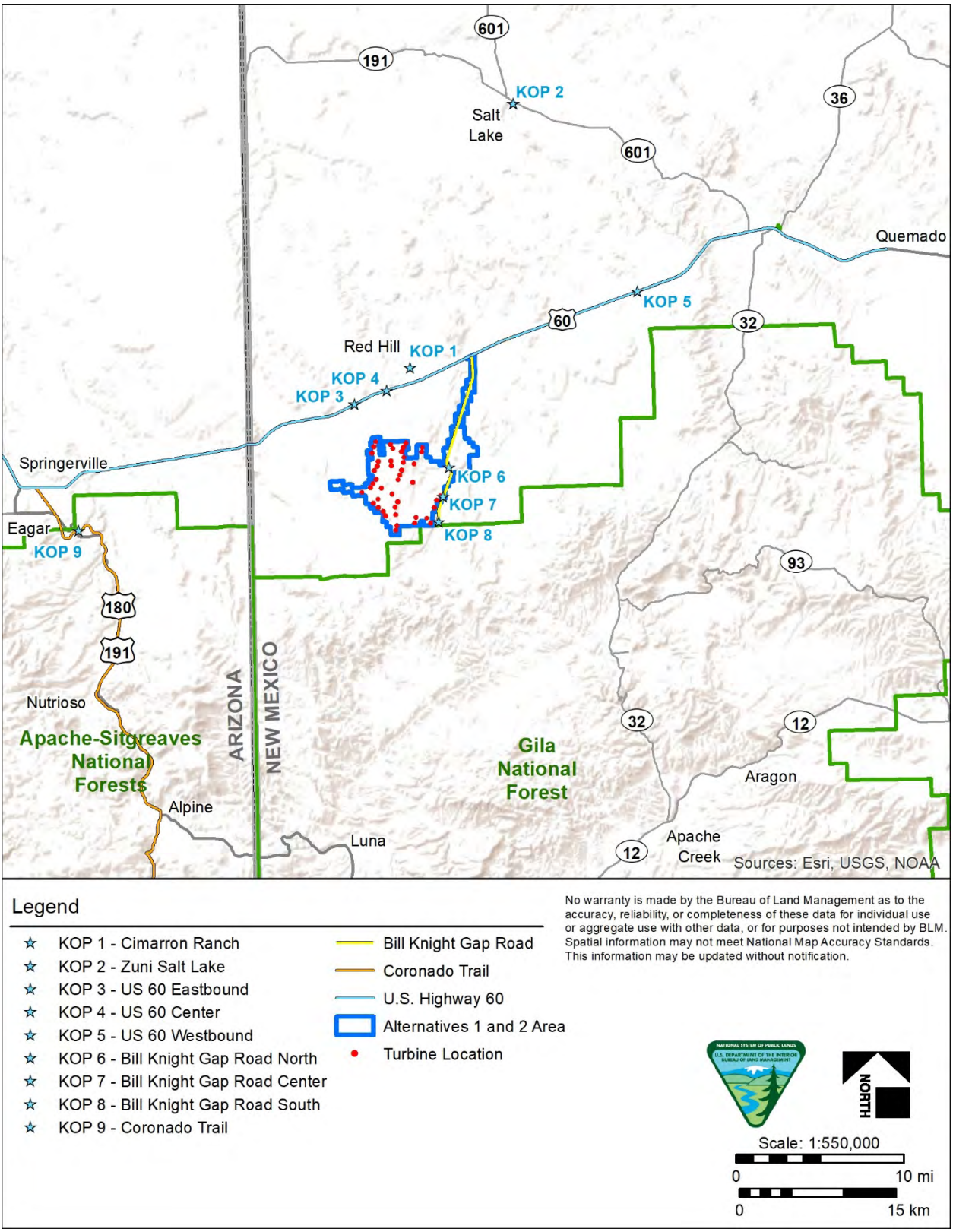

Figure 3-17. Key Observation Point Locations for Alternatives 1 and 2

3.9.2. Environmental Consequences

An analysis of visual dominance, scale, and contrast was used to determine the degree that the Proposed Action and Alternatives 1 and 2 would attract attention and to assess the relative change in character as compared to the existing characteristic landscape and its inherent scenic quality. The amount of visual contrast created is directly related to the amount of attention that is drawn to a feature in the landscape. Changes in the viewsheds from sensitive viewing locations were also evaluated and characterized. In addition, the analysis of visual impacts was used in the determination of compliance with the BLM's VRM objectives where the Proposed Action and Alternatives 1 and 2 would be located within BLM-administered lands. The potential impact to the Coronado Trail National Scenic Byway, Zuni Salt Lake Proprietary ACEC (including the two pilgrimage route locations), and the Cerro Pomo ACEC are also addressed in this section.

3.9.2.1 Direct and Indirect Impacts from the Proposed Action

Construction

Under the Proposed Action, the existing visual character and scenic quality would be affected during construction by the generation of fugitive dust; movement of equipment and vehicles in and out of the Proposed Action area; and the presence of construction cranes, transmission line stringing, and material stockpiles. The construction activities would introduce forms, lines, colors, and textures that would temporarily attract attention and create strong contrast[9] with the existing setting. Removal of vegetation would expose lighter-color soils in the cleared areas for laydown/staging, underground electrical collection system trenches, distribution poles, new access roads, and turbine towers.

The construction-related impacts would range from a minor to moderate degree of change in the characteristic landscape in the foreground area[10] of three of the KOPs (U.S. 60, Bill Knight Gap Road, and Cimarron Ranch Subdivision) depending on the viewing distance, type of construction activity taking place, and time of day. There would be no apparent change in the middleground from these viewing platforms or from the Coronado Trail National Scenic Byway KOP because of the open and irregular vegetation pattern in the landscape and because much of the ground disturbance from the construction of the BLWP would not be readily apparent at that distance. The construction activities would also be less noticeable in the middleground because of the presence of other cultural modifications and areas of disturbance such as the existing network of unpaved roads. Therefore, there would be short-term, moderate impacts on visual resources resulting from construction activities.

Operation and Maintenance

The magnitude of change to the landscape character and scenic quality within the foreground of the Proposed Action area would introduce numerous elements not currently common in the Proposed Action area. The proposed substation, security fencing, and O&M building would appear to substantially alter the landscape and be visually prominent. The large stature of the 499-foot-tall wind turbines, the white color of the towers, and the movement of the blades would attract attention, create a severe

[9] To analyze and mitigate potential visual impacts associated with proposed activities, the BLM uses guidelines described in BLM Handbook H-8431-1, Visual Resource Contrast Rating (BLM 1986). The degrees of contrast determined from selected KOPs or places where users tend to congregate, are categorized in a range including none, weak, moderate, or strong—where strong indicates a proposed activity will create contrast that demands attention, will not be overlooked, and is dominant in the landscape. Factors to be considered when applying the contrast criteria include distance, angle of observation, length of time the proposed project is in view, relative size or scale, season of use, light conditions, recovery time, spatial relationships, atmospheric conditions, and motion.

[10] The foreground distance zone is defined as the area up to 10 miles from the BLWP wind turbines or the KOPs, the middleground distance zone is the area from 10 miles to 20 miles away, and the background is considered to be from 20 to 30 miles away.

change in the landscape character, and result in a strong visual contrast within the foreground of the Proposed Action area. The overhead transmission and collection lines and access roads would be similar to existing features already present within the foreground area and would most likely not attract attention. Within the middleground and background of the Proposed Action area, the magnitude of change to the existing landscape character and scenic quality would vary depending on the distance, scale, and distinctiveness of landforms, which would affect the prominence of the Proposed Action components not common within the landscape.

Effects on Existing Scenic Quality and Landscape Character
Within the Proposed Action area, there are no lands that are considered as scenic quality A or B landscapes. There would be approximately 43,528 acres of scenic quality C landscapes within the Proposed Action area that would be impacted by the Proposed Action due the influence of project components within the landscape that would reduce the overall scenic quality rating associated with cultural modification for the two VAUs located within the Proposed Action area. The magnitude of change in landscape character associated with the Proposed Action would be major due to the dominant scale and form of the wind turbines in comparison to the undulating and sloping landforms, low stature vegetation, and minimal built features found in the existing landscape.

The improvements to existing access roads and the construction of new access roads within the Proposed Action area could create opportunities for people to access previously inaccessible areas of BLM lands. This could result in trampling vegetation and additional resource damage (such as increased erosion), which may indirectly affect scenic quality in these areas. New access roads could also potentially provide scenic viewing opportunities not currently available to the public. Therefore, there would be long-term, major impacts on the existing scenic quality and landscape character resulting from operation and maintenance activities.

Effects on Cimarron Ranch Subdivision KOP
All 46 of the potential wind turbine locations would be visible from the Cimarron Ranch Subdivision KOP, which is approximately 4.5 miles from the nearest turbine location. The potential magnitude of impacts to the views from the KOP would vary depending primarily on the distance from the Proposed Action and the visibility conditions. The wind turbines associated with the Proposed Action would demand attention and dominate the landscape in the foreground of the Cimarron Ranch Subdivision KOP. The landscape from this viewpoint would appear to be severely altered because of the dominance of the wind turbine structures in scale, color, line, texture, and form, as well as the motion of the turbine blades, which would create strong contrast in the setting. Therefore, there would be long-term, major impacts on the views from the Cimarron Ranch Subdivision KOP resulting operation and maintenance activities.

Effects on U.S. 60, Bill Knight Gap Road, and Coronado Trail National Scenic Byway
Of the three linear viewing platforms, only U.S. 60 and Bill Knight Gap Road would have foreground views of the Proposed Action. Views of project components from these platforms would predominately be skylined and occasionally backdropped based on viewer perspective.

Within the foreground and middleground distance zones of U.S. 60, all 46 potential Proposed Action wind turbine locations would be visible from the highway. Eastbound motorists on U.S. 60 would have views of the turbines in the foreground of the Proposed Action area for approximately 15 miles of the 67 miles (22 percent of the time) within the visual resource impact analysis area. Westbound motorists on U.S. 60 would see the wind turbines in the foreground of the highway for approximately 16 miles of the 67 miles (24 percent of the time) within the Proposed Action area. Within the middleground views from U.S. 60, the proposed turbines would be equally skylined and seen with a backdrop against mountainous terrain. From this distance, the components of the Proposed Action would be visible by motorists when traveling in either the eastbound or westbound direction for less than 4 miles of the

67 miles (6 percent of the time) within the visual resource impacts analysis area. Within the background distance zone, 14 of the Proposed Action wind turbine locations would be visible. The Proposed Action would be visible to motorists for 2 miles out of a total of 67.0 miles (3 percent of the time) within the analysis area in the eastbound direction. The components of the Proposed Action would not be visible within the background distance zone traveling in the westbound direction. Therefore, there would be long-term, major impacts on views from U.S. 60 resulting from operation and maintenance activities.

Along Bill Knight Gap Road within the foreground distance zone, 42 of the possible 46 Proposed Action wind turbine locations would be visible in either direction for the entire approximately 10.6 miles (100 percent) within the analysis area. Along one portion of Bill Knight Gap Road, the proposed turbines would be within approximately 850 feet of the road. The Bill Knight Gap Road viewing platform does not occur within the middleground or background area. Therefore, there would be long-term, major impacts on views from Bill Knight Gap Road KOP resulting from operation and maintenance activities.

From the U.S. 191 segment of the Coronado Trail National Scenic Byway, motorists would have middleground views of the Proposed Action; there would be no foreground or background views. Of the possible 46 Proposed Action wind turbine locations, 43 turbine locations would be visible from the scenic byway only in the southbound travel direction. Views of the proposed wind turbines from the scenic byway would be equally skylined and seen with a backdrop against mountainous terrain. The duration of view of the Proposed Action from the middleground of the scenic byway would be approximately 0.4 miles of the 36.6 miles of roadway (less than 1 percent of the time) within the visual resource impact analysis area. The Proposed Action as viewed from the middleground of the Coronado Trail National Scenic Byway would create weak contrast in form, color, line, and texture in the characteristic landscape and may attract attention depending on the time of day and atmospheric conditions. Therefore, there would be long-term, minor impacts on views form the Coronado Trail National Scenic Byway KOP resulting from operation and maintenance activities.

Effects on Zuni Salt Lake and Cerro Pomo ACECs

The Proposed Action would be visible in the background (approximately 21 miles away) of the Zuni Salt Lake Proprietary ACEC KOP. Twenty-six of the Proposed Action wind turbine locations would be visible from the Zuni Salt Lake Proprietary ACEC KOP. Views of the Proposed Action from this stationary KOP would be predominantly of the blades of the wind turbines; the remainder of the turbine structure would be obstructed from view by landforms. The proposed wind turbines would be visually subordinate and overall the project components would create low contrast due to the distance and variable atmospheric conditions. The casual observer would not likely notice the turbines on the horizon from this viewing platform because of the expansive views and variety of the landforms in the landscape. The amount of exposure of the Proposed Action from this KOP would be span approximately 15 degrees along the horizon. Visual magnification such as binoculars at this distance may be needed to pick out the turbines against the sky. Therefore, there would be long-term, negligible impacts on views from the Zuni Salt Lake Proprietary ACEC KOP resulting from operation and maintenance activities.

One of the two locations on the pilgrimage route is approximately 9 miles north of the Zuni Salt Lake Proprietary ACEC KOP and 30 miles from the closest wind turbine in the Proposed Action. At this location, the view would be approximately 800 feet higher in elevation than the Zuni Salt Lake Proprietary ACEC KOP and all 46 wind turbine locations would be visible. Only a portion of the blades of the turbines would be visible; the rest of the turbine would be obstructed from view by landforms. The wind turbines would be visually subordinate, and overall, the project components would create low contrast due to distance from the Proposed Action and variable atmospheric conditions. A person at this distance from the Proposed Action would not likely notice the turbines because of the expansive views and variety of the landforms in the landscape. The casual observer may need the aid of binoculars or some other magnification at this distance to pick out the turbines against the sky. The second

location along the pilgrimage route is approximately 1 mile south of the Zuni Salt Lake Proprietary ACEC KOP. The Proposed Action would not be visible from this location because of intervening landforms and an inferior viewer position. Therefore, there would be long-term, negligible impacts on views from the pilgrimage route resulting from operation and maintenance activities.

Visitors at the Cerro Pomo ACEC would have foreground and middleground views of the Proposed Action that would be intermittent and predominately seen with a backdrop against mountainous terrain. Views of the Proposed Action in the foreground would attract attention and create moderate contrast within the viewshed due to the form, line, color, texture, and scale of the turbines that are not characteristic of the landscape. Similar to other middleground views, the Proposed Action would create weak contrast in form, color, line, and texture in the characteristic landscape and may attract attention depending on the time of day and atmospheric conditions. Approximately 16 percent of the ACEC would have views of the Proposed Action in the foreground area and 3 percent would have views in the middleground area. Therefore, there would be long-term, minor impacts on views from within the Cerro Pomo ACEC resulting from operation and maintenance activities.

Effect on Night Skies - Aircraft Detection Lighting Systems
To avoid collisions with aircraft, the proposed turbines must be lighted at night. Night-sky contrasts can be substantial in rural, undeveloped areas such as the BLWP area because there are few other light sources and there is uniform and generally featureless dark background. The lights may be visible for more than 20 miles depending on atmospheric conditions (Sullivan, et.al. 2012, NPS 2014). The synchronized flashing of the Aircraft Detection Lighting Systems (ADLS) as proposed in the BLWP POD (Borderlands Wind, LLC 2020) when activated would result in strong, short-duration contrast on the surrounding landscape until the aircraft leaves the airspace.

Military aircraft conducting training missions within designated flight corridors in the vicinity of the wind turbines may activate the ADLS. Specific Military Training Routes known as VRs are conducted between 100 feet and 1,500 feet above ground level with flight corridors in this area which falls within the 1,000-foot ADLS trigger area. The number of Commercial air traffic passing over the BLWP area (not landing at local airports) would not activate the ADLS because they travel at elevations greater than 1,000 feet. There are four regional airports within approximately 30 miles of the BLWP area. Based on flight statistics obtained from those four regional airports, it is estimated there may be 55 flights that would occur in the BLWP area within a 24-hour period. It is unknown how many of the estimated 55 flights would occur during nighttime hours or fly at altitudes at or below 1,500 feet (height of the turbine and 1,000-foot trigger area). An airplane could trigger the ADLS on for approximately 4.5 minutes based on a speed of 180 miles per hour (single engine, general aviation aircraft) (Davisson 2016). Single engine aircrafts would typically cruise above 1,000 feet and would only enter into the 1,000-foot ADLS trigger area when they are landing or taking off. The closest regional airport is approximately 12 miles away with an average of two flights a month. A single engine, general aviation plane would approach or depart from an airport at a 10:1 glide slope gradient and would fly at an elevation between 1,000 and 1,500 feet approximately 2.5 miles away from the airport (Schiff 2011). At this distance from the BLWP area, it is unlikely that planes using the regional airport would trigger the ADLS.

The short duration synchronized flashing of the ADLS when activated by aircraft entering the airspace and approximately 30 seconds after leaving the airspace would have substantially less visual impacts at night than the standard continuous, medium-intensity red strobe light aircraft warning systems due to the short duration of activation. Therefore, there would be long-term, negligible to minor impacts on night skies resulting from operation and maintenance activities associated with the ADLS.

Effect on Night Skies - Continuous Flashing Red Aviation Obstruction Warning Lights
To avoid collisions with aircraft, the proposed turbines must be lighted at night. Continuously flashing red lights would be necessary if the use of the ADLS is not be approved for use by the FAA. Aerial

hazard navigation lighting that would be placed on top of proposed turbines would directly impact the natural lightscape and dark night skies in the foreground and middleground. Night-sky contrasts can be substantial in rural, undeveloped areas such as the BLWP area because there are few other light sources and there is uniform and generally featureless dark background. While not every turbine would have lights, the lighted turbines would flash on and off at the same time. The lights can be visible for more than 20 miles (Sullivan, et.al. 2012, National Park Service 2014). Synchronized flashing of the red aviation obstruction warning lights and the extent of the red aviation obstruction warning lights at night would result in strong contrast in the landscape for motorist along U.S. 60 and Bill Knight Gap Road and for views from the Cimarron Ranch Subdivision.

Decommissioning

The potential impacts associated with the decommissioning process would be similar to the construction-related effects for the Proposed Action. The Proposed Action area's scenic quality and landscape character would be affected by the generation of fugitive dust, movement of equipment and vehicles in and out of the BLWP area, and presence of construction cranes removing the turbine towers. The decommissioning activities would introduce forms, lines, colors, and textures that would temporarily attract attention and strongly contrast with the existing setting. In addition, the decommissioning activities would create a subtle degree of change in the characteristic landscape in the foreground area of the U.S. 60, Bill Knight Gap Road, and Cimarron Ranch Subdivision KOPs. There would be no apparent change in the middleground view of the KOPs because of the partial obstruction of the proposed project components by landforms, as well as much of the decommissioning activities, such as removal of the substation and O&M building, would not be readily apparent at that distance. Therefore, there would be short-term, moderate to strong impacts to scenic quality and landscape character resulting from decommissioning activities.

3.9.2.2 Proposed Action Conformance with BLM VRM Objectives

The BLM has developed measurable standards for managing the visual resources of its administered lands. As previously noted, VRM classes with established objectives have been identified for the BLWP area's visual resources as part of the RMP process. Based on the contrast rating evaluation (BLM 1986b) conducted for this analysis, the magnitude of impact determined whether or not the Proposed Action would be in conformance with the established objectives (Table 3-21). The contrast rating and environmental factors worksheets for each KOP assessing BLM-administered lands are included in Appendix F, along with photorealistic simulations.

Table 3-21. BLM Visual Resource Management Class Objectives

VRM Class	Management Objective
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be no more than moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

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

Table Abbreviations: BLM = Bureau of Land Management; VRM = Visual Resource Management

The Proposed Action would create weak contrast in VRM Class II areas when viewed from U.S. 60 and Bill Knight Gap Road KOPs and would meet VRM Class II objectives from those locations. There would be no perceived contrast associated with the Proposed Action from the Cimarron Ranch and Coronado Trail Scenic Byway KOPs.

As noted above, the Proposed Action would attract attention, create a severe change in the landscape character, and result in a strong visual contrast within the foreground area of the U.S. 60, Cimarron Ranch Subdivision, and the Bill Knight Gap Road KOPs. Therefore, the Proposed Action would not be in conformance with the VRM Class III management objectives (Table 3-22). Because the Proposed Action would not meet the VRM Class III objective as allocated in the SFO RMP, a land use plan amendment would be required. The Proposed Action would create weak contrast when viewed from the Coronado Trail Scenic Byway and would meet VRM Class III objectives from this KOP.

The Proposed Action would create strong contrast in VRM Class IV areas when viewed from the Cimarron Ranch, U.S. 60, and Bill Knight Gap Road KOPs and would meet VRM Class IV objectives from those locations. There would be weak contrast associated with the Proposed Action from the Coronado Trail Scenic Byway KOP.

The landscape of the Proposed Action area would not be visible from the Zuni Salt Lake Proprietary ACEC KOP; only a portion of the blade of the turbines would be visible, and as such, conformance with VRM is not applicable for that KOP.

Table 3-22. BLM Conformance by KOP for the Proposed Action

KOP	VRM Class	BLM Acres Visible	Contrast Rating	Conformance
Cimarron Ranch Subdivision	II	16	None	Meets
	III	2,363	Strong	Does Not Meet
	IV	23	Strong	Meets
U.S. 60	II	2,908	Weak	Meets
	III	13,876	Strong	Does Not Meet
	IV	6,257	Strong	Meets
Bill Knight Gap Road	II	525	Weak	Meets
	III	4,484	Strong	Does Not Meet
	IV	4,508	Strong	Meets
Coronado Trail Scenic Byway	II	7	None	Meets
	III	317	Weak	Meets
	IV	952	Weak	Meets
Total Acres of Nonconformance	II	0	NA	NA
	III	20,723	NA	NA
	IV	0	NA	NA

Table Abbreviations: BLM = Bureau of Land Management; KOP = key observation point; NA = not applicable; VRM = Visual Resource Management.

Additional Measures to Avoid and/or Minimize Impacts

With the implementation of the BMPs and other design features in Appendix B, no additional measures to avoid and/or minimize impacts to visual resources from the Proposed Action are recommended.

3.9.2.3 Direct and Indirect Impacts of Alternative 1 and Alternative 2

Alternatives 1 and 2 would have similar effects as the Proposed Action. With Alternative 2, the casual observer at the Zuni Salt Lake Proprietary ACEC KOP would see eleven more turbines (37) than the Proposed Action, and twelve more turbines than Alternative 1, because of the difference in turbine height. The reduction of two turbine locations for both Alternatives 1 and 2 as compared to the Proposed Action and the increase in turbine height associated with Alternative 2 would not be perceived by the casual observer and impacts on visual resources would be consistent with those impacts associated with construction, O&M, and decommissioning of the Proposed Action.

Conformance with BLM VRM Objectives:

Alternatives 1 and 2 would have similar effects on VRM objectives and KOPs as the Proposed Action (Table 3-23). Overall BLM acres visible from KOPs would be reduced as a result of the smaller footprint of Alternative 1 and 2 area as compared to the Proposed Action area. Similar to the Proposed Action, Alternatives 1 and 2 would not meet VRM Class III objectives as allocated in the SFO RMP; a land use plan amendment would be required.

Table 3-23. BLM Conformance by KOP for Alternatives 1 and 2

KOP	VRM Class	BLM Acres Visible	Contrast Rating	Conformance
Cimarron Ranch Subdivision	II	0	None	Meets
	III	387	Strong	Does Not Meet
	IV	23	Strong	Meets
U.S. 60	II	312	Weak	Meets
	III	3,816	Strong	Does Not Meet
	IV	4,204	Strong	Meets
Bill Knight Gap Road	II	269	Weak	Meets
	III	2,704	Strong	Does Not Meet
	IV	3,401	Strong	Meets
Coronado Trail Scenic Byway	II	0	None	Meets
	III	254	Weak	Meets
	IV	969	Weak	Meets
Total Acres of Nonconformance	II	0	NA	NA
	III	6,907	NA	NA
	IV	0	NA	NA

Table Abbreviations: BLM Bureau of Land Management; KOP = key observation point; NA = not applicable; VRM = Visual Resource Management.

Additional Measures to Avoid and/or Minimize Impacts

With the implementation of the BMPs and other design features in Appendix B, no additional measures to avoid and/or minimize impacts to visual resources from Alternatives 1 and 2 are recommended.

3.9.2.4 Direct and Indirect Impacts from the No Action Alternative

Under the No Action Alternative, the BLM would not authorize the new grant application to construct, operate, maintain, and decommission the Proposed Action or Alternatives 1 or 2. No new disturbance to the characteristic landscape would occur, and no new elements or patterns would be introduced to the BLWP area. Therefore, there would be no impact on the casual viewer from stationary or linear KOPs or Special Management Areas.

3.10 Cumulative Impacts

The determination of what past, present, and reasonably foreseeable future actions to consider in the impact analysis is based on the resources being affected by the proposed BLWP. Past, present, and reasonably foreseeable future actions that incrementally add to the potential cumulative impacts of the Proposed Action, Alternatives 1 and 2, and No Action Alternative are considered in this EIS. The intent of this analysis is to capture the total effects of multiple actions over time that would be missed by evaluating each action individually.

3.10.1. Cumulative Effects Analysis Area and Timeframe of Effects

Each resource being analyzed has a defined cumulative effects analysis area (CEAA) for the Proposed Action, Alternatives 1 and 2, and No Action Alternative. Table 3-24 provides the geographic area of the CEAAs by resource.

Table 3-24. Cumulative Effects Analysis Areas (CEAAs)

Resource	CEAA[1] and Rationale for CEAA	Acres of Proposed Action CEAA	Proposed Area Percent of Total CEAA	Acres of Alternatives 1 and 2 CEAA	Alternatives 1 and 2 Percent of Total CEAA
Cultural Resources	5 miles. Applies to all land ownership types and areas visible within 5 miles of any project component or to the visual horizon, whichever is closer.	220,587	19.73	175,542	9.48
Mexican Wolf	Species' current occupied range (not including Tribal lands).	11,155,987	0.39	11,155,987	0.15
Special Status Species	10 miles. Anticipated area of effect for local area populations.	490,188	8.88	424,171	3.92
Bald Eagle	86 miles. Area of potential impacts to bald eagles related to the regional breeding population and the usual dispersal distance for eagle fledglings.	16,951,207	0.26	16,553,819	0.10
Golden Eagle	109 miles. Area of potential impacts to golden eagles related to the regional breeding population and the usual dispersal distance for eagle fledglings.	26,510,746	0.16	26,012,930	0.06

Resource	CEAA[1] and Rationale for CEAA	Acres of Proposed Action CEAA	Proposed Area Percent of Total CEAA	Acres of Alternatives 1 and 2 CEAA	Alternatives 1 and 2 Percent of Total CEAA
Visual Resources	30 miles. Due to the scale and visibility of wind turbines, facilities beyond this distance might sometimes be noticed by casual observers, but would appear to be so small as to have negligible impacts.	2,570,753	1.69	2,417,815	0.69

[1] Where miles are used, miles refers to the distance from the Proposed Action or Alternatives 1 and 2 area boundaries.

In terms of timeframe, the cumulative effects analysis is considered over a 35-year period. The proposed BLWP has a life expectancy of 35 years based on electrical demand, maintenance, and the expected life of the project facilities and major components.

3.10.2. Past and Present Actions

The cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. Existing conditions reflect the aggregate impact of prior human actions and natural events that have affected the environment and could contribute to cumulative effects. By looking at current conditions, the residual effects of past human actions and natural events are captured, regardless of which particular action or event contributed those effects. The CEQ issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, "agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions."

3.10.3. Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions are actions that have existing decisions, funding, or formal proposals or that are highly probable. These actions are not connected to the Proposed Action, Alternatives 1 and 2, and No Action Alternative. They are projections being made so that future effects, cumulative and otherwise, can be estimated, as required by NEPA. Specific projects within the resource CEAAs have been reviewed by land managers, including the USFS Schedule of Proposed Actions (SOPA), NMDOT, Arizona Department of Transportation, NMSLO, and Catron, Apache, and Greenlee counties. Table 3-25 identifies the name and provides a brief description of each project within the CEAAs.

Table 3-25. Projects in the Cumulative Effects Analysis Areas

Project Name	Owner/Proponent	Project Summary	Relevant Resource
4FRI Rim Country Project EIS	Apache-Sitgreaves National Forests	Landscape-scale restoration on the Coconino, Apache-Sitgreaves, and Tonto National Forests of ponderosa pine ecosystems; designed to maintain, improve, and restore ecosystem structure, pattern, function, and resiliency.	Mexican Wolf, Special Status Species, Bald and Golden Eagles
Luna Restoration Project EIS	Gila National Forest Quemado Ranger District	Ecological restoration treatments to minimize impacts of high severity fire across the landscape and provide community protection, provide vegetation and forest health management, improve watershed conditions, and protect and conserve wildlife habitat.	Mexican Wolf, Special Status Species, Bald and Golden Eagles, and Cultural Resources
Sheep Cabin Water System CE	Gila National Forest Quemado Ranger District	Improve existing water sources on the El Caso Allotment near Poison Canyon. These water improvement structures will benefit wildlife, including bats, and livestock. Action will install approximately 2.3 miles of pipeline, 4 storage tanks, 3 troughs, and 1 well.	Mexican Wolf, Special Status Species, Visual and Cultural Resources
Quemado RD Willie Steele and Escondido Trail Re-Routes CE	Gila National Forest Quemado Ranger District	Decommission approximately 0.75 mile of trail segments on Willie Steele and Escondido trails that dead end on private land, and construct 1.6- and 1.0-mile segments of Willie Steele and Escondido trails, respectively, around private land to provide access entirely on USFS lands.	Mexican Wolf, Special Status Species, Visual and Cultural Resources
Agua Fria Water System CE	Gila National Forest Quemado Ranger District	Improve existing water sources on the Agua Fria Allotment to benefit wildlife and livestock. Proposed to install approximately 2.7 miles of pipeline, 1 or 2 storage tanks, and 2 troughs.	Mexican Wolf, Special Status Species, Visual and Cultural Resources

Table Abbreviations: 4FRI = Four Forest Restoration Initiative, CE = Categorical Exclusion, EIS = Environmental Impact Statement, RD = Ranger District

Other reasonably foreseeable future actions and management activities occurring in the CEAAs that are highly probable include livestock grazing, range improvements, vegetation management, recreation (e.g., hunting, OHV use), road improvements, temporary MET towers, transmission lines, telephone lines, communication towers, and community development. Other disturbances that are ongoing include wildland fire and spread and establishment of noxious weeds and invasive plant species.

3.10.4. Cumulative Impacts to Resources

For this analysis, cumulative resource impacts for the CEAAs are the combined direct and indirect effects of the present and reasonably foreseeable future actions, in addition to the direct and indirect impacts of the Proposed Action, Alternatives 1 and 2, and No Action Alternative. The levels of cumulative impacts are categorized as major, moderate, or minor based on the same thresholds defined in Section 3.1 Introduction. If the results of the analysis of direct or indirect impacts were considered to be none or negligible as a result of the build alternatives and No Action Alternative, there would be no measurable contribution to a cumulative effect; therefore, no cumulative effects analysis for the respective resource/use has been done.

Based on the analysis of direct and indirect impacts, only short-term impacts would occur from the construction or decommissioning of the Proposed Action or Alternatives 1 and 2 for a resource/use. It is unlikely that all of the reasonably foreseeable future actions and management activities occurring in the CEAAs would be built at the same time as the Proposed Action or Alternatives 1 and 2. Therefore, there would be no measurable contribution of the alternatives' short-term impacts to a given resource's/use's cumulative impacts, and no cumulative short-term effects analysis for the respective resource/use has been done.

Based on the analysis of direct and indirect impacts provided in Chapter 3, neither the Proposed Action, nor Alternatives 1 and 2, nor No Action Alternative would have long-term, minor, moderate, or major direct or indirect effects to lands and reality; transportation and travel management; general vegetation; special status plant, reptile, and amphibian species; or federally listed species within the BLWP area. There would be no measurable contribution to the resource's/use's respective cumulative impacts; therefore, there is no cumulative effects analysis for these resources/uses. Refer to the specific resource subsection in Chapter 3 for detailed information.

At the end of the description of the cumulative impacts for each resource below, concluding statements of impacts are provided. The alternative's magnitude, duration, and intensity of direct and indirect impacts are restated, followed by a similar summary of total cumulative impacts that includes consideration of the direct and indirect alternative's effects. A statement on the contribution of the alternatives' impacts to the cumulative impacts is made as well.

3.10.4.1 Cultural Resources

Only a portion of the approximately 345 square miles within the Proposed Action CEAA and 274 square miles within the Alternatives 1 and 2 CEAA has been surveyed for cultural resources. The region surrounding the Proposed Action and Alternatives 1 and 2 areas is one with a rich history and prehistory.

The identified past, present, and reasonably foreseeable projects that could contribute impacts to cultural resources include community development, transmission line development, roads, and forest health management. Although the extent of these disturbances is not readily quantifiable, much of the CEAA remains undeveloped, and thousands of cultural resources probably remain intact but have yet to be discovered and recorded. Potential impacts to public land managed by BLM and NMSLO would be considered for projects proposed in the future, and measures to avoid, reduce, or mitigate impacts on important cultural resources are likely to be implemented.

Proposed Action and Alternatives 1 and 2 Contribution to Cumulative Impacts

The cultural resources that would be directly affected by the Proposed Action and Alternatives 1 and 2 are a small fraction of a percent of the cultural resources within the CEAA, and impacts on those resources would be avoided or mitigated to the maximum extent practicable. If disturbance is unavoidable, recovery and preservation of artifacts and information and other potential mitigation measures would be implemented in accordance with Section 106 consultation. Direct visual impacts of the wind farm on the setting of cultural resource sites could be largely reversible with decommissioning of the BLWP at the end of its use life and the restoration of the landscape.

Any residual direct impacts would not represent a major cumulative impact to those of other past, present, and reasonably foreseeable future actions.

The BLWP, in combination with other highly probable reasonably foreseeable projects, including other planned renewable energy and residential development projects, could result in cumulative indirect

impacts to cultural resources. Cumulative impacts resulting from most types of development projects are likely to be long-term because those facilities probably would be present for decades.

No Action Alternative Contribution to Cumulative Impacts

There would be no contribution to cumulative impacts to cultural resources because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to cultural resources.

3.10.4.2 Mexican Wolf

The types of projects or actions that could contribute to impacts to Mexican wolves include livestock grazing, community development, OHV use, transmission line development, roads, vegetation management, and forest health management (including prescribed burning). Livestock grazing, as well as wildlife movement, may spread invasive plants and alter the cover and composition of plant communities used by wildlife. Community development, roads, and infrastructure development would potentially consume useable habitat and fragment large blocks of habitats into smaller isolated ones. Future Federal planning efforts such as the 4FRI Rim Country and the Luna Restoration projects would help to implement measures to reduce impacts since their purpose is to protect and conserve wildlife habitat. Some of the foreseeable future actions, such as fuels and vegetation management found within the Mexican Wolf CEAA would have beneficial impacts to Mexican wolves and their suitable habitats on federally managed lands. Approximately 64 percent of the lands within the Proposed Action and Alternatives 1 and 2 CEAA for Mexican wolves are federally managed. In combination, past, present, and reasonably foreseeable future actions would result in long-term, direct and indirect, minor impacts to Mexican wolves because the majority of the CEAA would have measures implemented by the BLM and/or USFS to minimize potential effects to Mexican wolves and their respective habitats.

Proposed Action and Alternatives 1 and 2 Contribution to Cumulative Impacts

In the long-term, the Proposed Action would have direct and indirect, minor effects to Mexican wolves and their habitats. These long-term effects would be reduced gradually over time as natural reclamation of plant composition and cover occurs following construction and decommissioning activities. Cumulatively, the effects of the Proposed Action or Alternatives 1 and 2, when combined with past, present, and reasonably foreseeable future actions, would result in minor cumulative impacts to Mexican wolves within the Mexican Wolf CEAA due to the potential for further habitat loss, degradation, and fragmentation. The Proposed Action and Alternatives 1 and 2 would have a minor contribution to the cumulative effect on Mexican wolves.

No Action Alternative Contribution to Cumulative Impacts

There would be no contribution to cumulative impacts to Mexican wolves because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to Mexican wolves.

3.10.4.3 Special Status Species

The types of projects or actions that could contribute to impacts to special status species include livestock grazing, community development, OHV use, transmission line development, roads, vegetation management, and forest health management (including prescribed burning). Livestock grazing, as well as wildlife movement, may spread invasive plants and alter the cover and composition of plant communities used by wildlife. Community development, roads, and infrastructure development would potentially consume useable habitat and fragment large blocks of habitats into smaller isolated ones. Future Federal planning efforts such as the 4FRI Rim Country and the Luna Restoration projects would help to implement measures to reduce impacts since their purpose is to protect and conserve wildlife habitat. Some of the foreseeable future actions, such as fuels and vegetation management found within the Special Status Species CEAA would have beneficial impacts to special status species and suitable

habitats on federally managed lands. Approximately 69 percent of the lands within the Proposed Action CEAA and approximately 71 percent of the lands within the Alternatives 1 and 2 CEAA for these special status species are federally managed. In combination, past, present, and reasonably foreseeable future actions would result in long-term, direct and indirect, minor, impacts to special status species because the majority of the CEAA would have measures implemented by the BLM and/or USFS to minimize potential effects to these special status species and their respective habitats.

Proposed Action and Alternatives 1 and 2 Contribution to Cumulative Impacts

In the long-term, the Proposed Action would have direct and indirect, minor effects to special status species and their habitats. These long-term effects would be reduced gradually over time as natural reclamation of plant composition and cover occurs following construction and decommissioning activities. Cumulatively, the effects of the Proposed Action or Alternatives 1 and 2, when combined with past, present, and reasonably foreseeable future actions, would result in moderate cumulative impacts to special status species within the Special Status Species CEAA due to the potential for further habitat loss, degradation, and fragmentation. The Proposed Action and Alternatives 1 and 2 would have a minor to moderate contribution to the cumulative effect on special status species.

No Action Alternative Contribution to Cumulative Impacts

There would be no contribution to cumulative impacts to special status species because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to special status species.

3.10.4.4 Bald and Golden Eagles

The types of projects or actions that could contribute to impacts to bald and golden eagles include livestock grazing, community development, OHV use, transmission line development, roads, vegetation management, and forest health management (including prescribed burning). Livestock grazing, as well as wildlife, may spread invasive plants and alter the cover and composition of plant communities used by prey species. Community development, roads, and infrastructure development would potentially consume useable habitat and fragment large blocks of habitats into smaller isolated ones. Future Federal planning efforts such as the 4FRI Rim Country and the Luna Restoration projects would help to implement measures to reduce impacts since their purpose is to protect and conserve wildlife habitat. Some of the foreseeable future actions, such as fuels and vegetation management found within the Bald and Golden Eagles CEAAs would have beneficial impacts to bald and golden eagles and their suitable habitats on federally managed lands. Approximately 40 percent of the lands within the Proposed Action and Alternatives 1 and 2 CEAAs for bald eagles and 37 percent of the lands within the Proposed Action and Alternatives 1 and 2 CEAAs for golden eagles are federally managed. In combination, past, present, and reasonably foreseeable future actions would result in long-term, direct and indirect, minor, impacts to bald and golden eagles because a large percentage of the CEAAs would have measures implemented by the BLM and/or USFS to minimize potential effects to these species and their respective habitats.

Proposed Action Contribution to Cumulative Impacts

The USFWS's Programmatic EIS for the Eagle Rule Revision (USFWS 2016a) concluded that an annual take rate of 5 percent of the local area eagle population was the upper threshold of what would be appropriate to authorize (i.e., permit), whether or not the take is offset by compensatory mitigation. The USFWS has not issued any permits for authorized take of golden eagles that overlap with the project's local area population.

In the long-term, the Proposed Action and Alternatives 1 and 2 may have direct and indirect, major effects to eagles and their suitable habitat. These long-term effects would be reduced gradually over time as natural reclamation of plant composition and cover occurs following construction and

decommissioning activities. Cumulatively, the effects of the Proposed Action and Alternatives 1 and 2, when combined with past, present, and reasonably foreseeable future actions, may result in major cumulative impacts to eagles within CEAA due to the potential for take of eagles as well as habitat loss, degradation, and fragmentation. The Proposed Action and Alternatives 1 and 2 may have a major contribution to the cumulative effect on eagles, though the cumulative effect to eagles would be offset to some degree through voluntary compensatory mitigation.

No Action Alternative Contribution to Cumulative Impacts

There would be no contribution to cumulative impacts to bald and golden eagles because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to bald and golden eagles.

3.10.4.5 Visual Resources

The types of projects or actions that could contribute to impacts to visual resources include overhead transmission lines, MET towers, pipelines, communication towers, and community development. These actions generally result in a transformation of the natural landscape to a more developed setting when viewed during both day and night conditions over the long-term. Currently there are no projects or actions identified within the cumulative effects analysis area on BLM administered lands. Four reasonably foreseeable future actions have been identified which occur on USFS managed lands within the Quemado Ranger District. The Sheep Cabin Water System, Quemado Road Willie Steele and Escondido Trail Re-Routes, and the Agua Fria Water System may contribute to overall cumulative impacts to visual resources, though at this time there is not sufficient documentation to evaluate the level of impact associated with these identified projects. In addition, wildland fire would also create a substantial change in the characteristic landscape for decades depending on the scale and intensity of the wildfire. The expansion of residential areas would expand the footprint of developed areas through the addition of structures, roads, and electrical distribution lines. The expanded developed area would be particularly evident during nighttime conditions, when lighting would extend for a substantial distance from the developed area. Impacts of the combined actions would be perceived as strongest where viewed from sensitive viewing platforms, traditional areas identified by Native American Tribes, and from wilderness areas and WSAs. The implementation of the respective VRM objectives for BLM and USFS lands within the Visual Resources CEAA would help to implement measures to reduce impacts. In combination, past, present, and reasonably foreseeable future actions would result in long-term, direct and indirect, minor to moderate, impacts to visual resources that overall would reduce scenic quality and notably transform the characteristic landscape.

Proposed Action and Alternatives 1 and 2 Contribution to Cumulative Impacts

The large stature of the proposed wind turbines with the white color of the towers, the movement of the blades and the synchronized flashing of the ADLS at night when activated (or if the ADLS is not approved, the flashing would be continuous at night) would attract attention, create a substantial change in the landscape character, and result in a strong visual contrast within the foreground area of both linear and stationary sensitive viewing platforms (i.e., KOPs). The view of the casual observer from the foreground of these sensitive viewing platforms would be visually dominated by the Proposed Action and Alternatives 1 and 2. Based on the analysis of potential effects in this EIS, the Proposed Action and Alternatives 1 and 2 would have long-term, direct and indirect, minor to major, impacts to visual resources depending on the distance from the proposed project components. Cumulatively, effects of the Proposed Action and Alternatives 1 and 2, when combined with past, present, and reasonably foreseeable future actions, would result in long-term, direct and indirect, minor to moderate, cumulative impacts to the visual resources within the Visual Resources CEAA. The Proposed Action and Alternatives 1 and 2 would have a moderate contribution to the cumulative effects to visual resources because of the scale, strong contrast, and industrial characteristic of the wind facility in a sparsely

largely reversible with decommissioning of the BLWP at the end of its use life and restoration of the landscape.

No Action Alternative Contribution to Cumulative Impacts

There would be no contribution to cumulative impacts to visual resource because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to visual resources.

3.11 Land Use Plan Amendment

Actions approved or authorized by Federal land management agencies must conform to the approved land use plans for the lands they administer (43 CFR 1610.5-3). The BLWP area includes VRM Class II, III, and IV allocations (Figure 3-18 and Figure 3-19). The BLM's VRM Class III allocation allows for management/project activities that may attract attention, but should not dominate the view of the casual observer. However, the construction and operation of the BLWP wind turbines over the 35-year life of the proposed project would create strong visual contrast in terms of scale, line, form, color, and texture in the characteristic landscape. None of the alternatives would be in conformance with VRM Class III objectives established in the SFO RMP for the management of the visual resource values associated with this landscape. The VRM Class III allocations in the Proposed Action area would be re-classified as VRM Class IV for the BLWP. The VRM Class III allocations in the Alternatives 1 and 2 area would have to be re-classified as VRM Class IV for the BLWP to meet the objectives of the VRM class where the turbines are located. Therefore, a plan amendment would be required for the BLWP to be in conformance with the RMP.

The SFO RMP has allocated a VRM Class II and ROW avoidance area within a 37-mile-long by approximately 1.0-mile-wide segment (15,084 acres of BLM-managed lands) along the south side of U.S. 60 from just west of Quemado to the AZ–NM State line. The BLWP access roads proposed within this VRM Class II allocation and ROW avoidance area[11] designation would not be compatible with the SFO RMP avoidance area allocation. The ROW avoidance area was delineated to protect the VRM Class II allocation and would no longer be applicable if the VRM Class II allocation was removed. As part of the proposed RMP amendment, the VRM Class II allocation would be removed and therefore the ROW avoidance designation would no longer be applicable. The removal of the VRM Class II and ROW avoidance would be completed within the Proposed Action and Alternatives 1 and 2 areas, as well as the entire 37-mile segment. The original allocation of VRM Class II in the RMP is not supported by the RMP record and no rationale exists for retaining the VRM Class II and ROW avoidance areas. This is beyond the scope of what is immediately necessary for the project but is being considered because of the lack of any rationale supporting the original allocation. The proposed plan amendment would re-classify the VRM II to a VRM III classification and remove the ROW avoidance area allocation.

[11] A ROW Avoidance area is an environmentally sensitive area where ROWs may be granted only when no feasible alternative route is available (BLM 2010a).

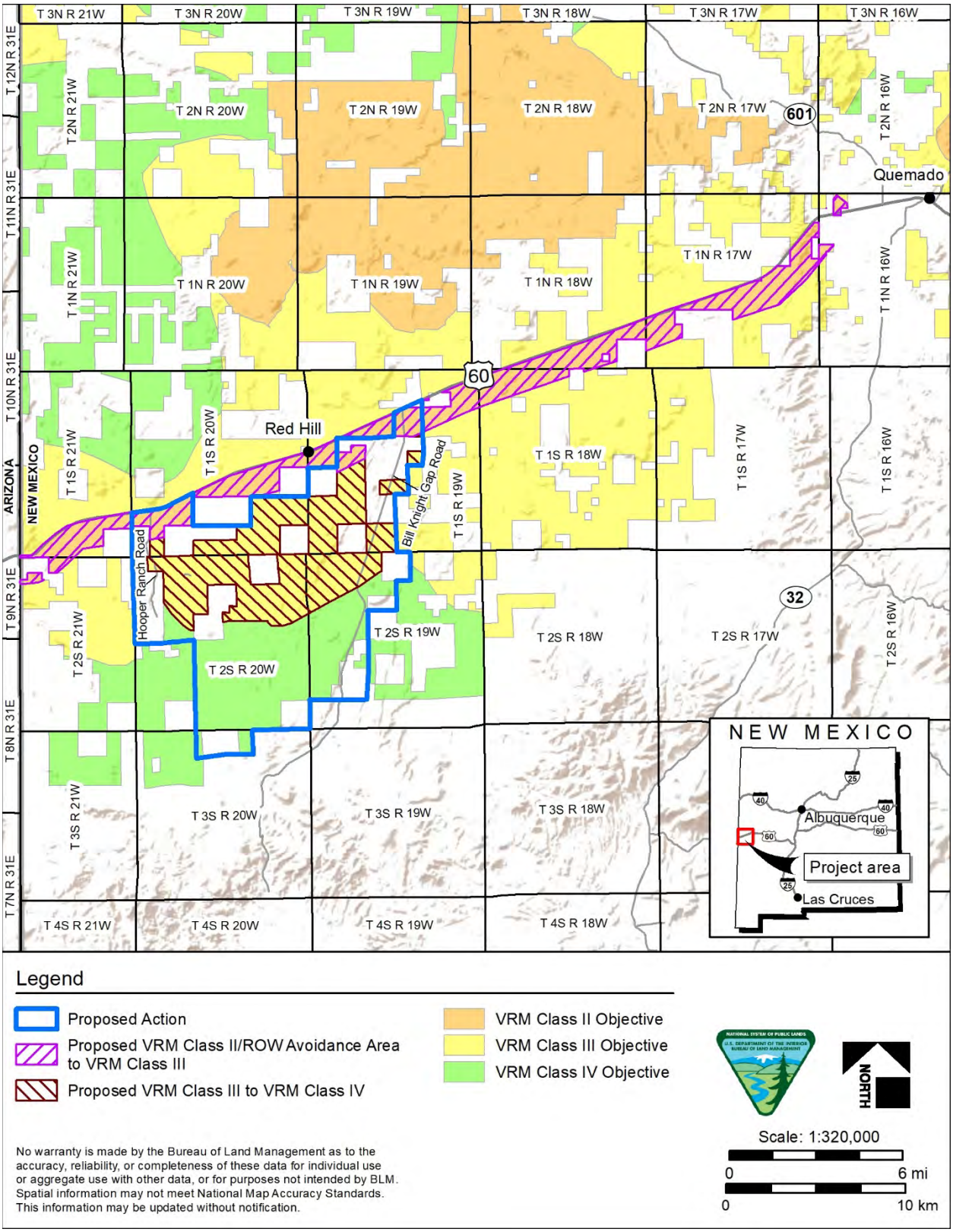

Figure 3-18. VRM RMP Amendment within the Proposed Action

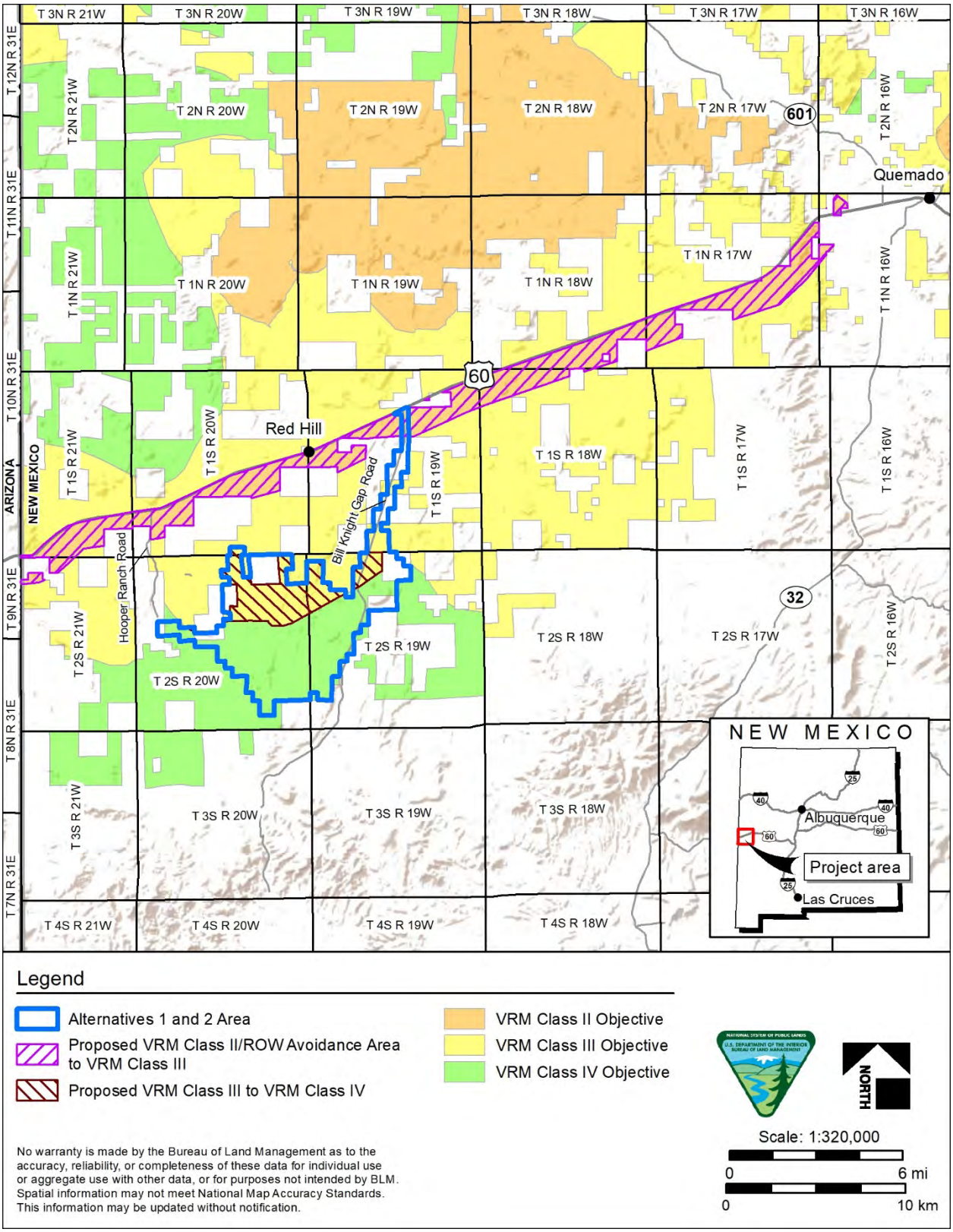

Figure 3-19. VRM RMP Amendment within Alternatives 1 and 2

Table 3-26 and Table 3-27 provide the acres of the proposed VRM changes, and Figure 3-18 and Figure 3-19 show the location of these modifications to the VRM class allocations for the Proposed Action and Alternatives 1 and 2, respectively. The acres of the various VRM classes in the SFO RMP (BLM 2010a:pp. 42–43) and Map 6 Visual Resources Management Designations in the SFO RMP (BLM 2010:p. 44) would require revisions to show the change in VRM classes and the removal of the ROW avoidance area.

Table 3-26. SFO RMP Proposed Amendment for the Proposed Action

VRM Class	Existing VRM (acres)	Proposed VRM Change (acres)	Current RMP VRM (acres)	Proposed RMP VRM (acres)	Difference from Existing VRM RMP (percent)
Class II	2,044*	-2,044	520,024	517,980	-0.39
Class III	15,026	-12,982	448,910	435,928	-2.89
Class IV	13,267	+15,026	509,432	524,458	+2.95

Table Abbreviations: RMP = Resource Management Plan; SFO = Socorro Field Office; VRM = Visual Resource Management
* All VRM Class II allocated areas within the Proposed Action area are located within the U.S. 60 ROW avoidance area.

Table 3-27. SFO RMP Proposed Amendment for Alternatives 1 and 2

VRM Class	Existing VRM (acres)	Proposed VRM Change (acres)	Current RMP VRM (acres)	Proposed RMP VRM (acres)	Difference from Existing VRM RMP (percent)
Class II	188*	-188	520,024	519,836	-0.04
Class III	6,634	-4,032	448,910	444,878	-0.90
Class IV	9,826	+4,220	509,432	513,652	+0.83

Table Abbreviations: RMP = Resource Management Plan; SFO = Socorro Field Office; VRM = Visual Resource Management
* All VRM Class II designated areas within Alternatives 1 and 2 areas are located within the U.S. 60 ROW avoidance area.

Amending the land use plan for the Proposed Action area would result in 12,982 fewer acres in VRM Class III and 15,026 more acres in VRM Class IV. For Alternatives 1 and 2, there would be 4,032 fewer acres in VRM Class III and 4,220 more acres in VRM Class IV.

There would be 15,084 fewer acres in VRM Class II in the SFO from the 37-mile-long segment (including the Proposed Action and Alternatives 1 and 2 areas). The total area removed from the ROW avoidance area in the SFO RMP (342,363 acres) would be a 15,084-acre, or 4.4 percent, reduction.

3.11.1. Environmental Effects of RMP Amendment

Direct and indirect effects of the BLWP Proposed Action and Alternatives 1 and 2 have been described in the preceding resource sections. This section includes descriptions of the potential impacts resulting from the proposed RMP amendment. With the No Action Alternative, no plan amendment would be implemented; it would not result in any additional environmental impacts other than those identified in the 2008 SFO RMP EIS (BLM 2008b) and ROD signed on August 20, 2010 (BLM 2010b). The following discussion addresses impacts from the change in allocation of VRM Class III to Class IV and the change from VRM Class II to Class III along with the removal of the ROW avoidance designation along U.S. 60 within the Proposed Action and Alternatives 1 and 2 areas.

The change in VRM objectives within the BLWP area to Class IV would allow for management/project activities to visually dominate the landscape and may be the major focus of viewer attention. The amendment to the SFO RMP to remove the ROW avoidance area would allow for ROW applications that

did not meet prior ROW avoidance perimeters to be considered on a case-by-case basis. The amendment to the SFO RMP could have direct impacts to lands, realty, and mineral resources depending on the type and scale of management/project activities that may be allowed to occur on lands affected by these changes. As noted in the RMP EIS, on page 4-23, removal of the ROW avoidance area could open the area to exploration and development. These types of activities would remove vegetation, modify landforms, and may add structural elements to the landscape. Any ground-disturbing activities associated with construction and operation of facilities would generate fugitive dust, increase traffic on access roads, and potentially use nighttime lighting.

The VRI for the BLWP area identified the area as having class C scenic quality, with a mix of high and low sensitivity levels and visual distance zones identified within the foreground/middleground as well as areas of seldom seen (see mapping in Appendix F). Future facilities and/or project activities would need to comply with the amended VRM Class III and Class IV objectives, which could have observable changes to the characteristic landscape by casual observers.

Removing the ROW avoidance designation, and changing the VRM from Class II to Class III, would allow for applications of land uses that could result in broader impacts to soil resources, such as roads wider than 14 feet. The change would reduce the BLM's level of management protection of soil and water resources on lands in the ROW avoidance area, because the management emphasis on maintaining existing vegetation and terrain features would not apply as noted in the 2008 RMP EIS on pages 4-38 and 4-39. Because the lands would still be managed by the BLM, measures to minimize impacts to soils would be implemented as part of the authorization process.

Biological resources may be affected by the SFO RMP amendment through a potential increase in habitat fragmentation and edge effects in a variety of wildlife habitats. Special status species that use these habitats may be effected by surface-disturbing activities (BLM 2008b:pp. 4-44 through 4-46). The magnitude of the potential effects to sensitive species are uncertain, but would be dependent on the type of construction and management activities for any project activities approved in the future that would take place within the BLWP area or the U.S. 60 corridor. Any direct or indirect impacts to federally listed species or species proposed for listing would be evaluated under Section 7 of the ESA at the time that a new activity or development is proposed.

Vegetation in the BLWP area consists of sparsely vegetated short-grass grassland that transitions to shrubland and dense patches of pinyon-juniper woodland. These general vegetation communities occur throughout the region and are well represented in the surrounding area, including the U.S. 60 ROW avoidance area. Following the removal of the avoidance designation, vegetation in the ROW avoidance area would not be protected from surface-disturbing activities, which may result in loss of vegetation, reduction in soil stability, increase in erosion, and/or reduction in watershed health. The intensity of these effects would vary by the actual use allowed. The VRM Class II would be reduced to Class III, which would decrease the area where the maintenance or enhancement of existing vegetation communities is supported in accordance with VRM objectives through mitigation measures when a surface-disturbing action is proposed. Effects related to soil erosion, water quality, and invasive species could result from future surface-disturbing activities such as construction in ROWs, although it is expected that mitigation would be identified as part of the future site-specific NEPA analyses on a project-by-project basis (BLM 2008b:p. 4-40). Any invasive plant and noxious weed populations would be managed in compliance with the SFO RMP, the Final Vegetation Treatments Using Herbicides PEIS (BLM 2007), and the Vegetation Treatments Using Aminopyralid Fluroxypyr and Rimsulfuron on BLM Lands in 17 Western States PEIS (BLM 2016).

The SFO RMP amendment may include the introduction of new access into areas that were previously unavailable to the public. Any new access could allow for inadvertent damage from erosion brought

about from vehicles and OHV use. ROWs are non-exclusive and any new applications for ROWs in the project area would be analyzed on a case-by-case basis for compatibility with the existing wind facilities. Direct effects to cultural resources would be assessed, and if adverse effects are identified, they would be resolved as part of the NHPA Section 106 process for any future management/project activities.

Direct and indirect socioeconomic impacts to BLM lands are expected to be minimal as a result of the amendment to the SFO RMP. If major utility-, energy-, or transportation-related projects were to be constructed in the U.S. 60 ROW avoidance area, Catron County and surrounding communities could experience job creation and tax revenues during construction. Impacts to population, housing, and community services would be greatest during construction of future projects because new populations would temporarily relocate for work. Mitigation or BMPs would minimize impacts from noise and other potential hazards to public safety.

3.12 Comparison of Impacts by Alternative

Table 3-28 displays the major characteristics and substantive environmental effects of each alternative, including the Proposed Action, considered in detail in this EIS.

Table 3-28. Comparison of Alternatives

Resource/Use	Proposed Action	Alternative 1	Alternative 2
Bald and Golden Eagles	Construction and decommissioning of the BLWP would result in the loss, degradation, and fragmentation of eagle foraging habitat. Disturbance from human activities and noise during construction and decommissioning could alter eagle use patterns, including the areas used for foraging, roosting, and nesting. Eagles that fly within the Proposed Action area could be injured or killed from collisions with rotating blades of wind turbines. The USFWS predicted there would be an annual take of 0.261 golden eagles per year and a cumulative take of two golden eagles over a five-year period during the O&M phase; the take of bald eagles at the BLWP is considered less likely to occur than take of golden eagles, but could not be quantified due to a lack of data resulting from few sightings within the Proposed Action area. The potential threat to eagles from collisions with wind turbines at the BLWP would exist during the anticipated 35-year life of the project. The project BMPs and other design features, and the stipulations that would be included in the BLM ROW authorization would minimize the potential short- and long-term impacts on eagles. However, the Proposed Action would still result in both short- and long-term, direct and indirect, major local and regional impacts on bald and golden eagles. The Proponent has included a commitment in their Draft Eagle Management Plan to provide voluntary compensatory mitigation to offset the anticipated impacts on eagles. The voluntary compensatory mitigation that is currently proposed by the Proponent would take the form of $165,000 in funding that would be contributed to the National Fish and Wildlife Foundation's Eagle Mitigation Account or to a mitigation banking or in-lieu fee credit program.	Same as Proposed Action.	Same as the Proposed Action except that the results of the USFWS's analysis of Alternative 2 indicate that a golden eagle fatality is predicted to occur at an annual rate of 0.313 eagles per year and a predicted cumulative take of two golden eagles over a five-year period during the O&M phase.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
Cultural Resources	The Proposed Action would introduce direct and indirect impacts on NRHP-eligible and unevaluated cultural resources that would not occur under the No Action Alternative. All direct impacts on cultural resources would occur during the construction phase of the project. It is expected that the 29 cultural resource sites that lie within the temporary disturbance footprint of the Proposed Action would be impacted by construction activities. The 17 cultural resource sites located outside but within 100 feet of the temporary disturbance footprint of the Proposed Action may also be indirectly impacted by construction activities. The O&M and decommissioning of the BLWP would likely not result in additional direct or indirect impacts to cultural resources beyond those resulting from the construction phase of the project. No cultural resources that are sensitive to potential visual impacts to setting were identified within the APE for visual effects. The PA stipulates that an HPTP, which would include procedures for data recovery, site avoidance marking, and monitoring, would be prepared and implemented prior to construction. Additional supplemental surveys may be required as more detailed construction plans are developed; if needed, they would be conducted in accordance with the PA.	There would be 6 cultural resource sites considered eligible, potentially eligible, or unevaluated for the NRHP within the temporary disturbance footprint of Alternative 1 that would be impacted adversely by construction activities. The 22 cultural resource sites located outside but within 100 feet of the temporary disturbance footprint of Alternative 1 may also be indirectly impacted by construction activities. The O&M and decommissioning of the BLWP would likely not result in additional direct or indirect impacts to cultural resources beyond those resulting from the construction phase of the project. No cultural resources that are sensitive to potential visual impacts to setting were identified within the APE for visual effects. The PA stipulates that an HPTP, which would include procedures for data recovery, site avoidance marking, and monitoring, would be prepared and implemented prior to construction. Additional supplemental surveys may be required as more detailed construction plans are developed; if needed, they would be conducted in accordance with the PA.	Same as Alternative 1.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
Land Use	With the exception of the SFO RMP, the Proposed Action would be in conformance with existing State and local land use plans, and would not prohibit other permitted uses to occur over the long-term. An amendment to the SFO RMP would be needed to grant the ROW for the Proposed Action in order to construct the intersection improvements on U.S. 60 within the designated ROW avoidance area. Localized, short-term, minor impacts would occur during construction and decommissioning when ground disturbance and the presence of construction equipment would disrupt livestock grazing and create delays for local vehicular traffic. Long-term impacts to land use would include a reduction in AUMs from the negligible loss of permanent foraging acres (0.4 percent). There would be no regional impacts to land use from the Proposed Action. An amendment to the SFO RMP would be needed to grant the ROW for the Proposed Action in order to construct the intersection improvements on U.S. 60 within the designated ROW avoidance area. With an RMP amendment, the Proposed Action would be in conformance with existing State and local land use plans, and would not prohibit other permitted uses to occur over the long-term.	Alternative 1 would reduce the total project boundary acreage by 26,880 acres, including 16,479 acres of BLM-administered public lands, 4,525 acres of NMSLO-managed lands, and 5,876 acres of privately owned lands as compared to the Proposed Action. With the exception of the SFO RMP, Alternative 1 would be in conformance with existing State and local land use plans, and would not prohibit other permitted uses to occur over the long-term. Similar localized, short-term, minor impacts as the Proposed Action would occur during construction and decommissioning when ground disturbance and the presence of construction equipment would disrupt livestock grazing and create delays for local vehicular traffic by Alternative 1. Long-term impacts to land use would include a reduction in AUMs from the negligible loss of permanent foraging acres (0.8 percent). There would be no regional impacts to land use from Alternative 1.	Same as Alternative 1.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
		An amendment to the SFO RMP would be needed to grant the ROW for Alternative 1 in order to construct the intersection improvements on U.S. 60 within the designated ROW avoidance area. With an RMP amendment, Alternative 1 would be in conformance with existing State and local land use plans and would not prohibit other permitted uses to occur over the long-term.	
Migratory Birds	There are no Important Bird Areas designated within the BLWP area. With the exception of seasonal playas, the BLWP area does not contain habitats that would concentrate migrating birds, such as large bodies of water, wetlands or riparian areas, or mountain ridges that would provide updrafts for migrating raptors. However, there are many Gunnison's prairie dog colonies that provide an abundant food source for raptors in the Proposed Action area. Potential impacts to migratory birds during construction and decommissioning may include injury or mortality; loss of nests; habitat loss, degradation, and fragmentation; and disturbance/displacement. During O&M, impacts to migratory birds would include injury or mortality from collision with turbines, towers, or transmission lines; electrocution from power lines; habitat loss, degradation, and fragmentation; and disturbance from human activities. A Bird and Bat Conservation Strategy would be implemented along with BMPs and other design features as part of the Proposed Action to minimize potential impacts on migratory birds and provide for adaptive management during O&M. The Proposed Action would result in short- and long-term, direct and indirect, moderate local and regional impacts to migratory birds.	Same as Proposed Action.	Same as Proposed Action.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
Social and Economic Conditions	The primary economic impacts of the Proposed Action would be relatively short-term potential increases in income and employment in the Social and Economic Study Area (SESA, see Section 3.3 Social and Economic Conditions for a detailed discussion), and longer term increases in tax revenue in Catron County. These potential increases in income, employment, and tax revenue would range from negligible to minor, and would include direct and indirect impacts. Potential project-related impacts to employment and income are anticipated to be highest during the 11- to 12-month construction period, with smaller income and employment impacts during O&M and decommissioning. There would be short-term, minor impacts from the displacement of recreation and livestock grazing uses during construction and decommissioning. Potential impacts to population density in the area, water quantity, or housing availability due to the Proposed Action are projected to be minor and short-term. Short-term minor to negligible impacts to quality of life, particularly during the construction and decommissioning phases, may result from impacts related to frequency and quantity of vehicle traffic in the area, noise, air quality, water quality, scenic quality, and recreation. Long-term minor to major impacts to scenic values would be created by the Proposed Action. Current economic activities in the BLWP area are limited to some recreational use and livestock grazing. There would be short-term, minor impacts from the displacement of both uses during construction and decommissioning. Minor to no impacts are expected on population, water quantity, or housing availability due to the build alternatives. Short-term minor to negligible impacts to nonmarket values, particularly during the temporary construction and decommissioning periods, may result from effects on traffic, air quality, and access to recreation, hunting, and wildlife viewing opportunities. Long-term minor to major impacts to nonmarket scenic values would be created by the Proposed Action.	Same as Proposed Action.	Same as Proposed Action.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
Special Status Plant and Wildlife Species	There are eight special status plant species that are known to occur or could potentially occur within the Proposed Action area. None of these species have been found in the disturbance footprint. Indirect impacts on special status plant species may occur from the introduction or spread of noxious or invasive weeds in disturbed areas, as well as potentially outside of the Proposed Action footprint. The Proposed Action would result in localized, negligible impacts on special status plants. Localized, short-term impacts on special status terrestrial wildlife species during construction and decommissioning would include potential injury or death from interactions with the increased number of vehicles traveling on access roads and/or ground disturbance and underground burrow destruction by heavy equipment during construction activities. Potential impacts on special status terrestrial wildlife species during the O&M phase of the Proposed Action would include injury or mortality of individuals and various types of disturbance associated with human activities (e.g., vehicle use, maintenance activities) and wind turbine operation (e.g., noise, vibration, flicker/shadows cause by moving blades). The Proposed Action would result in localized short- and long-term, minor impacts on special status terrestrial wildlife species, with the exception of the Gunnison's prairie dog. The siting of turbines and other infrastructure in proximity to Gunnison's prairie dog colonies and the construction of access roads and collection lines within occupied prairie dog colonies would result in ongoing injury or mortality of prairie dogs and fragmentation of prairie dog colonies; increased access could also lead to an increase in recreational shooting of prairie dogs. Even with the implementation of BMPs and species-specific mitigation measures/design features, the Proposed Action would result in localized short- and long-term, moderate impacts on prairie dogs.	Same as Proposed Action.	Same as Proposed Action.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
	Potential impacts on special status birds and bats during construction and decommissioning include injury or mortality; loss of nests; habitat loss, degradation, and fragmentation; and disturbance/displacement. Special status birds and bats may be injured or killed as a result of collisions with turbines, towers, or transmission lines during the O&M phase, with an increased risk for raptor and bat species that forage in the Proposed Action area. The Proposed Action would result in short- and long-term, direct and indirect, moderate, local and regional impacts on special status birds and bat species.		
Federally Listed Species	The Mexican spotted owl and Mexican wolf are the two federally listed species that could potentially occur within the BLWP area. There are no critical habitats for federally listed species in the BLWP area. There is a lack of preferred foraging, roosting, and nesting habitat for Mexican spotted owls in the BLWP area; however, wintering/migrating or dispersing Mexican spotted owls could potentially occur in the BLWP area. The Proposed Action would not impact Mexican spotted owl PACs or areas of designated critical habitat, directly or indirectly, during construction or any other phase of the project. The incidental occurrence of Mexican spotted owls in the Proposed Action area cannot be ruled out; however, the overall risk of direct or indirect impacts on the Mexican spotted owl is low. The Proposed Action could result in localized negligible impacts on Mexican spotted owls but would not have regional impacts on Mexican spotted owl populations.	Same as Proposed Action.	Same as Proposed Action.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
	Mexican wolves may occasionally travel through the BLWP area, but are not known to concentrate their activities in this area. Construction of the Proposed Action would result in minor habitat loss, degradation, and fragmentation for the Mexican wolf because wolves are not known to concentrate their activities in this area and there are no known den sites in the area. Construction and decommissioning of the Proposed Action would result in increased noise, human disturbance, and vehicle traffic, which could discourage adult or dispersing juvenile wolves from traveling through or foraging within the Proposed Action area. The construction of new access roads within the Proposed Action area would give the public more access to the area during O&M, which would increase the potential for disturbance to Mexican wolves that may travel in the vicinity of the Proposed Action area. The Proposed Action would have minor localized impacts on the Mexican wolf during the O&M phase due to the minimal use of the area by this species. The Proposed Action would result in localized minor impacts on the Mexican wolf but would not have regional impacts on Mexican wolf populations.		
Transportation and Travel Management	Lands administered by the BLM within the Proposed Action area are accessible for OHV use on existing roads and trails. During construction and decommissioning, access roads within the Proposed Action area would experience some restrictions due to localized project activity in order to protect public safety. O&M activities would not impact local traffic or access to the surrounding areas because there would be no discernible increase in daily traffic in the surrounding areas. The Proposed Action would have localized, short-term, minor effects and long-term, minor effects to transportation and travel management from the construction, O&M, and decommissioning of the BLWP facilities. There would be no regional impacts to transportation and travel management.	Same as Proposed Action.	Same as Proposed Action.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
Visual Resource	The landscape character and scenic quality within the foreground areas from the Proposed Action area would appear to be severely altered as a result of the introduction of elements of form, line, color, texture, and scale, as well as motion not common within the existing landscape. During construction, O&M, and decommissioning, the Proposed Action would create major changes to the existing landscape character and the landscape would appear visually altered. The short duration synchronized flashing of the ADLS when activated by aircraft entering the airspace and approximately 30 seconds after leaving the airspace would have substantially less visual impacts at night than the standard continuous, medium-intensity red strobe light aircraft warning systems due to the short duration of activation. The Proposed Action would result in short- and long -term, direct, major impacts on visual resources within the characteristic landscape and from sensitive viewing platforms depending on the viewing distance and visibility conditions.	Same as Proposed Action. An RMP amendment would be required since Alternative 1 would result in a strong visual contrast within the foreground area of the U.S. 60, Cimarron Ranch Subdivision, and the Bill Knight Gap Road KOPs and would not meet the VRM Class III objective as designated in the SFO RMP similar to the Proposed Action. Amending the SFO RMP for Alternative 1 area would result in 4,032 fewer acres in VRM Class III and 4,220 more acres in VRM Class IV. The reduction in VRM Class II and the total area removed from the ROW avoidance area would be the same as the Proposed Action.	With Alternative 2, ten more turbines would be visible to the casual observer at the Zuni Salt Lake Proprietary ACEC KOP when compared to the Proposed Action and Alternative 1 because of the difference in turbine height. The difference in turbine height would not be perceived by the casual observer and impacts on visual resources would be consistent with those impacts associated with Alternative 1. Alternative 2 would result in short- and long -term, direct, major impacts on visual resources within the characteristic landscape and from sensitive viewing platforms depending on the viewing distance and visibility conditions.

Resource/Use	Proposed Action	Alternative 1	Alternative 2
	An RMP amendment would be required since the Proposed Action would result in a strong visual contrast within the foreground area of the U.S. 60, Cimarron Ranch Subdivision, and the Bill Knight Gap Road KOPs and would not meet the VRM Class III objective as designated in the SFO RMP. Amending the SFO RMP for the Proposed Action area would result in 12,982 fewer acres in VRM Class III and an additional 15,026 acres in VRM Class IV. For Alternatives 1 and 2, there would be 4,032 fewer acres in VRM Class III and 4,220 more acres in VRM Class IV. There would be 15,084 fewer acres in VRM Class II in the SFO from the 37-mile-long segment (including the Proposed Action and Alternatives 1 and 2 areas). The total area removed from the ROW avoidance area in the SFO RMP (342,363 acres) would be a 15,084-acre, or 4.4 percent, reduction.		An RMP amendment would be required since Alternative 2 would result in a strong visual contrast within the foreground area of the U.S. 60, Cimarron Ranch Subdivision, and the Bill Knight Gap Road KOPs and would not meet the VRM Class III objective as allocated in the SFO RMP. Amending the RMP for Alternative 2, there would be 4,032 fewer acres in VRM Class III and 4,220 more acres in VRM Class IV. The reduction in VRM Class II and the total area removed from the ROW avoidance area would be the same as under the Proposed Action and Alternative 1.

Table Abbreviations: ACEC = Area of Critical Environmental Concern; APE = area of potential effects; AUM = animal unit month; BLWP = Borderlands Wind Project; BLM = Bureau of Land Management; BMP = best management practice; GHG = greenhouse gas; HPTP = Historic Properties Treatment Plan; KOP = key observation point; NM = New Mexico; NMSLO = New Mexico State Land Office; NRHP = National Register of Historic Places; O&M = operation and maintenance; PAC = Protected Activity Center; RMP = Resource Management Plan; ROW = right-of-way; SFO = Socorro Field Office; VRM = Visual Resource Management

3.13 Irreversible and Irretrievable Commitments of Resources

A commitment of resources is irreversible when its primary or secondary impacts limit the future option for a resource. An irretrievable commitment refers to the use or consumption of resources neither renewable nor recoverable for later use by future generations, and represents a permanent effect. Implementation of any of the build alternatives involving construction would require a commitment of natural, physical, human, and fiscal resources. Construction and operation of any of the build alternatives would require similar commitment of these resources.

Of all the build alternatives, the Proposed Action and Alternative 1 would represent the greatest impact to irreversible and irretrievable commitments of resources, as well as unavoidable impacts because these alternatives would have the larger footprint as compared to Alternative 2. Alternative 2 would have smaller construction and operation impacts because the footprint of this alternative, and the associated resources used to construct the BLWP would be less than the Proposed Action and Alternative 1. It should be noted however, that the construction of fewer turbines would mean constructing turbines with higher generation capacity to satisfy the interconnection agreement with TEP.

The No Action Alternative would represent no irreversible and irretrievable commitment of resources or unavoidable impacts in relation to the proposed BLWP. However, the No Action Alternative may represent possible impacts to resources on a regional basis because the amount of energy required for the demand would need to be produced from other sources. Insufficient information exists to say that the demand and subsequent supply would be from other renewable energy sources.

Construction of the BLPW would require the use of fossil fuels for construction vehicles, equipment, and construction-worker vehicles. Electricity would also be used at construction trailers or by portable generators during BLPW construction. Wind is a renewable resource that would not be depleted or altered by the build alternatives and could offset the need to consume fossil fuels.

Construction of the BLPW would require the use of various types of raw building materials, including cement, aggregate, steel, electrical supplies, piping, and other building materials such as metal, stone, sand, and fill material. Additionally, the fabrication and preparation of these construction materials would require labor and natural resources. Utilization of these resources would be irretrievable. However, these resources are readily available at this time and effects on their continued availability would not be expected.

Construction and operation of the proposed facilities would require labor, which would be otherwise unavailable for other projects. The commitment of labor is considered irretrievable. This commitment of labor, while irretrievable, would not be considered an effect, because the BLWP would be supplying employment opportunities. Furthermore, fiscal resources would be irretrievably committed to construction and operation of the BLWP. These funds would then not be available for other projects and activities.

In addition to the resources used in construction and operation of the proposed Project, there would be some irreversible and irretrievable loss of existing resources in the impact areas. The loss of productivity (i.e., forage, wildlife habitat) from lands devoted to Project facilities would be an irreversible and irretrievable commitment during the time that those lands are out of production and until they are successfully revegetated. Impacts on geological resources could result from surface and subsurface disturbing activities. Both surface and subsurface geology could be damaged (fractured) or destroyed during construction activities that disturb bedrock such as coring, trenching, blasting, clearing, and grading. Blasting, coring, and trenching would fracture and permanently alter bedrock resulting in

irreversible and irretrievable impacts on geology. The permanent loss of soil and vegetation within small and highly localized areas that would not be reclaimed would result in irreversible and irretrievable impacts on soils and vegetation.

The use of groundwater from wells for the construction, O&M, and decommission activities would be irretrievable since they would either be used for consumptive purposes, such as mixing cement, or would be applied for dust control and lost to evapotranspiration. Groundwater losses associated with the BLWP would, over time, replenish the aquifer through natural processes.

Archaeological sites are by their nature finite, and once damaged or destroyed they cannot be replaced. Any loss of such sites is therefore irreversible and irretrievable. Recovering artifacts and information from archaeological sites before they are damaged or destroyed and preserving the recovered artifacts and information commonly is considered acceptable mitigation for the loss of such sites.

CHAPTER 4. CONSULTATION AND COORDINATION

In addition to the planning, analysis, and review activities performed in preparation for this EIS, the BLM is conducting consultation, coordination, and public participation efforts. These efforts started with public scoping and will continue throughout the EIS process. The purpose of the consultation and coordination program is to encourage interaction between the BLM and other Federal, State, and local agencies; Native American Tribes; and the public. The BLM's initiative is to inform the public about the project and solicit input to assist in analysis and decision-making. The BLM has made formal and informal efforts to involve, consult with, and coordinate with these entities to ensure that the most appropriate data have been gathered and analyzed, and that agency policy and public sentiment and values are considered and incorporated.

4.1 Consultation and Coordination

Agencies and organizations that have jurisdiction and/or special expertise in the BLWP were contacted at the beginning of scoping, during resource inventory, and before the publication of the Draft EIS and Final EIS. This section describes the consultation and coordination activities with agencies, Tribes, and stakeholders that occurred throughout the EIS process, including the scoping process and public review of the Draft EIS.

4.1.1. Cooperating Agencies

The BLM SFO is the lead Federal agency responsible for the preparation of the EIS under NEPA. The BLM has decision-making authority to permit construction on affected Federal lands. The Federal, State, and local cooperating agencies are identified in Chapter 1.

4.1.2. Cultural Resources Formal Consultation

The BLM is required to prepare the EIS in coordination with studies or analyses required by the NHPA, as amended (54 U.S.C. 300101 et seq.). In accordance with Section 106 (54 U.S.C. 306108) of the NHPA, the lead Federal agency and cooperating Federal agencies are required to consider the effects of the agencies' undertakings on historic properties listed in, or eligible for listing in, the NRHP. The regulations also specify the need for meaningful consultation with SHPOs, Tribal Historic Preservation Offices, Native American Tribes, and other interested parties during all phases of Section 106 compliance. Pursuant to Title 36 CFR Part 800, and as lead Federal agency for the undertaking, the BLM has initiated Section 106 consultation. Consultation must be completed before a ROD can be issued.

4.1.2.1 Government-to-Government and Section 106 Tribal Consultation

The United States has an important legal relationship with Native American Tribes, as established by the U.S. Constitution, treaties, EOs, Federal statutes, and Federal and Tribal policies. As sovereign nations, Native American Tribes are conferred with legal rights and benefits with respect to their relationship with the U.S. Government. This relationship is founded on the U.S. Government's trust responsibilities to safeguard Tribal sovereignty and self-determination, as well as Tribal lands, assets, and resources reserved by treaty and other federally recognized rights. Federal agencies are required by both statute and regulation to consult with Native American Tribes on a government-to-government basis on Federal actions or undertakings that may affect "trust assets," including cultural and natural resources of concern to Tribes. Government-to-government consultation involves the process of seeking, discussing, and considering Tribes' views on policies, undertakings, and decisions such as environmental review of the proposed BLWP. The venue for government-to-government consultation for the BLWP has followed the established form of contact preferred by each Tribe. Consultation has

generally involved formal letters and submission of material via U.S. Postal Service Certified Mail, with follow-up telephone contact.

In May and September of 2018, the BLM formally initiated consultation with nine Native American Tribes that have previously expressed claims to cultural affiliation with the BLWP area to inform them of the project and to inquire about their interest in continuing government-to-government consultation. The contacted tribes are as follows:

- Fort Sill Apache Tribe
- Hopi Tribe
- Mescalero Apache Tribe
- Navajo Nation
- Pueblo of Acoma
- Pueblo of Isleta
- Pueblo of Laguna
- Pueblo of Zuni
- White Mountain Apache Tribe

The Pueblo of Zuni was the only Native American Tribe to request consultation on the EIS process. All other Tribes deferred to the Pueblo of Zuni or declined consultation. Additionally, on July 10, 2018, an informal meeting was held between the BLM and the Pueblo of Zuni. The Zuni Governor and two Zuni Council members were present, along with the BLM SFO Manager and the BLM National Project Manager. The BLM representatives briefly described the BLWP and associated components and explained that specific consultation with the Tribe regarding the BLWP would occur as the project moves toward the Draft EIS publication. Zuni representatives confirmed their status as a cooperating agency and stated that they would be reviewing the Draft EIS. One formal consultation meeting with the Pueblo of Zuni was held on March 16, 2020.

4.2 Scoping Process

The Proponent submitted its initial ROW application to the BLM in May 2017. On November 9, 2018, the BLM published an NOI to prepare the BLWP EIS in the Federal Register. The public scoping process began with the publication of the NOI to prepare the BLWP EIS. Scoping notifications were sent to 106 individuals and organizations, posted on the BLM's BLWP site on ePlanning, and placed in the *Catron County Courier*. In addition, scoping flyers were placed in public locations in Magdalena, Datil, Pie Town, Quemado, Red Hill, Socorro, Springerville, AZ, and at the ranger stations for the Cibola, Gila, and Apache National Forests. The scoping comment period was held from November 9 through December 10, 2018. A public scoping meeting was held in Quemado, NM on November 14, 2018. A total of 40 people attended the 2018 scoping meeting. The BLM consulted with SHPO regarding the BLWP in June 2018 as part of the NHPA Section 106 review process.

4.3 Public Comment on the Draft EIS

The Draft EIS was posted to the project ePlanning website and was available to agencies, interested organizations, and individuals for review and comment. During the 90-day comment period for the Draft EIS, the BLM held a public meeting on September 18, 2019 to receive comments on the Draft EIS. Comments received on the Draft EIS and from the public meetings have been compiled and responses have been provided in Appendix G. The public release of the Final EIS will be followed by a 30-day public protest period and 60-day Governor's Consistency Review before the BLM may issue the ROD. The Final EIS is posted to the project ePlanning website.

4.4 Preparers and Contributors

The following individuals from the BLM and the third-party contractor team were responsible for preparing the Final EIS.

4.4.1. Bureau of Land Management

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CHAPTER 5. REFERENCES

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APPENDIX A: SUMMARY TABLES OF POTENTIAL MAJOR AGENCY AUTHORITIES AND ACTIONS AND OTHER APPLICABLE FEDERAL LAWS, REGULATIONS, AND POLICIES

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Table A-1 lists the relevant actions and authorities that must be obtained or considered for the BLWP. Table A-2 provides a partial list and summary of other Federal, State, and Catron County authorities and actions that may be applicable to this EIS. The lists provided in each table are not meant to be comprehensive or all-inclusive.

Table A-1. Summary of Potential Major Agency Authorities and Actions

Agency	Proposal Requiring Action	Permit, License, Approval, Compliance, or Review	Relevant Law and/or Regulation
Bureau of Land Management (BLM)	Right-of-way grant for the Borderlands Wind Project (BLWP), primary access road, transmission line, and other associated facilities on BLM-administered land. The BLM is the lead agency for National Environmental Policy Act (NEPA) purposes.	Environmental Impact Statement (EIS) and Record of Decision	NEPA (42 U.S.C. 4321); Council Environmental Quality NEPA Regulations (40 CFR 1500-1508) Department of the Interior implementing regulations (43 CFR 46)
BLM	Prevent the establishment and spread of noxious and invasive weeds	Compliance	Federal Noxious Weed Act of 1974, as amended, Public Law 93-629 (7 U.S.C. § 2801 et seq.; 88 Stat. 2148); and Executive Order 13112, Invasive Species
BLM	Protection of segments, sites, and features related to national trails	Compliance	National Trails System Act (Public Law 90-543) (16 U.S.C. 1241 to 1249)
BLM	Potential disturbance of graves, associated funerary objects, sacred objects, and items of cultural patrimony	Consultation with affected groups regarding a Plan of Action for treatment of protected remains and objects	Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001-3002)
BLM	Effects on BLM sensitive species	Compliance	BLM Manual H-6840 (Special Status Species)
BLM (lead) in consultation with New Mexico State Historic Preservation Officer (SHPO), Advisory Council on Historic Preservation	Proposed undertaking that may adversely affect properties eligible for, or on the National Register of Historic Places	Section 106 reviews and provides consultations to identify and resolve any adverse effects to historic properties	National Historic Preservation Act (16 U.S.C. 470; 36 CFR 800)
BLM in consultation with U.S. Fish and Wildlife Service (USFWS)	Effects on species listed or critical habitat designated under the Endangered Species Act	Compliance	Endangered Species Act of 1973, as amended (16 U.S.C. §1531) Section 7(a)(2)

Agency	Proposal Requiring Action	Permit, License, Approval, Compliance, or Review	Relevant Law and/or Regulation
BLM in consultation with USFWS	Protection of migratory birds	Compliance	The Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712; Ch. 128); and Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds
BLM in consultation with USFWS	Protection of Bald and Golden Eagles	Compliance	The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), 1940 et seq., and BLM Instruction Memorandum 2010-156.
U.S. Environmental Protection Agency	Potential pollutant discharge during construction, operation, maintenance, and decommissioning	Spill Prevention Control, Countermeasure Plan, and Stormwater Pollution Prevention Plan	Oil Pollution Act of 1990 (33 U.S.C. 2701 et seq.; 40 CFR Part 112); Section 402 of the Clean Water Act
U.S. Army Corps of Engineers	Potential discharge of dredged or fill material into waters of the United States (including wetlands and washes)	Section 404 Permit (individual or nationwide)	Clean Water Act (33 U.S.C. 1344)
Federal Aviation Administration (FAA)	Structures exceeding 200 feet	Determination of No Hazard To Air Navigation and Confirmation of achieved height	14 CFR Part 77, Objects Affecting Navigable Air Space (49 U.S.C. 44718)
FAA	Required lighting on turbines	Review and approval of selective lighting	FAA Advisory Circular 70/7460-1K, change 2
New Mexico Department of Transportation (NMDOT)	Project activities that require oversized commercial delivery and construction of project access on public right-of-way	Commercial Driveway Permit, Approval to construct access on public right-of-way, Traffic Control / Roadway Work Permit	23 CFR 710.201 49 CFR Part 24
New Mexico State Land Office (NMSLO)	The proposed project and associated facilities (access road, transmission line, and other associated facilities) located on NMSLO-administered lands	Right-of-Way grant authorization	Title 19 Chapter 2, Part 10

Table Abbreviations: BLM = Bureau of Land Management; BLWP = Borderlands Wind Project; CFR = Code of Federal Regulations; EIS = Environmental Impact Statement; FAA = Federal Aviation Administration; NEPA = National Environmental Policy Act; NMSLO = New Mexico State Land Office; U.S.C. = U.S. Code; USFWS = U.S. Fish and Wildlife Service

Table A-2. Summary of Other Applicable Federal Laws, Regulations, and Policies

Relevant Authority
American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
Antiquities Act of 1906 (16 U.S.C. 431–433)
Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa to 470ee)
Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668–668d)
Clean Air Act (42 U.S.C. 7401 et seq., as amended)
Clean Water Act (33 U.S.C. 1251 et seq.)
Clean Water Act - Section 404(b)(1) Guidelines (40 CFR 230)
Endangered Species Act of 1973 (16 U.S.C. 1513 et seq.)
Energy Policy Act of 2005 (Public Law 109-58; 42 U.S.C. 13201 et seq.)
Executive Order 11593, Protection and Enhancement of the Cultural Environment (May 6, 1971)
Executive Order 11990, Protection of Wetlands (May 24, 1977)
Executive Order 13007, Indian Sacred Sites (May 24, 1996)
Executive Order 13112, Invasive Species (February 3, 1999)
Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 9, 2000)
Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (January 10, 2001)
Executive Order 13212, Actions to Expedite Energy-Related Projects (May 18, 2010)
Federal Noxious Weed Act of 1974, as amended
Manual 6100– National Landscape Conservation System (July 13, 2012)
Manual 6220– National Monuments, National Conservation Areas, and Similar Designations (July 13, 2012)
Manual 6280– Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation (September 14, 2012)
Migratory Bird Treaty Act of 1918 (16 U.S.C. 703–711)
National Historic Preservation Act of 1966 (54 U.S.C. 300101 et seq.)
Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001–3002)
Secretarial Order 3355: Streamlining NEPA Section 4.a.(2)

Table Abbreviations: CFR = Code of Federal Regulations; NEPA = National Environmental Policy Act; U.S.C. = U.S. Code

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APPENDIX B: BEST MANAGEMENT PRACTICES AND DESIGN FEATURES

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Table B-1. Proponent-Provided Best Management Practices (BMPs) and Design Features

BMP	Source
The area disturbed by installation of meteorological towers (i.e., footprint) shall be kept to a minimum.	BLWP POD
Existing roads shall be used to the maximum extent feasible. If new roads are necessary, they shall be designed and constructed to the appropriate standard.	BLWP POD
Meteorological towers shall not be located in sensitive habitats or in areas where ecological resources known to be sensitive to human activities (e.g., prairie grouse) are present. Installation of towers shall be scheduled to avoid disruption of wildlife reproductive activities or other important behaviors.	BLWP POD
Meteorological towers installed for site monitoring and testing shall be inspected periodically for structural integrity.	BLWP POD
Borderlands Wind, LLC will plan for efficient use of the land. Any necessary infrastructure requirements will be consolidated wherever possible, and current transmission and market access will be evaluated carefully.	BLWP POD
Borderlands Wind, LLC will utilize existing roads and utility corridors to the maximum extent feasible, and to minimize the number and length/size of new roads, lay-down areas, and borrow areas.	BLWP POD
Borderlands Wind, LLC will develop “good housekeeping” procedures to ensure that during operation the site will be kept clean of debris, garbage, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards.	BLWP POD
Borderlands Wind, LLC will design the project to avoid (if possible), minimize, or mitigate impacts to important, sensitive, or unique habitats in the project vicinity (e.g., locate the turbines, roads, and ancillary facilities in the least environmentally sensitive areas; i.e., away from riparian habitats, streams, wetlands, drainages, or critical wildlife habitats).	BLWP POD
Borderlands Wind, LLC will design the project to minimize or mitigate the potential for bird and bat strikes.	BLWP POD
Borderlands Wind, LLC will site turbines to avoid landscape features known to attract raptors (to the extent practical) if site studies show that placing turbines there would pose a significant risk to raptors.	BLWP POD
Borderlands Wind, LLC will avoid placing turbines near known bat hibernation, breeding, and maternity/nursery colonies; in known migration corridors; or in known flight paths between colonies and feeding areas (to the extent practicable).	BLWP POD
Borderlands Wind, LLC will consider measures to reduce raptor use at a project site.	BLWP POD

BMP	Source
Borderlands Wind, LLC will design facilities to discourage facility structure's use as perching or nesting substrates by birds (to the extent practicable).	BLWP POD
Design the project to avoid (if possible), minimize, or mitigate impacts to these resources. Mitigation may include seasonal use restrictions, if other mitigation is not possible, during construction and operation.	BLWP POD
Borderlands Wind, LLC will integrate the turbine array with the surrounding landscape to the extent practicable. Design elements to be addressed include visual uniformity, use of tubular towers, proportion and color of turbines, nonreflective paints, and prohibition of commercial messages on turbines.	BLWP POD
Borderlands Wind, LLC will integrate other site design elements with the surrounding landscape to the extent practicable including minimizing the profile of the ancillary structures, burial of cables, prohibition of commercial symbols, and lighting. Borderlands will minimize the need for and amount of lighting on ancillary structures.	BLWP POD
Borderlands Wind, LLC will prepare an access road siting and management plan incorporating existing BLM standards regarding road design, construction, and maintenance such as those described in the BLM 9113 Manual (BLM 1985).	BLWP POD
Design the project to avoid (if possible), minimize, or mitigate impacts to these resources.	BLWP POD
Borderlands Wind, LLC will use certified weed-free mulching. Trucks and construction equipment are arriving from locations with known invasive vegetation problems, will undergo a controlled inspection and a cleaning area will be established to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.	BLWP POD
Borderlands Wind, LLC may use herbicides on the site, and an integrated weed management plan will be developed to ensure that applications would be conducted within the framework of BLM and DOI policies and entail only the use of EPA-registered herbicides. Borderlands will only apply herbicides in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications.	BLWP POD
Design the project to avoid (if possible), minimize, or mitigate impacts to these resources.	BLWP POD
Borderlands Wind, LLC will avoid cultural resources to the extent practicable and coordinate with BLM and/or tribes on other mitigation measures.	BLWP POD
Borderlands Wind, LLC will include in their construction worker training and operations staff training, the protocols for unanticipated discoveries and the consequences of unauthorized collection and destruction of artifacts on public land.	BLWP POD

BMP	Source
Design the project to avoid (if possible), minimize, or mitigate impacts to these resources.	BLWP POD
Borderlands Wind, LLC will develop a discovery plan for construction activities in case of inadvertent cultural resource discoveries.	BLWP POD
Borderlands Wind, LLC will avoid paleontological resources to the extent practicable	BLWP POD
Borderlands Wind, LLC will include in their construction worker training and operations staff training, the protocols for unanticipated discoveries and the consequences of unauthorized collection and destruction of fossils on public land	BLWP POD
Design the project to avoid (if possible), minimize, or mitigate impacts to these resources.	BLWP POD
Borderlands Wind, LLC will minimize the area disturbed by construction and operation of the project (i.e., footprint).	BLWP POD
Borderlands Wind, LLC will minimize the number and size/length of roads, temporary fences, lay-down areas and borrow areas.	BLWP POD
Borderlands Wind, LLC will salvage and reapply during reclamation, the topsoil from all excavations and construction activities.	BLWP POD
Borderlands Wind, LLC will reclaim all areas of disturbed soil using weed-free native grasses, forbs, and shrubs. Reclamation activities will be undertaken as early as possible on disturbed areas.	BLWP POD
Borderlands Wind, LLC will bury all electrical collector lines in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance).	BLWP POD
Borderlands Wind, LLC will avoid creating excessive slopes during excavation and blasting operations. Special construction techniques will be used, where applicable, in areas of steep slopes, erodible soil, and stream channel crossings	BLWP POD
Borderlands Wind, LLC will utilize erosion controls that comply with county, state, and federal standards Practices such as jute netting, silt fences, and check dams will be applied near disturbed areas.	BLWP POD
Borderlands Wind, LLC will undertake restoration in accordance with the habitat restoration plan as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.	BLWP POD
Borderlands Wind, LLC will implement a worker environmental awareness training to educate/instruct all construction employees to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. Borderlands will not allow employees' pets on site during construction.	BLWP POD

BMP	Source
Borderlands Wind, LLC will reduce visual impacts during construction by minimizing areas of surface disturbance, controlling erosion, using dust suppression techniques, and restoring exposed soils as closely as possible to their original contour and vegetation.	BLWP POD
Borderlands Wind, LLC will use existing roads but only if in safe and environmentally sound locations. If new roads are necessary, roads will be designed and constructed to the appropriate standard and be no higher than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Excessive grades on roads, road embankments, ditches, and drainages will be avoided, especially in areas with erodible soils. Special construction techniques will be used, where applicable. Abandoned roads and roads that are no longer needed will be recontoured and revegetated	BLWP POD
Where appropriate, Borderlands Wind, LLC will use aggregate materials on road surfaces.	BLWP POD
Borderlands Wind, LLC will design any new roads to follow natural contours and minimize side hill cuts.	BLWP POD
Borderlands Wind, LLC will locate roads away from drainage bottoms and avoid wetlands, if practicable.	BLWP POD
Borderlands Wind, LLC will design roads so that changes to surface water runoff are avoided and erosion is not initiated.	BLWP POD
Borderlands Wind, LLC will locate roads to minimize stream crossings. All structures crossing streams will be located and constructed so that they do not decrease channel stability or increase water velocity. All applicable federal and state permits will be obtained.	BLWP POD
Borderlands Wind, LLC will not alter existing drainage systems, especially in sensitive areas such as erodible soils or steep slopes. Potential soil erosion will be controlled at culvert outlets with appropriate structures. Catch basins, roadway ditches, and culverts will be cleaned and maintained regularly.	BLWP POD
Borderlands Wind, LLC will construct gates along access roads that intersect allotment pasture fences as necessary.	BLWP POD
Borderlands Wind, LLC construction personnel and contractors will be instructed and required to adhere to speed limits commensurate with road types, traffic volumes, vehicle types, and site-specific conditions, to ensure safe and efficient traffic flow and to reduce wildlife collisions and disturbance and airborne dust.	BLWP POD
Borderlands Wind, LLC will restrict traffic to the roads developed for the project. Use of other unimproved roads shall be restricted to emergency situations.	BLWP POD
Borderlands Wind, LLC will place signs along construction roads to identify speed limits, travel restrictions, and other standard traffic control information.	BLWP POD

BMP	Source
Borderlands Wind, LLC will use dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust.	BLWP POD
Borderlands Wind, LLC will post and enforce speed limits (e.g., 25 mph [40 km/h]) to reduce airborne fugitive dust.	BLWP POD
Borderlands Wind, LLC will cover construction materials and stockpiled soils if they are a source of fugitive dust.	BLWP POD
Borderlands Wind, LLC will implement dust abatement techniques before and during surface clearing, excavation, or blasting activities.	BLWP POD
Borderlands Wind, LLC will avoid creating hydrologic conduits between two aquifers during foundation excavation and other activities.	BLWP POD
Borderlands Wind, LLC will backfill foundations and trenches with originally excavated material as much as possible. Excess excavation materials will be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities	BLWP POD
Borderlands Wind, LLC will obtain borrow material only from authorized and permitted sites and existing sites may be used instead of new sites	BLWP POD
Borderlands Wind, LLC will coordinate with BLM and other federal and state agencies to establish the parameters for use of explosives with respect to timing, specified distances from sensitive wildlife or streams and lakes.	BLWP POD
Borderlands Wind, LLC will limit noisy construction activities (including blasting) to the least noise-sensitive times of day (i.e., daytime only between 6 a.m. and 10 p.m.) and weekdays.	BLWP POD
Borderlands Wind, LLC will ensure that all construction equipment will have sound-control devices no less effective than those provided on the original equipment. All construction equipment used will be adequately muffled and maintained.	BLWP POD
Borderlands Wind, LLC will ensure that all stationary construction equipment (i.e., compressors and generators) will be located as far as practicable from nearby residences.	BLWP POD
Borderlands Wind, LLC will notify nearby residents in advance if blasting or other noisy activities are required during the construction period.	BLWP POD
Borderlands Wind, LLC will bring to the attention of the BLM authorized officer any unexpected discovery of cultural or paleontological resources during construction. Work will be halted in the vicinity of the find to avoid further disturbance to the resources while the resource(s) is being evaluated and appropriate mitigation measures are being developed.	BLWP POD

BMP	Source
Borderlands Wind, LLC will ensure that secondary containment is provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) will be a temporary activity occurring only for as long as is needed to support construction activities.	BLWP POD
Borderlands Wind, LLC will ensure wastes are properly containerized and removed periodically for disposal at appropriate off-site permitted disposal facilities.	BLWP POD
In the event of an accidental release to the environment, Borderlands Wind, LLC will document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event will be provided to the BLM authorized officer and other federal and state agencies, as required.	BLWP POD
Borderlands Wind, LLC will ensure that any wastewater generated in association with temporary, portable sanitary facilities will be periodically removed by a licensed hauler and introduced into an existing municipal sewage treatment facility. Temporary, portable sanitary facilities provided for construction crews will be adequate to support expected on-site personnel and will be removed at completion of construction activities.	BLWP POD
Borderlands Wind, LLC will install temporary fencing around staging areas, storage yards, and excavations during construction to limit public access.	BLWP POD
Borderlands Wind, LLC will ensure that inoperative turbines will be repaired, replaced, or removed in a timely manner. Borderlands understands that requirements to do so will be incorporated into the due diligence provisions of the ROW authorization. Borderlands will be required to demonstrate due diligence in the repair, replacement, or removal of turbines; failure to do so could result in termination of the ROW authorization.	BLWP POD
Borderlands Wind, LLC will ensure that employees, contractors, and site visitors will be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. Borderlands will also ensure that no pets will be allowed on site to avoid harassment and disturbance of wildlife.	BLWP POD
Borderlands Wind, LLC will ensure that observations of potential wildlife problems, including wildlife mortality, will be reported to the BLM authorized officer. Threatened and endangered species fatalities, as well as eagle fatalities, will be reported within 24 to 48 hours to the BLM authorized officer. All other fatality events will be reported in a year-end report. This includes following the methodology outlined in the Bird and Bat Conservation Strategy (Appendix M), which will include specifics for a downed wildlife observation program and reporting, as well as a post-construction fatality monitoring and searcher efficiency program for general avian species, eagles, and bats.	BLWP POD
Borderlands Wind, LLC will ensure that ongoing ground transportation planning will be conducted to evaluate road use, minimize traffic volume, and ensure that roads are maintained adequately to minimize associated impacts.	BLWP POD

BMP	Source
Borderlands Wind, LLC will ensure that any site monitoring protocols defined in this POD and plans associated with this POD will be implemented. These will incorporate monitoring program observations and additional mitigation measures into standard operating procedures and BMPs to minimize future environmental impacts.	BLWP POD
Borderlands will provide the results of monitoring program efforts to the BLM authorized officer.	BLWP POD
Borderlands Wind, LLC will install and maintain permanent fencing around the electrical substation/switchyard. Turbine tower access doors will be locked to limit public access.	BLWP POD
In the event the project results in EMI, Borderlands Wind, LLC will work with the owner of the impacted communications system to resolve the problem. Additional warning information may also need to be conveyed to aircraft with onboard radar systems so that echoes from wind turbines can be quickly recognized.	BLWP POD
Borderlands Wind, LLC will remove all turbines and ancillary structures.	BLWP POD
Borderlands Wind, LLC will salvage and reapply topsoil from all decommissioning activities during final reclamation.	BLWP POD
Borderlands Wind, LLC will reclaim (using weed-free native shrubs, grasses and forbs) all areas of disturbed soil.	BLWP POD
Borderlands Wind, LLC will ensure that the vegetation cover, composition, and diversity is restored to values commensurate with the ecological setting.	BLWP POD

Table B-2. BMPs and Design Features from BLM

BMP	Source
Air	
The contractor shall use a Bureau of Land Management (BLM)-approved dust palliative on roads and disturbed surfaces to reduce the potential for fugitive dust during construction.	Ocotillo Wind Energy Facility, CA El Centro FO; 2012
In accordance with Section 12 of the Air Quality Regulations, the applicant would obtain an air quality permit for any emission units or stationary sources (e.g., concrete plants, rock crushers, boilers, emergency generators) on the project capable of emitting regulated pollutants. The applicant would use water to control dust to comply with New Mexico dust control requirements. Where water is insufficient to control dust, soil stabilizers approved by the BLM would be used within the project area to control dust to New Mexico standards. The project would implement the following practices for fugitive dust and wind erosion control: • Minimize grading and vegetation removal, and limit surface disturbance during construction. • Limit vehicular speeds (post and enforce) on non-paved roads to 25 mph to reduce airborne fugitive dust. • Apply water to disturbed soil areas of the project site to control dust and maintain optimum moisture levels for compaction, as needed. Apply the water using water trucks. • Minimize water application rates as necessary to prevent runoff and ponding. • Apply dust control suppressants approved by the BLM. • During windy conditions (forecast or actual wind conditions of approximately 25 miles per hour or greater), apply dust control to haul roads to adequately control wind erosion. • Cover exposed stockpiled material areas. • Suspend excavation and grading during periods of high winds. • Cover all trucks hauling soil and other loose material or maintain at least 2 feet of freeboard	Searchlight Wind Energy Project; NV Las Vegas FO; 2012
The applicant would turn off idling equipment when not in use.	Searchlight Wind Energy Project; NV Las Vegas FO; 2012
Dust abatement techniques shall be used before and during surface clearing, excavation, or blasting activities.	BLM Wind PEIS; 2005
Construction	
At locations where collection lines would cross features like surface water drainages, horizontal directional drilling below the features would be used to minimize impacts.	BLM Wind PEIS; 2005

BMP	Source
All control and mitigation measures established for the project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the construction phase, as appropriate.	BLM Wind PEIS; 2005
The area disturbed by construction and operation of a wind energy development project (i.e., footprint) shall be kept to a minimum.	BLM Wind PEIS; 2005
The number and size/length of roads, temporary fences, lay-down areas, and borrow areas shall be minimized.	BLM Wind PEIS; 2005
Topsoil from all excavations and construction activities shall be salvaged and reapplied during reclamation.	BLM Wind PEIS; 2005
New Mexico-certified noxious weed-free seed shall be used and tested prior to purchase and planting in the rehabilitation process, all BLM SFO RMP Noxious weeds stipulations shall be followed.	BLM Wind PEIS; 2005
All electrical collector lines shall be buried in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance). Overhead lines may be used in cases where burial of lines would result in further habitat disturbance.	BLM Wind PEIS; 2005
Operators shall identify unstable slopes and local factors that can induce slope instability (such as groundwater conditions, precipitation, earthquake activities, slope angles, and the dip angles of geologic strata). Operators also shall avoid creating excessive slopes during excavation and blasting operations. Special construction techniques shall be used where applicable in areas of steep slopes, erodible soil, and stream channel crossings.	BLM Wind PEIS; 2005
A project-specific Erosion Control Plan that complies with county, State, and Federal standards shall be developed, approved by the BLM, and applied. Practices such as jute netting, silt fences, and check dams shall be applied near disturbed areas, as necessary.	BLM Wind PEIS; 2005
The project shall be planned and designed to comply with FAA regulations and in coordination with the Department of the Air Force, including lighting regulations, and to avoid potential safety issues associated with proximity to airports, military bases or training areas, or landing strips. (Air Force compliance is needed)	BLM Wind PEIS; 2005
Above ground facilities requiring painting should be designed to blend in with the surrounding environment.	Socorro Field Office RMP; 2010
Surface disturbance would be restricted in areas that have special topographic (steep or broken terrain and/or benches) and soil concerns in order to reduce impacts caused by soil erosion and habitat disturbance.	Socorro Field Office RMP; 2010

BMP	Source
In areas that BLM has permitted the contractor to travel off-road, minimize the off-road impact of large vehicles. Use wide, flat-tread, balloon tires (especially on seismic thumper trucks) where possible. Use all-terrain vehicles rather than large vehicles where possible.	Socorro Field Office RMP; 2010
Only excavate topsoil and subsoil where it is absolutely necessary. Consider brush-beating, mowing, and/or parking on vegetation for surface disturbing activities.	Socorro Field Office RMP; 2010
Disturbed areas should be contoured to blend with the natural topography. Blending is defined as reducing form, line, and color contrast associated with the surface disturbance. Disturbance should be contoured to match the original topography, where matching is defined as reproducing the original topography and eliminating form, line, and color caused by the disturbance, as much as possible.	Socorro Field Office RMP; 2010
Interim reclamation should be implemented concurrent with construction and site operations to the fullest extent possible. Final reclamation actions shall be initiated within 6 months of the termination of operations unless otherwise approved in writing by the authorized officer.	Socorro Field Office RMP; 2010
Fill material should be pushed into cut areas and up over back slopes. Depressions should not be left that would trap water or form ponds unless the authorized officer has determined that dips or depressions may be used to assist reclamation efforts and seed propagation.	Socorro Field Office RMP; 2010
Reclaimed soil would be free of contaminants and would have adequate depth, texture, and structure to provide for successful vegetation reclamation. Vegetation reclamation would be considered successful when healthy, mature perennials are established with a composition and density that closely approximates the surrounding vegetation as prescribed by the BLM, and the reclamation area is free of noxious weeds.	Socorro Field Office RMP; 2010
If necessary after reclamation, a BLM-standard barbed wire fence would be constructed to exclude livestock for a minimum of at least two successful growing seasons. Do not disturb, or leave inoperable at any time, livestock improvements including but not limited to pipeline systems, fences, or water catchments. If they must be disturbed, consult with the grazing allottee and come to a favorable resolution immediately.	Socorro Field Office RMP; 2010
Additional reclamation measures may be required based on the conditions existing at the time of abandonment.	Socorro Field Office RMP; 2010
Oil and fuel for equipment and vehicles must be carefully handled and disposed of to prevent soil or water contamination.	Socorro Field Office RMP; 2010

BMP	Source
Develop a Spill Contingency Plan that identifies all actions to be taken in the event of a chemical spill, including phone numbers for Federal, State, and local agencies that must be notified.	Socorro Field Office RMP; 2010
Time activities to avoid wet periods.	Socorro Field Office RMP; 2010
Biology	
General Biology Measures	
Comply with all applicable federal, state, and local laws.	Bat Conservation International, 2017
Establish non-disturbance buffer zones to protect sensitive habitats or areas of high risk for species of concern identified in pre-construction studies. Determine the extent of the buffer zone in consultation with the USFWS and state, local and tribal wildlife biologists, or other credible experts as appropriate.	Bat Conservation International, 2017
Use construction and management practices to minimize activities that may attract prey and predators to the wind energy facility.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
All vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground disturbing activities; or for authorized off-road driving would confirmed to be clean and free of soil and debris capable of transporting weed propagules. Vehicles and equipment would be cleaned with power or high pressure equipment prior to entering or leaving the project area. Cleaning efforts would concentrate on tracks, feet or tires, and on the undercarriage. Special emphasis would be applied to axles, frames, cross members, motor mounts, on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs would be swept out and refuse would be disposed of in waste receptacles. Cleaning sites would be recorded using global positioning systems or other mutually acceptable equipment and provided to the Albuquerque District Office Weed Coordinator or designated contact person.	Ocotillo Wind Energy Facility, CA El Centro FO; 2012

BMP	Source
Borderlands Wind, LLC would implement appropriate waste management practices during on site concrete operations. Waste management practices would be applied to the stockpiling of concrete, curing and finishing of concrete as well as to concrete wash-out operations. Waste management practices would be adequate to ensure that fluids associated with the curing, finishing and wash- out of concrete would not be discharged to any stream or basin. Concrete wastes would be stockpiled separately from sediment and protected by erosion control measures so that concrete dust and debris are not discharged to any stream or basin. The appropriate waste management practices based on considerations of flow velocities, site conditions, availability of erosion control materials and construction costs would be used. Decommissioning methods should minimize new site disturbance and removal of native vegetation, to the greatest extent practicable	Tule Wind Energy Project ; CA El Centro FO; 2012
Trenches will not be left open overnight and will be covered with suitable material that would not cave in with weight. Escape ramps (i.e. dirt berms) would be installed to allow for wildlife to exit the trench. Trenches will be inspected by a biological monitor each morning before construction activities resume. If wildlife are in the trench, biological monitors will safely remove wildlife. Ensure that all fences are constructed to BLM Socorro Field Office Fence Specifications to mitigate impacts to wildlife. No harm, harassment, or collection of plant and wildlife species would be allowed. Feeding of wildlife would be prohibited.	Socorro Field Office RMP; 2010
Project personnel would not be allowed to bring firearms or pets to any Project area to minimize harassment or killing of wildlife and to prevent the introduction of destructive animal diseases to native wildlife populations.	Tule Wind Energy Project ; CA El Centro FO; 2012
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.	BLM Socorro Field Office
Littering would not be allowed. Garbage and waste disposal on project sites would be properly managed using wildlife proof containers to avoid creating attractive nuisances for wildlife by providing them with supplemental food. Food-related garbage and trash would be removed from the Project area daily.	Tule Wind Energy Project ; CA El Centro FO; 2012
If pesticides are used on the site, an integrated pest management plan shall be developed to ensure that applications would be conducted within the framework of BLM and DOI policies and entail only the use of EPA-registered pesticides approved for use in BLM's Record of Decisions related to herbicide/pesticide use (BLM 2007, BLM 2016). Pesticide use shall be limited to non-persistent, immobile pesticides and shall only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Herbicides may be used for vegetation removal around the base of the turbines during construction and to reduce the spread of noxious weeds.	Ocotillo Wind Energy Facility, CA El Centro FO; 2012

BMP	Source
Observations of potential wildlife issues, including wildlife mortality, shall be reported to the BLM authorized officer immediately.	BLM Wind PEIS; 2005
Provide the results of all monitoring program efforts, including post-construction mortality information, to the appropriate state and federal wildlife offices. Consider contributing the data (confidentially) to the American Wind and Wildlife Institute's (AWWI) Wind/Wildlife database.	Bat Conservation International, 2017
At the completion of the Project, all construction materials would be removed from the site.	Tule Wind Energy Project ; CA El Centro FO; 2012
Foundations should be removed to a minimum of three feet below surrounding grade, and covered with soil to allow adequate root penetration for native plants, and so that subsurface structures do not substantially disrupt ground water movements. Three feet is typically adequate for agricultural lands. Wind turbines that are no longer in operation and overhead distribution lines that are no longer needed should be removed.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
Restrict construction vehicle speeds to 25 mph on unpaved roads. Nighttime vehicle traffic volume associated with Project activities would be kept to a minimum and speeds would be limited to 10 miles per hour to prevent mortality of nocturnal wildlife species. Instruct project personnel to drive at appropriate speeds, be alert for wildlife, and use additional caution in low visibility conditions.	Tule Wind Energy Project ; CA El Centro FO; 2012
All construction employees shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons.	BLM Wind PEIS; 2005
Explosives will be used only within specified times and at specified distances from sensitive wildlife or surface waters as established by BLM. Blasting would not occur during known sensitive life history phases (e.g, critical fawning/calving/nesting and denning periods) and would avoid any special habitat features (e.g, burrows- prairie dog and burrowing owl, dens, springs, rock outcrops); for waters may also include distance to wells and springs.	Alta East Wind BBCS; CA,
In all crucial calving, lambing, kidding, and fawning areas and wintering ranges, all surface-disturbing activities, permanent or temporary, will be avoided during the appropriate time periods.	BLM Socorro Field Office
Bald and Golden Eagle Measures	
Pre-construction nesting eagle surveys would be completed during the year(s) of construction to document the status of all existing and any newly identified eagle nests within the project area during the breeding/nesting season. Disruptive construction and maintenance activities would be avoided within 0.5 mile of active nests from January 1–August 31.	BLM Socorro Field Office

BMP	Source
Borderlands Wind, LLC would hold an annual meeting with federal and state agencies including but not limited to BLM, USFWS, and NMGFD. The annual meeting would discuss monitoring, quarterly and annual reports, observations and issues, maintenance needs, and other conservation practices.	BLM Socorro Field Office
Borderlands Wind, LLC would be required to develop a mitigation plan for eagles that demonstrates operational measures that avoid and minimize eagle mortality at the facility.	BLM Socorro Field Office
Borderlands Wind, LLC would develop as part of their monitoring plan an Adaptive Management process, which would be used to identify additional conservation practices, BMPs, avoidance and minimization measures, and conservation measures to reduce risk to eagles based on monitoring. It is expected over the life of the project that advances in industry standards would identify additional BMPs and conservation practices that may be appropriate for this project area.	BLM Socorro Field Office
If an eagle is taken at any point during the life of the ROW grant, the Borderlands Wind, LLC shall immediately notify the BLM authorized officer and the USFWS (Division of Migratory Birds, Southwest Region and Office of Law Enforcement, Southwest Region). After consultation with the BLM and the USFWS, Borderlands Wind, LLC shall implement reasonable specific actions (i.e. conservation actions, BMPs) to avoid further unpermitted take of eagles. Borderlands Wind, LLC shall work closely with the USFWS to identify appropriate risk reduction and offsetting measures, consistent with the applicable USFWS permitting policies including development of an Eagle Conservation Plan as appropriate. All such measures shall be identified and, after appropriate environmental review, incorporated into an amended ROW grant. It is important to note that this does not alleviate any enforcement actions that may be taken by UFSWS's Office of Law Enforcement since Borderlands Wind, LLC is not permitted to take eagles.	BLM Socorro Field Office
Borderlands Wind, LLC shall notify USFWS Office of Law Enforcement and the BLM Authorized Officer within 24 hours of the discovery of any dead or injured eagle in the Borderlands Wind, LLC Project area. The USFWS Office of Law Enforcement would provide further direction. No remains, parts, feathers shall be disturbed by Borderlands Wind, LLC. If an injured eagle is encountered, the USFWS Office of Law Enforcement and BLM Authorized Officer shall be notified immediately. The USFWS Office of Law Enforcement would direct a qualified biologist, such as a state game biologist, or other certified wildlife handler to handle the eagle and transfer it to an approved rehabilitation center as appropriate.	BLM Socorro Field Office
The BLM would require Borderlands Wind, LLC to monitor eagle fatalities following the Eagle Conservation Plan Guidance (USFWS 2013a) and implement adaptive management that would reduce mortalities further if take rates are higher than expected. During the first two years of operation, carcass searches would be conducted to document eagle fatalities potentially attributable to project operation. Post-construction mortality monitoring would be comprised of three components: standardized carcass searches, searcher efficiency trials, and carcass removal trials. This monitoring would be conducted to estimate total eagle mortality accounting for biases from imperfect searcher efficiency, unsearched areas, and carcass removal rates. Results from post-construction mortality monitoring can be entered into the USFWS's	USFWS

BMP	Source
Collision Risk Model to update the collision probability prior with the monitoring data collected from the wind facility to obtain a posterior distribution that provides project specific estimates of collision probability. Depending on results from the first two years of monitoring, at least one additional year of standardized eagle mortality monitoring every five years would be conducted to supplement operational eagle mortality monitoring to assess impacts to eagles. Operational eagle mortality monitoring would be required for the duration of the project. Annual monitoring reports and raw survey data would be submitted to the BLM and the Service. The monitoring would be conducted by qualified, independent third parties that report directly to the BLM. The monitoring protocols that would be implemented would include: • *Standardized eagle mortality monitoring:* first two years of operation, performed by biological consultant 1. Carcass searches • All dead or injured eagles found in proximity to hazardous project features will be attributed to facility operations and maintenance unless the USFWS determines otherwise • Year-round surveys to systematically search for eagle remains, once per month • Conducted at 50% of the turbines: 20 turbines for Proposed Action and Alternative 1 or 17 turbines for Alternative 2 • Turbines to be searched randomly selected for first survey, and alternated with unsearched turbines for second survey so that all turbines are searched every other month • Sampling 260 m square search plot centered on the turbine (240 m square plots cover all of the distribution of the fall zone for large birds for turbines with 55 m rotor radius (using average of Table 5 and Table 9 in Hull and Muir 2010), so for larger radius turbines proposed for the project, 260 m sampled to cover this larger distribution) • 12 m distance between parallel survey transects • While intent is to monitor eagle carcasses, also record all bird and bat fatalities • For all fatalities, record discovery date; collection date; species; sex and age; carcass condition and description; GPS coordinates; turbine number; type and configuration of structure or features found near eagle remains and potentially responsible for injury/mortality; ground distance remains found from nearest pole, line, turbine, or other structure; suspected cause of mortality/injury; any Federal band number, color markers, or transmitter descriptions; and any special notes or additional information • Photograph all fatalities • Record data and photograph any carcasses discovered incidentally by searchers or operations staff and code these carcasses as incidental discoveries 2. Searcher efficiency (i.e., observer) bias correction trials • To estimate proportion of carcasses detected by observers, to adjust carcass counts for detection bias • Year-round surveys, 20 carcasses per season • Large bird trial carcasses may include raptors, turkeys, geese, ducks, or pheasants; decoys should not be used as there is no evidence that they are an adequate surrogate	

BMP	Source
• Trial carcasses randomly placed within plots before carcass searches 3. Carcass persistence (i.e., scavenger-removal) bias correction trials • To estimate length of time carcasses remain in the search area, to adjust carcass counts for removal by scavengers or other factors • Year-round trials, 20 carcasses per season • Carcasses used for searcher efficiency testing can also be used to test carcass persistence • Removal trial carcasses may include raptors, turkeys, geese, ducks, or pheasants • Carcasses monitored over 40-day period, checked every day on days 1-4 and then on days 7, 10, 14, 20, 30, and 40 • *Operational eagle mortality monitoring*: all years of operation, performed by trained operations staff trained by biological consultant ▪ All dead or injured eagles found in proximity to hazardous project features will be attributed to facility operations and maintenance unless the USFWS determines otherwise ▪ Year-round surveys, once per month ▪ Conducted at all turbines ▪ Walking search of road and turbine pad ▪ Binocular search of areas out to maximum blade-tip height from turbine ▪ Standardized documentation for all fatalities, including discovery date; collection date; species; sex and age; carcass condition and description; GPS coordinates; turbine number; type and configuration of structure or features found near eagle remains and potentially responsible for injury/mortality; ground distance remains found from nearest pole, line, turbine, or other structure; suspected cause of mortality/injury; any Federal band number, color markers, or transmitter descriptions; and any special notes or additional information ▪ Photograph all fatalities ▪ Record data and photograph any carcasses discovered outside search area and code these carcasses as incidental discoveries	
Minimize the area and intensity of disturbances: • Minimize roads, power lines, and other Project infrastructure to the maximum extent practicable; use existing transmission corridors and roads to the extent practicable. • Avoid or minimize the use of structures that are attractive to eagles for perching. • Use the minimum number of permanent meteorological (MET) towers.	SWCA EMP 2019
Informed by eagle use of the site, site turbines back from ridge edges and drainages, as warranted; in the final proposed design, all proposed turbines have been sited at least 100 m from steep slopes and drainages.	SWCA EMP 2019

BMP	Source
Site turbines away from any additional important eagle use areas and the flight paths between them if identified during the Stage 2 Year 2 surveys.	SWCA EMP 2019
From February 15–June 15, avoid short-duration surface-disturbing activities within 0.25 mile of occupied prairie dog colonies (BLM 2010) to the extent practicable.	SWCA EMP 2019
Consider eagle attractant removal (e.g., relocating prairie dogs) as warranted to adhere to avoidance prescriptions (Allison et al. 2017).	SWCA EMP 2019
Dismantle non-permanent/non-operational MET towers.	SWCA EMP 2019
Minimize storage, equipment, or debris/rock piles near turbines that may attract prey.	SWCA EMP 2019
Discourage eagles from nesting or perching on newly installed power poles, MET towers, and other facility structures to the extent practicable (BLM 2009, 2010).	SWCA EMP 2019
Bury power lines to reduce avian collision and electrocution to the extent practicable.	SWCA EMP 2019
If overhead lines are necessary, follow the Avian Power Line Interaction Committee (APLIC) guidance (APLIC 2006, 2012) on power line construction and design to limit collision and electrocutions: • To reduce collision risk, avoid siting powerlines within collision risk areas (i.e., important eagle use areas and the flight zones between them). If powerlines are placed within collision risk areas, install line marking devices (also known as diverters), and design lines without ground wires (APLIC 2018; Loss et al. 2014). • To reduce electrocution risk, cap energized parts and ensure 60 inches of horizontal separation and 40 inches of vertical separation between phases and grounds (APLIC 2006, 2018).	SWCA EMP 2019

BMP	Source
The use of self-supported MET towers are preferred if feasible. The structure should be painted so that it stands out from the surrounding environment to provide optimum visibility for birds. If guy wires are necessary, bird flight diverters will be used following BLM's (2012) protocols: • Each and every guy wire (not just external wires) should be clearly marked for the length of the wire. Starting at the top of the guy wire, the first marker must be placed within the first 15 feet of length. The last marker can be no more than 15 feet from the ground at the end of the guy wire. Markers should be of a color that does not blend with the wire. Choice of marker and spacing of the markers along the guy wire must use one of the following options. ▪ Spiral flight diverters (i.e., open-ended BIRD FLIGHT™ diverter or closed SWAN FLIGHT™ diverter or equivalent technology) spaced at intervals no greater than 15 feet apart. ▪ FireFly™ "flapper" secured with a dropped forged galvanized cable (u-bolt) clamp or equivalent technology, spaced at intervals no greater than 30 feet apart. ▪ In an alternating pattern, FireFly™ (or equivalent technology), and spiral flight diverters (e.g., open-ended BIRD FLIGHT™ diverter or closed SWAN FLIGHT™ diverter or equivalent technology) at spacing intervals of 15 feet apart. • Avoid placing lines within wetlands, over canyons, or within important avian movement corridors (i.e., between foraging and nesting sites) to the extent practicable. • Lights are sometimes used to mark guy wires and power lines. Because lights can both attract and confuse migrating birds, use lights only if lighting is needed for aviation safety. Unless otherwise requested by the Federal Aviation Administration, use only the minimum number of strobed, strobe-like, or blinking incandescent lights with a minimum intensity, maximum "off-phased" duel strobe lights. No steady-burning lights (e.g., L-810) should be used. All lights should illuminate simultaneously.	SWCA EMP 2019
Maintain facilities and grounds in a manner that minimizes any potential impacts to eagles (e.g., minimize storage, equipment, or debris/rock piles near turbines that may attract prey).	SWCA EMP 2019
Instruct Project personnel, including contractors, to drive at low speeds (<25 mph) and be alert for wildlife, especially in low-visibility conditions.	SWCA EMP 2019

BMP	Source
Implement a carcass removal plan to promptly remove large mammal (e.g., cows, elk) carrion from the Project footprint and vicinity when observed (Allison et al. 2017): • Plan will include lessee/landownership agreement involving regular communication regarding known carcasses and relocation/removal of the known cow dump site to an appropriate area outside of the Project footprint; siting of the new area will consider potential flight path connections between eagle use areas and eagle risk. • Instruct Project personnel to identify and investigate corvid (e.g., crow, raven) and turkey vulture (*Cathartes aura*) concentration areas to inform presence of relevant carcasses.	SWCA EMP 2019
Implement training to educate workers on eagle identification and ecology, BMPs, avoiding eagle use areas, and eagle fatality/injury reporting and disposition procedures	SWCA EMP 2019
Implement effectiveness monitoring, including development of additional BMPs as warranted, through the adaptive management process (see Section 6.6).	SWCA EMP 2019
Follow decommissioning BMPs aimed at stabilizing soils and restoring native vegetation identified in the Project's POD.	SWCA EMP 2019
Minimize new site disturbance and removal of native vegetation to the extent practicable.	SWCA EMP 2019
Overhead power lines that are no longer needed should be removed.	SWCA EMP 2019
Bird and Bat Measures	
A Bird and Bat Conservation Strategy (BBCS) would be developed by Borderlands Wind, LLC for the Proposed Project. The BBCS would contain detailed mitigation requirements and adaptive management techniques to avoid and minimize impacts to birds and bats. The BBCS would include a risk assessment and provide for rigorous pre- construction surveys, post construction monitoring, and adaptive management measures consistent with the USFWS Land-Based Wind Energy Guidelines. Pre-construction surveys are intended to determine if any species is at high risk to inform post-construction fatality monitoring. The BBCS would also include monitoring requirements and provisions for adaptive management measures based on mortality rates.	Searchlight Wind Energy Project; NV Las Vegas FO; 2012
To avoid avian electrocution and collisions, place low and medium voltage electric power lines underground (see NMDGF Trenching Guideline) or on the surface as insulated, shielded wire where feasible unless greater adverse impacts to sensitive resources would result. To avoid and minimize bird electrocution or collisions associated with on- or off-site above-ground lines, transformers or conductors, refer to the NMDGF Powerline Guideline, and design and construct structures following the published recommendations of the Avian Power Line Interaction Committee (APLIC 1994, 2006, 2012).	NMDGF Wind Energy Guidelines, 2012

BMP	Source
Operators shall determine the presence of active raptor nests (i.e., raptor nests used during the breeding season). Measures to reduce raptor use at a project site (e.g., minimize road cuts, maintain either no vegetation or nonattractive plant species around the turbines) should be implemented.	BLM Wind PEIS; 2005
Prior to initiating geophysical or other preliminary surveys during the raptor breeding season, the area would be surveyed for the presence of raptor nests.	Socorro Field Office RMP; 2010
Encourage landowners/lessees to reduce availability of carrion by practicing responsible animal husbandry (removing carcasses, fencing out cattle, etc.) to avoid attracting Golden Eagles and other raptors.	NMDGF Wind Energy Guidelines, 2012
Examine the impact of wind turbines on bats. Methods for post-construction monitoring may include fatality searches, acoustic detectors, radar, and thermal imaging.	Bat Conservation International, 2017
Based on the results of post-construction monitoring, scientifically proven avoidance, mitigation, and minimization strategies such as operational minimization and curtailment should be used during periods of high risk to reduce bat fatalities and the potential take of sensitive species at wind turbines.	Bat Conservation International, 2017
Use data collected by the wind turbines or meteorological towers to relate bat and or bird fatality to weather and operational variables.	Bat Conservation International, 2017
Participate in on-going and new research to better understand bat behaviors near wind turbines and effective strategies to minimize bat fatalities, such as ultrasonic acoustic deterrents, or operational minimization.	Bat Conservation International, 2017
During construction and operation, measures would be taken to avoid/minimize the impact of light intrusion into adjacent native/undisturbed/sensitive habitats. Night lighting during construction would not occur to the maximum extent practicable. Any night lighting used during construction and operation would be the lowest illumination allowed for human safety, selectively placed, down shielded, and directed away from all areas of native habitat to the maximum extent practicable. All unnecessary lighting should be turned off at night to limit attracting migratory birds and bats in search of insects.	Tule Wind Energy Project ; CA El Centro FO; 2012
Employ only red, or dual red and white strobe, strobe-like, or flashing lights, not steady burning lights, to meet Federal Aviation Administration (FAA) requirements for visibility lighting of wind turbines, permanent met towers, and communication towers. Aircraft safety lighting should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. Only a portion of the turbines within the wind project should be lighted, and all pilot warning lights should fire synchronously.	USFWS Land-Based Wind Energy Guidelines, 2012

BMP	Source
Avoid guy wires on communication towers and permanent met towers. If guy wires are necessary, bird flight diverters or high visibility marking devices should be used at intervals specified and approved by the BLM and USFWS.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
Keep lighting at both operation and maintenance facilities and substations located within half a mile of the turbines to the minimum required: a. Use lights with motion or heat sensors and switches to keep lights off when not required. b. Lights should be hooded downward and directed to minimize horizontal and skyward illumination. c. Minimize use of high intensity lighting, steady-burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights. d. All internal turbine nacelle and tower lighting should be extinguished when unoccupied.	USFWS Land-Based Wind Energy Guidelines, 2012
Prior to construction, Borderlands Wind, LLC would remove all existing raptor nests (excluding eagle nests) from existing structures that would be affected by Project construction following approval by the BLM. Removal of raptor nests would occur outside of the raptor breeding season (i.e., raptor nest removal would occur during the period from August 16-January 31). If it is necessary to remove an existing raptor nest during the breeding season, a qualified biologist would survey the nest prior to removal to determine if it is active. If the nest is inactive, it would be dismantled and removed from the site promptly under the supervision of a biologist to be approved by the BLM. If the nest is determined to be active, it would not be removed and the biologist would monitor the nest to ensure nesting activities and/or breeding activities are not disrupted. If the biologist determines that Project activities are disturbing or disrupting nesting activities, the monitor would make recommendations to reduce the noise and/or disturbance in the vicinity of the nest.	Tule Wind Energy Project ; CA El Centro FO; 2012
Facilities shall be designed to discourage their use as perching or nesting substrates by birds. For example, power lines and poles shall be configured to minimize raptor electrocutions and discourage raptor and raven nesting and perching.	BLM Wind PEIS; 2005
When practical use tubular towers or best available technology to reduce ability of birds to perch and to reduce risk of collision.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
Where post-construction studies show a high rate of bat mortality, or mortality to special status bat species, turbines operation should be curtailed at wind speeds below 4-6 mps, at the relevant time of day and season of the year.	NMDGF Wind Energy Guidelines, 2012

<table>
<tr><th>BMP</th><th>Source</th></tr>
<tr><td>Prior to the initiation of a surface-disturbing activity, the project area would be surveyed for raptor nests. Surveys would be conducted by professional biologists approved by the Authorized Officer. All raptor nests would be avoided by the distances and seasonal periods listed below:
<table>
<tr><th>Species</th><th>Minimum Distance</th><th>Season</th></tr>
<tr><td>Aplomado Falcon</td><td>0.5 mile</td><td>January 1-July 31</td></tr>
<tr><td>Eagle</td><td>0.5 mile</td><td>February 1-July 15</td></tr>
<tr><td>Ferruginous Hawk</td><td>0.5 mile</td><td>February 1-July 15</td></tr>
<tr><td>Prairie Falcon</td><td>0.5 mile</td><td>March 1-August 1</td></tr>
<tr><td>All other raptor species</td><td>0.5 mile</td><td>during observed nest establishment through fledgling</td></tr>
</table>
</td><td>Socorro Field Office RMP; 2010</td></tr>
<tr><td>Post-construction studies may show disproportionate mortality at certain towers, for example those located on the end of a tower string, or closest to the edge of a cliff; in these cases, curtailment, retrofitting or relocating is highly recommended.</td><td>NMDGF Wind Energy Guidelines, 2012</td></tr>
<tr><td>All surface disturbing activities associated with the project conducted during the general bird nesting season (April 1 through August 1) will require surveys two weeks prior to initiating surface disturbing activities by a qualified biologist. The biologist will inspect the area for nests, or signs of nesting or courtship behavior. If active nests or signs of nesting are observed and recorded, the BLM Biologist will be contacted for specific mitigation. If there is a lapse in construction activities of two or more weeks, a second survey will be required.</td><td>BLM Socorro Field Office</td></tr>
<tr><td>Potential for creating temporary or permanent habitats suitable for rodents, such as rock piles, eroded slopes with openings or overhangs, or stockpiling of construction debris will be avoided</td><td>Alta East Wind BBCS; CA,</td></tr>
<tr><td>Soils and Restoration</td><td></td></tr>
<tr><td>After project construction, close roads not needed for site operations and restore these roadbeds to native vegetation, consistent with landowner agreements.</td><td>USFWS Land-Based Wind Energy Guidelines, 2012</td></tr>
</table>

BMP	Source
All seed shall be certified noxious weed free. Areas would be monitored to determine the success of re-vegetation, the presents of invasive/noxious weeds, and would be reseeded if necessary.	Socorro Field Office RMP; 2010
Topsoils located in areas to be restored would be conserved and stockpiled during excavation and reused as cover on disturbed areas to facilitate regrowth of vegetation when restoring plant communities. Topsoils should be restored to assist in establishing and maintaining pre-construction native plant communities to the extent possible, consistent with landowner objectives. Topsoil located in developed or disturbed areas is excluded from this BMP.	USFWS Land-Based Wind Energy Guidelines, 2012
In accordance with the habitat restoration plan, restoration shall be undertaken as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.	BLM Wind PEIS; 2005
Site Development: Incorporate native plant species into interim and long-term habitat restoration plans for proposed sites. Avoid or minimize negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species. For example, avoid attracting high densities of prey animals (rodents, rabbits, etc.) used by raptors.	NMDGF Wind Energy Guidelines, 2012
Refer to state and federal agencies guidance when seeding or planting native seeds during restoration.	Bat Conservation International, 2017
Restore the vegetation cover, composition, and diversity to values commensurate with the ecological setting.	Bat Conservation International, 2017
Special Status Species	
Prior to the start of construction, surveys for special status plant species would be conducted. Surveys would take place during the appropriate season (i.e. flowering period) for the species and the boundaries of special status plant populations would be delineated by a BLM NM approved botanist with clearly visible flagging or fencing. The flagging and/or fencing would be maintained in place for the duration of construction. Flagged and fenced areas would be avoided to the extent practicable during construction activities in that area.	Tule Wind Energy Project ; CA El Centro FO; 2012
A BLM approved biologist would perform pre-construction surveys of work areas within suitable habitat, for prairie dogs, raptors, migratory birds, and/or other special status species, which would include BLM sensitive species, two weeks prior to initiating surface disturbing activities. If there is a lapse in construction activities of two or more weeks, a second survey would be required. Since prairie dog, raptors, migratory birds, or other sensitive species move throughout a landscape surveys would be completed in the season during which construction activities are planned during the current year's active season survey.	BLM Socorro Field Office

BMP	Source
Gunnison Prairie Dog	
BLM's Construction Inspection Contractor would develop a WEAP (Worker Environmental Awareness Program) and Training program to inform all project related personnel of the occurrence of Gunnison prairie dog, their status, and specific avoidance/exclusion, timing limitations, and other mitigation measures.	BLM Socorro Field Office
All exclusion/avoidance areas, such as prairie dog colonies, shall be clearly delineated to ensure project construction avoidance. A combination of flagging, fencing, signage and/or a computer-based tool that ensures, defined work areas, and approved access roads shall be utilized. All personnel would be trained on the meaning of flagging, fencing, signage, or use of a computer-based tool.	BLM Socorro Field Office
A habitat suitability assessment would be completed two-weeks prior to initiating surface disturbing activities and/or construction activities. Based on results of assessment, additional mitigation may be developed and applied. Refer to Gunnison Prairie dog Habitat Assessment Protocol.	BLM Socorro Field Office
A project speed limit of 15 mph within 350' within suitable prairie dog habitat during the active season and 5 mph within 350' feet of an active prairie dog colony would be established.	BLM Socorro Field Office
Pads/areas cleared within ¼ miles of occupied habitat would be inspected daily prior to construction activities and fenced (i.e. silt fencing/barriers) to exclude prairie dogs from establishing on site.	BLM Socorro Field Office
Materials/stock yards would be located ¼ mile for long-term use and 350' for temporary staging areas outside of occupied but suitable prairie dog habitat. Temporary use is defined as work that would not extend beyond the current years active season and long-term use is defined as work which extend past the current years active season (occur within two or more seasons). If this is not possible, area would be fenced (i.e., silt fencing/barriers or something more permanent) to ensure that wildlife do not access and occupy them.	BLM Socorro Field Office
Equipment and vehicle maintenance activities would avoid prairie dog occupied habitat by 350'. Precautions should be taken to ensure that ground contamination by fuels, motor oils, grease, etc. does not occur and that any waste materials are contained and properly disposed of off-site.	BLM Socorro Field Office
A BLM approved monitor would be required to be onsite during all work within 350' of occupied, mapped habitat (i.e. colonies). The monitor would document compliance with design features and any impacts that may occur and would have the authority to halt activities which may be in violation of design features and/or may result in death/ injury, abandonment of active colony or precludes dispersal into otherwise suitable habitat.	BLM Socorro Field Office

BMP	Source
To the extent possible in prairie dog colonies, construction would occur during the extended active season (April 1st – September 30th) to allow animals that may be in harm's way of construction activities an opportunity to move as well as the ability to identify if burrows are active or not.	BLM Socorro Field Office
Restoration and rehabilitation efforts within prairie dog habitat would utilize seed mixes conducive to maintaining a native grassland.	BLM Socorro Field Office
In the event that all other mitigation measures/design features have been utilized and impact cannot be mitigated, those prairie dogs in immediate risk of injury or death would be translocated to the nearest occupied colony in accordance with translocation plan.	BLM Socorro Field Office
Gunnison Prairie Dog Habitat Assessment and Preconstruction Surveys • A habitat assessment would be completed prior to construction activities. A desktop analysis followed by field review would occur and shall be timed with preconstruction surveys. Areas of unsuitable habitat would be exempt from surveys. Unsuitable habitat is defined as habitat that includes 1) dominant tree sites, 2) >30% shrub canopy, 3) rocky/cliff areas, and 4) playas, wetlands, and areas of saturated soils. Note that shrub/steppe habitats with a minor tree component (i.e. shrub cover < 30% and tree cover < 10%) and secondary floodplains of riparian areas could be suitable habitat. Surveyors would assess the suitability of the habitat and if it is determined that habitat is not suitable for prairie dogs, the surveyor would map (i.e. GPS the beginning and end of the unsuitable habitat) and document (i.e. brief description vegetation component, estimates of shrub/tree canopy cover, reasons for unsuitability determination, and photos) their findings. • Qualified surveyors approved by BLM would survey all suitable habitat within new proposed ground disturbance areas, within 0.25 mile buffer prior to construction to document the presence or absence of functional prairie dog burrows within the disturbance areas associated with each construction activity (i.e. temporary workspace, roads/crane paths, electrical collection system, etc.). Transects would be spaced 30 meters apart and the surveyor would ensure 100% visual coverage of the construction areas. All functional prairie dog burrows would be mapped and GPS'd. This information would be used to inform the application of mitigation measures during construction. Surveys data and reports would be provided to the Field Office a minimum of 2 weeks prior to construction.	BLM Socorro Field Office
Cultural/Paleontological Resources	
Unexpected discovery of cultural or paleontological resources during construction shall be brought to the attention of the responsible BLM authorized officer immediately. Work shall be halted in the vicinity of the find to avoid further disturbance to the resources while they are being evaluated and appropriate mitigation measures are being developed.	BLM Wind PEIS; 2005

BMP	Source
Decommissioning	
Prior to the termination of the rights-of-way authorization, a Decommissioning Plan shall be developed and approved by the BLM. The Decommissioning Plan shall include a Site Reclamation Plan and Monitoring Program.	BLM Wind PEIS; 2005
All management plans, BMPs, and stipulations developed for the construction phase shall be applied to similar activities during the decommissioning phase.	BLM Wind PEIS; 2005
Excavation, Blasting, and Grading	
The operator shall develop a Blasting Plan to include identification of planned blasting locations, a description of the planned blasting methods, an inventory of receptors potentially affected by the planned blasting, and determination of the area affected by the planned blasting. Blasting methods would take into consideration the high wildland fire hazard conditions in and surrounding the project area. Precautions to prevent fire would be included in the Blasting Plan and would include requirements to have all blasting charges capped with soil and/or other materials that are not combustible. Blasting activities are required to be observed by a Blasting Inspector. A Blasting Inspector is a person on the Sheriff's approved list of inspectors authorized to conduct inspections, before and after a blast. To be on the Sheriff's approved list, an inspector shall be certified by or registered with the International Conference of Building Officials, the International Code Counsel/Counsel of American Building Officials, the Building Officials & Code Administrator, or the Southern Building Code Congress International.	Tule Wind Energy Project ; CA El Centro FO; 2012
Operators shall gain a clear understanding of the local hydrogeology. Areas of groundwater discharge and recharge and their potential relationships with surface waterbodies shall be identified.	BLM Wind PEIS; 2005
Foundations and trenches shall be backfilled with originally excavated material as much as possible. Excess excavation materials shall be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.	BLM Wind PEIS; 2005
Borrow material shall be obtained only from authorized and permitted sites.	BLM Wind PEIS; 2005
Fire Safety	
A Fire Protection and Prevention Plan shall be prepared for construction and operation of the project. The objective of this plan is to eliminate the causes of fire, prevent loss of life and property by fire, and to comply with the Occupational Safety and Health Administration (OSHA) standard on fire prevention, 29 CFR 1926.24.	Ocotillo Wind Energy Facility, CA El Centro FO; 2012

BMP	Source
To reduce fire hazard from vehicles and human activities, instruct employees to use spark arrestors on power equipment, ensure that no metal parts are dragging from vehicles, and use caution with open flames, cigarettes, etc.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
Geology and Soils	
For soil disturbing actions that would require reclamation, soil and/or seed stocks may be salvaged and stockpiled prior to surface disturbances. Seed stock piles shall be windrowed and protected from wind erosion if they are to be left for more than one growing season. Recontour all disturbed areas to blend as seamlessly as possible with the natural topography prior to revegetation. Rip all compacted portions of the disturbed soil to an appropriate depth based on site characteristics. Establish an adequate seed bed to provide good seed-to-soil contact. Note that stockpiling top soil would increase disturbance areas at road and turbine assembly areas.	Ocotillo Wind Energy Facility, CA El Centro FO; 2012
Hazardous Materials and Waste	
Operators shall develop a Waste and Hazardous Materials Management Plan that addresses storage, use, transportation, and disposal of each hazardous material anticipated to be used at the site. The plan shall identify all hazardous materials that would be used, stored, or transported at the site. It shall establish inspection procedures, storage requirements, storage quantity limits, inventory control, nonhazardous product substitutes, and disposal of excess materials. The plan shall also identify requirements for notices to Federal and local emergency response authorities and include emergency response plans.	BLM Wind PEIS; 2005
Operators shall develop a Waste and Hazardous Materials Management Plan that identifies the waste streams that are expected to be generated at the site and addresses hazardous waste determination procedures, waste storage locations, waste-specific management and disposal requirements, inspection procedures, and waste minimization procedures. This plan shall address all solid and liquid wastes that may be generated at the site.	BLM Wind PEIS; 2005
Operators shall develop a spill prevention, control, and countermeasure plan identifying where hazardous materials and wastes are stored, spill prevention measures, training requirements, spill response actions, locations of spill response kits, procedures for ensuring that the spill response kits are adequately stocked, and procedures for making timely notifications to authorities.	BLM Wind PEIS; 2005
In the event of an accidental release to the environment, the operator shall document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event shall be provided to the BLM authorized officer and other federal and state agencies, as required."	BLM Wind PEIS; 2005

BMP	Source
Secondary containment shall be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) shall be a temporary activity occurring only for as long as is needed to support construction activities.	BLM Wind PEIS; 2005
Wastes shall be properly containerized and removed periodically for disposal at appropriate off-site permitted disposal facilities.	BLM Wind PEIS; 2005
Any wastewater generated in association with temporary, portable sanitary facilities shall be periodically removed by a licensed hauler and disposed of at an existing municipal sewage treatment facility. Temporary, portable sanitary facilities provided for construction crews shall be adequate to support expected on-site personnel and shall be removed at completion of construction activities.	BLM Wind PEIS; 2005
Federal and state measures for handling toxic substances to minimize danger to water and wildlife resources from spills would be followed. All fuels, waste oils, and solvents would be collected and stored in tanks or drums within a secondary containment area consisting of an impervious floor and bermed sidewalls capable of holding the volume of the largest container stored within. Borderlands Wind, LLC would ensure that all equipment operating in or near a drainage, or in a basin, is in good working condition, and free of leaks. All vehicles would have drip pans during storage to contain minor spills and drips. No refueling or storage would take place within 100 feet (30.5 meters) of a drainage channel or structure. Spill containment materials must be on site or readily available for any equipment maintenance or refueling that occurs adjacent to a drainage. In addition, all maintenance crews working with heavy equipment would maintain Hazardous Materials Spill Kits on site and be trained in spill containment and response. Petroleum product leaks and chemical releases should be remediated prior to completion of decommissioning.	Tule Wind Energy Project ; CA El Centro FO; 2012
Health and Safety Planning	
The applicant would notify FAA by filing FAA Form 7460 at least 30 days before construction is to begin or the application for the construction permit is to be filed.	Searchlight Wind Energy Project; NV Las Vegas FO; 2012
A safety assessment shall be conducted to describe potential safety issues and the means that would be taken to mitigate them, including issues such as site access, construction, safe work practices, security, heavy equipment transportation, traffic management, emergency procedures, and fire control.	BLM Wind PEIS; 2005

BMP	Source
A health and safety program shall be developed to protect both workers and the general public during construction, operation, and decommissioning of a wind energy project. Regarding occupational health and safety, the program shall identify all applicable Federal and State occupational safety standards; establish safe work practices for each task (e.g., requirements for personal protective equipment and safety harnesses; Occupational Safety and Health Administration [OSHA] standard practices for safe use of explosives and blasting agents; and measures for reducing occupational electric and magnetic fields [EMF] exposures); establish fire safety evacuation procedures; and define safety performance standards (e.g., electrical system standards and lightning protection standards). The program shall include a training program to identify hazard training requirements for workers for each task and establish procedures for providing required training to all workers. Documentation of training and a mechanism for reporting serious accidents to appropriate agencies shall be established.	BLM Wind PEIS; 2005
Regarding public health and safety, the health and safety program shall establish a safety zone or setback for wind turbine generators from residences and occupied buildings, roads, rights-of-ways, and other public access areas that is sufficient to prevent accidents resulting from the operation of wind turbine generators. It shall identify requirements for temporary fencing around staging areas, storage yards, and excavations during construction or decommissioning activities. It shall also identify measures to be taken during the operation phase to limit public access to hazardous facilities (e.g., permanent fencing would be installed around electrical substations, and turbine tower access doors would be locked).	BLM Wind PEIS; 2005
Temporary fencing shall be installed around staging areas, storage yards, and excavations during construction to limit public access.	BLM Wind PEIS; 2005
Permanent fencing shall be installed and maintained around electrical substations, the switchyard, and the operations and maintenance building. Turbine tower access doors shall be locked to limit public access.	BLM Wind PEIS; 2005
In the event an installed wind energy development project results in EMI (e.g., impacts to radar, microwave, television, or radio transmissions), the operator shall work with the owner of the impacted communications system to resolve the problem. Additional warning information may also need to be conveyed to aircraft with onboard radar systems so that echoes from wind turbines can be quickly recognized.	BLM Wind PEIS; 2005
Hydrological Resources and Water Quality	
Operators shall develop a Stormwater Management Plan for the site to ensure compliance with applicable regulations and prevent off-site migration of contaminated stormwater or increases in soil erosion.	BLM Wind PEIS; 2005

BMP	Source
Surface water flows should be restored to pre-disturbance conditions, including removal of stream crossings, roads, and pads, consistent with stormwater management objectives and requirements.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
After decommissioning, erosion control measures should be installed in all disturbance areas where potential for erosion exists, consistent with stormwater management objectives and requirements.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
Avoid impacts to wetlands, hydrology, and stream morphology by using appropriate erosion control measures to limit runoff to nearby water sources. Follow all applicable provisions of the Clean Water Act (33 USC 1311-1313, 1317) and the Rivers and Harbors Act (33 USC 301 et seq.).	Bat Conservation International, 2017
Land Use	
Borderlands Wind, LLC would coordinate with the grazing permittees during construction to control grazing livestock movement and inform the BLM SFO of the agreed upon method for livestock control. Prior approval from the BLM SFO is required for any temporary fencing.	
Monitoring and Testing	
The area disturbed by installation of meteorological towers (i.e., footprint) shall be kept to a minimum.	BLM Wind PEIS; 2005
Meteorological towers shall not be located in sensitive habitats or in areas where ecological resources known to be sensitive to human activities are present. Installation of towers shall be scheduled to avoid disruption of wildlife reproductive activities or other important behaviors.	BLM Wind PEIS; 2005
Meteorological towers installed for site monitoring and testing shall be inspected periodically for structural integrity.	BLM Wind PEIS; 2005
Site monitoring protocols defined in the POD shall be implemented. These shall incorporate monitoring program observations and additional BLM-approved mitigation measures into standard operating procedures and BMPs to minimize future environmental impacts.	BLM Wind PEIS; 2005

BMP	Source
Noise	
Noisy construction activities (including blasting) shall be limited to the least noise-sensitive times of day (i.e., daytime only between 7 a.m. and 10 p.m.) and weekdays.	BLM Wind PEIS; 2005
All equipment shall have sound-control devices no less effective than those provided on the original equipment. All construction equipment used shall be adequately muffled and maintained.	BLM Wind PEIS; 2005
All stationary construction equipment (e.g., compressors and generators) shall be located as far as practicable from nearby residences.	BLM Wind PEIS; 2005
If blasting or other noisy activities are required during the construction period, nearby residents shall be notified in advance.	BLM Wind PEIS; 2005
Noxious/Invasive Weeds	
Operators shall develop a plan for control of noxious weeds and invasive species, which could occur as a result of new surface disturbance activities at the site. The plan shall address monitoring, education of personnel on weed identification, the manner in which weeds spread, and methods for treating infestations. The use of certified weed-free mulching shall be required. If trucks and construction equipment are arriving from locations with known invasive vegetation problems, a controlled inspection and cleaning area shall be established to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.	BLM Wind PEIS; 2005
If fill dirt or gravel is brought onto public lands, the source must be noxious weed-free.	Socorro Field Office RMP; 2010
Surveys should be conducted by qualified experts to detect invasive plants, and comprehensive approaches to controlling any detected plants should be implemented and maintained as long as necessary.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
Construction sites should be monitored for the life of the project for the presence of invasive/noxious weeds (includes maintenance and construction activities). If weeds are found, the Socorro Field Office would be notified and it would determine the best method for the control of the particular weed species.	Socorro Field Office RMP; 2010

BMP	Source
All seed shall be certified noxious weed-free. Areas would be monitored to determine the success of revegetation and the presence of invasive/noxious weeds, and would be reseeded if necessary.	Socorro Field Office RMP; 2010
Consider livestock quarantine, removal, or timing limitations in invasive/noxious weed-infested areas.	Socorro Field Office RMP; 2010
All seed, hay, straw, mulch, or other vegetative material transported and used on public land for site stability, rehabilitation, or project facilitation shall be certified noxious weed-free and free of all reproductive parts upon the passage of a weed-free law in the State of New Mexico.	Socorro Field Office RMP; 2010
It is recommended that all vehicles, including off-road and all-terrain and equipment, traveling in or out of weed-infested areas be cleaned before and after use on public land.	Socorro Field Office RMP; 2010
Additional BMPs may be developed from the 2007 and 2016 Vegetation Management EISs and the BLM 1740-2 Handbook.	BLM Socorro Field Office
Operations	
All control and mitigation measures established for the project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the operational phase, as appropriate. These control and mitigation measures shall be reviewed, revised, and approved by the BLM, as needed, to address changing conditions or requirements at the site, throughout the operational phase. This adaptive management approach would help ensure that impacts from operations are kept to a minimum.	BLM Wind PEIS; 2005
Inoperative turbines shall be repaired, replaced, or removed in a timely manner. Requirements to do so shall be incorporated into the due diligence provisions of the rights-of-way authorization. Operators would be required to demonstrate due diligence in the repair, replacement, or removal of turbines; failure to do so could result in termination of the rights-of-way authorization.	BLM Wind PEIS; 2005
Recreation	
To minimize impacts to resource values or to enhance a recreational setting and recreation experience, harden sites and locations subject to prolonged/repetitive concentrated recreational uses with selective placement of gravel or other porous materials and allow for dust abatement, paving, and engineered road construction.	Socorro Field Office RMP; 2010
As appropriate, employ limitations of specific activities to avoid or correct adverse impacts to resource values, public safety issues, and/or conflicts between recreational uses.	Socorro Field Office RMP; 2010

BMP	Source
Employ land use ethics programs and techniques such as Leave No Trace™ and Tread Lightly!® programs. Use outreach efforts of such programs to lessen needs to implement more stringent regulatory measures to obtain resource protection and a quality recreation experience.	Socorro Field Office RMP; 2010
Roads	
A Road Design, Traffic, and Transportation Plan shall be prepared that incorporates existing BLM standards regarding road design, construction, and maintenance such as those described in the BLM 9113 Manual (BLM 1985) and the Surface Operating Standards for Oil and Gas Exploration and Development (RMRCC 1989) (i.e., the Gold Book).	BLM Wind PEIS; 2005
Existing roads shall be used, but only if in safe and environmentally sound locations. If new roads are necessary, they shall be designed and constructed to the appropriate standard and be no higher than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Excessive grades on roads, road embankments, ditches, and drainages shall be avoided, especially in areas with erodible soils. Special construction techniques shall be used, where applicable.	BLM Wind PEIS; 2005
Access roads and on-site roads shall be surfaced with aggregate materials, wherever appropriate.	BLM Wind PEIS; 2005
Access roads shall be located to follow natural contours and minimize side hill cuts.	BLM Wind PEIS; 2005
Roads shall be located away from drainage bottoms and wetlands, if practicable.	BLM Wind PEIS; 2005
Roads shall be designed so that changes to surface water runoff are avoided and erosion is not initiated.	BLM Wind PEIS; 2005
Access roads shall be located to minimize stream crossings. All structures that cross streams shall be located and constructed so that they do not decrease channel stability or increase water velocity. Operators shall obtain all applicable Federal and State permits	BLM Wind PEIS; 2005
Existing drainage systems shall not be altered, especially in sensitive areas such as erodible soils or steep slopes. Potential soil erosion shall be controlled at culvert outlets with appropriate structures. Catch basins, roadway ditches, and culverts shall be cleaned and maintained regularly.	Socorro Field Office RMP; 2010
Base the road design criteria and standards on road management objectives (such as traffic requirements of the proposed activity) and the overall transportation objectives, and minimize damage to the environment.	Socorro Field Office RMP; 2010

BMP	Source
Locate roads on stable terrain such as ridgetops, natural benches, and flatter transitional slopes near ridges and valley bottoms and moderate sideslopes and away from slumps, slide-prone areas, concave slopes, clay beds, and where rock layers dip parallel to the slope. Locate roads on well-drained soil types; avoid wet areas.	Socorro Field Office RMP; 2010
Construct cut-and-fill slopes to be approximately 3(h):1(v) or flatter where feasible. Locate roads to minimize heights of cutbanks. Avoid high, steeply sloping cutbanks in highly fractured bedrock.	Socorro Field Office RMP; 2010
Avoid head walls; midslope locations on steep, unstable slopes; fragile soils; seeps; old landslides; sideslopes in excess of 70 percent; and areas where the geologic bedding planes or weathering surfaces are inclined with the slope. Implement extra mitigation measures when these areas cannot be avoided.	Socorro Field Office RMP; 2010
Construct roads for surface drainage by using outslopes, crowns, grade changes, drain dips, waterbars, and/or insloping to ditches as appropriate.	Socorro Field Office RMP; 2010
Sloping the road base to the outside edge for surface drainage is normally recommended for local spurs or minor collector roads where traffic volume is low and lower traffic speeds are anticipated. This is also recommended in situations where long intervals between maintenance would occur and where minimum excavation is wanted. Out-sloping is not recommended on steep slopes. Sloping the road base to the inside edge is an acceptable practice on roads with steep sideslopes and where the underlying soil formation is very rocky and not subject to appreciable erosion or failure.	Socorro Field Office RMP; 2010
Crowning and ditching are recommended for arterial and collector roads where traffic volume, speed, intensity, and user comfort are considerations. Recommended gradients range from 0 to 15 percent where crowning and ditching may be applied, as long as adequate drainage away from the road surface and ditch lines is maintained.	Socorro Field Office RMP; 2010
Minimize excavation when constructing roads through the use of balanced earthwork, narrowing road widths, and end-hauling where sideslopes are between 50 and 70 percent.	Socorro Field Office RMP; 2010
If possible, construct roads when soils are dry and not frozen. When soils or road surfaces become saturated to a depth of 3 inches, BLM-authorized activities should be limited or cease unless otherwise approved by the authorized officer.	Socorro Field Office RMP; 2010
Consider improving inadequately surfaced roads that are to be left open to public traffic during wet weather with gravel or pavement to minimize sediment production and maximize safety.	Socorro Field Office RMP; 2010

BMP	Source
Retain vegetation on cut slopes unless it poses a safety hazard or restricts maintenance activities. Roadside brushing of vegetation should be done in a way that prevents disturbance to root systems and visual intrusions (e.g., avoid using excavators for brushing).	Socorro Field Office RMP; 2010
Retain adequate vegetation between roads and streams to filter runoff from roads.	Socorro Field Office RMP; 2010
Avoid riparian/wetland areas where feasible; locate in these areas only if the roads do not interfere with the attainment of proper functioning condition and riparian management objectives.	Socorro Field Office RMP; 2010
Minimize the number of unimproved stream crossings. When a culvert or bridge is not feasible, locate drive-through (low-water) crossings on stable rock portions of the drainage channel. Harden crossings with the addition of rock and gravel if necessary. Use angular rock if available.	Socorro Field Office RMP; 2010
Locate roads and limit activities of mechanized equipment within stream channels to minimize their influence on riparian areas. When stream crossing is necessary, design the approach and crossing perpendicular to the channel where practical. Locate the crossing where the channel is well defined, unobstructed, and straight.	Socorro Field Office RMP; 2010
Avoid placing fill material in floodplains unless the material is large enough to remain in place during flood events.	Socorro Field Office RMP; 2010
Use drainage dips instead of culverts on roads where gradients would not present a safety issue. Locate drainage dips in such a way so water would not accumulate or where outside berms prevent drainage from the roadway. Locate and design drainage dips immediately upgrade of stream crossings and provide buffer areas and catchment basins to prevent sediment from entering the stream.	Socorro Field Office RMP; 2010
Construct catchment basins, brush windrows, and culverts in a way to minimize sediment transport from road surfaces to stream channels. Install culverts in natural drainage channels in a way to conform with the natural streambed gradients and with outlets that discharge onto rocky or hardened protected areas.	Socorro Field Office RMP; 2010
Design and locate water crossing structures in natural drainage channels to accommodate adequate fish passage, provide for minimum impacts to water quality, and be capable of handling a 100-year event for runoff and floodwaters.	Socorro Field Office RMP; 2010
Replace undersized culverts and repair or replace damaged culverts and downspouts. Provide energy dissipaters at culvert outlets or drainage dips.	Socorro Field Office RMP; 2010

BMP	Source
Locate culverts or drainage dips in such a manner as to avoid discharge onto unstable terrain such as head walls or slumps. Provide adequate spacing to avoid accumulation of water in ditches or road surfaces. Culverts should be placed on solid ground to avoid road failures.	Socorro Field Office RMP; 2010
Properly sized aggregate and riprap should be used during culvert construction. Place riprap at culvert entrances to streamline water flow and reduce erosion.	Socorro Field Office RMP; 2010
Establish adapted vegetation on all cuts and fill immediately following road construction and maintenance.	Socorro Field Office RMP; 2010
Remove berms from the downslope side of roads, consistent with safety considerations.	Socorro Field Office RMP; 2010
Rehabilitate roads no longer needed and leave abandoned roads in a condition that provides adequate drainage without further maintenance and remove any existing culverts. Close abandoned roads to traffic by physically obstructing the road with large berms, trenches, logs, stumps, or rock boulders as necessary to accomplish permanent closure.	Socorro Field Office RMP; 2010
When plowing snow for winter use of roads, provide breaks in snow berms to allow for road drainage. Avoid plowing snow into streams. Plow snow only on existing roads.	Socorro Field Office RMP; 2010
Maintenance should be performed to conserve existing surface material, retain the original crowned or out-sloped, self-draining cross section, prevent or remove rutting berms (except those designed for slope protection) and other irregularities that retard normal surface runoff. Avoid wasting loose ditch or surface material over the shoulder where it can cause stream sedimentation or weaken slump-prone areas. Avoid undercutting back slopes.	Socorro Field Office RMP; 2010
Do not disturb the toe of cut slopes while pulling ditches or grading roads. Avoid sidecasting road material into streams.	Socorro Field Office RMP; 2010
Grade roads only as necessary. Maintain drain dips, waterbars, road crown, in-sloping, and out-sloping, as appropriate, during road maintenance.	Socorro Field Office RMP; 2010
When landslides occur, save all soil and material usable for reclamation and stockpile for future reclamation needs. Avoid sidecasting of slide material where it can damage, overload, and saturate embankments, or flow into down-slope drainage courses. Reestablish vegetation as needed in areas where vegetation has been destroyed due to sidecasting.	Socorro Field Office RMP; 2010

BMP	Source
Strip and stockpile topsoil ahead of construction of new roads, if feasible. Reapply soil to cut and fill slopes prior to revegetation.	Socorro Field Office RMP; 2010
Minimize the number and length of access roads; use existing roads when feasible.	USFWS Wind Turbine Guidelines Advisory Committee Recommendations, 2010
Right of Ways and Utility Corridors	
Rights-of-way and utility corridors should use areas adjoining or adjacent to previously disturbed areas whenever possible, rather than traverse undisturbed vegetation communities.	Socorro Field Office RMP; 2010
Waterbars or dikes should be constructed on all of the rights-of-way and utility corridors, and across the full width of the disturbed area, as directed by the authorized officer.	Socorro Field Office RMP; 2010
Disturbed areas within road rights-of-way and utility corridors should be stabilized by vegetation practices designed to hold soil in place and minimize erosion.	Socorro Field Office RMP; 2010
Sediment barriers should be constructed when needed to slow runoff, allow deposition of sediment, and prevent transport from the site. Straining or filtration mechanisms may also be employed for the removal of sediment from runoff.	Socorro Field Office RMP; 2010
Traffic and Transportation Planning and Management	
A Road Design, Traffic, and Transportation Plan shall be developed, particularly for the transport of turbine components, main assembly cranes, and other large pieces of equipment. The plan shall consider specific object sizes, weights, origin, destination, and unique handling requirements and shall evaluate alternative transportation approaches. In addition, the process to be used to comply with unique State requirements and to obtain all necessary permits shall be clearly identified.	BLM Wind PEIS; 2005
A Road Design, Traffic, and Transportation Plan shall be prepared for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan shall incorporate measures such as informational signs, flaggers when equipment may result in blocked throughways, and traffic cones to identify any necessary changes in temporary lane configuration.	BLM Wind PEIS; 2005

BMP	Source
Operators shall consult with local planning authorities regarding increased traffic during the construction phase, including an assessment of the number of vehicles per day, their size, and type. Specific issues of concern (e.g., location of school bus routes and stops) shall be identified and addressed in the Traffic Management Plan.	BLM Wind PEIS; 2005
Project personnel and contractors shall be instructed and required to adhere to speed limits commensurate with road types, traffic volumes, vehicle types, and site-specific conditions to ensure safe and efficient traffic flow and to reduce wildlife collisions and disturbance and airborne dust.	BLM Wind PEIS; 2005
Traffic shall be restricted to the roads developed for the project. Use of other unimproved roads shall be restricted to emergency situations.	BLM Wind PEIS; 2005
Signs shall be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information. To minimize impacts on local commuters, consideration shall be given to limiting construction vehicles traveling on public roadways during the morning and late afternoon commute times.	BLM Wind PEIS; 2005
Ongoing ground transportation planning shall be conducted to evaluate road use, minimize traffic volume, and ensure that roads are maintained adequately to minimize associated impacts.	BLM Wind PEIS; 2005
Visual Resources	
Use wind turbine towers, nacelles, and rotors that are locally uniform and that conform to high standards of industrial design to present a trim, uncluttered, aesthetic appearance.	Tule Wind Energy Project ; CA El Centro FO; 2012
Place much of the facility's electrical collection system underground (as much as possible), minimizing the system's visual impacts.	Tule Wind Energy Project ; CA El Centro FO; 2012
Borderlands Wind, LLC would integrate the turbine array with the surrounding landscape to the extent practicable. Design elements to be addressed include visual uniformity, use of tubular towers, proportion and color of turbines, non-reflective paints, and prohibition of commercial messages on turbines.	BLWP POD / Visual Report 2018
Borderlands Wind, LLC would integrate other site design elements with the surrounding landscape to the extent practicable including minimizing the profile of the ancillary structures, burial of cables, prohibition of commercial symbols, and lighting. Borderlands Wind, LLC would minimize the need for and amount of lighting on ancillary structures.	BLWP POD / Visual Report 2018

BMP	Source
Where feasible, non-reflective paints and coatings should be used on wind turbines, visible ancillary structures, and other equipment to reduce reflection and glare. Turbines, visible ancillary structure, and other equipment should be painted before or immediately after installation. Uncoated galvanized metallic surfaces should be avoided because they may create a stronger visual contrast.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013 / Department of Transportation Federal Aviation Administration Advisory Circular Number 70/7460-1L Section 13.4.1 Marking Standards
Commercial messages and symbols (such as logo or trademarks) on wind turbines should be prohibited.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Wind turbines should be well maintained for the duration of the operating permit. Nacelle covers and rotor nose cones should always be in place and undamaged. Inoperative turbines should be repaired, replaced, or removed as quickly as feasible. A clear delineation of maintenance responsibilities and schedules should be part of the approval process.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Nacelles and towers should be cleaned to remove any spilled or leaking fluids and the dirt and dust that would accumulate on them.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Colors for paints, stains, coatings, and other surface color treatments to be used on structures should be selected from the BLM Standard Environmental Colors Chart CC-001.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013

BMP	Source
The use of permanent signs and project construction signs should be minimized. Beyond those required for basic facility and company identification for safety, navigation, and delivery purposes, commercial symbols or signs and associated lighting on buildings and other structures should be minimized. All commercial symbols and signs and associated lighting should be designed to minimize offsite visibility. • Necessary signs should be made of non-glare materials and utilize unobtrusive colors. The reverse sides of signs and mounts should be painted or coated using the most suitable color selected from the BLM • Standard Environmental Color Chart CC-001 to reduce contrasts with the existing landscape."	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Installation of gravel and pavement should be avoided to reduce color and texture contrasts with the existing landscape.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Road cut slopes should be rounded, and the cut-and-fill pitch should be varied to reduce contrasts in form and line; the slope should be varied as needed to preserve specimen trees and nonhazardous rock outcroppings where feasible.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Materials and surface treatments for structures and roads should repeat and/or blend with the existing form, line, color, and texture of the surrounding landscape. For example, if the project will be viewed against an earthen or other non-sky background, appropriately colored materials should be selected to help blend structures with the project's backdrop. Where appropriate, roads should be surfaced with material compatible in color with the local environment.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Unless safety or functional requirements preclude it, all structures, including but not limited to buildings, tanks, fences and railing, poles, aboveground pipes and culverts, and reverse sides of signs and guardrails, should be color treated to reduce contrasts with existing landscape, using the most suitable color selected from the BLM Standard Environmental Color Chart CC-001.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013

BMP	Source
Materials, coatings, or paints that have little or no reflectivity should be used on structures including, but not limited to, buildings, tanks, fences and railing, poles, aboveground pipes and culverts, and reverse sides of signs and guardrails. Semi-gloss finishes should be used rather than flat or gloss finishes. Substation equipment should be specified with a low-reflectivity, neutral finish. Insulators at substations and on takeoff equipment should be non-reflective and non-refractive. The surfaces of substation structures should be given low-reflectivity finishes with neutral colors to minimize the contrast of the structures with their backdrops. Chain-link fences surrounding the substations should have a dulled, darkened finish to reduce contrast.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Painted, stained, or coated surfaces should be kept in good repair, and the surface treatment should be reapplied when necessary, as the surface color fades or the coating flakes or otherwise deteriorates.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Except as required to meet the minimum safety and security requirements (e.g., collision markers required by the FAA, or other emergency lighting triggered by alarms), all permanent lighting should use full cutoff luminaires, which are fully shielded (i.e., not emitting direct or indirect light above an imaginary horizontal plane passing through the light source), and must meet the Illuminating Engineering Society (IES) glare requirement limiting intensity of light from the luminaire in the region between 80° and 90° from the ground. All fixtures must be mounted properly, at the proper angle.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Construction and permanent lighting should be mounted and directed to focus light only on the intended area, and to avoid light spill and offsite light trespass. Lights pointing upward or horizontally should be avoided.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
When accurate color rendition is not required (e.g., roadway, basic security), lighting should be amber in color, using either low-pressure sodium lamps or yellow LED lighting, or an equivalent. When white light is required for accurate color rendition, it should be less than or equal to 3500° Kelvin color temperature (warm-white). Bluish-white lighting should not be used in permanent outdoor lighting.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013

BMP	Source
Consistent with safety requirements, lighting use should be minimized during construction and operations. During construction, localized and portable lighting should be used where and when the work is occurring. Lighting should be powered by generators and have switches to cut power when lighting is not required during construction.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Lighting for facilities should not exceed the minimum number, intensity, and coverage required for safety and basic security. All area lighting should be divided into separately controlled zones to focus lighting on smaller areas where tasks are being performed and to avoid illuminating unused space. Area lighting should be controlled by timers, sensors, or switches available to facility operators; dusk-to-dawn lighting controlled by photocell alone should not be allowed except where required for safety. The facility operators should identify those components/structures that do not require continuous lighting for safety reasons. Area lights should only be switched on when there is a specific need (e.g., cleaning mirrors and panels at a solar facility, pumping fuel, persons occupying an area, or alarm situation). When not needed, lights should be switched off. Exceptions to switched-off lighting for safety purposes should be articulated in the lighting plan (see BMP 6.5.1). Focused task lighting, portable light towers, or flashlights should be used instead of area lighting, and retro-reflective or luminescent markers should be used in lieu of permanent lighting where feasible.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Vehicle-mounted lights or portable light towers are preferred over permanently mounted lighting for nighttime maintenance activities. If possible, such lighting should be equipped with hoods or louvers and be aimed toward the ground to avoid causing glare and skyglow.	Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands; 2013
Plan of Development	
To plan for efficient use of the land, necessary infrastructure requirements shall be consolidated wherever possible, and current transmission and market access shall be evaluated carefully.	BLM Wind PEIS; 2005
The project shall be planned to utilize existing roads and utility corridors to the maximum extent feasible, and to minimize the number and length/size of new roads, lay-down areas, and borrow areas.	BLM Wind PEIS; 2005

BMP	Source
A monitoring program shall be developed to ensure that environmental conditions are monitored during the construction, operation, and decommissioning phases. The monitoring program requirements, including adaptive management strategies, shall be established at the project level to ensure that potential adverse impacts of wind energy development are mitigated. The monitoring program shall identify the monitoring requirements for each environmental resource present at the site, establish metrics against which monitoring observations can be measured, identify potential mitigation measures, and establish protocols for incorporating monitoring observations and additional mitigation measures into standard operating procedures and BMPs.	BLM Wind PEIS; 2005
"Good housekeeping" procedures shall be developed to ensure that the site would be kept clean of debris, garbage, carrion, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards during operation.	BLM Wind PEIS; 2005

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APPENDIX C: BORDERLANDS WIND PROJECT PLAN OF DEVELOPMENT

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Borderlands Wind Project
Plan of Development

Submitted to

Bureau of Land Management
Socorro Field Office

Submitted by

Borderlands Wind, LLC

March 2020

BORDERLANDS WIND PROJECT
PLAN OF DEVELOPMENT

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020 (rev)

CONTENTS

Appendices

The appendix documents are not included herein, but can be viewed and downloaded at: https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=171852

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- Attachment 2: Monitoring Report Cover Page Form
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ACRONYMS AND ABBREVIATIONS

ABC	aggregate base-course
ACEC	Area of Critical Environmental Concern
ADLS	Aircraft Detection Lighting System
BLM	Bureau of Land Management
BMP	best management practice
Borderlands Wind	Borderlands Wind, LLC
COD	commercial operation date
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
GE	General Electric
HDPE	high-density polyethylene
IM	Instruction Memorandum
kV	kilovolt(s)
MBTA	Migratory Bird Treaty Act
met	meteorological
mph	miles per hour
MW	megawatt(s)
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMAC	New Mexico Administrative Code
NMDGF	New Mexico Department of Game and Fish
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMSA	New Mexico Statutes Annotated
NMSLO	New Mexico State Land Office
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
PM	particulate matter
POD	Plan of Development
project	Borderlands Wind Project

PTC	Production Tax Credit
RMP	Resource Management Plan
ROW	right-of-way
SCADA	Supervisory Control and Data Acquisition
SODAR	sonic detection and ranging
SPCC	Spill Prevention, Control, and Countermeasure
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
TEP	Tucson Electric Power
U.S. 60	U.S. Route 60
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WTG	wind turbine generator

1 PROJECT DESCRIPTION

1.1 Introduction

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. This POD reflects updated project details, including a more refined (via micrositing) turbine array and ancillary facilities, and a description of alternatives.

When permanently constructed, project features would include

- WTGs and associated pad-mounted transformers at the base of each turbine;
- new and improved access roads;
- an underground electrical collection system and associated aboveground junction boxes;
- an electrical interconnection switchyard and substation;
- an operations and maintenance (O&M) facility;
- one well for use for the O&M facility;
- up to two permanent meteorological towers; and
- a distribution line from the existing Socorro Electric Cooperative, Inc., line to the substation.

The temporary features that will be necessary for construction include

- three construction laydown areas;
- one concrete batch plant; and
- high-density polyethylene (HDPE) water lines.

Additional temporary related features that would be required for the proposed project construction, but would be permitted, built, and operated by a separate entity include

- one borrow pit (Alternatives 1 and 2 only); and
- one construction water well.

Construction is expected to begin in September to October 2020, and to continue for 11 to 12 months with a commercial operation date (COD) being achieved by September 1, 2021. This commercial operation date is needed for two specific reasons. First, the customer (TEP) is planning on this power being available in 2021 and has already reported this availability to their regulatory bodies. Grid studies already incorporate this power being readily available. Second, for Borderlands Wind to maximize the Production

Tax Credit (PTC) that would be available, COD must occur before the end of the year 2020. If the COD date becomes delayed after 2021, the PTC drops 20 percent. A schedule for the project is presented below in Table 1. The proposed project requires a new right-of-way (ROW) grant from the BLM for long-term commercial wind energy development. This POD is a required component of the accompanying commercial ROW grant application, and describes how the project would be built, operated, and decommissioned in a manner consistent with federal and state laws and regulations and BLM policy. The POD is a living document that will continue to be refined during BLM's evaluation of this application.

Table 1. Anticipated Milestones for Construction of the Borderlands Wind Project

Activity	Date
ROW Grant issued	August 2020
Mobilize to site/Construction start	October 1, 2020
Turbine deliveries	October 2020 – May 2021
Main transformer (GSU) delivery	May 1, 2021
Backfeed power	June 1, 2021
Commercial Operation Date	September 1, 2021

1.1.1 *Project Location*

The project is located on lands south of U.S. Route 60 (U.S. 60) in Catron County near Quemado, New Mexico, and the Arizona/New Mexico border. For all alternatives, the project area (including all ancillary facilities) consists of public lands administered by the BLM Socorro Field Office, the State of New Mexico, and by private landowners.

1.2 Purpose and Need of the POD

The purpose of the proposed project is to construct, manage, and maintain the energy-generating infrastructure sufficient to provide up to 100 MW of renewable wind energy to the electrical transmission grid in the Southwest. The project is needed in order to meet the renewable energy demand recommendations by various federal and state policies and regulations.

The National Energy Policy recommended that the federal government work to increase renewable energy production on federal lands (National Energy Policy Development Group 2001). Based on these recommendations and Executive Order 13212, the BLM established a Wind Energy Development Program on BLM-administered lands in the western United States. This program is meant to support wind energy development on public lands and establish policies regarding the processing of wind energy development ROW authorization applications (BLM 2005). Therefore, the proposed project needs to be addressed and processed in accordance with the program.

Additionally, the Energy Policy Act of 2005 (Public Law 109-58) Section 211 states, "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity."

The Socorro Resource Management Plan (RMP) states that renewable energy may be proposed in the Socorro Field Office's jurisdiction and that applications will follow the guidance outlined in the Wind

Energy Development Program (BLM 2010a). Therefore, the Socorro Field Office needs to address the proposed project and process the ROW application in accordance with the Wind Energy Development Program guidance.

The project would comply with policies, processes (including the National Environmental Policy Act [NEPA]), and best management practices (BMPs) outlined in the *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* (BLM 2005) and Instruction Memorandum (IM) 2017-096, Acreage Rent and Megawatt Capacity Fees (Years 2016-2021) for Solar and Wind Energy ROW Grants and Leases. Entities seeking to develop a wind energy project on BLM-administered public lands shall develop a project-specific POD that incorporates all BMPs and, as appropriate, the requirements of other existing and relevant BLM mitigation guidance. Additional mitigation measures will be incorporated into the POD and into the ROW authorization as project stipulations, as needed, to address site-specific and species-specific issues. The POD will include a site plan showing the locations of turbines, roads, power lines, other infrastructure, and other areas of short- and long-term disturbance.

1.2.1 *Project Objectives*

The objective of the proposed project is to respond to a TEP proposal for a wind project that is directly interconnected to their transmission system that can generate up to 100 MW of power for their customers. This proposal is in response to market demands, which have caused retirements of coal generating facilities along transmission lines that deliver power to the Four Corners region (Arizona, New Mexico, Colorado, and Utah) and an increased interest in renewable energy to replace this power generation. Due to New Mexico's high capacity to generate wind power, Borderlands Wind considered sites along TEP transmission lines in New Mexico. An additional consideration was to avoid areas that have existing congestion in the transmission network (such as sites surrounding Albuquerque, New Mexico). An additional site in Arizona near the Arizona/New Mexico border was also considered but dropped from consideration. This site contained numerous environmental constraints including many eagle nests within the site boundary and within 10 miles of the site. Furthermore, this site was located near highly sensitive cultural resources and Native American tribes expressed serious concerns about the development of this site. Based on the considerations and the objectives of the TEP proposal described above, Borderlands Wind ultimately selected the proposed project boundary due to the high quality of wind resource available, the proximity to existing TEP transmission lines, the limited impact to cultural resources (compared to other potential sites), and the compatibility of the proposed project with the existing land uses within the project boundary, which is predominantly cattle grazing.

1.3 General Facility Description

Borderlands Wind is proposing a 100-MW wind energy facility consisting of wind turbines, which would provide renewable energy to the electrical transmission grid in the southwestern United States. The proposed project requires a new ROW grant from the BLM for long-term commercial wind energy development. Borderlands Wind is requesting a 35-year ROW grant based on electrical demand, maintenance, and the expected life of the project facilities and major components. Technology initially considered by Borderlands Wind included a combination of WTGs, including 2.3-MW, 2.5-MW, and/or 3.0MW machines depending on the alternative. The project is scheduled to come online in 2021, and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. Maximum turbine height (with turbine blades) may reach up to 192 meters (630 feet) for the 3.0-MW WTGs. The proposed project would interconnect into the existing TEP Springerville to Greenlee 345-kV transmission line within the boundaries of the project area. Current interconnection details are being finalized with TEP.

WTGs and ancillary facilities would be placed in locations that would maximize energy production while minimizing environmental impacts. Safety during construction, operations, and maintenance is also considered during siting. The following sections provide additional supporting detail on specific components of the project. Detailed Site Plans (Appendix A) and Legal Description (Appendix B) are provided for Alternative 2.

1.3.1 *Alternatives*

The proposed project includes three alternatives:

- Proposed Action
- Alternative 1
- Alternative 2

All three alternatives would meet project objectives and the purpose and need of the POD, however, please note that the project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. Additionally, all alternatives are similar in ancillary facility description (see Section 1.3.3 in this POD), design criteria and mitigation measures (see Section 1.4), and permit requirements (Section 1.5), except where noted. All alternatives would follow the same general construction process (Section 2), operations and maintenance procedures (Section 3), and project decommissioning (Section 4). Therefore, these sections are not discussed by alternative. Over the course of project development, Borderlands Wind considered many different alternatives to the proposed alternatives that were not considered in detail (Appendix C).

PROPOSED ACTION

Under the Proposed Action, Borderlands Wind would construct the proposed project within a boundary that encompasses 40,348 acres of lands, with 28,989 acres being public lands administered by the BLM Socorro Field Office as described in the *Notice of Intent to Prepare a Resource Management Plan Amendment and Environmental Impact Statement for the Borderlands Wind Project in Catron County, New Mexico* (BLM 2018) (Figures 1 and 2). The remaining lands in the project area are managed by the State of New Mexico (5,185 acres) and by private landowners (6,246 acres).

Legal Land Description

The following legal description is for the Proposed Action (federal and non-federal lands), which includes all planned project components. The Proposed Action can be found on the U.S. Geological Survey (USGS) Nelson Reservoir NE (1968), Cow Springs (1963), Red Hill (1951), Jones Creek (1981), and Black Peak (1990) quadrangles. The Proposed Action falls within all or part of the sections listed in Table 2.

Table 2. Proposed Action Location: Township, Range, Section

Township/Range	Sections
T1S, R20W	1–5, 13, 14, 20–36
T1S, R21W	25, 26, 35, 36
T2S, R19W	4–8, 17–19
T1S, R19W	8–10, 15–22, 28–33
T2S, R21W	1, 2, 12
T2S, R20W	1–18, 20–29, 32–36

Wind Turbine and Ancillary Facility Configuration and Layout

A layout of the Proposed Action alternative including wind turbine locations and ancillary facilities is shown in Figure 3. The Proposed Action includes 46 WTGs; six of these are alternative turbine locations. Only 40 WTGs would be constructed, once permitted. A comparison of the number, size, and disturbance of the wind turbine and ancillary facilities by alternative is discussed in Sections 1.3.2 and 1.3.5.

ALTERNATIVE 1

Under Alternative 1, Borderlands Wind would construct the proposed project within a boundary that encompasses 16,650 acres of lands, with 13,861 acres being public lands administered by the BLM Socorro Field Office (Figures 4 and 5). The remaining lands in the project area are managed by the State of New Mexico (1,168 acres) and by private landowners (1,621 acres). Alternative 1 would reduce the total project boundary acreage by 23,698 acres, with 15,128 acres being reduced from public lands administered by the BLM, 4,017 acres being reduced from the State of New Mexico–managed lands, and 4,625 acres being reduced from private landowners. Alternative 1 would reduce the impacts that the Proposed Action would have on some of the environmental consideration resources, which are described in greater detail in the environmental impact statement (EIS).

Alternative 1 would consist of a total of 44 turbines as detailed in Section 1.3.2. The ancillary facilities including the laydown yards, batch plant, O&M building, and substation locations would all remain the same as the Proposed Action. Alternative 1 slightly shifts the locations of some of the project infrastructure (turbines, roads, collections) to better avoid sensitive environmental resources. Alternative 1 also considers the construction of a borrow pit for sourcing materials needed for concrete and road construction as a related activity. For the Proposed Action, these materials would have been brought in from an off-site Department of Transportation (DOT) approved location.

Legal Land Description

The following legal description is for Alternative 1 (federal and non-federal lands), which includes all planned project components. Alternative 1 can be found on the U.S. Geological Survey (USGS) Nelson Reservoir NE (1968), Cow Springs (1963), Red Hill (1951), Jones Creek (1981), and Black Peak (1990) quadrangles. Alternative 1 falls within all or part of the sections listed in Table 3.

Table 3. Alternative 1 Location: Township, Range, Section

Township/Range	Sections
T1S, R19W	10, 15, 21, 22, 28, 33
T1S, R20W	34
T2S, R19W	3–9, 17–20, 30
T2S, R20W	1–3, 10–18, 21–27, 35

Wind Turbine and Ancillary Facility Configuration and Layout

A preliminary layout of proposed locations for the wind turbine generators and ancillary facilities for Alternative 1 is shown in Figure 6. The Alternative 1 includes 44 WTGs; four of these are alternative turbine locations. Only 40 WTGs would be constructed, once permitted. A comparison of the number, size, and disturbance of the wind turbine and ancillary facilities by alternative is discussed in Sections 1.3.2 and 1.3.5.

ALTERNATIVE 2

Alternative 2 has the same project boundary as Alternative 1 (see Figures 4 and 5), therefore, the legal description for Alternative 2 is the same as described under Alternative 1. Under Alternative 2, Borderlands Wind would use the same collection line system and access road system as Alternative 1. This alternative is the preferred alternative of Borderlands Wind. The impacts of Alternative 2 are described in detail in the proposed project's EIS.

Wind Turbine and Ancillary Facility Configuration and Layout

A layout of Alternative 2 turbine location and ancillary facilities is shown in Figure 7. Alternative 2 includes 44 WTGs; 10 of these are alternative turbine locations. Only 34 WTGs would be constructed, once permitted. A comparison of the number, size, and disturbance of the wind turbine and ancillary facilities by alternative is discussed in Sections 1.3.2 and 1.3.5.

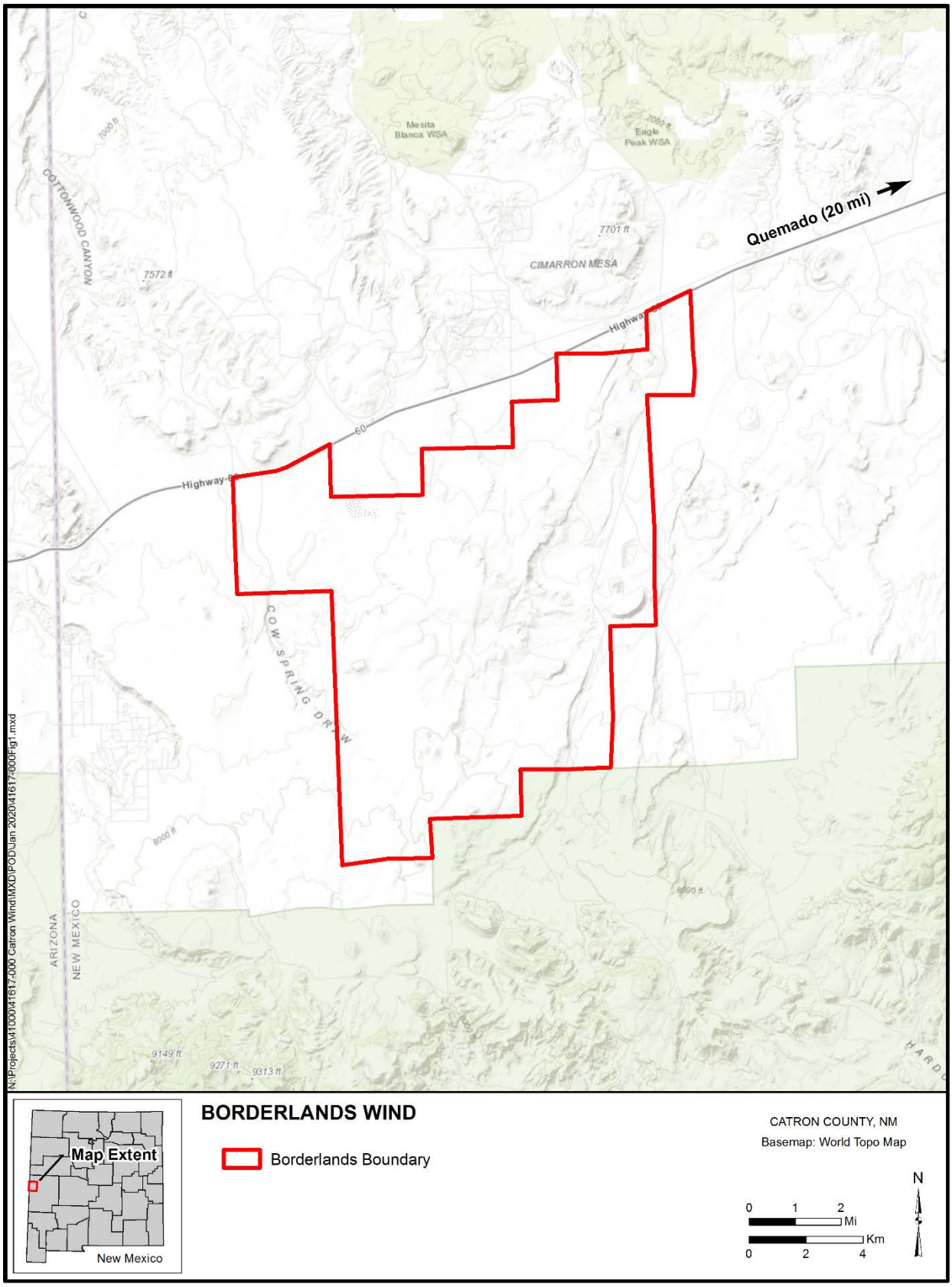

Figure 1. Proposed Action alternative boundary.

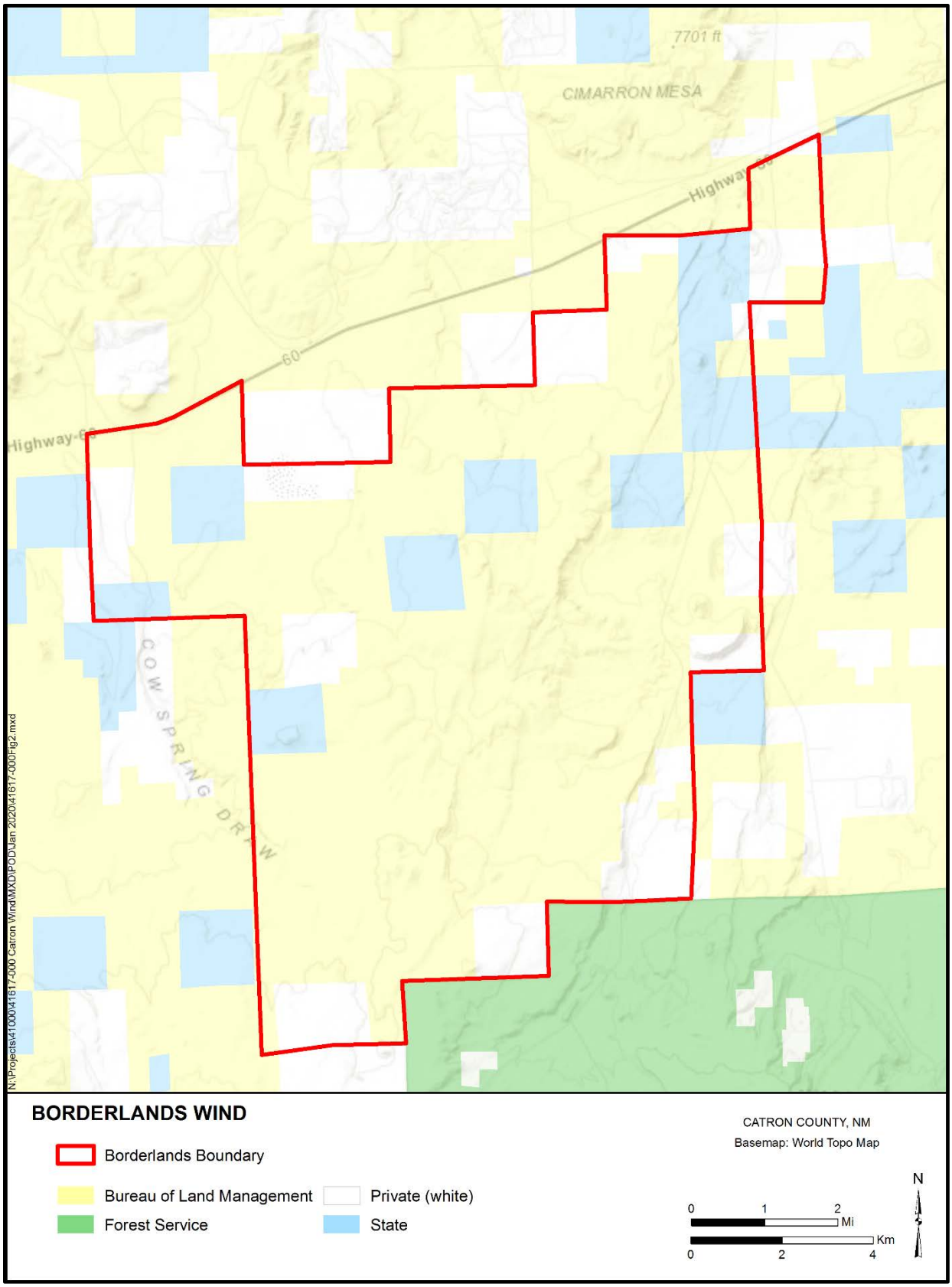

Figure 2. Land ownership of the Proposed Action alternative.

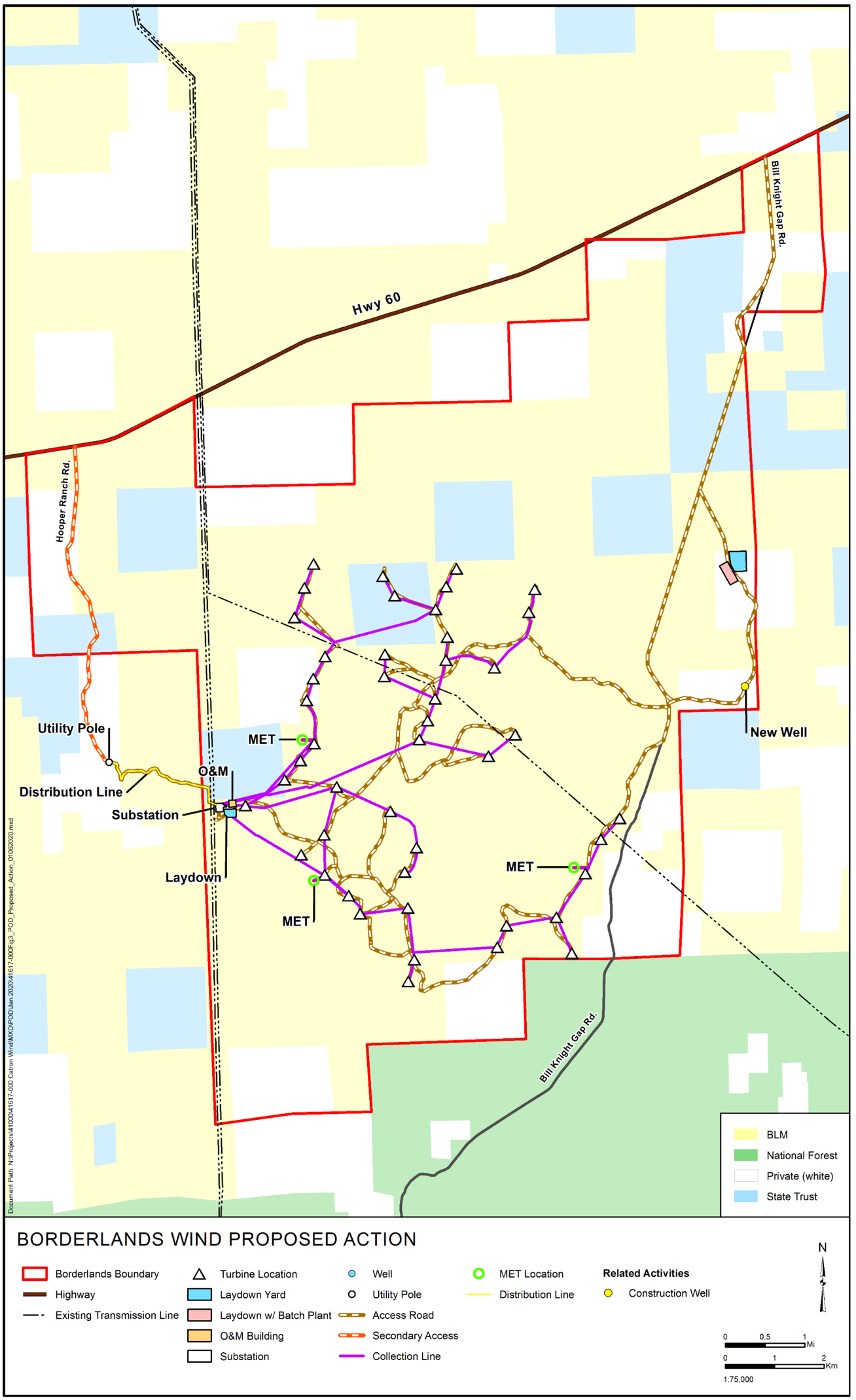

Figure 3. Proposed locations for the wind turbine generators and ancillary facilities under the Proposed Action.

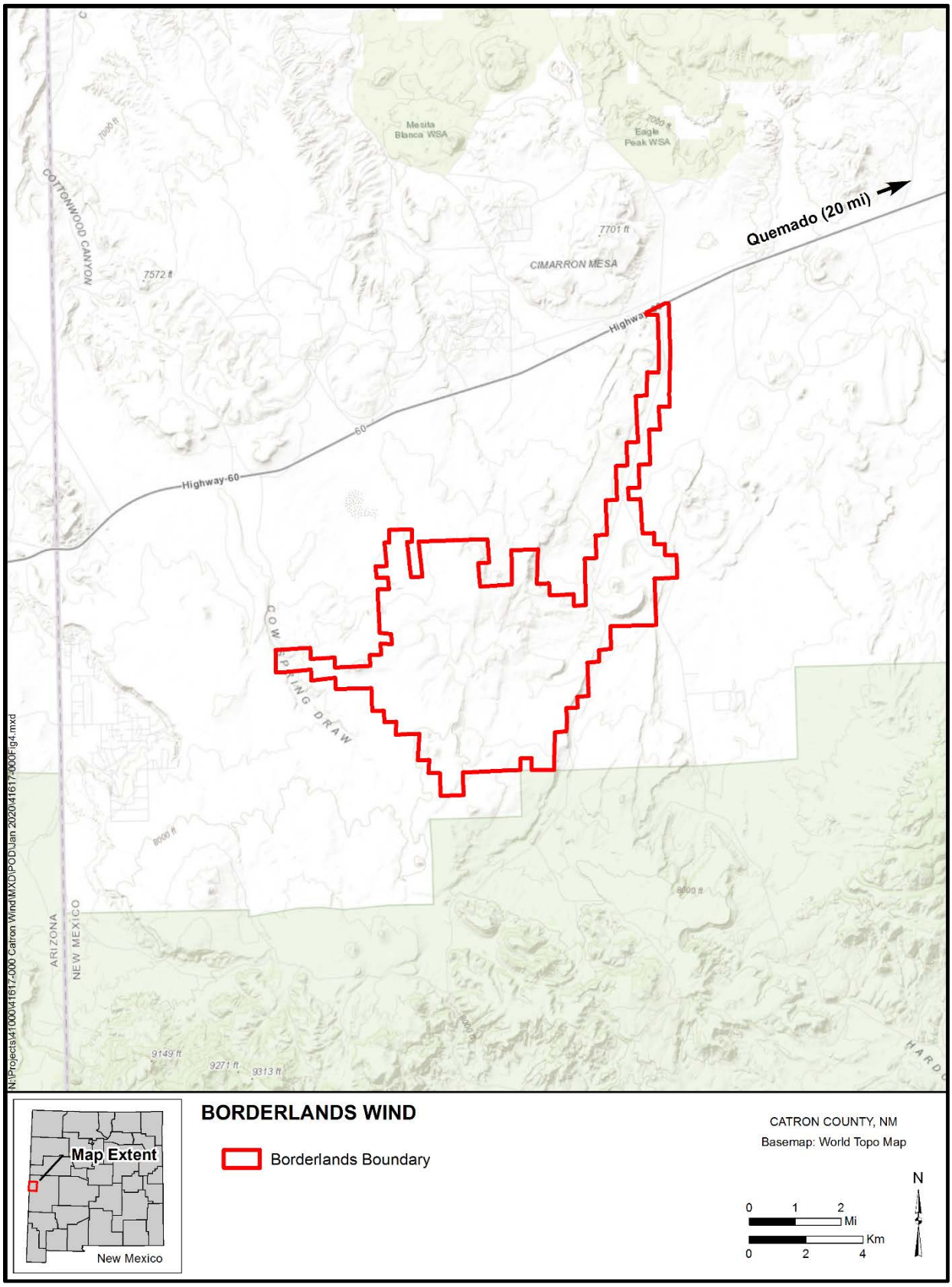

Figure 4. Alternatives 1 and 2 project boundary.

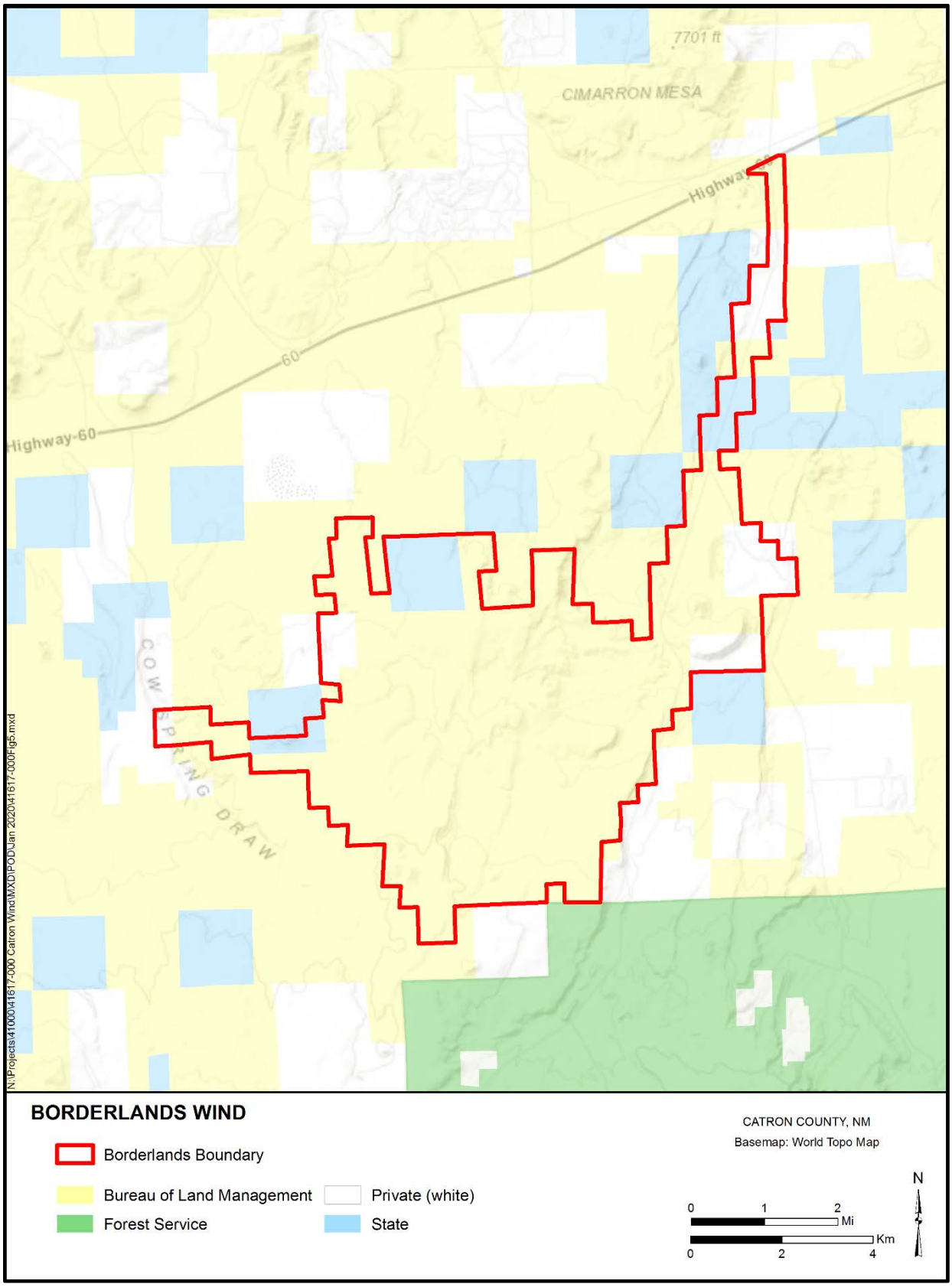

Figure 5. Land ownership of Alternatives 1 and 2.

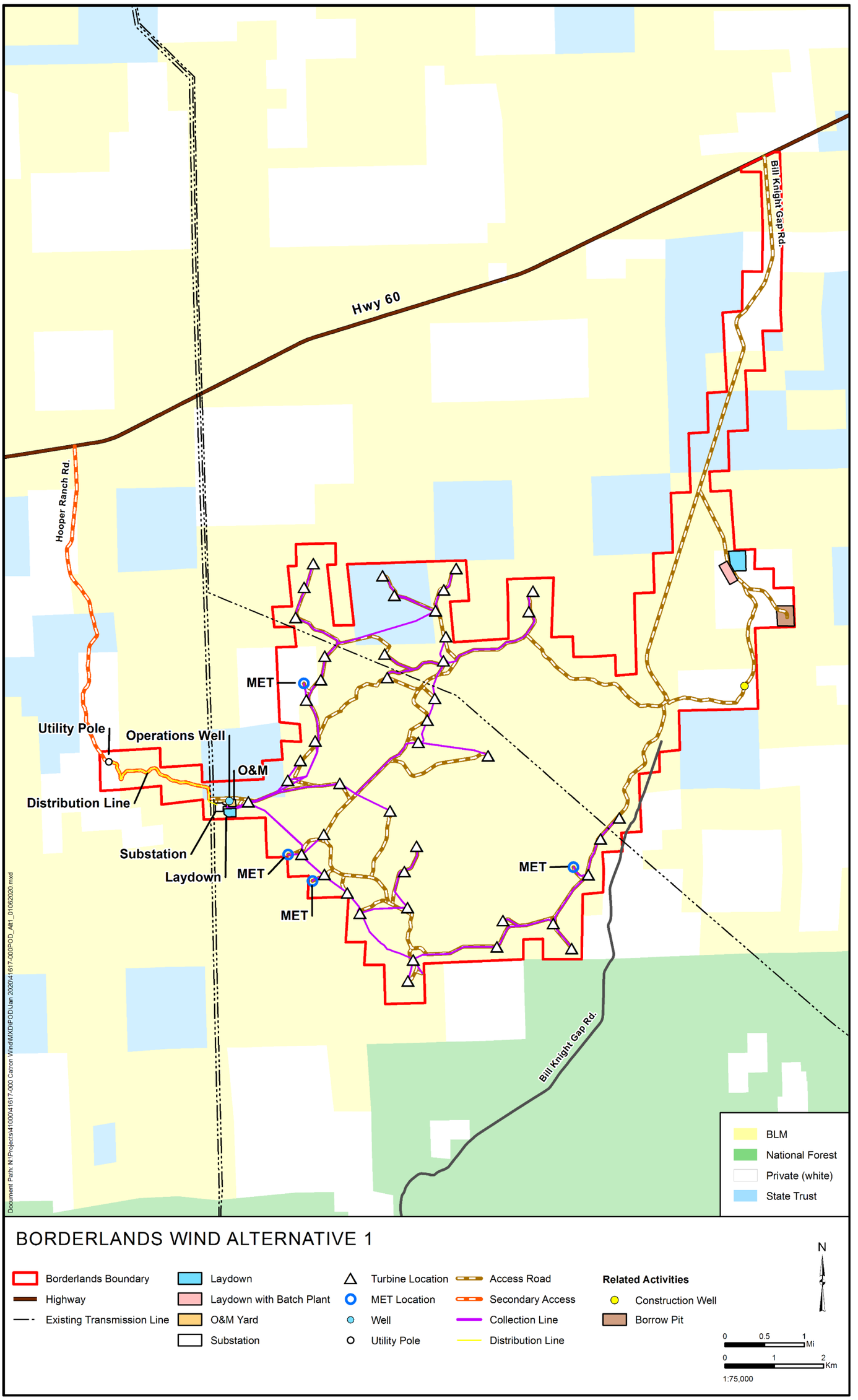

Figure 6. Proposed locations for the wind turbine generators and ancillary facilities under Alternative 1.

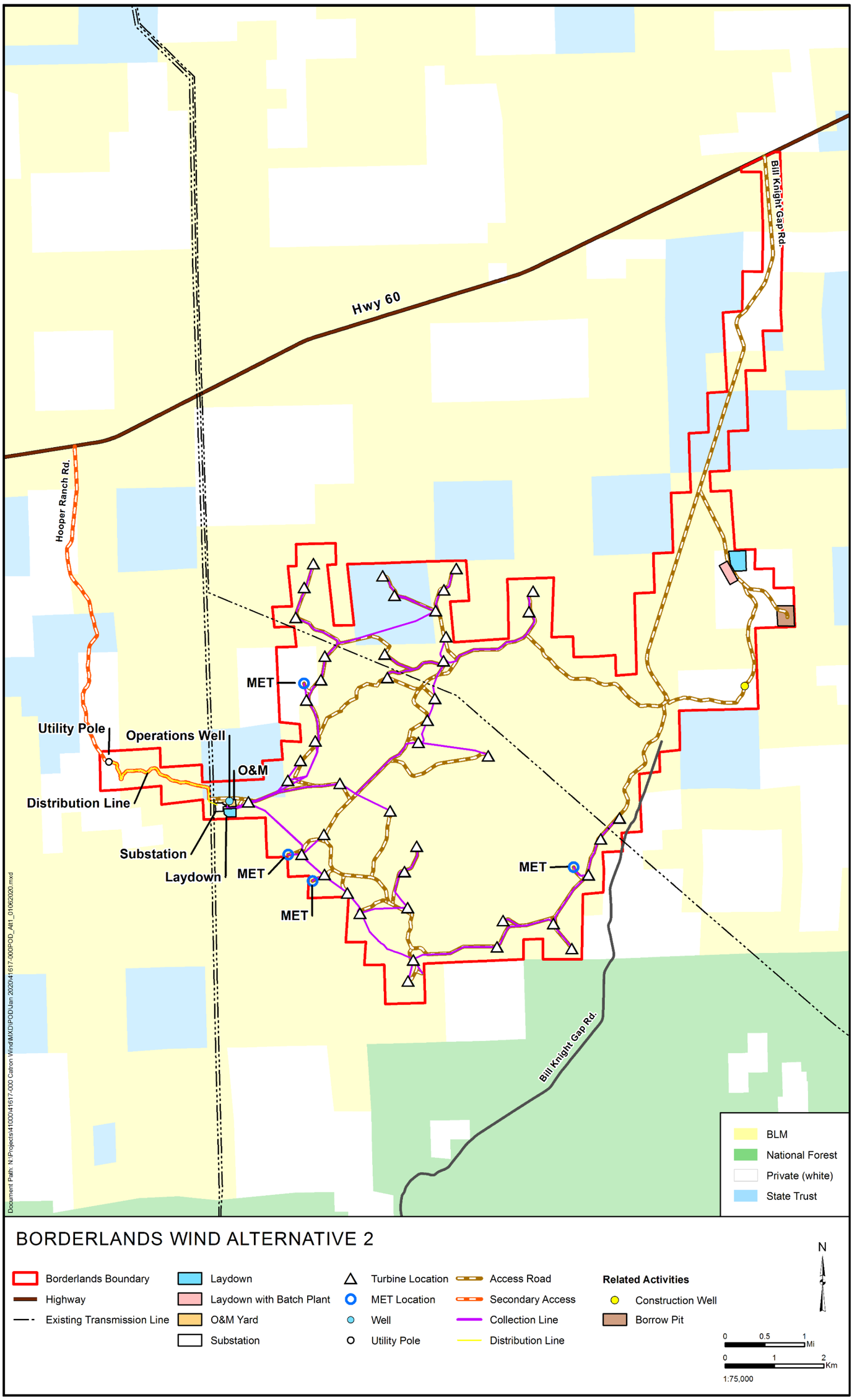

Figure 7. Proposed locations for the wind turbine generators and ancillary facilities under Alternative 2.

1.3.2 *Number and Size of Wind Turbines*

The number and size of WTGs to be constructed depends on the alternative, which are detailed in Table 4.

Table 4. Proposed Number and Size of Wind Turbine Generators by Alternative

Alternative	GE 2.3-MW WTGs	GE 2.5-MW WTGs	GE 3.0-MW WTGs	Alternative Turbine Locations
Proposed Action	4	36	0	6
Alternative 1	4	36	0	4
Alternative 2	0	4	30	10

Alternative turbine locations would be evaluated in case that proposed WTG locations are not viable. Details of when turbine locations are not viable can only be determined during construction activities, therefore, the alternative turbine locations are considered in disturbance estimates. Details of the construction of the WTGs are presented in Section 2.

Table 5 identifies the characteristics of the different proposed WTG types including tower/hub height, rotor radius, rotor diameter, ground clearance, and maximum overall height. Figures 9–11 depict the tower/hub height, rotor radius, ground clearance, and maximum overall height.

Table 5. Proposed Wind Turbine Generator Options – Turbine Characteristics

	GE 2-MW Platform 2.3 MW		GE 2-MW Platform 2.5 MW		GE 3-MW Platform 3.0 MW	
	meters	feet	meters	feet	meters	feet
Tower/hub height	80	262	90	295	98–117	322--384
Rotor radius	58	190	58	190	70	230
Rotor diameter	116	380	116	381	140	459
Ground clearance	22	72	24.5	84	28–47	92–154
Maximum overall height	138	453	152	499	up to 192	up to 630

Note: Technical data represent the maximum worst-case design characteristics for each model, based on available manufacturer specifications (GE 2018).

Additionally, each WTG would have pad-mounted transformers at the base (Figure 8). This equipment is approximately 10 feet in length, 8 feet in width, and 7 feet in height. The transformer box housing the circuitry would be mounted on a pad or vault developed from concrete or fiberglass. Each transformer box would transport the electricity to a substation by means of electrical collection system (see Section 1.3.3). The transformer on each WTG would increase the voltage for efficiency.

Figure 8. Typical pad-mounted transformer.

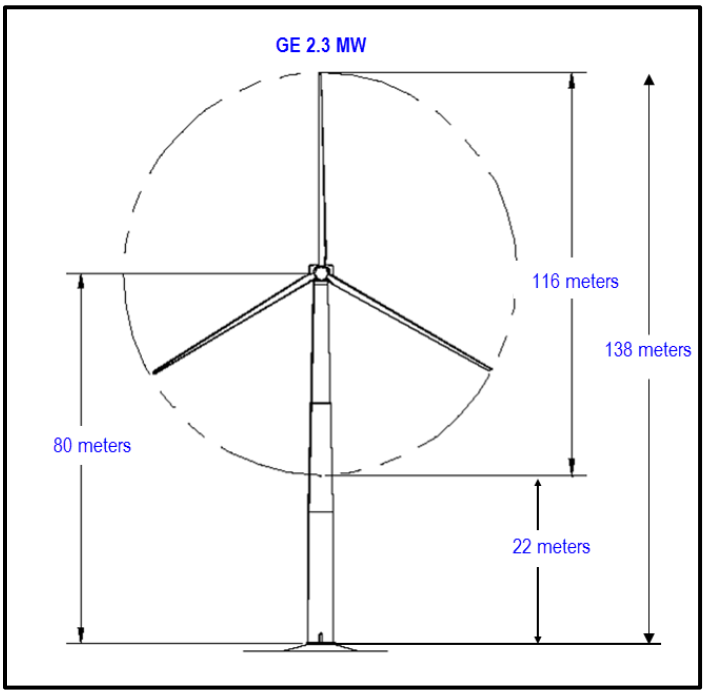

Figure 9. Schematic and dimensions of a GE 2.3-MW turbine.

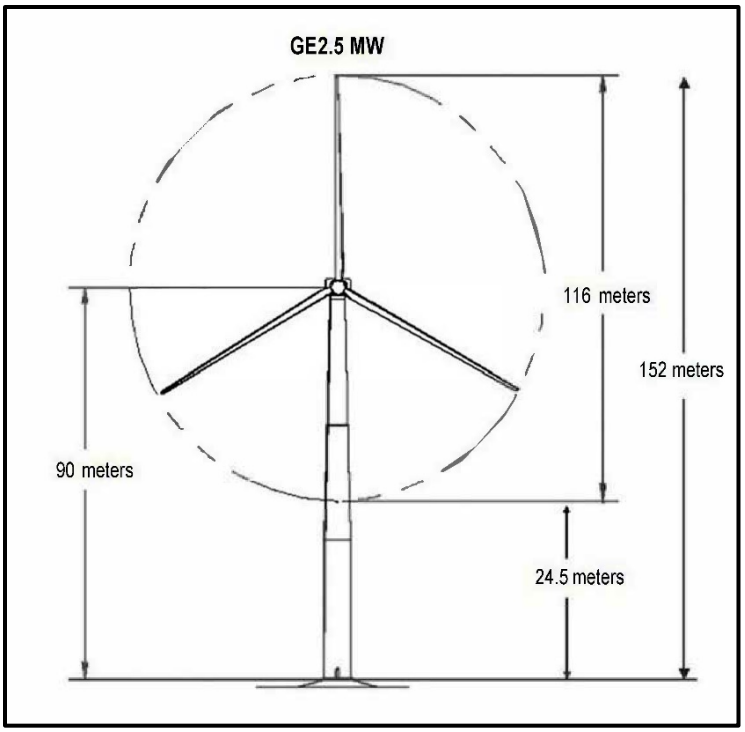

Figure 10. Schematic and dimensions of a GE 2.5-MW turbine.

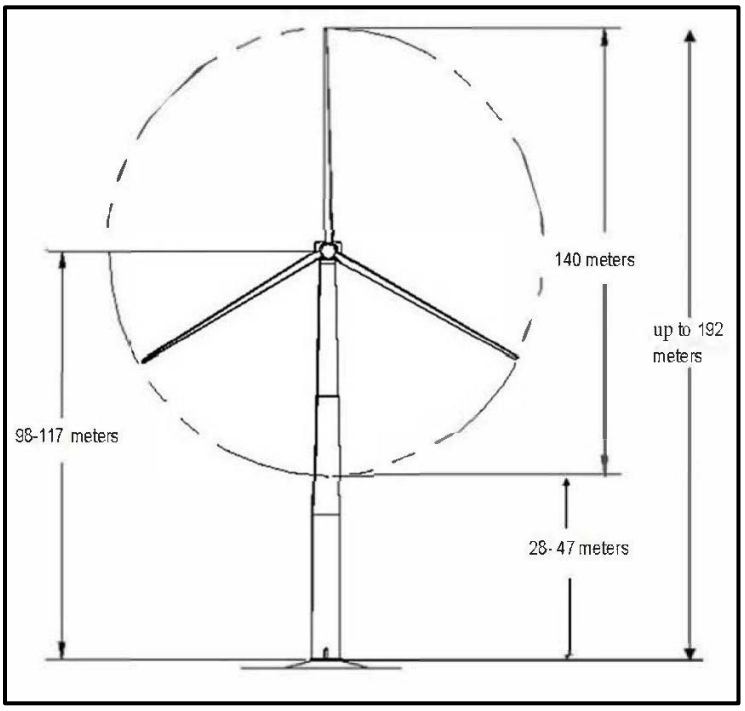

Figure 11. Schematic and dimensions of a GE 3.0-MW turbine.

1.3.3 *Ancillary Facilities*

The project's permanent facilities under all alternatives would include WTGs and associated pad-mounted transformers, access roads, an underground collection system, the project substation and switchyard, an O&M building, the distribution line and meteorological (met) tower(s). The project's temporary facilities under all alternatives include the construction laydown yards, the concrete batch plant, met tower(s), and for the laydown yard in the eastern area of the site, HDPE piping for conveyance of construction water from a private well to the batch plant. Additionally, a related activity of drilling a new well on private lands would occur for all alternatives. This water would be purchased by Borderland Wind (see Section 2.15.2 for more detail). A borrow pit would also be constructed as a related activity under Alternatives 1 and 2 on private land. Borderlands Wind would purchase the minerals from the private landowner (see Section 1.3.4).

A brief description and purpose of each ancillary facility for all alternatives is provided below. The locations and disturbance estimates of these ancillary facilities varies by alternative and is presented in Section 1.3.5. Detailed information on the construction of these ancillary facilities is provided in Section 2.

ACCESS ROADS

The main access point for the project will be the intersection of U.S. 60 and Bill Knight Gap Road/Country Road/FR-19. This main access point would be used to accommodate construction and maintenance of the project, including the turning-radius needed for turbine delivery. Currently, the proposed access point would not accommodate the proposed project construction and maintenance requirements. Borderlands Wind has proposed to improve this access point and accommodate the proposed project construction and maintenance requirements (see Section 2.2 for more detail regarding the proposed improvements).

An additional network of access roads would be needed to facilitate construction and maintenance of the wind turbines, as well as provide access to the substation, the switchyard, and the project's O&M facility. These roads would have an all-weather aggregate base-course (ABC) surface and would be acceptable to support the size and weight of maintenance vehicles. Included in this network of access roads is a secondary access road (Hooper Ranch Road), which would run from the intersection of U.S. 60 south to the O&M building. This secondary access road would serve as a potential access road for emergency services if they are required. A portion of this secondary access road (approximately 1.8 miles) between the utility pole and substation would need to be improved to allow safe construction of the distribution line. Only emergency access and construction/operation traffic associated with distribution line would be permitted on the secondary access road between the utility pole and the substation. Only emergency access would be permitted between the utility pole and U.S. 60 on the secondary access road.

COLLECTION LINES

Each wind turbine would be connected to the project substation by underground power and communication cables, called the collection lines. The collection system would consist of underground collecting cables connecting each WTG transformer box together and conducting the electricity to the substation and switchyard (Figure 12). These collection lines would be co-located with the access road footprints when possible to minimize ground disturbance. Where underground collection lines and access roads are co-located, trenching would occur adjacent to the proposed roadbed, an average of 2 to 4 feet from the roadbed. Junction boxes would be installed as part of the collection lines (see Section 2.9 for more detail).

Figure 12. Typical collection lines.

SUBSTATION AND SWITCHYARD

The project substation is where all underground electrical collection lines would terminate. No overhead collection lines are anticipated to be constructed to the substation. The purpose of the project substation would be to step up the electricity generated by the project to the voltage necessary to transmit it across the transmission system. The substation would include a power transformer, breakers, feeder breakers, switches, an equipment enclosure, and a substation superstructure (Figure 13). Exterior lighting at the substation would be required for safety and would be downshielded. No motion-activated lighting is proposed for this facility. The project substation would collect the electricity and interconnect to the nearby switchyard via aboveground transmission poles. The final footprint of the project substation would be 1 acre. This would be fenced with a 9-foot-tall chain-link security fence (the fence would be 8 feet tall with 1 foot of three-strand barbed wire, for a total of 9 feet).

Figure 13. Typical substation.

The proposed switchyard would be connected to the project substation and would located adjacent to the project substation. The purpose of the switchyard would be to integrate the electricity generated by the project onto the existing high-voltage overhead transmission system. The proposed switchyard may include circuit breakers, overhead electrical work, switches and controls, and an equipment enclosure building. The switchyard would occupy approximately 7 acres adjacent to the 1-acre project substation. Like the substation, all components of the switchyard would be enclosed inside an 9-foot-tall chain-link security fence (the fence would be 8 feet tall with 1 foot of three-strand barbed wire, for a total of 9 feet). The fencing would have a maximum depth of 4 inches and surround the substation (0.1 acres of the 7-acre facility).

Distribution Line

Electricity would be needed for the substation, which would be brought into the area via a distribution line. This would involve tapping the distribution line located near Cow Springs west of the project and constructing a new line east into the substation. The proposed 1.8-mile distribution line would be an approximately 12-kV, single-phase line. The distribution poles would be made of wood, and like the Socorro Electric Cooperative, Inc., poles currently located in the area (Figure 14). The poles would be 45 feet high and approximately 8 inches in diameter. Approximately 38 to 40 poles spaced approximately 250 feet apart would be needed. The proposed distribution line would be designed and constructed to minimize avian electrocutions and collisions (Avian Power Line Interaction Committee 2006, 2012).

Figure 14. Type of distribution line pole to be installed.

OPERATIONS AND MAINTENANCE FACILITY

The project requires an O&M facility that would include the 2,500-square foot (0.1-acre) O&M building and associated outside areas, for a total 5-acre facility. The O&M building is a pre-manufactured building assembled on a concrete slab foundation that is used by construction and operations personnel for the proposed project (Figure 15). The O&M building would contain offices, restrooms, a kitchen/breakroom, a room to house the control system for the WTGs, and a warehouse area that would store spare parts, tools, maintenance equipment, etc. Outside the O&M building would be a gravel parking area and outdoor storage. Electricity to the O&M facility would be supplied by the same distribution line as the substation (see above). The water for the O&M facility during operations would be obtained by digging a new well completely within the 5-acre facility (see Section 2.15.2 for further information).

Figure 15. Typical O&M building.

METEOROLOGICAL TOWERS

The purpose of a met tower is to profile the wind by measuring the scattering of sound waves by atmospheric turbulence. These systems are used to measure wind speed at different heights aboveground and the thermodynamic structure of the lower atmosphere (Figure 16). During pre-construction, meteorological collection instruments are needed to study the wind resource in the area. A met tower and sonic detection and ranging (SODAR) units have been placed on the study area and may remain through construction and potentially a couple months into operation of the facility. The SODAR on BLM land was permitted under a separate action. The met tower is on private land and was also permitted under a separate action. These pre-construction meteorological collection instruments are not considered or depicted in any of the alternatives. For all alternatives, three to four met tower locations would be considered (see Figures 3, 6, and 7); however, only one or two permanent met towers would be needed during operations. The locations of these met towers would be alternative-dependent. Borderlands Wind anticipates that the met towers will be monopole (i.e., non-guyed). Should guyed-wire met towers be required, Borderlands Wind would consider these locations when conducting post-construction fatality monitoring as detailed in the Bird and Bat Conservation Strategy (Appendix M). Met towers would be lighted as required by the Federal Aviation Administration (FAA). If the project can use an Aircraft Detection Lighting System (ADLS) lighting system, the met towers would be part of that system such that lights on the towers (met towers as well as wind turbines) would automatically come on when aircraft is detected in the area.

Figure 16. Typical monopole meteorological tower.

CONSTRUCTION LAYDOWN AREAS

Three temporary construction laydown areas would be required during construction. One laydown area on the eastern side of the site would be approximately 31.3 acres and would contain the mobile trailers for construction management/staff and parking areas for construction workers. An equipment laydown area on the eastern side of the site would be approximately 20 acres and would be used for materials storage and a 2-acre concrete batch plant facility. The third laydown area would be on the western side of the site near the substation and switchyard and would be approximately 9.5 acres. This facility would also be used for materials storage. Any power needed for the construction laydown yards would be supplied through generators (Figure 17).

Figure 17. Typical storage/staging/laydown area during construction.

Concrete Batch Plant

The location of the project is remote, and a nearby concrete batch plant does not exist. Therefore, the project would require the use of a temporary concrete batch plant on-site that would be co-located within a construction laydown area on the eastern side of the site (see Figures 3, 6, and 7 for location). The plant would be responsible for supplying the concrete needed for applicable project components, including the WTG foundations and pads, and distribution line pole foundations.

Temporary concrete batch plant facilities typically consist of loading bays, hoppers and mixing equipment, cement and admixture silos, concrete truck loading areas, aboveground water storage tanks, and bins for aggregate and clean sand storage (Figure 18). The height and color of the batch plant equipment will vary depending on the equipment ultimately selected. Generally, facilities will have heights ranging from 30 to 50 feet. A washout area would be located within the laydown/staging area, with the concrete removed and reclaimed when the washout area is no longer needed. The water needed for the concrete batch plant would be supplied from the well located on private property through HDPE piping that would run overland along approximately 1.5 miles of access road to the laydown area/concrete batch plant (see Section 2.15.2 for more detail).

Figure 18. Typical temporary concrete batch plant.

1.3.4 *Related Facilities*

The proposed project may require up to two related facility actions to be constructed. Under all alternatives, a new well may be constructed to meet the water supply needs of construction activities and a new borrow pit may be constructed under Alternatives 1 and 2. Details of these related facility actions are described below, however, both facility actions would be permitted separately and are not considered part of the proposed project.

BORROW PIT

A new temporary borrow pit may be required during construction to supply the raw earthen materials needed for the on-site concrete batch plant and road construction for Alternatives 1 and 2 only (Figure 19). This borrow pit would be located on private land and disturbance would be limited to approximately 35 acres. During operations, typical construction equipment used at a borrow pit includes excavators, dozers, tipper trucks, graders, water trucks, and lowbed trucks. This borrow pit would be constructed, operated, maintained, and reclaimed by another private entity on private land and is considered a separate action. The proposed borrow pit potential environmental impacts will be detailed in the Environmental Assessment for the project. It is anticipated that construction for the proposed borrow pit, if approved, would begin around the same time as the proposed project construction, in June 2020. If approved, Borderlands Wind would purchase the mineral materials excavated from the borrow pit to use for the proposed project. Since Borderlands Wind would supply the equipment that would haul the material from the borrow pit location to the on-site concrete batch plant, the access road leading to the borrow pit is considered temporary disturbance, but not permanent disturbance.

Under the Proposed Action, raw earthen materials would be supplied through a Department of Transportation (DOT)-certified borrow pit. A DOT-certified borrow pit may also be used under Alternatives 1 and 2 if the anticipated borrow pit to be constructed is not approved.

CONSTRUCTION WATER WELL

Under all alternatives, a new well may be required during construction to supply the water needed for construction and would likely be supplied by leasing water from the on-site landowner at market rate. The on-site landowner would be responsible for the permit authorization for the existing well to be used for this type of activity. Borderlands Wind has agreed to perform any necessary new construction associated with the existing well that has been agreed upon by the on-site landowner. This well would have a capacity of 110 acre-feet and would have a 16-inch casing. This well has been approved and permitted through the New Mexico Office of the State Engineer (Permit No. G-3218 POD1 and File No. G-03218).

Under all alternatives, if Borderlands Wind is unable to get construction water supplied from this well or it is unable to produce enough water to meet construction water supply needs, then water would be brought in from off-site to meet construction water supply needs.

Figure 19. Typical borrow pit.

1.3.5 *Disturbance Estimates by Alternative*

Following is a description of the facility components for the proposed project by alternative. Table 6 describes the potential temporary disturbance from each of the facility components by alternative, which would occur during the construction period of the project (11 to 12 months). Table 7 describes the potential permanent disturbance by alternative, which would occur during the life expectancy of the project (35 years). Construction details of these components are presented in Section 2. Temporary and permanent disturbances would be less than listed below due to the final design.

Table 6. Facility Components and Estimated Acreage – Temporary Disturbance

Facility Components	Proposed Action	Alternative 1	Alternative 2
Wind turbines and pad-mounted transformers	46 turbines permitted, 40 constructed 1.6 acres/turbine – 36 GE 2.5 – 4 GE 2.3 – 6 alternatives 73.6 acres	44 turbines permitted, 40 constructed 6.5 acres/turbine for 42 locations 7.1 acres for 1 location* 7.3 acres for another location* – 36 GE 2.5 – 4 GE 2.3 – 4 alternatives 287.4 acres	44 turbines permitted, 34 constructed 6.5 acres/turbine for 42 locations 7.1 acres for 1 location* 7.3 acres for another location* – 30 GE 3.0 – 4 GE 2.5 – 10 alternatives 287.4 acres
Access roads	48 miles total 41.2 miles of new roads 150 feet wide 872.7 acres	47.9 miles total 36.8 miles of new roads 100–150 feet wide 845 acres	Same as Alternative 1
Underground electrical collection system and communication lines	29.7 miles 60 feet wide 213.7 acres	30.4 miles 60 feet wide 203.5 acres 11 junction boxes 0 acres Will be contained within the access road disturbance No new disturbance	Same as Alternative 1
O&M facility	5 acres	Same as the Proposed Action	Same as the Proposed Action
Electrical interconnection switchyard and substation	7 acres	Same as the Proposed Action	Same as the Proposed Action
Laydown/staging area for construction	61 acres	Same as the Proposed Action	Same as the Proposed Action
Concrete batch plant for construction	2 acres needed for concrete batch plant, completely within laydown/staging area	Same as the Proposed Action	Same as the Proposed Action
Meteorological towers	14 acres	Same as the Proposed Action	Same as the Proposed Action
Distribution line	1.8 miles 100 feet wide 22.7 acres	Same as the Proposed Action	Same as the Proposed Action
HDPE water lines	1.5 miles Will follow access road disturbance No new disturbance	Same as Proposed Action	Same as Proposed Action
ADLS radar units and associated server rack houses	0 acres Will be contained within the access road disturbance No new disturbance	Same as Proposed Action	Same as Proposed Action
Total (acres)	**1,269.7**	**1,445.6**	**1,445.6**
Related Activities			
Borrow pit	N/A	35 acres	Same as Alternative 1

Note: All values are approximations. These values may change slightly during final engineering design.

N/A = not applicable. The facility component would not be present for that alternative.

* These locations have an “offset” larger temporary disturbance area to avoid cultural resource impacts.

Table 7. Facility Components and Estimated Acreage – Permanent Disturbance

Facility Components	Proposed Action	Alternative 1	Alternative 2
Wind turbines and pad-mounted transformers	46 turbines permitted, 40 constructed 0.2 acres/turbine – 36 GE 2.5 – 4 GE 2.3 – 6 alternatives 9.2 acres	44 turbines permitted, 40 constructed 0.1 acres/turbine – 36 GE 2.5 – 4 GE 2.3 – 4 alternatives 4.4 acres	44 turbines permitted, 34 constructed 0.1 acres/turbine – 30 GE 3.0 – 4 GE 2.5 – 10 alternatives 4.4 acres
Access roads	48.0 miles total 40.2 miles of new roads 1 mile of Bill Knight reroute 16 feet wide for most roads 24 feet wide for Bill Knight Gap Road (6.8 miles) 101 acres	47.1 miles total 36.8 miles of new roads 1 mile of Bill Knight reroute 16 feet wide for most roads 24 feet wide for Bill Knight Gap Road (6.3 miles) 97 acres	Same as Alternative 1
Underground electrical collection system and communication lines	0 acres All temporary areas would be reclaimed	0.1 acre for junction boxes All other areas would be reclaimed	Same as Alternative 1
O&M facility	5 acres	Same as the Proposed Action	Same as the Proposed Action
Electrical interconnection switchyard and substation	7 acres	Same as the Proposed Action	Same as the Proposed Action
Laydown/staging area for construction	0 acres All temporary areas would be reclaimed	Same as the Proposed Action	Same as the Proposed Action
Concrete batch plant for construction	0 acres All temporary areas would be reclaimed	Same as the Proposed Action	Same as the Proposed Action
Permanent meteorological towers	0.1 acres	Same as the Proposed Action	Same as the Proposed Action
Distribution line	1.8 miles 100 feet wide 22.7 acres	Same as the Proposed Action	Same as the Proposed Action
HDPE water lines	0 acres All HDPE water lines would be removed following construction	Same as the Proposed Action	Same as the Proposed Action
ADLS radar units and associated server rack houses	0.1 acres	Same as the Proposed Action	Same as the Proposed Action
Total (acres)	**145.1**	**136.4**	**136.4**
Related Facilities			
Borrow pit	N/A	0 acres All temporary areas would be reclaimed	Same as Alternative 1

Note: All values are approximations. These values may change slightly during final engineering design.

N/A = not applicable. The facility component would not be present for that alternative.

1.4 Additional Design Criteria and Mitigation Measures

A set of general design criteria (proponent constraints and mitigation measures) would be implemented through each phase of the proposed project. A list of these criteria can be found in Appendix H, Design Criteria.

1.5 Other Federal, State, and Local Agency Permit Requirements

Federal, state, and local agencies have jurisdiction over certain aspects of the project. Federal and state agencies and their respective permit/authorizing responsibilities that are anticipated to be required for the project are listed in Table 8. Since the POD is a living document, this table will be updated as additional permits are identified.

Table 8. Proposed Project Permit/Authorizing Responsibilities

Triggering Action	Permit/Approval	Agency / Authority
Federal		
The proposed project and associated facilities (access road, transmission line, and other associated facilities) located on BLM-administered lands. The BLM is the lead agency for NEPA purposes.	ROW grant	BLM
To comply with NEPA and the Endangered Species Act (ESA), BLM will consult with the U.S. Fish and Wildlife Service (USFWS) on the effects of the proposed project on species listed or critical habitat designated under the ESA.	ESA Section 7 compliance	USFWS
If project activities (i.e., grading, trenching or other construction) may have potential to have adverse effects to historic properties	Native American Section 106 consultation as part of the NHPA compliance	BLM
The project will have a transmission line interconnection point	Interconnection approval	TEP
Potential pollutant discharge during construction, operations, maintenance, and decommissioning	Spill Prevention Control and Countermeasure Plan	U.S. Environmental Protection Agency (EPA)
Potential discharge of dredged or fill material into waters of the U.S. (including wetlands and washes)	Clean Water Act, Section 404 Permit (individual or nationwide)	U.S. Army Corps of Engineers
Structures exceeding 200 feet	Determination of No Hazard to air navigation and operations	FAA
Required lighting on turbines	Tower lighting	FAA
State		
Project construction	General Construction Permit	New Mexico Regulation and Licensing Department- Construction Industries and Manufactured Housing Division
If project activities (i.e., grading, trenching or other construction) may have potential to have adverse effects to historic properties	National Historic Preservation Act (NHPA) compliance	New Mexico State Historic Preservation Division
Required for potential discharge of stormwater from an industrial site	National Pollutant Discharge Elimination System	New Mexico Environment Department (NMED)
The proposed project and associated facilities (access road, transmission line, and other associated facilities) located on NMSLO-administered lands	ROW grant	NMSLO
Displacement or removal of regulated native plant species as a result of construction activities	Native plant survey	NMSLO
Air pollutant emissions during construction	Clean Air Act	NMED and EPA

Triggering Action	Permit/Approval	Agency / Authority
Project activities (i.e., grading, trenching, or other construction) may have potential to impact fish and wildlife	Coordination with New Mexico Department of Game and Fish (NMDGF) regarding impacts to fish and wildlife	NMDGF
Project activities that require oversized commercial delivery and construction of project access on public right-of-way	Commercial Driveway Permit, Approval to construct access on public right-of-way, Traffic Control / Roadway Work Permit	NMDOT
Project activities will use water	Ground Water and Surface Water Filing Forms	New Mexico Office of the State Engineer

1.6 Financial and Technical Capacity of the Applicant

NextEra Energy Resources, LLC, is a wholly owned subsidiary of NextEra Energy Inc. NextEra Energy Inc. is a leader in clean energy with 2016 revenues of more than $16.2 billion, approximately 45,900 MW of generating capacity, and more than 15,000 employees in 30 states and Canada.

Borderlands Wind is a wholly owned subsidiary of NextEra Energy Resources, LLC. Additionally, NextEra Energy Resources, LLC, a wholly owned subsidiary of NextEra Energy Capital Holdings, Inc., owns, develops, constructs, manages, and operates primarily domestic electric generating facilities that sell power into the wholesale energy markets. NextEra Energy Capital Holdings, Inc., provides full energy and capacity requirements services primarily to distribution utilities in certain markets.

1.7 Preconstruction Activities

Prior to the start of construction, Borderlands Wind would conduct geotechnical studies and site preparation, surveying, and staking. Each of these activities is described in detail below.

1.7.1 *Geotechnical Studies*

The BLM issued Borderlands Wind a 3-year temporary right-of-way grant (Serial Number NMNM 139677) to conduct geotechnical investigations. Additional information regarding the geotechnical investigation can be found in the Borderlands Wind Project Geotechnical Investigations Plan of Development (Exhibit B of the executed temporary right-of-way grant).

A geotechnical investigation was conducted and included standard penetration test borings at proposed turbine sites to visually characterize the soils and to obtain samples for laboratory testing. This survey informs the preliminary engineering for the turbine foundations, substation/switchyard locations, O&M building location, etc. This investigation consists of using appropriate equipment (such as a small vehicle or all-terrain vehicle-mounted drill rig) that bores to the required depths to identify the subsurface soil and rock types and strength properties by sampling and lab testing. This included 68 deep borings at the turbine locations (one boring at each location), substation (18 borings), met towers (four borings), and the O&M building (one boring) at a depth of 40 feet. Additionally, 13 shallow borings were conducted along the access road locations at a depth of 2 feet. Soil samples were collected at each boring location and laboratory tests of the samples included in-situ electrical resistivity tests and bulk samples for thermal resistivity testing. Electrical resistivity testing measures how well the soil conducts electricity. This is primarily used in the design of the grounding grids, which are used to dissipate electricity into the ground. Thermal resistivity testing measures how well heat is dissipated into the soil. This is primarily used in the

design of the underground collection circuits to ensure that the heat generated by the cables does not exceed the cable's specification. Corrosion testing measures how corrosive the soils are to concrete and metallic conduits or materials. This is primarily used in specifying the cement type in concrete and corrosion mitigation.

The geotechnical investigation confirmed the surface and subsurface features and determined that the proposed project can be feasibly built. The biggest challenge identified was the shallow depth to bedrock.

1.7.2 *Site Preparation, Surveying, and Staking*

Limitations of areas to be disturbed would be clearly defined prior to construction of roads, collection system, and turbine location. Limits would be staked or flagged, and other methods for construction staking would be used for the road alignment and turbine construction. Limits of the ROW would also be flagged, where necessary. Construction activities would be confined to these areas, preventing effects on sensitive areas. These temporary and permanent disturbance limits are discussed in Section 1.3.5 by alternative for each facility component. Flagging and stakes that are damaged during construction would be repaired or replaced prior to resuming construction. When construction and restoration are complete, stakes and flagging would be removed. A Flagging, Fencing, and Signage Plan (Appendix K) further details the site preparation, surveying, and staking.

2 CONSTRUCTION OF FACILITIES

The actions necessary to construct the project are described below. This section of the POD presents a general description of the construction steps for the major components, activities, and construction methods of the project as they are currently anticipated and in the order they are anticipated. It is anticipated that construction would occur in phases and would take approximately 11 to 12 months. All facilities would be constructed in accordance with the National Electrical Safety Code and Occupational Safety and Health Administration (OSHA) standards. The following major steps are currently anticipated to construct the proposed project:

- Site clearing and grading
- Access road improvement
- Constructing laydown areas (including installing the concrete batch plant)
- Component delivery
- Tower foundation excavation and installation
- Tower assembly
- Tower erecting and installation
- Installing underground collection lines
- Installing meteorological towers
- Constructing electrical substations
- Constructing interconnection switchyard
- Constructing the O&M building
- Constructing the distribution line
- Inspecting the facilities
- Site stabilization, protection, and reclamation

The construction of the proposed project would occur in phases. After project engineering and preconstruction activities, construction mobilization would begin. Civil improvements would be the first part of construction, including temporary laydown areas for turbine and tower deliveries, trenching for electrical cabling, access roads, turbine foundation, and crane pads to erect the towers. The second phase of construction would include construction of the switchyard, installation of the electrical hardware, O&M building, project substation, and construction of the turbines. The final construction phase would include the substation and switchyard, mechanical finalization of all turbines, and other facilities followed by commissioning and testing each turbine, restoration of all temporary disturbed areas, utility interconnection, and testing of the electrical system. Specific dates for the various project tasks have not been established but would be dictated by weather, site conditions, and delivery schedule.

2.1 Site Clearing and Grading

Clearing and grading of project site components and ancillary facilities would be required and would be limited to those areas identified previously (see Table 6). Borderlands Wind anticipates that clearing and grading would occur in the following areas: the access road network (including the U.S. 60 and Bill Knight Gap Road intersection), the O&M facility, WTG pads, the substation and switchyard, the construction laydown areas, and the underground collection system. Additional site clearing and grading would occur at the met tower locations; however, this is expected to be minimal. Bulldozers, road graders, or other standard earth-moving equipment would be used for clearing and grading. The land clearing and grading process would be performed in accordance with BLM policies and a State-approved Stormwater Pollution Prevention Plan (Appendix D).

The total acreage to be temporary cleared and graded, and the acreage to remain permanently disturbed during operations and maintenance, varies by alternative and is presented in Tables 6 (for temporary disturbance) and 7 (for permanent disturbance). Disturbance acreage by project component is also presented in Tables 6 and 7 for temporary and permanent disturbance, respectively.

2.2 Access Road Improvement

As stated previously, the main access point for the proposed project is the U.S. 60 and Bill Knight Gap Road intersection. To determine how to sufficiently improve the access point, Borderlands Wind consulted with the New Mexico Department of Transportation (NMDOT), which is acting on behalf on the Federal Highway Administration. During this consultation, Borderlands Wind and NMDOT agreed that the access point should be improved by construction of a 1,000-foot, permanent left-turn lane off U.S. 60 and a permanent gravel turn-off (Figure 20).

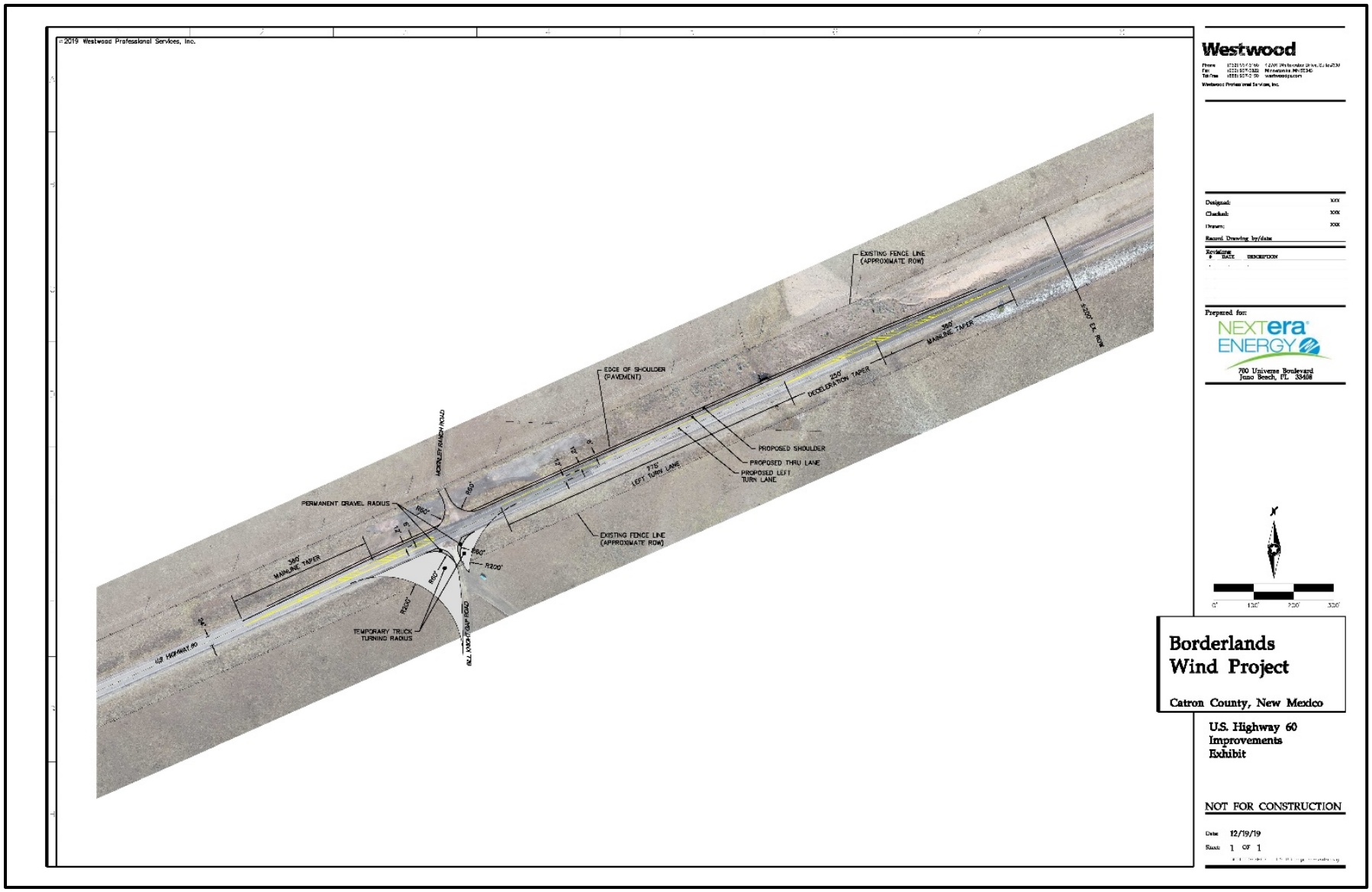

Figure 20. Proposed U.S. 60 and Bill Knight Gap Road intersection improvement.

The proposed project would require an access road network, which would consist of several components: Bill Knight Gap Road, internal access roads, and a secondary access road. Each of these components is discussed in detail below.

The proposed project main access point is Bill Knight Gap Road at the U.S. 60 intersection. Improvements to the U.S. 60 and Bill Knight Gap Road intersection would be required as described above. During construction, Bill Knight Gap Road would be temporarily widened to 150 feet (i.e., the limit of construction disturbance) and an alignment change would occur. Due to the proximity of cultural resources, the temporary limits of construction disturbance would shift in the 150-foot-wide corridor to avoid or minimize impacts to cultural resources when possible. These shifts could include limiting construction disturbance to a particular side of the construction disturbance (i.e., construction disturbance would be limited to the east side). The alignment shift would be located near the northern portion of Bill Knight Gap Road and would be modified in the area where known flooding occurs. This alignment change is located on private property and has been discussed and agreed to with the county and the landowner given the extensive flooding that occurs on Bill Knight Gap Road in this section (see Figures 3, 6, and 7). Following construction, Bill Knight Gap Road would be reclaimed to a permanent width of 24 feet. The modified alignments would continue to be used and would be reclaimed to 24 feet as well. The mileage, location, and construction of this component would be the same under all alternatives.

The internal access roads are those roads depicted (see Figures 3, 6, and 7) that are not Bill Knight Gap Road or those that have been identified as a secondary access road. All internal access roads would total between 100 and 150 feet in width during construction (i.e., the limit of construction disturbance). Following construction and during operations, almost all of these roads would be reclaimed and maintained to a 16-foot width. The only portion of the internal access roads that would be reclaimed and not used during operations is the access road leading from Bill Knight Gap Road to the borrow pit (up to 0.8 miles, or 13.2 acres; the reclamation effort on this road is to be determined through consultation with the landowner). The remaining internal access road routes used during construction would continue to be used during operations and maintenance. Although internal access roads would be constructed under all alternatives as described above, the locations and mileage of the internal access roads would vary by alternative as described and shown previously (see Tables 6 and 7, see Figures 3, 6, and 7). If internal access roads intersect with grazing allottee fences, new gates will be constructed.

For both Bill Knight Gap Road and internal access roads, local landowners would be consulted and the roads would be developed in accordance with local building requirements where the roads intersect with public roads. All roads would require engineering surveys and would be required to meet or exceed the BLM's *Surface Operating Standards and Guidelines for Oil and Gas Development – The Gold Book* (BLM 2007a). Additionally, all roads have been designed to avoid or minimize impacts to known cultural and natural resources.

The secondary access road would require no widening or modifications during construction or operations, except for 1.8 miles between a utility pole and substation (see Figures 3, 6, and 7). This is required for the safe construction of the distribution line. For this segment, the access road would be widened to a total of 150 feet during construction. Following construction and during operations, this segment of the road would be reclaimed and maintained to a 16-foot width. This segment of the secondary access road would continue to be used during operations and maintenance. The mileage, location, and construction of this component would be the same under all alternatives.

As project engineering progresses, identification of the other areas for culverts or other drainage crossings will be considered. All access roads (except for the non-improved secondary access road) would be graded, include sufficient drainage, and be surfaced with an aggregate surface material. Surface material

may include gravel, caliche, or other locally sourced gravel-like material. Borderlands Wind anticipates no asphalt/paving on any of the access road network, except for the main access point improvement.

2.3 Construction Laydown Area

As stated above, the proposed project would require three temporary construction laydown areas during construction. One laydown area on the eastern side of the site would be approximately 31.3 acres and would contain the mobile trailers for construction management/staff and parking areas for construction workers. An equipment laydown area on the eastern side of the site would be approximately 20 acres and would be used for materials storage and a 2-acre concrete batch plant facility. The third laydown area would be on the western side of the site near the substation and switchyard and would be approximately 9.5 acres. This facility would also be used for materials storage. Any power needed for the construction laydown yards would be supplied through generators (see Figure 17). All areas would be cleared and graded during construction. The concrete batch area is expected to compact soil. Following construction, the soils in this area will be recompacted, recontoured and reclaimed. The other laydown areas will also be reclaimed following construction. The location and acreage of construction laydown areas would be the same under all alternatives. The concrete batch plant would be in the same construction laydown area under all alternatives. All mobile trailers for the construction laydown area would be delivered via delivery trucks, any equipment to be delivered to the construction laydown area would be delivered appropriately (see Section 2.4). Concrete components of the project would be hauled to the on-site batching plant from the borrow pit. Construction of the concrete batch plant is described below.

2.3.1 *Concrete Batch Plant*

During project construction, it is estimated that a 2-acre on-site concrete batch plant would operate through the duration of the project (location depicted in Figures 3, 6, and 7). Approximately 18,000 cubic yards of concrete is expected to be required for construction that would be produced by the on-site concrete batch plant. The batch plant would have capacity to produce approximately 800 cubic yards of concrete each day. These details would be confirmed as a result of geotechnical exploration.
The processing area and materials stockpiling area would be located at the batch plant. To produce the necessary materials, the batch plant would require water and power during construction. Water would be delivered via 2-inch HDPE pipes from a well located on private land to the concrete batch plant. The well would be constructed separately and would be operated by the on-site landowner and water would be leased to Borderlands Wind (see Section 1.3.4 for more information). The 2-inch HDPE pipes would follow existing access roads, would be aboveground, and would not create any additional disturbance. The concrete batch plant water needs are included in the total water needs for the entire construction period (see Section 2.15.2), and fuel/power for the batch plant would be stored in an aboveground storage tank with secondary containment spill prevention.

Stockpiles for aggregate and sand would be constructed near the batch plant in a manner that would minimize wind exposure. A screw conveyor would transport cement discharge into a storage silo. Construction managers and crews would use BMPs and standard operating procedures to keep the batch plant site, stockpile, and storage areas clean.

Washout operations for concrete would be co-located with the batch plant. A small depression would be made within the batch area, and concrete chutes would be washed into the depression. Residual concrete from washing operations would be crushed and cleared for disposal at a nearby landfill or buried in place at the discretion of the landowner.

Preparation of the concrete batch plant site and operation of the batch plant during project construction would be covered under the National Pollutant Discharge Elimination System General Storm Water Construction Permit.

Construction and improvements on roads would require the use of a rock crusher for aggregate fill and road base. It is anticipated that sources of aggregate would be supplied through on-site aggregate by purchasing these minerals from a nearby borrow pit (see Section 1.3.4). One of the proposed construction staging areas would have a portable rock crusher with a crushing capacity of roughly 20,000 tons per day (this will be confirmed as a result of geotechnical exploration). The rock crusher would be used through the duration of construction (11 to 12 months).

The batch plant and any excess concrete elements would be removed after the concrete placing phase and could be recycled or used on other projects.

2.4 Component Delivery

Delivery vehicles would be directed to a single point of access exiting U.S. 60 at the Bill Knight Gap Road intersection. The vehicle would then be directed to one of the turbine locations or temporary project laydown areas. On-site speed would be limited to 25 miles per hour (mph) to control for safety and minimize fugitive dust; signage indicating speed would be provided during construction. The project is estimated to generate a peak of approximately 500 trips per day on U.S. 60 (based on 160 construction personnel leaving and entering and 50 delivery trucks leaving and entering the project site). A Road Design, Traffic and Transportation Plan is included in Appendix J.

Generally, heavy equipment would not pose any unique transportation considerations. Heavy equipment required for the proposed project construction includes bulldozers, graders, excavators, front-end loaders, compactors, semi-trucks, and dump trucks (Figure 21; see summary in Section 2.15). The equipment would be delivered to the site by flatbed combination truck, and most equipment would remain on-site until construction is finalized. Construction materials that would be transported to the project site may include gravel, rock, sand, and water, which usually are locally available.

Figure 21. Turbine tower delivery truck.

2.5 Tower Foundation Excavation and Installation

The areas identified for the WTG tower foundations would be cleared and graded as described in Section 2.1. The areas would then be excavated with a backhoe in order to prepare each area for a concrete foundation. The topsoil element for the turbine excavation would be spread evenly around the base of the turbine to blend with present grades. If the subsurface is too hard to excavate, blasting would be conducted. The Blasting Plan (Appendix I) would be in place from the general contractor before any blasting takes place. Blasting would be about 1.5 seconds, two to four times per day, over a 40- to 50-day period. Once excavated, a seal slab is poured at the bottom of the foundation hole prior to rebar placement. Forms are set in place, and then reinforced with steel and anchor bolts, and conduit is placed into the foundation hole. Once completed, an aluminum tube and bolt cage would be installed and concrete would be placed into the hole (Figures 22–24). The foundation design of the wind turbine would be prepared by a Registered Professional Engineer licensed in the state of New Mexico. The final design parameters of the foundations are dictated by turbine tower load specifications, geotechnical surveys, and cost considerations. The supporting foundations are usually octagonal and would be approximately 60 feet in diameter at the base (Figure 25). Two different foundation types are under investigation depending on the geotechnical investigations for the GE 2.3 and 2.5 machines. For these GE 2.3 and 2.5 machines, foundation type 1 (i.e., a spreadfoot foundation) would extend up to 65 feet in diameter and 15 feet below the ground surface, and foundation type 2 (i.e., a P&H foundation) would extend up to 20 feet diameter and 35 feet below the ground surface. The foundation being considered for the GE 3.0 machines would extend up to 62 feet in diameter and 10 feet below the ground surface, with only 18 feet in diameter exposed aboveground. Temporary and permanent disturbance of each WTG is presented in Tables 6 and 7, respectively. After curing, the foundation would be ready to receive the turbine tower and ground control grids are installed.

Additional excavated material would be recycled for road construction or disposed of in accordance with all applicable regulations and permit conditions. Any concrete spoil would be disposed of by the contractor at a licensed waste facility off-site.

Figure 22. Excavating foundation hole.

Figure 23. Excavated foundation area.

Figure 24. Foundation rebar and bolt cage.

Figure 25. Typical spread-footing foundation.

2.6 Tower Assembly

After road and turbine pad preparation, the individual WTG components would be assembled on-site. Nacelle, hub, tower sections, and rotor blades would be delivered to the construction site using special delivery trailers for components of each wind turbine as needed. Components for each turbine would be

transported directly to each turbine site and unloaded. When unloading at an individual site is not feasible, the components would be unloaded at a laydown yard until the turbine site is ready for installation.

2.7 Tower Erecting and Installation

The lifting equipment to erect the towers and for nacelle and rotor installation would be the same. Cranes would operate in the planned area around each turbine location (Figures 26–28). The cranes would move between tower locations via the roads constructed for the project. Typically, gravel and rock would need to be placed and compacted on the areas around the planned tower locations to support the crane's weight, provide all-weather access in the areas that the crane would operate, and provide a level surface. The beauty ring area (i.e., the permanent limit of disturbance) would be 40 feet in diameter and the foundation pedestal would be 20 feet in diameter, which in total would encompass 0.2 acres per WTG for the GE 2.3 and 2.5 machines (Figure 31). The beauty ring area would be 40 feet in diameter and the foundation pedestal would be 18 feet in diameter, which in total would encompass 0.1 acres per WTG for the GE 3.0 machines (Figure 32). The beauty ring also connects each turbine to an associated access road. Crane mats may also be used for added stability and weight distribution. Project towers would arrive on-site in segments and would be bolted/welded together as the tower is built. The free-standing tubular wind turbine towers would be connected to an underground concrete foundation via anchor bolts. The nacelle would contain a drive train already assembled, and the hub and blades would be installed on it (Figures 29–30). All internal cabling is then connected and terminated. It is likely that household quantities of paints, lubricants, and grease may be used during construction. The tower, nacelle, and rotors would be finished in white paint.

After commission finalization, the turbine pads would be graded to repair any damages caused by construction and ensure proper drainage of stormwater away from the foundation.

Figure 26. Turbine erection.

Figure 27. Aerial view of preparations to erect a wind turbine tower.

Figure 28. Wind turbine nacelle installation.

Figure 29. Rotor assembly.

Figure 30. Installation of a rotor on a General Electric 1.5-MW wind turbine.

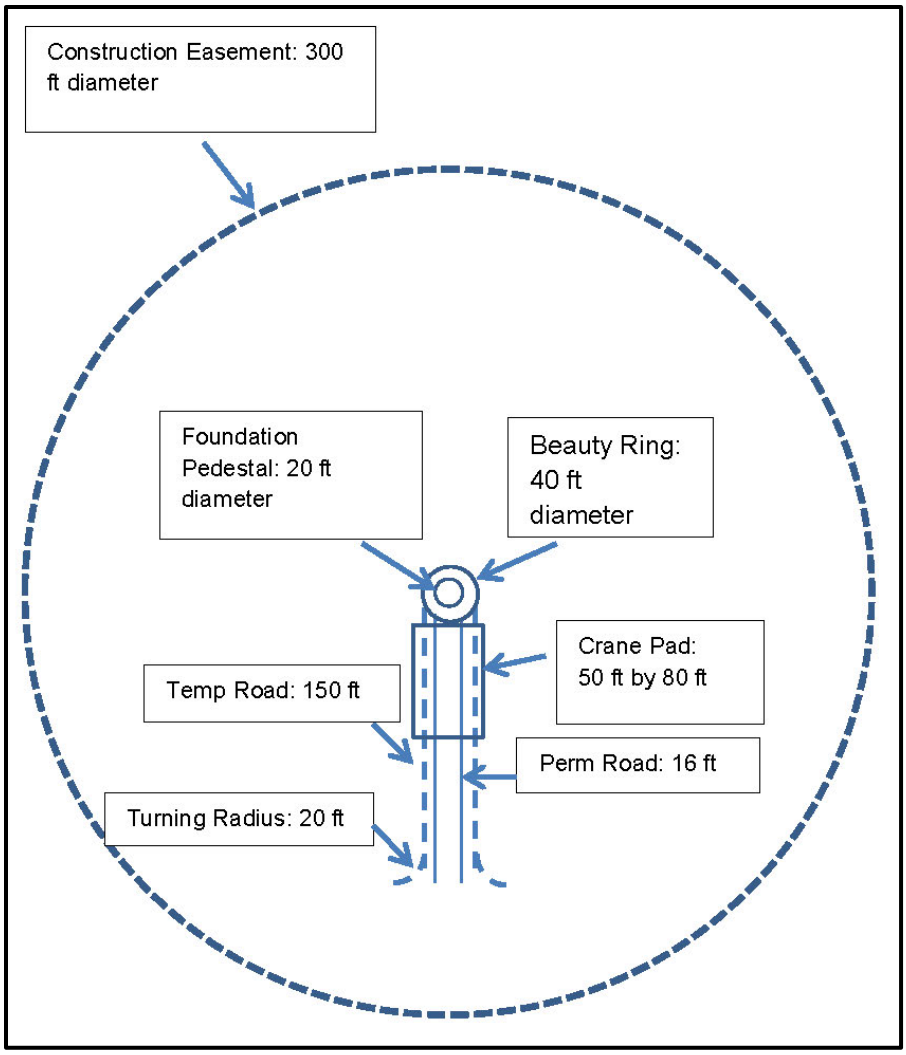

Figure 31. Wind turbine generator component staging dimensions for GE 2.3 and 2.5 machines. Note: dotted areas are temporary impacts.

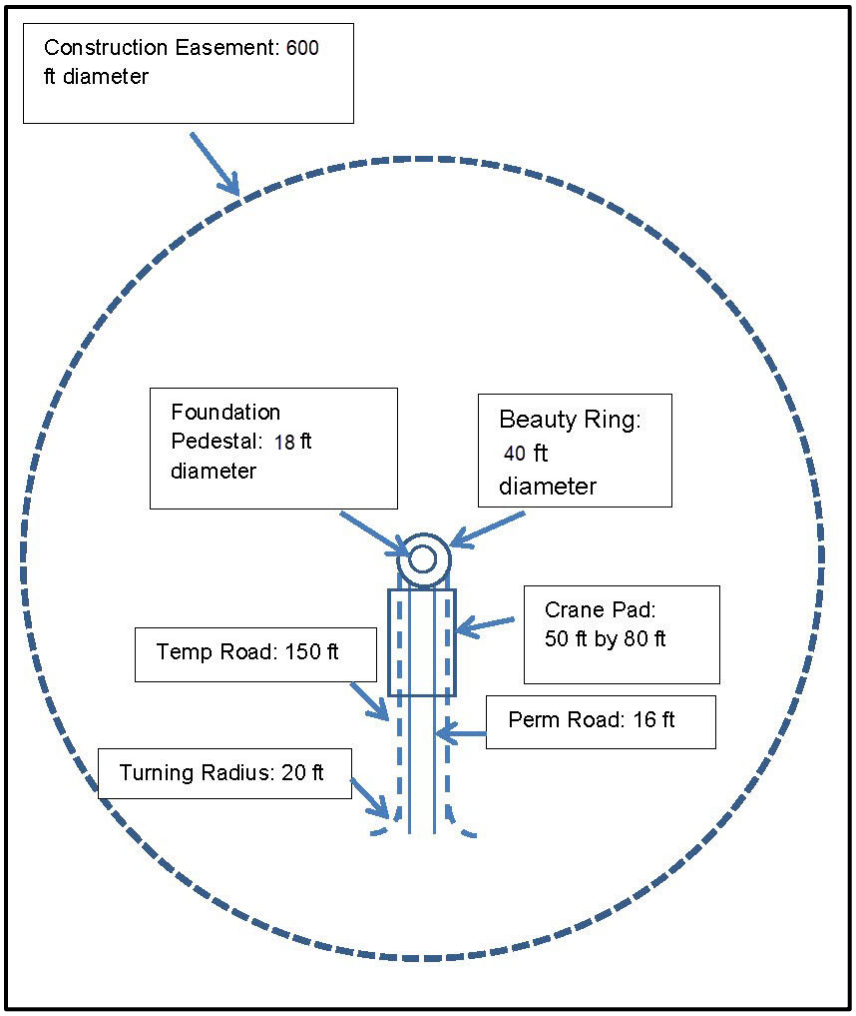

Figure 32. Wind turbine generator component staging dimensions for GE 3.0 machines. Note: dotted areas are temporary impacts

2.8 Installing Underground Collection Lines

Underground collection lines would be installed as part of this project, which would consist of a buried cable in trenches that are approximately 3 feet deep by 4 feet wide and would follow access roads as much as possible. The permanent and temporary disturbance of the collection lines varies and is described and depicted by alternative (see Tables 6 and 7; see Figures 3, 6, and 7). Excavation of the trenches would be completed by trencher and backhoe and would follow the New Mexico Department of Game and Fish Trenching Guidelines (2003) to minimize impacts to wildlife resources (Figure 33). Each proposed linear disturbance would be limited to a short-term, temporary ROW and disturbance area of approximately 60 feet wide. Trenches would be filled with compacted material, and any disturbance associated with the trench would be reclaimed. If there is any remaining trench space not filled by excavated material, clean fill would be placed around the cables and excavated material immediately after construction. No disposal of excavated material would be required.

Horizontal directional drilling would be used to minimize impacts at locations where collection lines would cross features like surface-water drainages. Underground cable would have to connect to an

overhead collection system if the distance to another substation is excessive or where obstacles may be created by the terrain.

Underground lines would be marked by a buried warning tape placed close to the surface to warn personnel of the presence of underground lines. The warning tape would also be used to avoid accidental excavation of the lines in the future. No overhead collection lines are proposed as they would be economically unfeasible.

Additionally, junction boxes would be required throughout the proposed project. A junction box is where all electrical wires meet, connect, and are protected before being routed to other locations in the proposed project. Each junction box location is estimated to be 6 feet long, 4 feet wide, 4 feet deep below the surface, and would be visible as a 3 × 3–foot square aboveground (Figure 34). Additionally, each junction box would have a 1-foot gravel ring around it as there is some grounding copper buried under and around the box.

Figure 33. Typical underground collector cable trench.

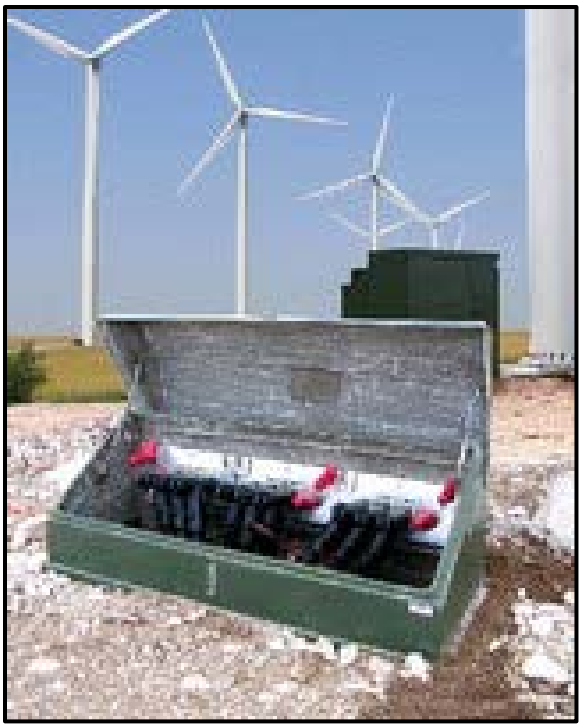

Figure 34. Typical junction box.

2.9 Installing Meteorological Towers

The proposed project would require installation of temporary met towers before construction and permanent met tower(s) during construction for operations of the project. The met towers would be no more than 361 feet (110 meters) tall with side guy wires spanning 300 feet from the tower on four sides. Borderlands Wind is also considering a monopole tower that would not require guy wires. Alternative met tower(s) are proposed under some of the alternatives in case the proposed location(s) is/are not viable. The met towers would be installed on gently sloping sites (less than 5-degree slope), with the tower laid out downwind of the baseplate. Any low-lying brush around the baseplate, guy wire areas, and anchors sites would need to be cleared to allow for safe installation of the tower(s). The tower(s) would require 3 to 5 days for installation once the anchors have been installed. After the construction of the met tower(s), all installation equipment would be removed from the site. It is anticipated that personnel would visit the met tower(s) one or two times a year to perform routine maintenance.

2.10 Constructing Electrical Substation and Switchyards

In order to construct the project substation and switchyard, the following equipment would be delivered to the project site: the equipment enclosure, electrical breakers, a 345-kV transformer, overhead electrical bus, and pole structures. Additionally, bulk materials would need to be delivered such as conductor, electrical boxes, conduit, switches, meters, relays, and all other substation-related equipment, as needed. Voltage at the substation would be increased from 34.5 kV to the interconnection voltage of 345 kV. The project substation capacity would be dependent on the number of wind turbines supplying power.

A conductor or bus would be required for the project to carry power from the substation to the interconnection switchyard, where power would be transferred to the electrical power grid.

The switchyard and substation facility would be fenced off and graveled, and would total roughly 7 acres, with a parking area and electrical devices. To provide a redundant way to communicate with the switchyard, the telecommunications line to the O&M building would be extended from the O&M building to the switchyard. System studies would determine the location for the interconnection with an existing transmission line. The transmission line would be the same voltage as the power line to which it interconnects.

Construction for the switchyard and substation would consist of site clearing and grading (see Section 2.1), concrete equipment foundation forming and pouring, crane-placed electrical and structural equipment, ground grid trenching, underground and overhead cabling and cable termination, erection of equipment enclosure, and installation of all the equipment for the associated systems. For the substation facility, a fence would be constructed around the perimeter that would consist of an 8-foot-tall chain-link structure with three-strand barbed wire on top (1 foot), resulting in a total height of 9 feet.

2.11 Constructing the Operations and Maintenance Building

The O&M facilities would be built near the electrical substation and interconnection switchyard (see Figure 6). The building itself would be approximately 2,500 square feet and would be a premanufactured building on a 5-acre site. Construction of the O&M building would consist of clearing and grading the site (see Section 2.1), constructing the associated septic tank, pouring the concrete slab foundation, delivering the O&M building via a semi-truck, and placing the premanufactured building on the concrete slab. Power to the O&M building would be provided via the newly constructed distribution line from the Cow Springs distribution pole to the substation/O&M area (see Section 2.12 below). The 5-acre O&M facility would be enclosed by a 6-foot-tall chain-link fence with 1 foot of barbed wire on top, for a total height of 7 feet. Exterior lighting at the O&M facility is required for safety and would be downshielded to minimize impacts to the dark-sky nature of the project area.

2.11.1 *Constructing the Septic Tank*

Borderlands Wind proposes to construct a septic tank for the proposed project. Construction would consist of installing a septic tank with a 1,000-gallon capacity and a percolation rate of approximately 18 minutes per inch. The design flow would be approximately 130 gallons per day. The design flow and percolation rate are subject to change based on field investigations of the O&M site location. For comparison purposes, the proposed septic tank would be like those built for residential use. Should the construction of a septic tank not be possible, a holding tank near the O&M building would be constructed that would be pumped periodically. If a holding tank cannot be constructed, portable toilets (porta-potties) would be placed near the O&M building.

2.11.2 *Construction the Water Well*

Borderlands Wind proposes to construct a new water well near the O&M building to supply operations and maintenance water needs for the proposed project. It is estimated that operations and maintenance water use would be 140,800 gallons per year. This water use would be met entirely through the construction of a water well that would consist of installing a new well until water is hit (depth unknown) that would produce 5 to 6 gallons per minute. It is anticipated that this well would be approved and permitted through the New Mexico Office of the State Engineer before operations and maintenance activities occur.

2.12 Constructing the Distribution Line

The proposed project would require construction of a distribution line that would involve tapping the distribution line located near Cow Springs west of the project and constructing a new line east into the substation. The existing distribution line (operated by Socorro Electric Cooperative, Inc.) is 14.4 kV with a maximum span of 280 feet. The proposed distribution line would be an approximately 12-kV, single-phase line that would be made of wooden poles that are approximately 8 inches in diameter and 45 feet tall. The poles would be placed every approximately 250 feet for approximately 1.8 miles. Construction activities include site clearing and grading (see Section 2.1), excavating structure foundations, assembling and erecting structures, wire stringing, and site reclamation (see Section 2.14).

2.13 Inspecting the Facilities

After project construction is complete, the project would be commissioned. Detailed inspection procedures and testing procedures would be provided after final turbine commissioning. Once construction activities are finalized, temporary construction areas would be revegetated and restored according to the Integrated Reclamation Plan (Appendix E).

2.14 Site Stabilization, Protection, and Reclamation Practices

After project construction is finalized, the site would be cleaned up and restored to facilitate only operational activities. Waste, debris, and equipment used during construction would be removed from the site. After project completion, any visible waste on the project site would be removed. Requirements for site restoration would be cited in the project's construction and operation permits and in the project's Integrated Reclamation Plan. Revegetation and habitat restoration would occur on all major staging and laydown areas, although a few sites may remain for long-term use of maintenance and parts storage. The project's roadway footprint would be reduced by reducing the width of most construction roadways, and any areas disturbed during construction but not retained for operations would be revegetated. Construction limits of disturbance for internal project roadways would be 150 feet. These roadways would be reclaimed to 16 feet for the operations of the project. Construction limits of disturbance on Bill Knight Gap Road would also be 150 feet. Bill Knight Gap Road would be reclaimed to 24 feet for the operations of the project. Borderlands Wind developed an Integrated Reclamation Plan for the project (Appendix E).

2.15 Additional Construction Considerations

2.15.1 *Construction Workforce Numbers, Vehicles, Equipment, and Time Frames*

Project construction is anticipated to last 11 to 12 months, with the majority of the construction activity taking place in a 6 to 8-month period. General project construction activities initiate with fewer workers and minimal deliveries as only limited activities (examples include civil improvements such as temporary laydown areas for turbine and tower deliveries, access roads, etc.) can and must occur before other construction activities can occur. Once these are completed, project construction activities increase and require more workers and deliveries (examples include construction of the switchyard, installation of the electrical hardware, O&M building, project substation, and construction of the turbines). This can be thought of as the peak construction activity period. After these main construction events, construction

activities decrease that require fewer workers and deliveries (examples include mechanical finalization of all turbines, and other facilities followed by commissioning and testing each turbine, restoration of all temporary disturbed areas, utility interconnection, and testing of the electrical system) until the project ultimately enters the operational phase.

At project construction initiation and conclusion, construction activities would require at least 50 to 70 workers at any given time, and the maximum of 250 workers would be required during peak construction. Typically and depending on the weather, construction crews would work 8- to 12-hour workdays for approximately 6 days per week during the entire construction period (11 to 12 months). The project team would consist of qualified contractors and subcontractors employing trained, competent personnel. Numerous tasks would be subcontracted out from the general contractor where necessary. Local contractors would include surveyors, clearing and grubbing, all trucking, water supply, rock crushing, etc. The general contractor would also hire local employees (e.g., laborers, concrete workers, and operators). The construction-phase vehicles are listed below in Table 9.

Table 9. Construction Use Areas and Activities

Vehicles	Use Areas	Activities
Bulldozers and excavators	Turbine locations and major earthwork locations	Clearing, grading, excavating, and moving large quantities of soil
Crane and forklifts	Turbine locations, operations and maintenance, and substation/switchyard	Lifting and erecting turbine components and unloading and placement of equipment and materials
Graders	Access roads, operations and maintenance, turbine locations, and substation/switchyard	Clearing, finish grading, and moving small amounts of soil
Trenchers and backhoes	Turbine locations and collection system	Small area and trench excavation and backfill
Delivery trucks and semi-trucks	Access roads and all major construction areas and the concreate batch plant	Delivery of finished concrete, aggregate, cement, water, steel, cable, and other bulk construction items
Pick-up trucks and sport-utility vehicles	Access roads and all construction areas	Worker and small equipment transport

2.15.2 *Water Usage, Amounts, Sources*

Construction would require approximately 26 million gallons of water, assuming standard dust control mitigation measures. Construction activities that may require water use include but are not necessarily limited to: dust control measures, on-site concrete batch plant, cleaning of trucks entering project site to minimize the spreading of noxious weeds, and for WTG pad foundation construction. All permits or authorizations concerning water use would be obtained from the New Mexico Office of the State Engineers prior to the start of construction, in addition to landowner authorization. Water would be required temporarily for on-site mixing of concrete and for dust control. A source of water needed for construction would likely be supplied by leasing water from an existing well owned by an on-site landowner at market rate. The on-site landowner would be responsible for the permit authorization for the existing well to be used for this type of activity. Borderlands Wind has agreed to perform any necessary new construction associated with the well and this has been agreed upon by the on-site landowner. This well would have a capacity of 110 acre-feet and would have a 16-inch casing. This well has been approved and permitted through the New Mexico Office of the State Engineer (Permit No. G-3218 POD1 and File No. G-03218). If Borderlands Wind is unable to get construction water supplied from this well, then water would be brought in from off-site to meet construction water supply needs.

Borderlands Wind proposes to construct a new water well near the O&M building to supply operations and maintenance water needs for the proposed project. It is estimated that operations and maintenance water use would be 140,800 gallons per year. This water use would be met entirely through the construction of a water well that would consist of installing a new well until water is hit (depth unknown) that would produce 5 to 6 gallons per minute. It is anticipated that this well would be approved and permitted through the New Mexico Office of the State Engineer before operations and maintenance activities occur.

2.15.3 *Erosion Control and Stormwater Drainage*

A Stormwater Pollution Prevention Plan (SWPPP) was developed to control off-site migration of sediment and to control erosion during construction of the project (Appendix D). Construction practices would comply with the SWPPP to ensure appropriate drainage and sediment control measures are in place during construction and during operations of the facility.

2.15.4 *Vegetation Restoration and Weed Management*

Borderlands Wind would follow herbicide application guidelines as described by BLM policies and procedures (i.e., *Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement* [BLM 2007b]) when treating noxious or invasive vegetation.

Temporarily disturbed areas would be revegetated using seed mixtures and techniques approved by the BLM Socorro Field Office. Borderlands Wind developed an Integrated Reclamation Plan (Appendix E). The plan defines success criteria and monitoring protocols to assess how successful revegetation efforts have been and determine whether additional reclamation efforts are needed.

To minimize the introduction of undesirable plant species into the project area, specific control measures may be implemented as described in Appendix E.

2.15.5 *Health and Safety*

Borderlands Wind developed a site-specific Health and Safety Program, which includes a Health and Safety Plan (Appendix F) to avoid and mitigate the potential for injuries, where feasible, and protect the project and the general public.

The Health and Safety Plan addresses waste and hazardous materials management and spill prevention, as well as fire protection (Appendix F). These are briefly described below.

WASTE AND HAZARDOUS MATERIALS MANAGEMENT AND SPILL PREVENTION

No extremely hazardous materials are expected to be produced, used, stored, transported, or disposed of as a result of the project. Potentially hazardous materials used in the operations and maintenance of the project would be stored in the O&M facility in approved, aboveground containers with appropriate spill containment features.

One potential hazard is turbine lubricants used in the turbine gearboxes. To prevent lubricant leakage, the gearboxes would be sealed. Lubricant from the gearboxes would be tested periodically and samples would confirm whether the lubricating properties are adequate. The gearboxes would be drained and new lubricant would be added when the lubricants have degraded to the point where they no longer contain the required lubricating properties.

Additionally, transformers contain oil for heat dissipation; therefore, transformers would be sealed and contain no moving parts. The oil for the transformer does not need periodic inspection and would not need to be replaced (Figure 35).

Figure 35. Typical pad-mounted transformer under construction.

To minimize leaks of motor oils, hydraulic fluids, and fuels, construction equipment and O&M vehicles would be appropriately managed. During construction, maintenance and refueling for vehicles that are permitted for highway travel would be performed off-site at an appropriate facility. A specially designed vehicle-maintenance truck would be on the project site to service construction vehicles that are not highway authorized. O&M vehicles would be serviced and fueled at the O&M building or at an off-site location during operations.

The SPCC Plan (Appendix G) describes any measure needed to reduce the risk associated with the use, storage, transportation, production, and disposal of hazardous materials, oil, and oil products during construction and operation of the facility.

Solid non-hazardous waste and hazardous waste management would be implemented for the project. The waste would be disposed of off-site at a properly licensed facility. Any project wastewater would be disposed of in accordance with federal, state, and county regulations.

FIRE PROTECTION

There is potential for on-site, human-caused fires to occur during the construction and operations phases of the project due to hot machinery or exhaust, on-site equipment fueling, storage of flammable liquids, and smoking. In order to prevent fire emergencies and deal with them quickly and effectively, all workers would be appropriately trained. Workers would have fire prevention equipment and consult with the local fire department and BLM when fire dangers are high.

The height, complexity, and physical dimensions of WTGs may present difficulties for local emergency service providers and fire department to respond to emergencies. There is also potential fire danger from flammable components, electrical-generating equipment, and electrical cables, along with various lubricants used.

Components of the project generate the potential for fire or medical emergency due to use and storage of diesel fuels, lubricating oils, and hydraulic fluids. These substances would be used and stored at each substation, in electrical transmission structures, at staging area(s), or other on-site facilities.

Borderlands Wind has documented safety procedures to manage work situations where fire presents a safety hazard and developed an Emergency Action Plan and Fire Protection and Prevention Plan (Attachments 1 and 3 of the Health and Safety Plan, respectively) to prevent and manage fire during construction. Borderlands Wind or its contractors would perform safety audits regularly throughout construction.

During operations, workers would ensure that there are sufficient fire extinguishers and other safety devices available in the bases and nacelles of the wind turbine generators, at substations, and other on-site structures.

PROPOSED SITE SECURITY AND FENCING

The only areas of the project to be fenced include the O&M facility and the substation/switchyard area (see Sections 2.10 and 2.11 for fencing details). No individual turbine locations would be fenced. Facility fence gates would be locked when the facility is unattended. During construction activities, temporary gates or signs would be installed on access roads. Consultation with the BLM would determine the necessary control needed to manage public access to the site for safety reasons. Private landowners and BLM-permitted uses would have access preserved but would be limited during construction.

2.15.6 *Aviation Lighting*

All structures taller than 200 feet are required by the FAA to have aircraft warning markings. Wind turbine generators and met towers constructed for this project would be more than 200 feet in height and would trigger a review from the FAA. After project layout is completed, Borderlands Wind would develop a Lighting Plan with guidance from *FAA Technical Note: Development of Obstruction Lighting Standards for Wind Turbine Farms* (Patterson 2005). Borderlands Wind is committed to using Aircraft Detection Lighting System (ADLS). These ADLS systems have been developed to allow for automatic obstruction lighting activation for aviation obstructions such as wind turbines, high-voltage transmission lines, and communication towers. Borderlands Wind is evaluating the DeTect Intelligent Sensors HARRIER ADLS system, which provides reliable, continuous 360-degree radar surveillance of the airspace around the wind farm from ground level to above aircraft flight altitudes. Lights on turbines are automatically illuminated when aircraft are detected at a defined outer perimeter. The HARRIER system meets or exceeds all regulatory requirements of the FAA (DeTect Intelligent Sensors 2019). This system would require two radar units and associated server rack houses. These radar and server rack house units would be located inside the temporary road disturbance areas. This system would require no new temporary disturbance outside the temporary disturbance for the access road and each system would require no more than 0.1 acres of permanent disturbance. The radar units would be no more than 33 feet tall and the server rack house units would be no more than 6 feet tall (Figures 36 and 37). It is anticipated that the ADLS system would minimize visual impacts during the night (and therefore minimize impacts to dark skies) compared to traditional lighting systems required on wind farms (i.e., continuous, medium-intensity red strobe lights).

Once final turbine locations are locked, Borderlands Wind would also submit a Notice of Proposed Construction or Alteration (Form 7460.1) to the FAA for each tower to ensure compliance with FAA regulations (including lighting regulations) and to avoid potential safety issues associated with air navigation. The FAA would issue a determinative notice assessing the hazard potential of the wind energy facility. Additionally, the FAA would determine when notification of actual construction is required.

Currently, Borderlands Wind has obtained Determination of No Hazards (DNHs) on the turbine siting (No. ASN 2019-WTW-5844-OE). Borderlands Wind is in the process of obtaining approval from the FAA to use the ADLS system.

2.15.7 *Construction Design Criteria and Mitigation Measures*

To minimize impacts during construction, design criteria (proponent constraints and mitigation measures) would be implemented; these are provided in Appendix H.

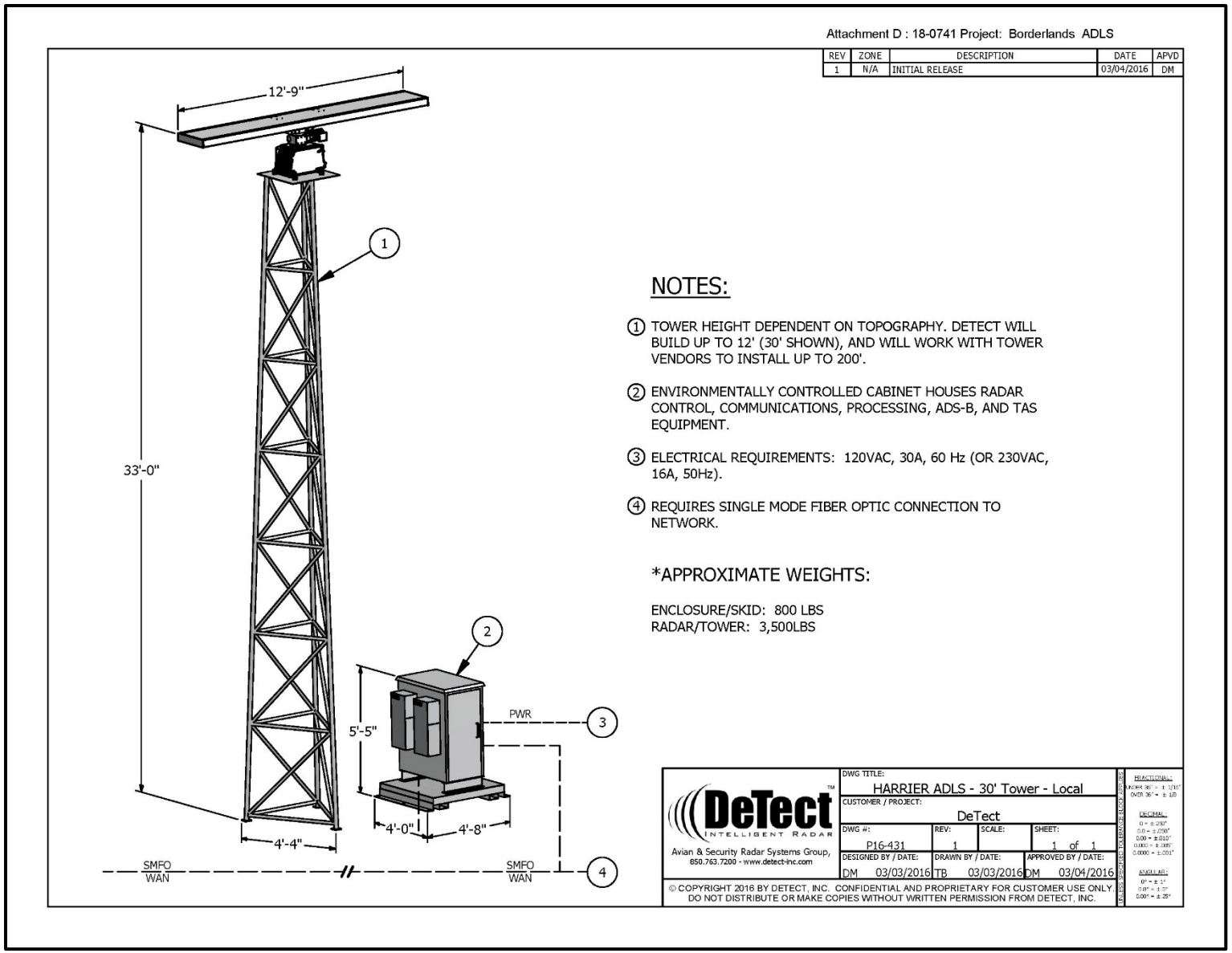

Figure 36. ADLS specifications—Option 1.

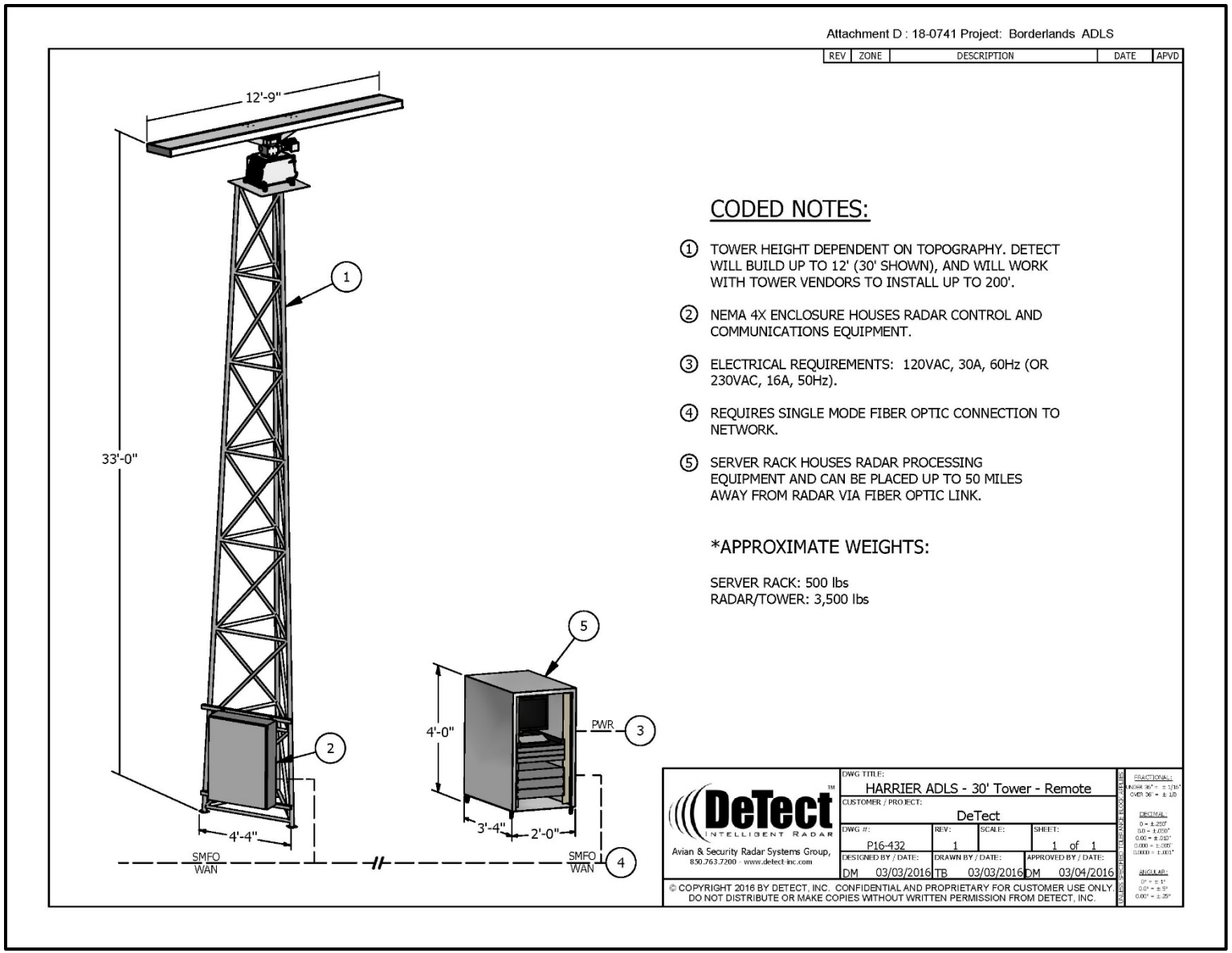

Figure 37. ADLS specifications—Option 2.

3 OPERATIONS AND MAINTENANCE

Once construction is finalized, on-site personnel would operate and maintain the wind energy facility. The facility would be consistent with existing permitted land uses to include grazing and dispersed recreation. Public access is not expected to be restricted unless vandalism becomes an important issue or there is a threat to public safety. During project operations and maintenance, all permanent facilities (see Table 7) would be visible and maintained accordingly. The remainder of the project facilities and areas would be stabilized, protected, and reclaimed (see Section 2.14).

3.1 Operations and Facility Maintenance Needs

When the initial startup period has concluded, the WTGs would be serviced at regular intervals. Overhaul maintenance service would also need to be performed annually; servicing would be on-site. Typically, the routine would consist of inspecting and testing safety systems, inspecting component wear and tear, mechanical systems lubrication, electronic diagnostic performance on control systems, and an overall inspection of the structural components. Occasional blade cleaning may be necessary and may be required if debris reduces the WTG aerodynamic performance. Water would be used to spray-wash the blades using a high-pressure sprayer.

Routine O&M work would be conducted by the O&M staff on the project site. If specialized equipment or expertise is required, Borderlands Wind would subcontract with an appropriate contractor. Personnel would be on-site from the WTG supplier as needed to perform warranty maintenance and operations servicing while under warranty. Personnel may work off-site in an office in a nearby local community. Borderlands Wind anticipates that most of the O&M activities would be conducted by on-site staff, with most of the necessary materials and supplies to be stored in the O&M building.

3.1.1 *Maintenance Activities, including Road Maintenance*

All access roads for the project would be graded periodically and compacted to maintain their integrity, safety, and environmental requirements for the life of the project. Maintenance of cut-and-fill slopes, culverts, grade separations, and drainage areas would be performed as needed to control and correct erosion issues and manage functionality of drainage structures. Additionally, new gravel may periodically be needed to maintain the integrity of the roads. Borderlands Wind would be responsible for clearing all construction debris and maintaining the appearance of all project roads and ROWs in association with appropriate parties.

A single point of access to the proposed project would continue to be U.S. 60 at the Bill Knight Gap Road intersection.

3.1.2 *Operations Workforce, Equipment, and Ground Transportation*

Up to five full-time workers would be employed to operate and manage the project on-site. Staff would be working at various times and days for the life of the project. O&M staff would be responsible for system operations, routine performance checks, troubleshooting malfunctions, WTG system checks, shutdown and restart of facilities, and security. Staff would be headquartered at the O&M facility and travel around the site when necessary. Typical operations may involve deploying up to three crews of two technicians around the site and up to three personnel in the office. Staff might not be present all 24 hours per day, but operations would be monitored continually through the Supervisory Control and Data Acquisition (SCADA) system from a Borderlands Wind–operated remote location. Training would be provided to

each staff regularly regarding best practices of health, safety, and environmental protection services. Additionally, any equipment used during project operations would be maintained and regularly inspected by authorized and trained personnel. A complete schedule would be developed prior to starting operations.

During site operations, four to six service vehicles may be used, as crews would work and travel in pairs. Vehicles would be kept on-site, and personnel would travel to the site in personal vehicles. Carpooling would be encouraged.

3.2 Operations Design Criteria and Mitigation Measures

To minimize impacts during operations, design criteria (proponent constraints and mitigation measures) would be implemented; these are provided in Appendix H.

4 PROJECT DECOMMISSIONING

The project has a life expectancy of 35 years, based on electrical demand, maintenance, and the expected life of the project facilities and major components. If there is continued demand for the electricity generated by the project, outdated or worn facility components could be replaced or upgraded to "repower" the project and keep it operational. Repowering is now a common occurrence in the wind industry for aging facilities. If continued operation of the project becomes no longer cost-effective, then the project would be decommissioned and the existing equipment would be removed.

If the project is decommissioned, all facilities that make up the project would be dismantled and removed in accordance with applicable county, state, and federal laws.

Post-operation reclamation of the site would occur in areas disturbed by project decommissioning and/or long-term operations and maintenance activities. An Integrated Reclamation Plan is included in Appendix E. A Decommissioning Plan is included in Appendix L, which further details project decommissioning methods.

To minimize impacts during decommissioning, design criteria (proponent constraints and mitigation measures) would be implemented; these are provided in Appendix H.

5 ENVIRONMENTAL CONSIDERATIONS

The following sections identify preliminary potential environmental considerations associated with development of the project for the largest project area (the Proposed Action project boundary). The affected environment and impacts of the proposed project on the environment will be discussed in greater detail in the project EIS.

5.1 General Description of Site Characteristics and Potential Environmental Concerns

The proposed wind energy facility is in Catron County, New Mexico, and is partially located on lands managed by the BLM, NMSLO, and private landowners. BLM lands are administered by the New Mexico BLM Socorro Field Office and managed for multiple uses under the *Socorro Resources Management Plan* (BLM 2010a). Land in the project area is dominated by shrub/scrub and

grassland/herbaceous ground cover, and its primary use is for livestock grazing. The area is a part of the high desert, ranging in elevation from roughly 7,000 to 8,300 feet (2,100 to 2,500 m) above mean sea level.

5.1.1 *Land Use*

The project area is located just south of U.S. 60, 3 miles east of the Arizona–New Mexico state border. The closest community is Quemado, New Mexico. There are no incorporated areas or Catron County–designated community nodes within the project area. The Gila National Forest is located directly south of the project area.

The project area includes several existing transmission lines. Within and adjacent to the west side of the project area are the El Paso Electric Springerville-Luna 345-kV transmission line and TEP's Willow-Greenlee-Springerville 345-kV transmission lines.

Lands, including private lands in the project area, are primarily undeveloped, low-density population rural lands. There are two developed rural residences with associated storage/agricultural buildings in the project area. There are three BLM Socorro Field Office special designation areas located more than 3 miles northeast of the project area, including the Cerro Pomo Area of Critical Environmental Concern (ACEC), Zuni Salt Lake ACEC, and the Eagle Peak and Mesita Blanca Wilderness Study Areas. The protection objectives for these areas are as follows:

• Cerro Pomo ACEC: manage to protect unique geological features, paleontological resources, cultural resources, and high scenic quality while preserving appropriate recreation opportunities

• Zuni Salt Lake ACEC: manage to protect cultural resources, sacred sites, and hydrologic resources

• Eagle Peak and Mesita Blanca Wilderness Study Areas: areas under study for possible inclusion as wilderness areas in the National Wilderness Preservation System

BLM lands in the project area are primarily used for grazing. There are six BLM grazing allotments (Red Hill South [10038], Red Hill North [10062], Florenio Orona [00099], Vevarosa [10011], Heavenly Acres (10073], and Cow Springs [01126]) in the project area (BLM 2016a). Additionally, there are two cancelled oil and gas leases in the project area located on NMSLO-administered lands (Cotton Wood Canyon Units #009 and #010) (New Mexico Oil Conservation District 2018). State lands in the project area include both surface and subsurface estate and lands, and there are active agricultural leases on all the State land surface estates (NMSLO 2018). No other lease types exist on the State lands in the project area (NMSLO 2018).

5.1.2 *Biological Resources*

MIGRATORY BIRDS

The regulatory framework for protecting birds includes the Endangered Species Act (ESA), the Migratory Bird Treaty Act of 1918 (MBTA) (which includes any part, nest, or egg), the Bald and Golden Eagle Protection Act, and Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (issued 2001). In addition to migratory birds, this section also addresses raptors and eagles. Additionally, BLM IM 2010-156, Bald and Golden Eagle Protection Act – Golden Eagle National Environmental Policy Act and Avian Protection Plan Guidance for Renewable Energy states that consideration of golden eagles must be incorporated into the NEPA process (BLM 2010b).

All birds categorized as sensitive, as well as most other bird species that are likely to occur in the project area, are protected by the MBTA. The MBTA prohibits the take of migratory birds and does not include provisions for allowing unauthorized take. Although it is not possible for the U.S. Fish and Wildlife Service (USFWS) to absolve individuals, companies, or agencies from liability, the USFWS and Department of Justice have not focused their prosecutorial efforts on those who have made good-faith efforts to avoid take of migratory birds (USFWS 2003). A good-faith effort is best shown through the development of a Bird and Bat Conservation Strategy that generally follows the final USFWS Land-Based Wind Energy Guidelines (USFWS 2012). To develop this strategy, developers of wind project sites generally conduct preconstruction surveys to determine the extent of use by bird and bats. Avian use surveys for the project area were initiated in March 2017 and concluded in March 2019. The Year One survey consisted of visiting 12 points twice per month for 1 hour to document any avian species observed. The Year Two surveys consist of eight additional points for a total of 20 points, all surveyed twice a month for 1 hour. These points all represent the site spatially and by habitat condition and were micro-sited in the field to maximize views of the surrounding airspace. Bat surveys were initiated in September 2017 and concluded in February 2019. The bat surveys consisted of two bat acoustic stations, one low microphone near a water feature and one high microphone attached to a met tower. Any bat species that passed were recorded with a SongMeter acoustic detector, which records full-spectrum data. The results of these surveys have been used to help inform a project-specific Bird and Bat Conservation Strategy (Appendix M).

The Bald and Golden Eagle Protection Act is similar to the MBTA in that it prohibits the take of bald and golden eagles. The USFWS issued final Eagle Conservation Plan Guidance (USFWS 2013) that outlines a process for eagle avoidance, minimization, and mitigation. Developers of wind project sites generally conduct preconstruction surveys to determine the extent of use by eagles. These surveys were initiated in March 2017, and continued through March 2019. The Year One survey consisted of visiting 12 points twice per month for 1 hour to document any eagles observed. The Year Two surveys consisted of eight additional points for a total of 20 points, all surveyed twice a month for the 1 hour. These points all represent the site spatially and by habitat condition and were micro-sited in the field to maximize views of the surrounding airspace. Based on the results of these surveys, an Eagle Management Plan (Appendix M).

The BLM may coordinate with the USFWS on eagles in order to follow IM 2017-040, Bald and Golden Eagle Protection Act – Eagle Incidental Take Permit Guidance for Renewable Energy Development. The memorandum provides guidance on the processing of ROW applications for wind and solar energy development projects that have the potential to result in mortalities to eagle(s). If the USFWS has determined that take of eagles at a project is likely, the BLM will require stipulations to monitor the project regularly for fatalities. Based on the USFWS assessment, the ROW applicant must inform the BLM of its planned approach to address potential eagle take so that the BLM can incorporate the information as it prepares the draft NEPA document. Since a take permit is not being pursued for the project, the BLM will require implementation of mitigation measures to protect eagles based on level of risk. The Eagle Management Plan provides a review of the project's potential risk to eagles, and outlines project-specific avoidance, minimization, and mitigation measures. The BLM will coordinate with the USFWS to analyze the applicant's proposed measures and will seek input from the USFWS on the need for additional design features to further avoid or minimize the project's impacts on eagles.

The project area does not contain Important Bird Area designation, and is not a Ramsar Convention site or Western Hemisphere Shorebird Reserve Network site. Although not present within the project area, designated critical habitat for the Mexican spotted owl is within 5 miles of the southern boundary of the project area.

The potential for migratory birds and eagles to occur within the project area, and any potential impacts to them, will be analyzed and documented during the NEPA process.

SPECIAL-STATUS SPECIES

Special-status species in this document collectively refers to threatened or endangered species protected under the ESA, as well as species given special status in New Mexico's State Wildlife Action Plan (New Mexico Department of Game and Fish 2016), and by the New Mexico BLM as BLM sensitive. This section describes special-status species that have the potential to occur in the project area.

The purpose of the ESA is to protect species in danger of extinction due to low population levels and other environmental hazards. The project area includes federal land; therefore, ESA Section 7 consultation with the USFWS will occur if take of an ESA-listed species would be anticipated. Bald and golden eagles are protected under both the MBTA and the Bald and Golden Eagle Protection Act, and are discussed above.

The New Mexico BLM maintains a list of sensitive species specific to BLM lands, which can be found on the BLM New Mexico website (BLM 2012, 2016b). Rare plant species are protected at the State level under the New Mexico Endangered Plant Species Act (New Mexico Statutes Annotated [NMSA] 75-6-1 and New Mexico Administrative Code [NMAC] 19.21) and managed by the State Forestry Division of the New Mexico Energy, Minerals and Natural Resources Division. Animal species are protected at the State level under the Wildlife Conservation Act (NMSA 17-2-37 and NMAC 19.33) and managed by the New Mexico Department of Game and Fish.

SWCA Environmental Consultants (SWCA) completed a site evaluation and characterization report in March 2018, which followed the USFWS's Land-Based Wind Energy Guidelines Tiers 1 and 2, and Eagle Conservation Plan Guidance Stage 1. This report provided an initial (pre-NEPA analysis) assessment of special-status wildlife and plant species that are known to or that may occur in the project area. The assessment included evaluation of species occurrence data within 10 miles of the project provided to SWCA by Natural Heritage New Mexico (2017) and official project-specific species and critical habitats via the USFWS Information for Planning and Consultation (IPaC) system (USFWS 2017), among other resources. Ongoing Tier 3 wildlife surveys, initiated in March 2017 and continuing through March 2019, provide an in-depth knowledge of the site's habitat associations and documentation of relevant species.

As the lead agency, the BLM will initiate Section 7 ESA consultation with the USFWS as part of the NEPA process, if impacts to ESA-listed species are anticipated. In addition, a Biological Assessment may be needed to evaluate the effects of the project on ESA-protected species. The USFWS Land-Based Wind Energy Guidelines (USFWS 2012) recommend a higher-level site characterization be completed to determine which of these species may be affected by the proposed project, and whether those species use the project area. Coordination with the BLM, and the New Mexico Department of Game and Fish if they are a cooperating agency, is required to ensure that specific concerns are addressed. Though BLM sensitive species have no specific legal protection, the BLM is to manage BLM sensitive species to minimize the likelihood of and need for listing of these species under the ESA (BLM 2008). Therefore, the agency may require additional surveys to determine species presence/absence in the project area and potential impacts.

The potential of special-status species to occur within the project area, and any potential associated impacts to these species, will be analyzed and documented during the NEPA process.

VEGETATION

In accordance with IM 2013-111, The National Vegetation Classification and Associated Mapping Standards for Bureau of Land Management Planning Documents and Assignment of State-Level Vegetation Classification Data Stewards, the existing vegetation within the project area was classified using the National Vegetation Classification Standard that is found within the USGS Gap Analysis Project Land Cover Data (USGS 2011). Classifications of vegetation are provided below (Table 10). Acreages and potential impacts will be analyzed and documented during the NEPA process.

Table 10. National Vegetation Classification Standard Vegetation within the Project Area

Class	Formation	Macrogroup	Ecological System
Forest and Woodland	Cool Temperate Forest and Woodland	Southern Rocky Mountain Lower Montane Forest	Southern Rocky Mountain Ponderosa Pine Woodland
		Intermountain Singleleaf Pinyon-Utah Juniper – West Juniper Woodland	Inter-Mountain Basins Juniper Savanna
		Southern Rocky Mountain and Colorado Plateau Two-needle Pinyon – One-seed Juniper Woodland	Colorado Plateau Pinyon-Juniper Woodland
Shrub and Herb Vegetation	Temperate Grassland and Shrubland	Southern Rocky Mountain Montane Shrubland	Rocky Mountain Gambel Oak-Mixed Montane Shrubland
	Salt Marsh	Warm and Cool Desert Alkali-Saline Marsh, Playa and Shrubland	Inter-Mountain Basins Playa
Desert and Semi-Desert	Cool Semi-Desert Scrub and Grassland	Great Basin-Intermountain Trail Sagebrush Steppe and Shrubland	Inter-Mountain Basins Big Sagebrush Shrubland
		Great Basin-Intermountain Dry Shrubland and Grassland	Inter-Mountain Basins Semi-Desert Grassland
			Inter-Mountain Basins Semi-Desert Shrub Steppe
		Intermountain Basins Cliff, Scree and Badlands Sparse Vegetation	Colorado Plateau Mixed Bedrock Canyon and Tableland
Open Rock Vegetation	Temperate and Boreal Cliff, Scree and Other Rock Vegetation	Western North American Temperate Cliff, Scree and Rock Vegetation	Rocky Mountain Cliff, Canyon and Massive Bedrock
Open Water	Open Water	Open Water	Open Water (Fresh)

Noxious Weeds

Nearly all noxious species in New Mexico are found on rangelands and wildlands. Noxious species of weeds may result in reductions in available forage for wildlife and livestock. The New Mexico Department of Agriculture is directed by the Noxious Weeds Management Act to create a noxious weed list for the state, educate the public about these noxious weeds, and identify methods of control for specific species. The New Mexico Department of Agriculture coordinates with local, state, and federal land managers, as well as private landowners, about weed management practices.

Noxious weeds were not found in the initial site survey. However, there is potential for noxious weed seed transport and establishment during project construction activities. Vehicles traverse lands lacking noxious weeds after driving through lands containing noxious weeds. This could lead to potential noxious weed establishment. An Integrated Reclamation Plan, which includes an Integrated Weed and Pest Management Plan, is included in Appendix E.

5.1.3 *Cultural Resources*

Cultural resources include prehistoric and historic resources, which are protected by federal and state laws. If a project requires a federal permit, license, or approval, the federal agency must comply with Section 106 of the National Historic Preservation Act, which requires that all cultural items found within the area of potential effects must be recorded and assessed for National Register of Historic Places eligibility. Cultural resources refer to both human-made and natural physical features significant to Native identity and, in most cases, are finite, unique, fragile, and nonrenewable. Cultural resources that meet the eligibility criteria for listing in the National Register of Historic Places are considered "significant" resources and must be taken into consideration during the planning of federal projects.

Cultural Resources in the Project Area

A cultural resources survey was be completed in coordination with the BLM. Results of the survey are presented in the report *A Class III Cultural Resources Survey for the Borderlands Wind Project, Catron County, New Mexico* (NMCRIS_140961) that was submitted to the BLM for review. Results of the survey, coordination with Tribes (including with the Zuni tribe), and an analysis of impacts to cultural resources will be discussed in greater detail in the EIS.

5.1.4 *Noise*

The nearest sensitive noise receivers are four developed rural residences located within or near the vicinity of the project area. These residences are approximately 0.8 mile (unknown residence), 2.0 miles (Houston residence), 2.6 miles (Hooper residence), and 6.4 miles (Chavez residence) away from the nearest turbine. The communities of Red Hill and Quemado are the closest communities and are 4.9 miles and more than 20 miles from the project, respectively. These communities (sensitive receivers) are not expected to be affected by project-related noise due to the distance from the proposed project. There are no incorporated areas or Catron County–designated community nodes in the project area. An analysis of noise impacts to the sensitive noise receivers and communities will be discussed in the EIS.

Construction Noise

During construction, which is expected to last approximately 11 to 12 months, short-term noise would be generated by on-site construction and by the transportation of workers and equipment. Temporarily elevated noise levels can be expected in the project ROW and along the roads to and from the ROW.

The project is estimated to generate a peak of approximately 420 trips per day on U.S. 60 during the 6 to 8-month peak construction period (based on 160 construction personnel leaving and entering and 50 delivery trucks leaving and entering the project site). However, as described in Section 2.15, the number of trips associated with project during project initiation and conclusion are likely to be significantly less than the peak number of trips. The highest noise levels typically occur with earthmoving equipment (bulldozers, excavators, backhoes, etc.) and road-building equipment (compactors, scrapers, graders, etc.). Typical operating cycles may involve 1 or 2 minutes at full-power operation, followed by 3 or 4 minutes at lower power settings. If required, blasting may be an additional source of noise during construction. Blasting times would be limited to the hours between 6 a.m. and 8 p.m., and nearby residents would be notified in advance if blasting needs to occur. The amount of blasting required, if any, is unknown at this time. Should blasting be required, the Blasting Plan (Appendix I) would be implemented.

Operational Noise

During commercial operation, the WTGs would generate a swooshing sound as the blades pass through the air. The level of this sound diminishes with distance. For a typical configuration, the sound of the WTGs is barely audible for residences at 1,500 feet (0.3 mile) from the WTG under most atmospheric conditions.

Federal codes, and primarily the Occupational Safety and Health Act of 1970, regulate worker exposure to noise levels, and these would apply during construction and maintenance of the project. These codes limit worker exposure to noise levels of 85 decibels or lower over an 8-hour period. The project would comply with all federal, state, and local requirements with respect to noise levels during construction and operation.

5.1.5 *Air Quality*

The project site is in the Southwestern Mountains-Augustine Plains Air Quality Control Region 156. The region covers over 20,000 square miles of the western portion of New Mexico, and includes Catron County, Socorro County, portions of McKinley County, and portions of Valencia County. The region is located between Sections 1 and 1, Township 7 North, Range 2 West; then southerly on section lines to the Socorro/Valencia County line at Sections 11–14, Township 5 North, Range 2 West (Figure 38).

The Clean Air Act established six pollutants as National Ambient Air Quality Standards (NAAQS): particulate matter (PM), sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, and lead. Compliance with NAAQS for the project area is shown in Table 11.

Table 11. Southwestern Mountains-Augustine Plains Air Quality Control Region 156 Compliance with NAAQS

Constituent	Status
Ozone–1-hour	Compliant
Ozone–8-hour	Compliant
PM_{10}	Minor Source 08/04/1978
$PM_{2.5}$	Compliant
Carbon monoxide	Compliant
Nitrogen dioxide	None
Sulfur dioxide	Minor Source 08/04/1978
Lead particulates	None

Notes:

PM_{10} = particulate matter less than 10 microns in aerodynamic diameter

$PM_{2.5}$ = particulate matter less than 2.5 microns in aerodynamic diameter

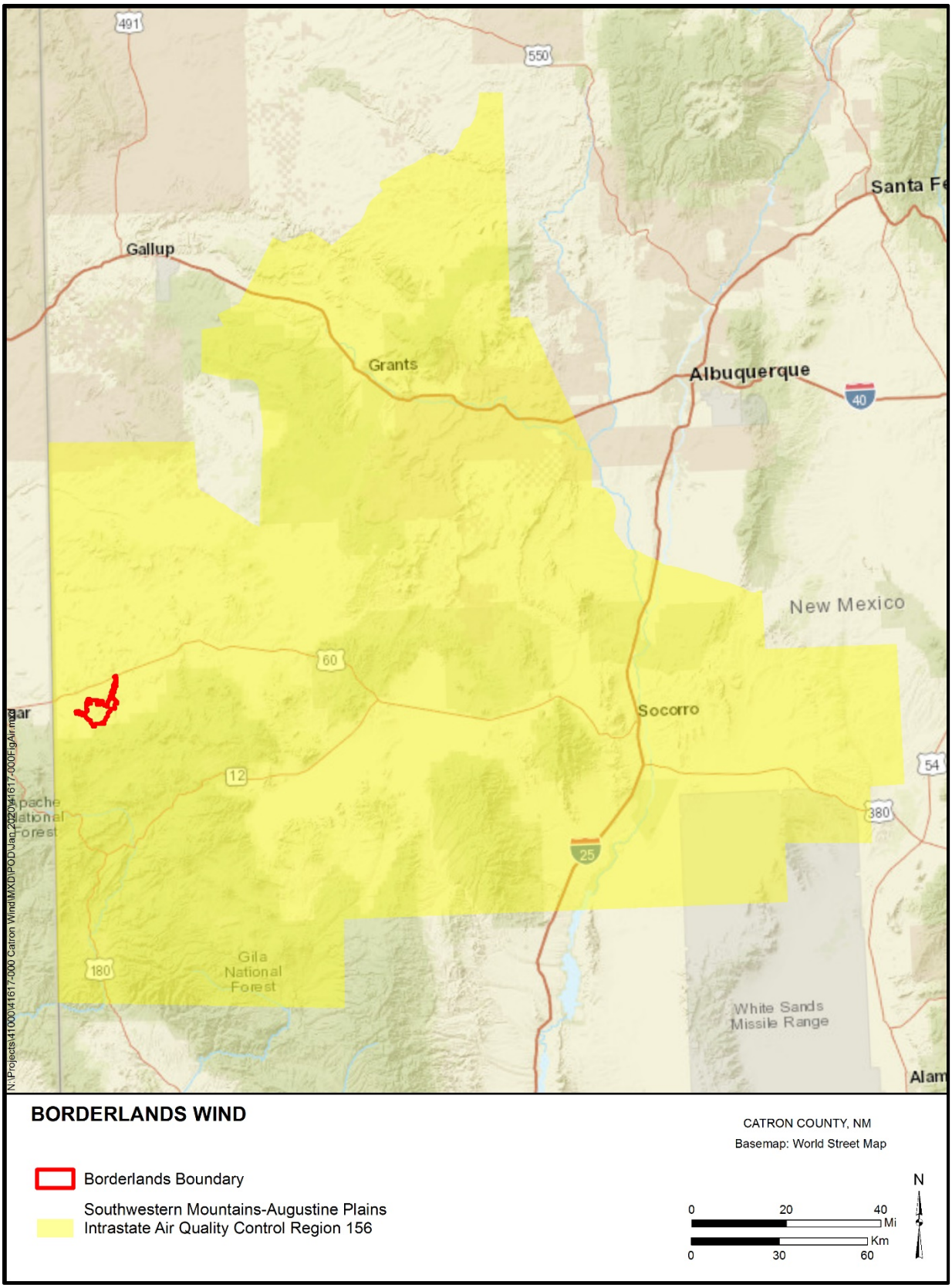

Figure 38. Southwestern Mountains-Augustine Plains Air Quality Control Region 156.

Exhaust from construction equipment may result in short-term emissions of nitrogen oxides and reactive organic compounds. Soil disturbance, mobile-source exhaust emissions, travel on unpaved roads, and on-site concrete batch may contribute to PM emissions during construction.

Additionally, the project would involve staff of up to five workers on-site during operations. These workers would need to monitor WTG and system operations, troubleshoot malfunctions, perform routine instructions, shut down and restart turbines, and provide security; therefore, workers would travel on-site. Project operations may require the use of a forklift to unload parts and other on-site support equipment.

Additionally, diesel-powered backup generators may be used during operations; therefore, a diesel-powered fire pump may be necessary. Workers driving on-site would create exhaust and on-site support equipment would result in small portions of long-term emission of nitrogen oxides and reactive organic compounds. Workers driving on unpaved roads would also contribute to some long-term emissions of PM_{10}. A Dust Control and Air Quality Plan (Appendix O) further details project-specific air quality and dust control methods.

5.1.6 *Jurisdictional Waters and Wetlands*

The U.S. Army Corps of Engineers (USACE) has jurisdiction over dredge or fill impacts to waters of the U.S., which include wetlands, as well as permanent, intermittent, and ephemeral drainages under Section 404 of the Clean Water Act.

The project area is in hydrologic basin HUC #15020003 and ranges in elevation from 7,100 to 8,100 feet (USFWS 2016; USGS 2016). A jurisdictional determination for waters of the U.S. would be necessary to determine the presence and extent of water of the U.S. subject to Section 404 of the Clean Water Act. The project would avoid impacts to waters of the U.S. to the extent practicable. If crossings over or borings under potentially jurisdictional features are needed, as the project engineering is finalized, Borderlands Wind would submit a wetland delineation report to the USACE and request a jurisdictional determination and obtain necessary permits from the USACE (i.e., Nationwide 12 or Nationwide 14).

5.1.7 *Visual Quality*

Wind turbines can be visible from as far away as 30 miles, depending on the height of the turbines, atmospheric conditions, and lines of sight toward the project from the surrounding landscape.

Potential visual resource impacts from the project would depend on the degree to which it would substantially affect a scenic vista, alter the existing visual character of the area, or be a new source of light and glare in the area. The degree to which project components would appear as new features in the landscape would dictate the extent of potential visual impacts.

Visual impacts that would result from the project are currently undetermined. The BLM will undertake a Visual Impact Analysis in the EIS.

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APPENDIX A

Site Plans

BORDERLANDS WIND PROJECT
APPENDIX A
SITE PLANS

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

Figures

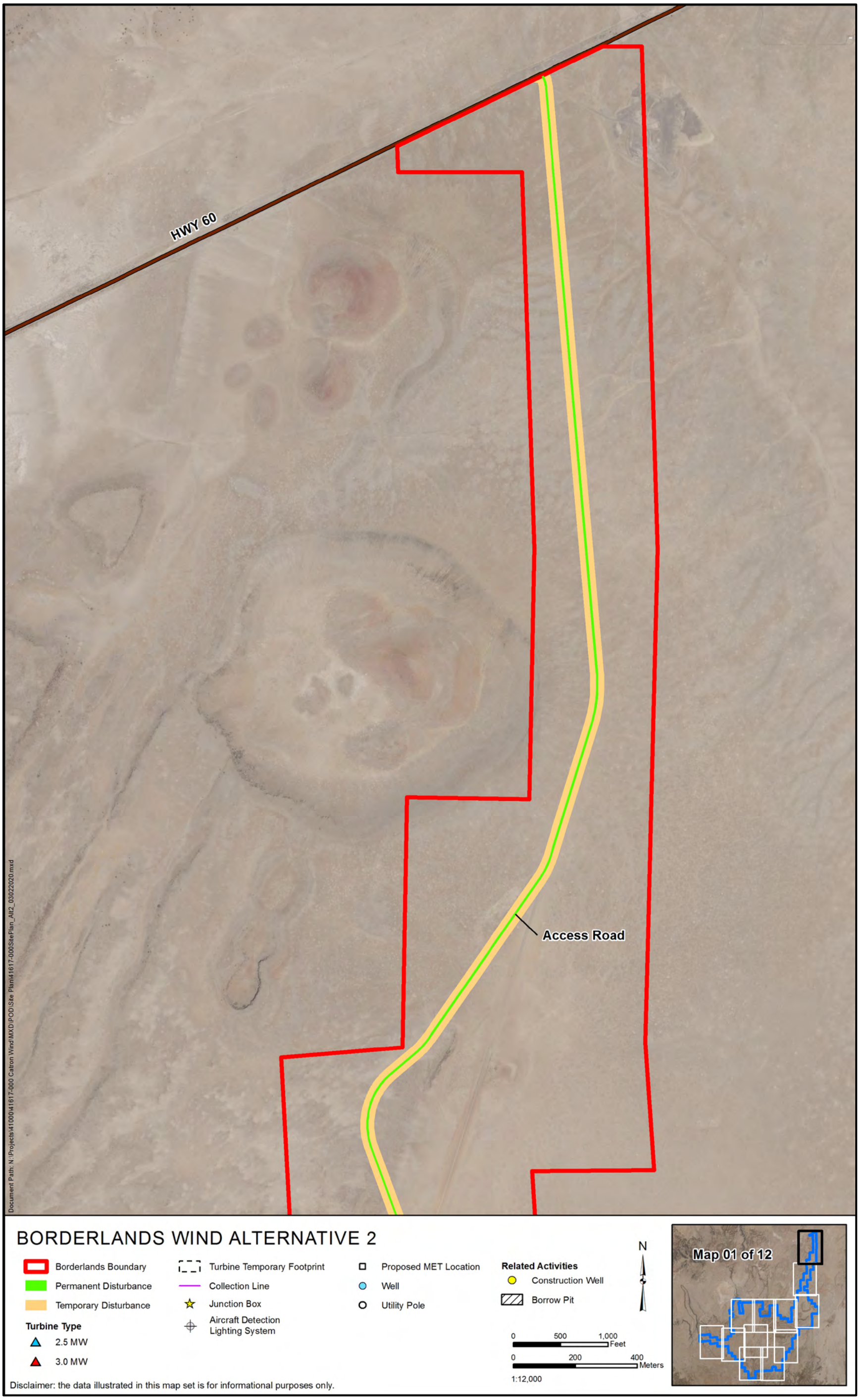
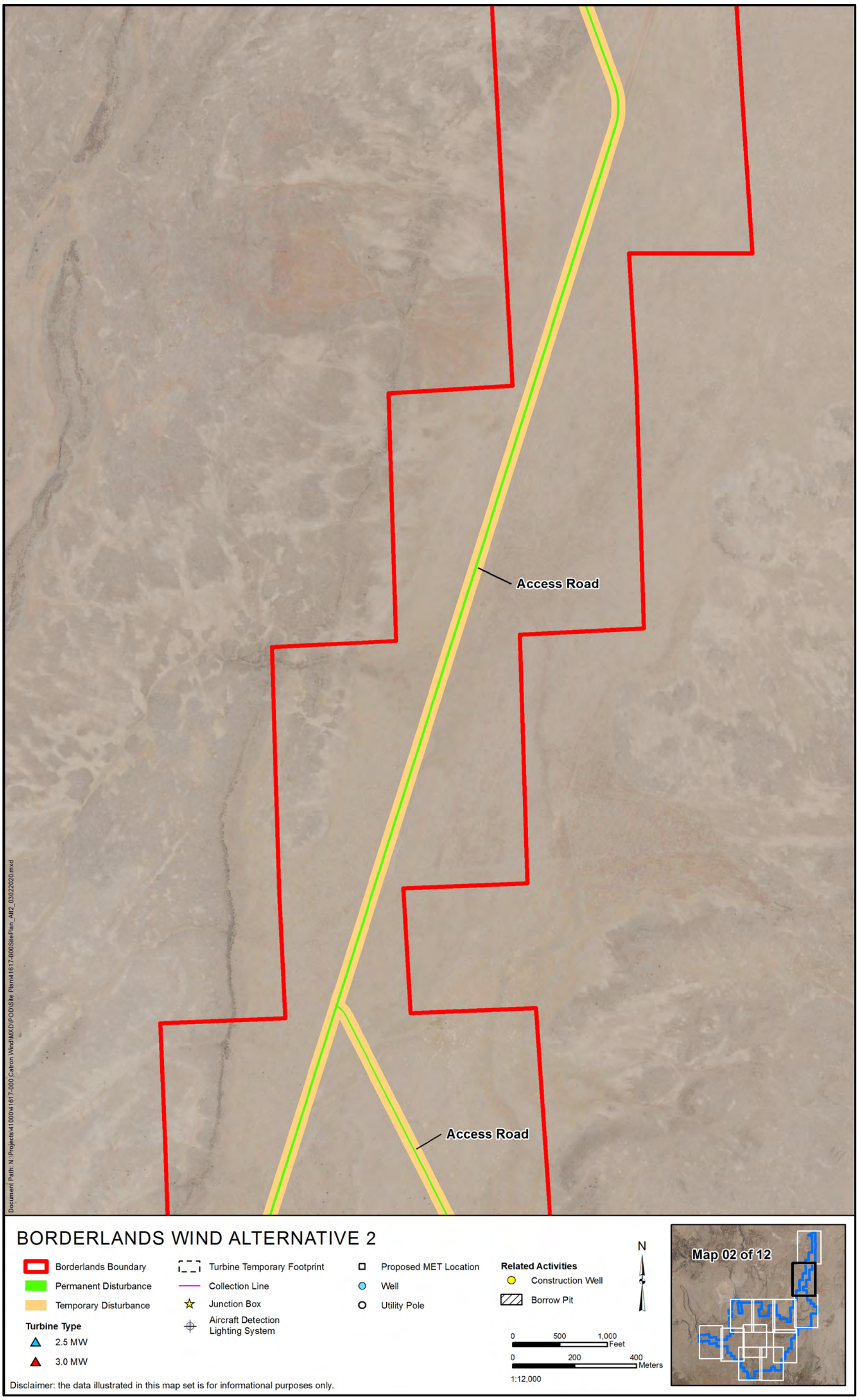


Figure 1a. Alternative 2 Site Plan (Map 1 of 12)



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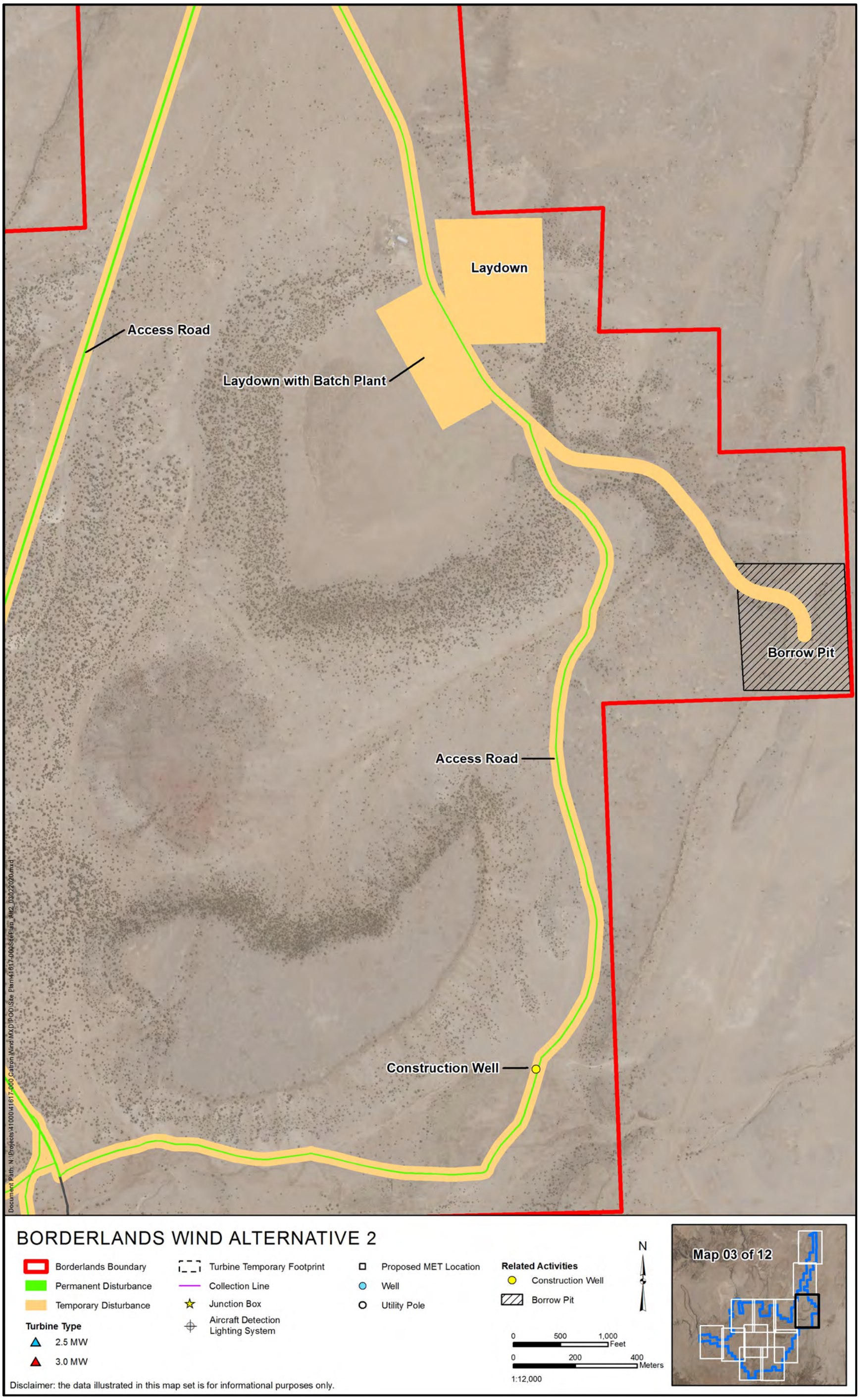

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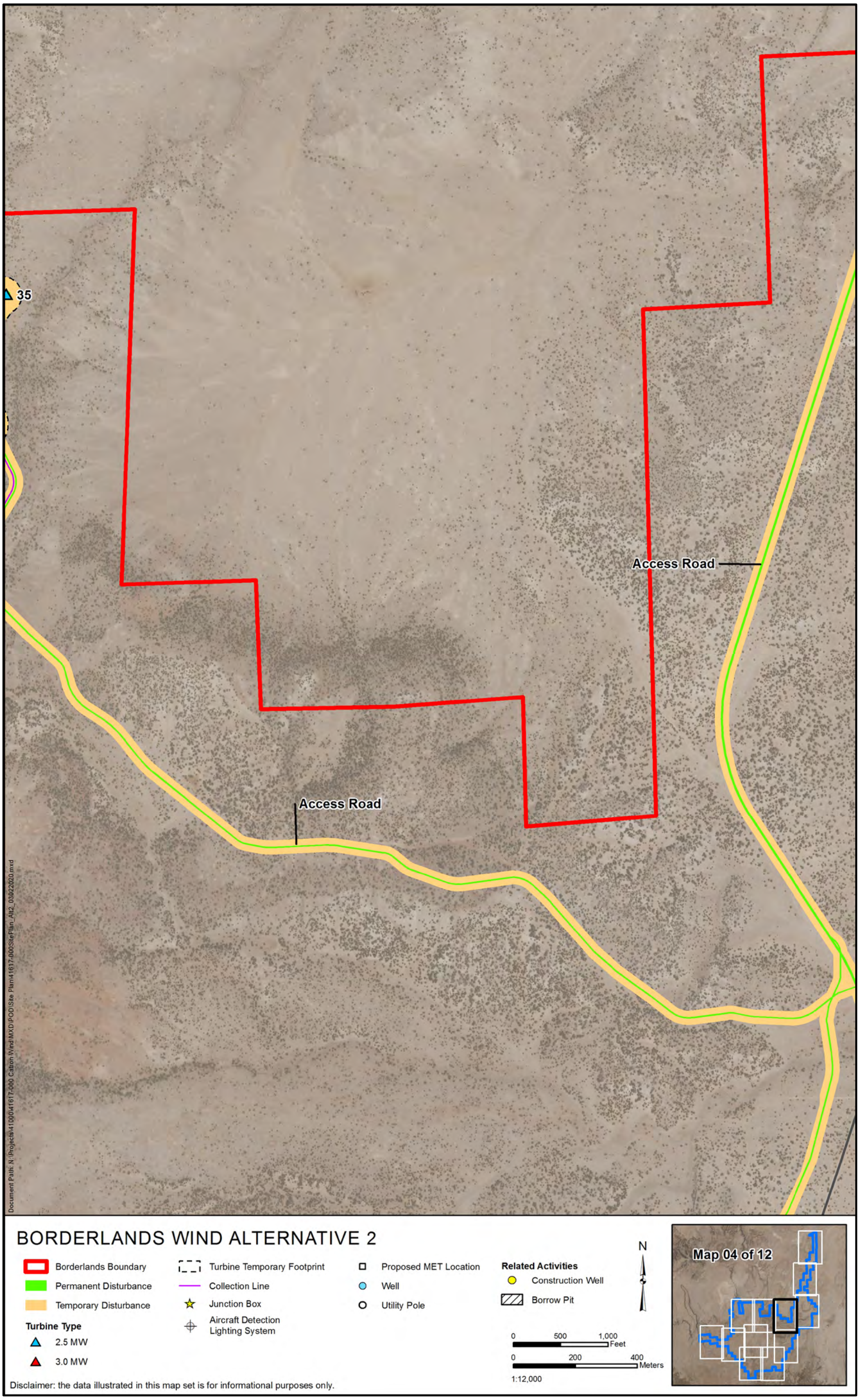


Figure 1d. Alternative 2 Site Plan (Map 4 of 12)

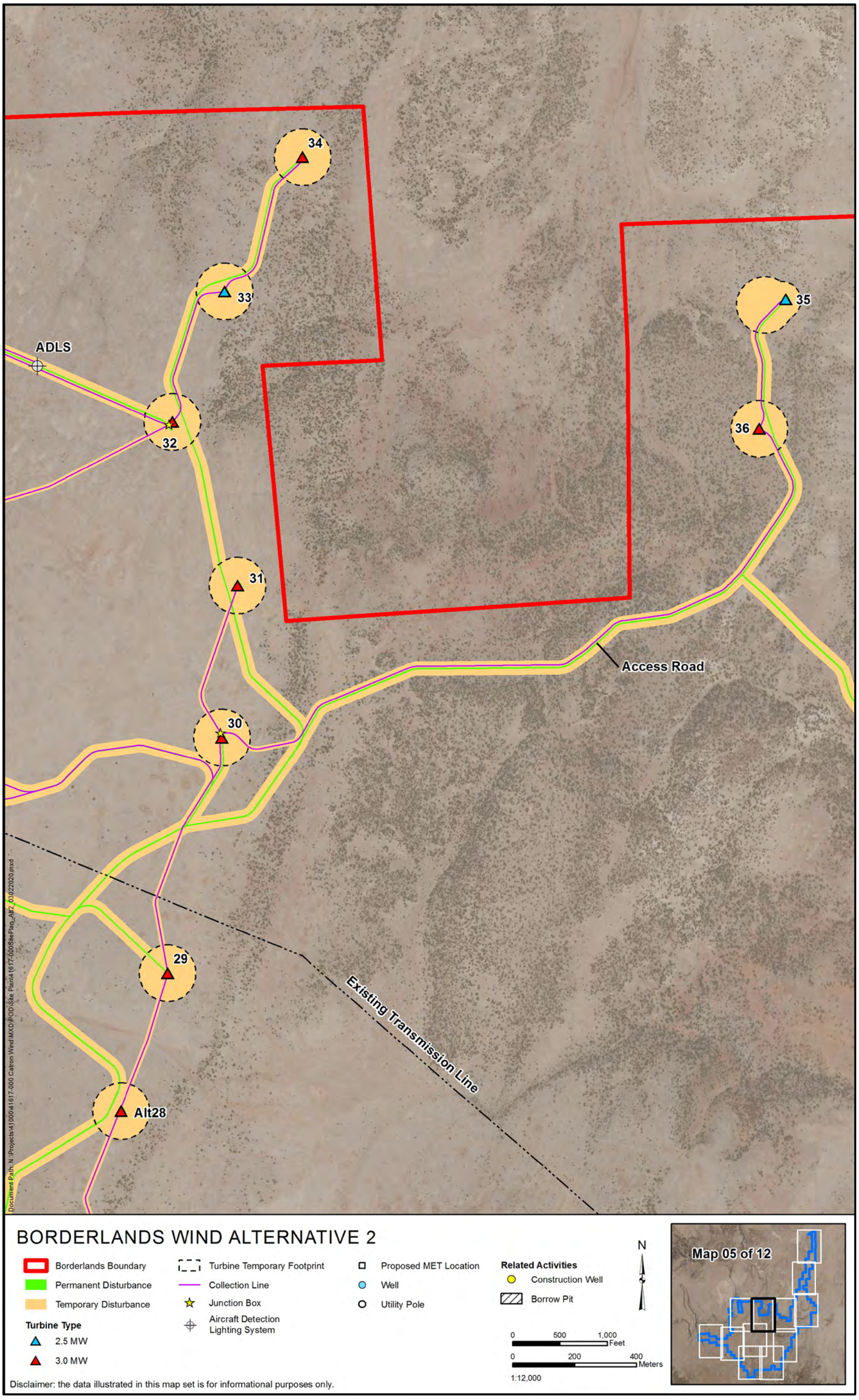
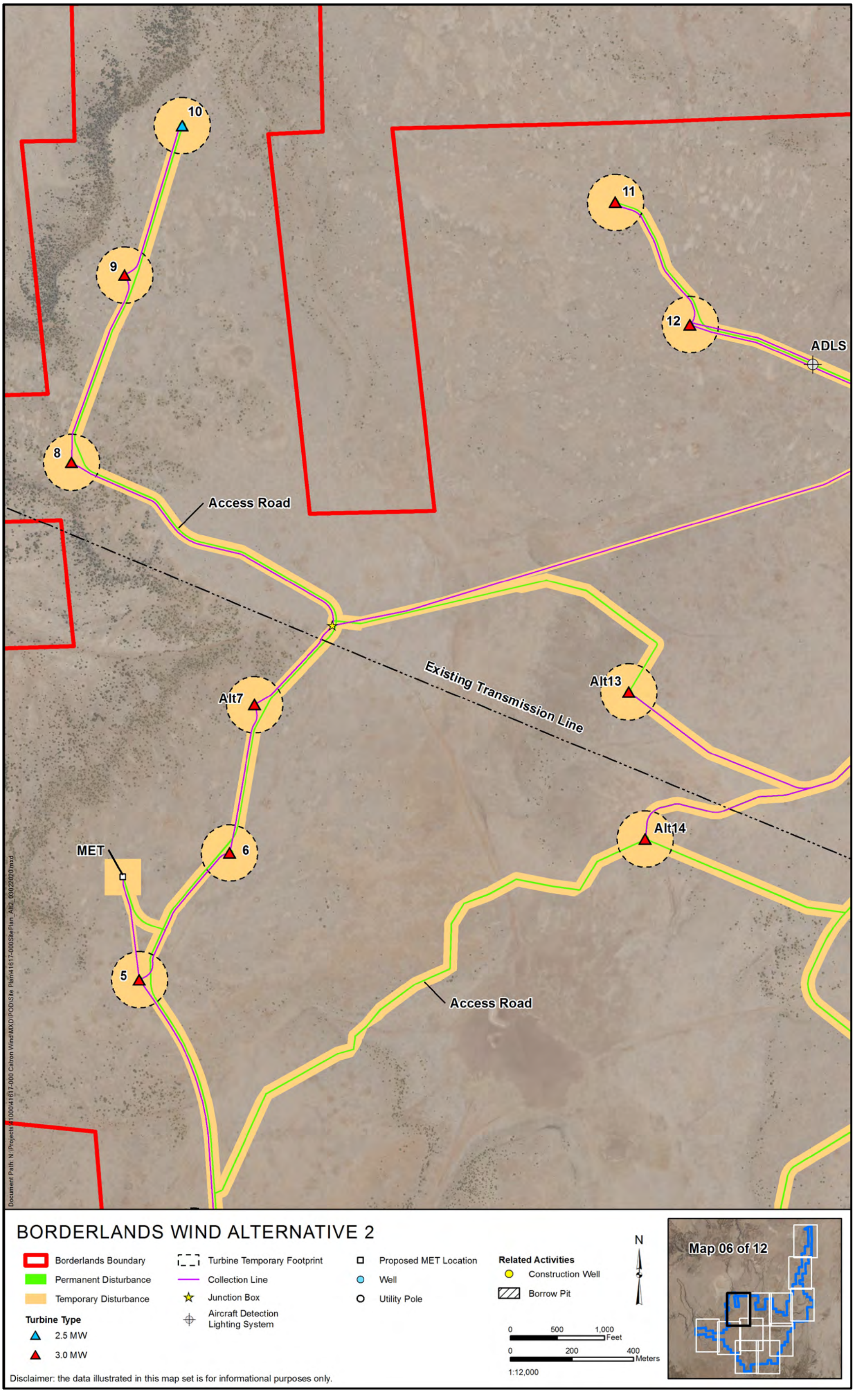


Figure 1e. Alternative 2 Site Plan (Map 5 of 12)



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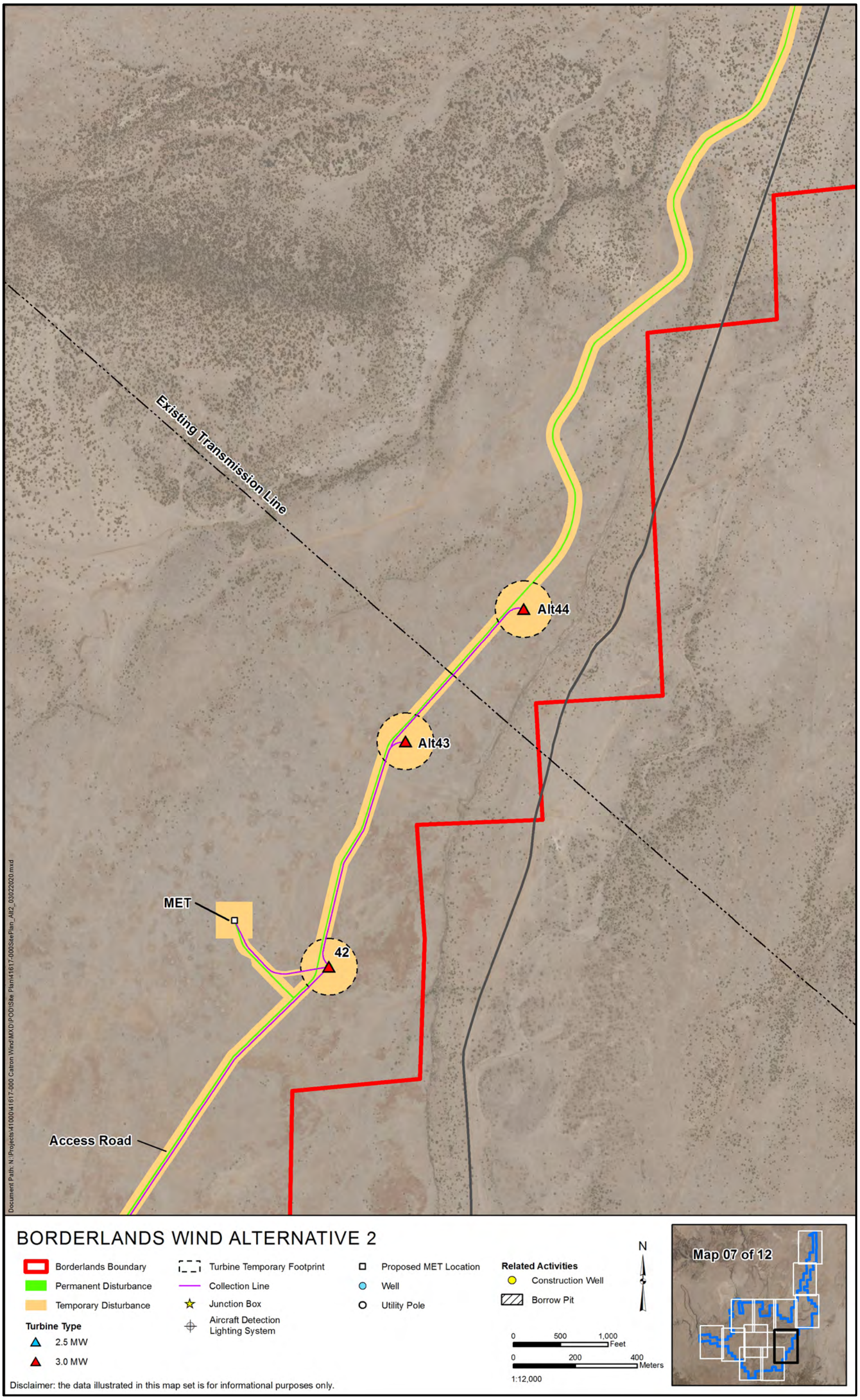


Figure 1g. Alternative 2 Site Plan (Map 7 of 12)

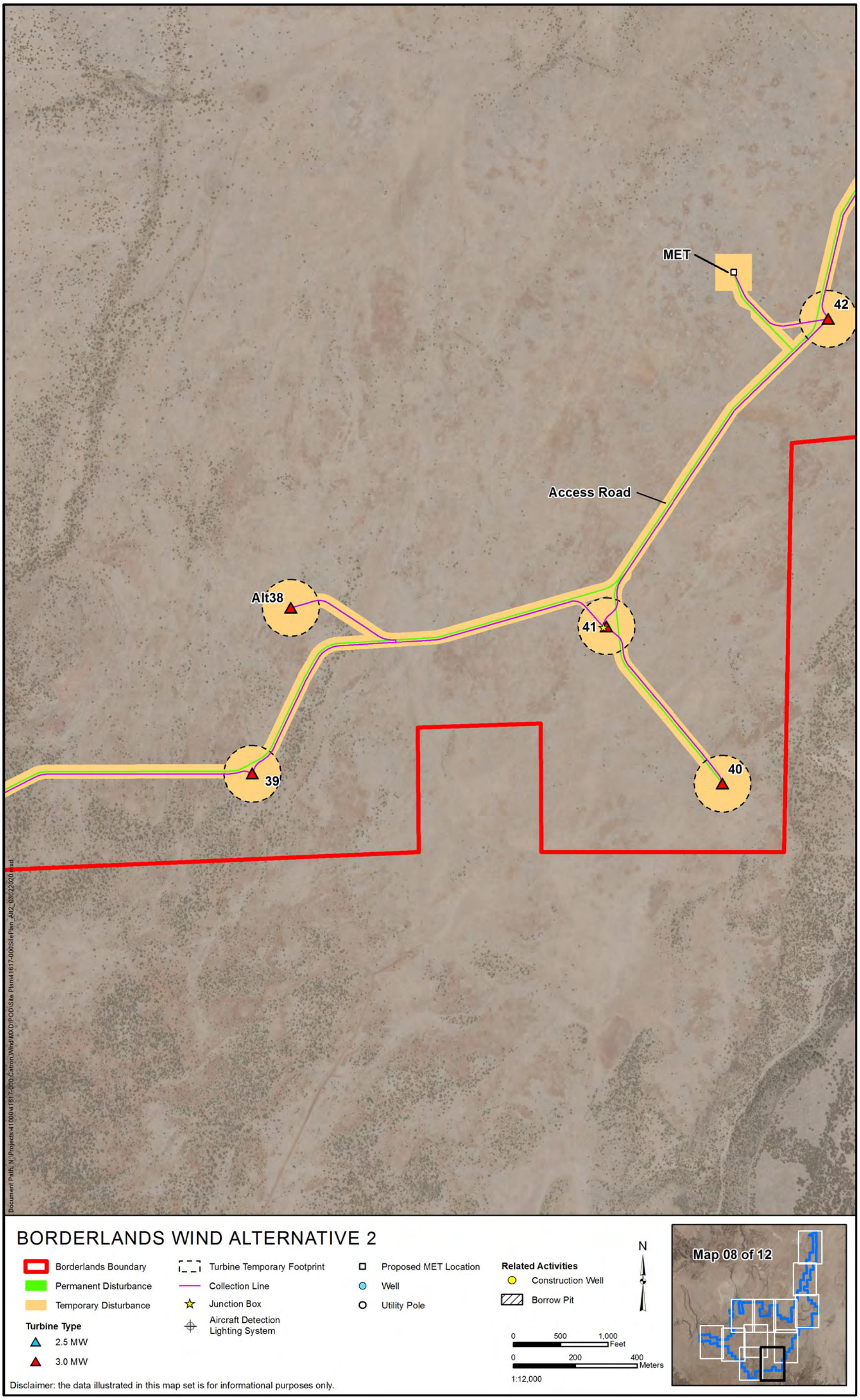


Figure 1h. Alternative 2 Site Plan (Map 8 of 12)

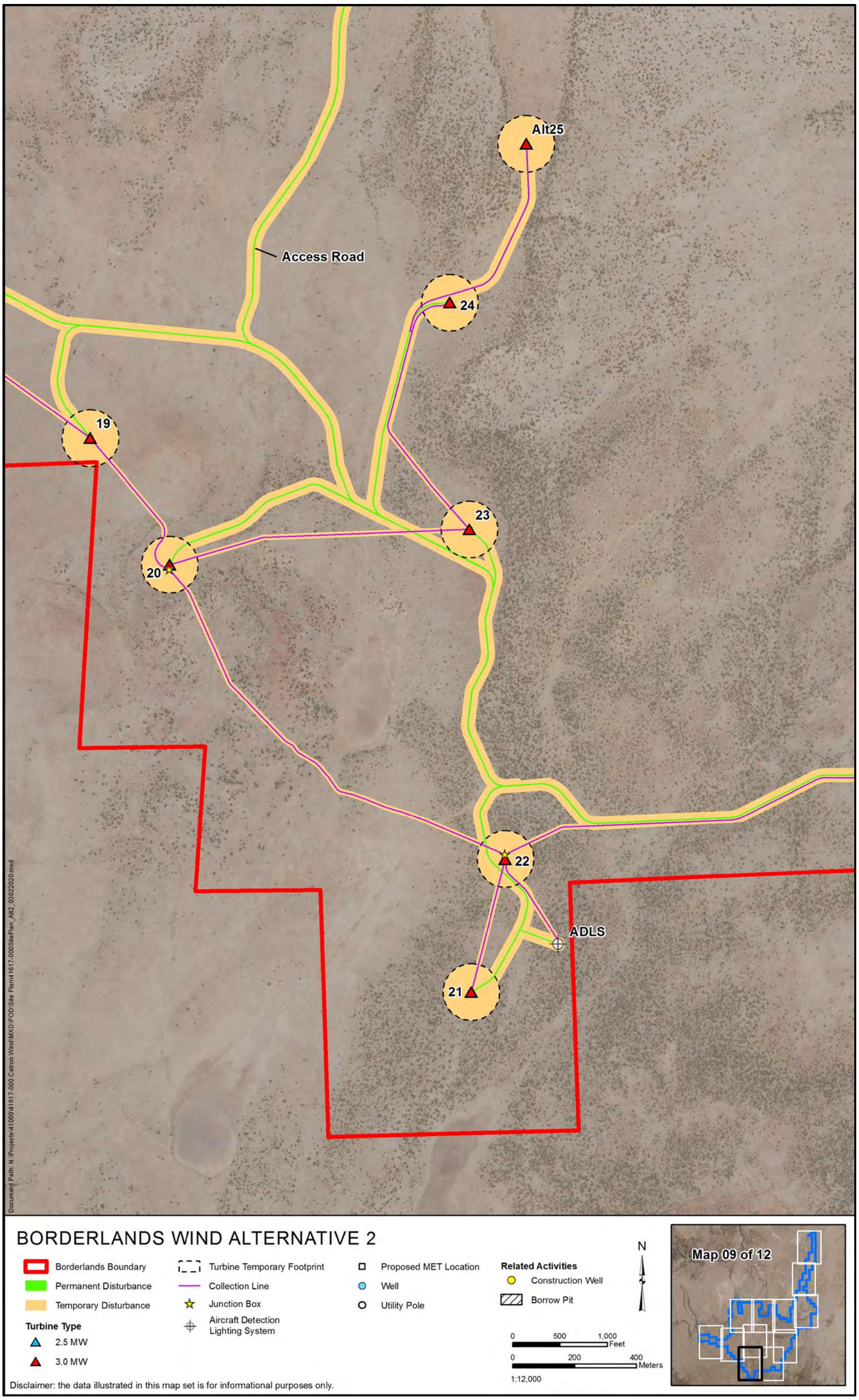
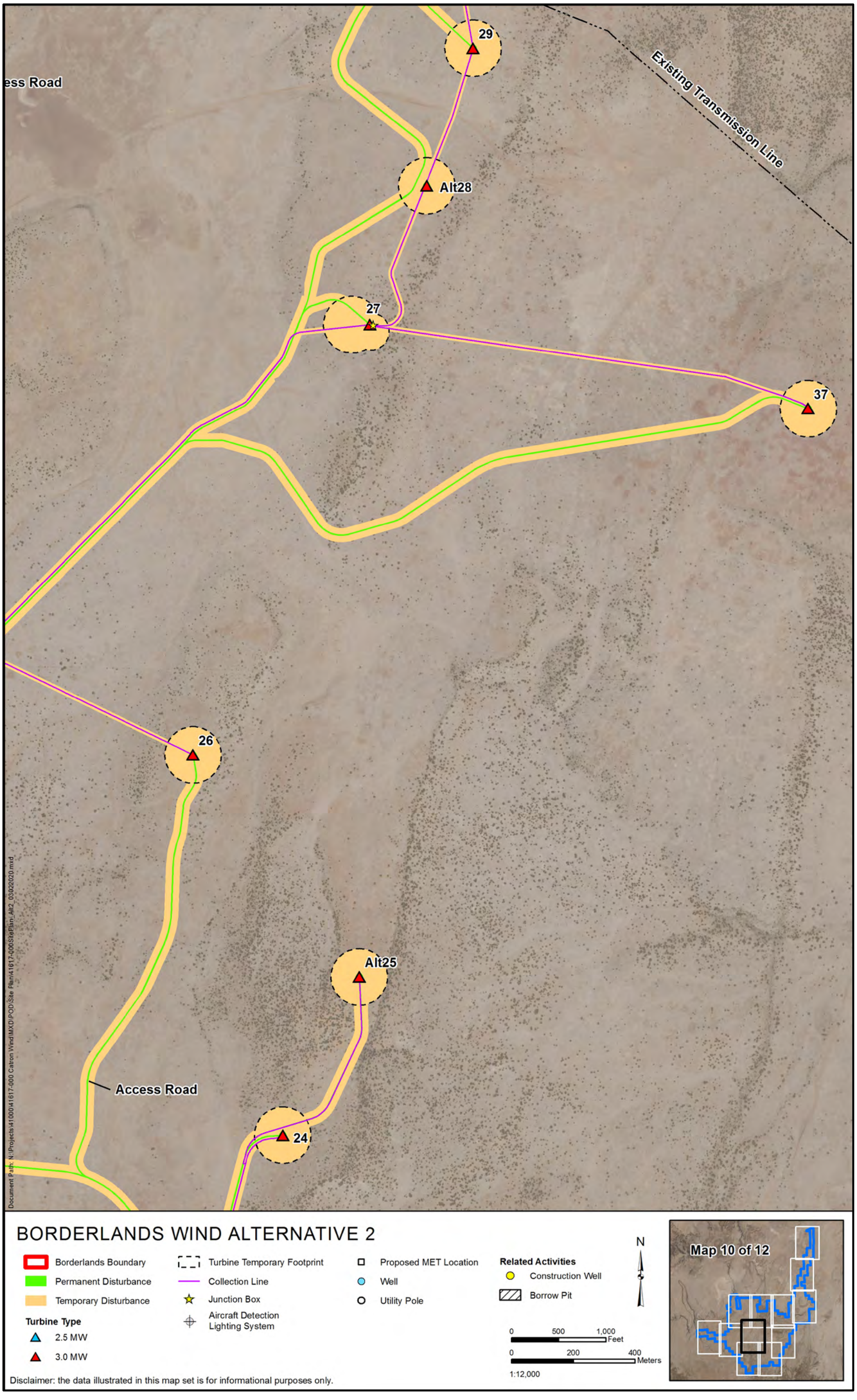


Figure 1i. Alternative 2 Site Plan (Map 9 of 12)



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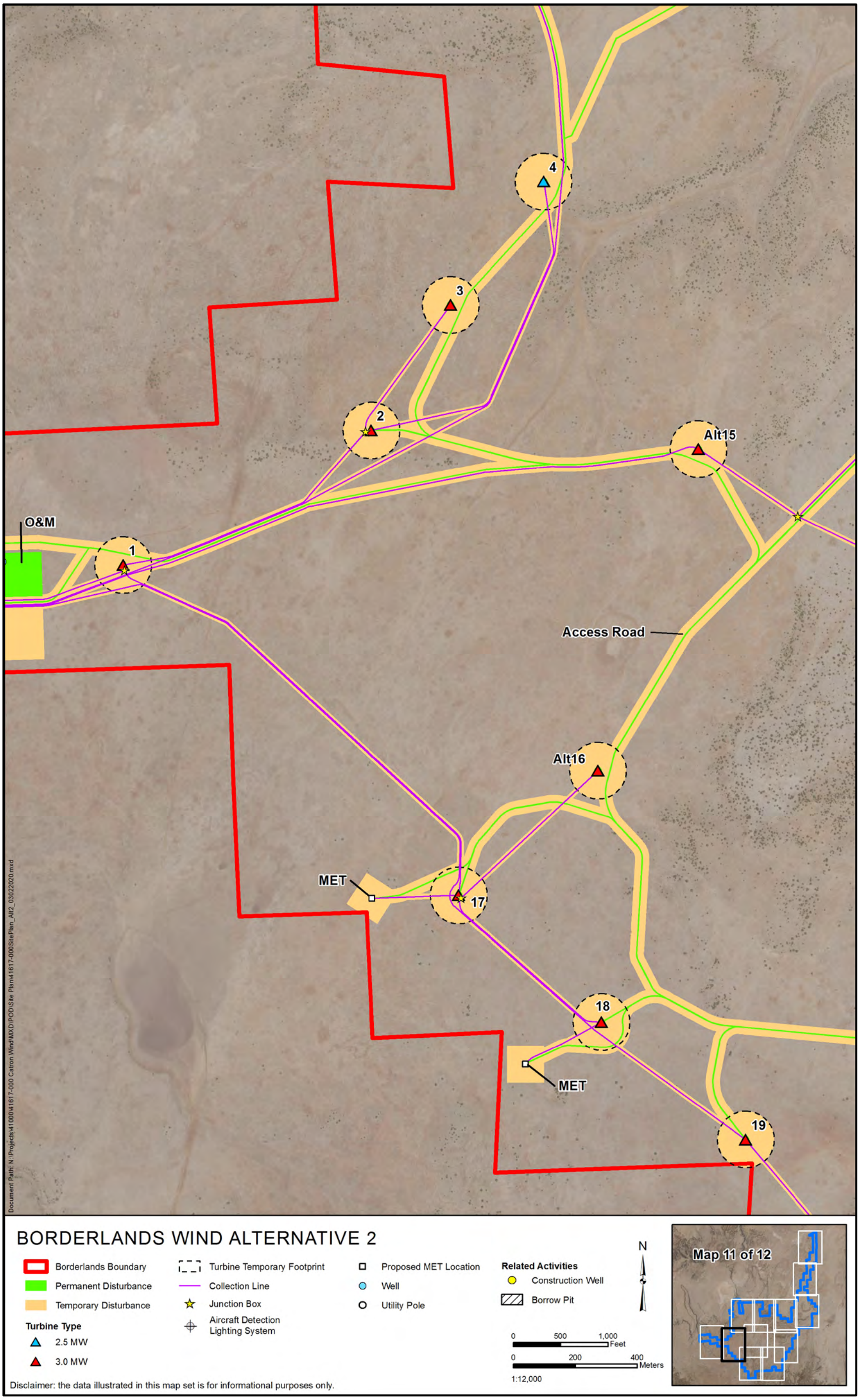

Figure 1k. Alternative 2 Site Plan (Map 11 of 12)

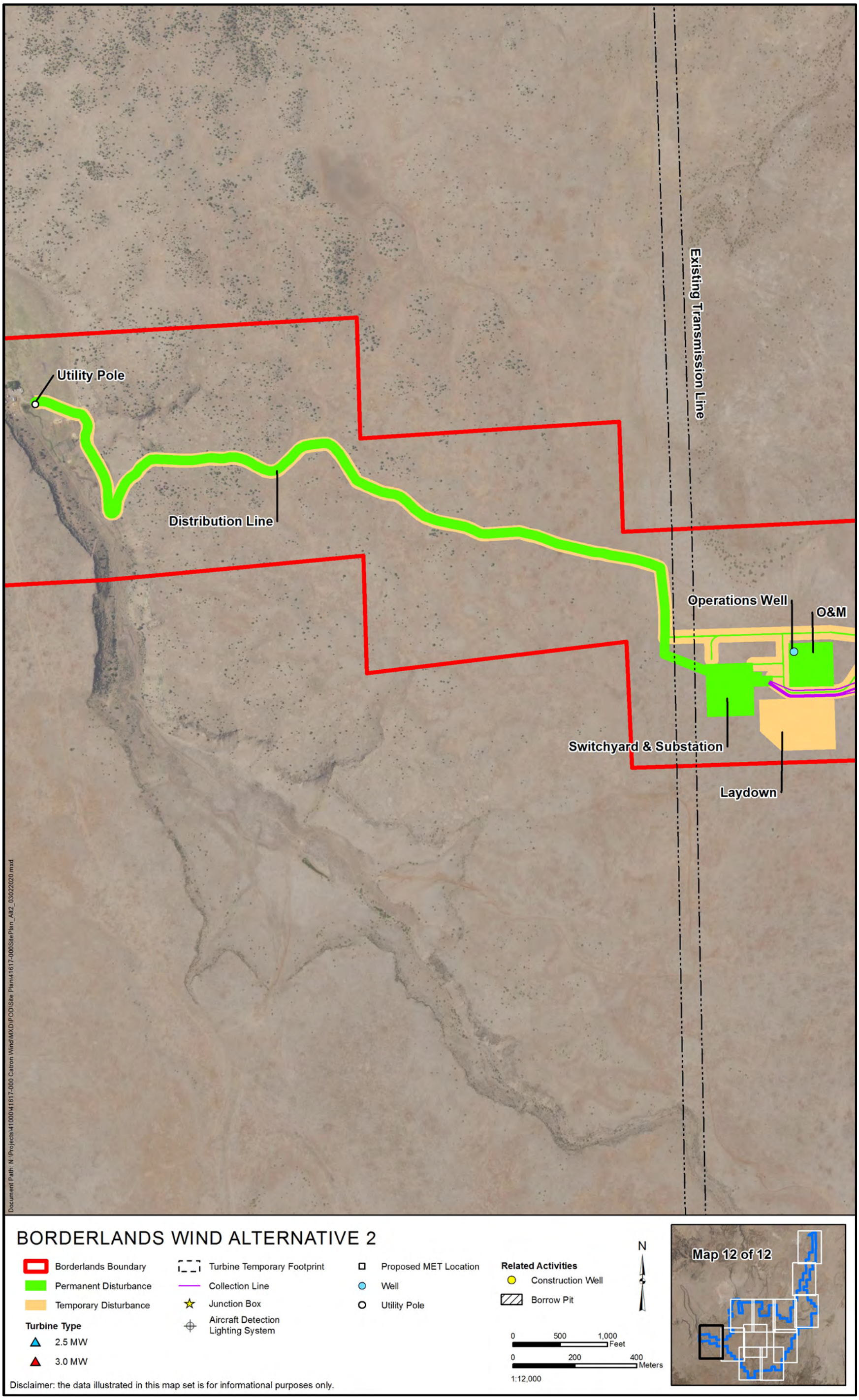

Figure 1l. Alternative 2 Site Plan (Map 12 of 12)

APPENDIX B

Legal Description

BORDERLANDS WIND PROJECT
APPENDIX B
LEGAL DESCRIPTION

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

BORDERLANDS BLM LEASE LEGAL DESCRIPTION

ALL THAT LAND LOCATED IN TOWNSHIP 1 SOUTH, RANGE 19 WEST, AND TOWNSHIP 1 SOUTH, RANGE 20 WEST, AND TOWNSHIP 2 SOUTH, RANGE 19 WEST, AND TOWNSHIP 2 SOUTH, RANGE 20 WEST, ALL OF THE NEW MEXICO PRINCIPAL MERIDIAN, COUNTY OF CATRON, STATE OF NEW MEXICO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

TOWNSHIP 1 SOUTH, RANGE 19 WEST

SECTION 10
ALL OF THE NORTHWEST, NORTHEAST AND SOUTHEAST QUARTERS OF THE NORTHWEST QUARTER LYING SOUTH OF STATE HIGHWAY 60, AND THE NORTHEAST, AND SOUTHEAST QUARTERS OF THE SOUTHWEST QUARTER, ALL IN SECTION 10;

SECTION 21
THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER, AND SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER, ALL IN SECTION 21;

SECTION 22
THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER IN SECTION 22;

SECTION 33
THE SOUTHWEST QUARTER, THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER, THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER, THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER, THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER, AND THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, ALL IN SECTION 33;

TOWNSHIP 2 SOUTH, RANGE 19 WEST

ALL OF SECTIONS 18 AND 19;

SECTION 4
GOVERNMENT LOTS 2 AND 3, THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER, THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, AND THE SOUTHWEST QUARTER, ALL IN SECTION 4;

SECTION 5
GOVERNMENT LOT 1, THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER, AND THE SOUTHEAST QUARTER, ALL IN SECTION 5;

SECTION 6
GOVERNMENT LOTS 10, 11, 14, 15, 16 AND 17, ALL IN SECTION 6;

SECTION 7
GOVERNMENT LOTS 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 AND 20, ALL IN SECTION 7;

SECTION 8
GOVERNMENT LOTS 1, 2, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 AND 20, ALL IN SECTION 8;

SECTION 9
THE NORTHWEST QUARTER, AND THE NORTHEAST QUARTER, ALL IN SECTION 9;

SECTION 17
THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER, THE NORTHEAST QUARTER, GOVERNMENT LOTS 1, 2, 3, AND 4, AND THE SOUTHWEST QUARTER, ALL IN SECTION 17;

SECTION 20
GOVERNMENT LOTS 1, 2, 3, 4 AND 5, ALL IN SECTION 20;

SECTION 30
GOVERNMENT LOTS 3, 5, 6, 7, 8, 9, 10, 11, 13, 14, THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER, AND THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, ALL IN SECTION 30;

TOWNSHIP 1 SOUTH, RANGE 20 WEST

SECTION 34
GOVERNMENT LOTS 2 AND 3, BOTH IN SECTION 34;

TOWNSHIP 2 SOUTH, RANGE 20 WEST

ALL OF SECTIONS 11, 12, 13, 14, 15, 22, 23, 24, 25, AND 26;

SECTION 1
GOVERNMENT LOTS 3, 4, 8, AND 9, THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER, AND THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, ALL IN SECTION 1;

SECTION 3
GOVERNMENT LOTS 2 AND 3, THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER, THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER, THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER, THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER, THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, AND THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER, ALL IN SECTION 3;

SECTION 10
THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, ALL IN SECTION 10;

SECTION 17
GOVERNMENT LOTS 5, 6, 7, AND 8, THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER, THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER, AND THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER, ALL IN SECTION 17;

SECTION 18
THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER, AND THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER, ALL IN SECTION 18;

SECTION 21
THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER, THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER, THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER, THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER, THE SOUTHEAST OF THE NORTHEAST QUARTER, AND THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER, ALL IN SECTION 21;

SECTION 27
GOVERNMENT LOTS 1, 2, 3, 8, AND 9, ALL IN SECTION 27;

SECTION 35
THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER, THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER, THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER, AND THE SOUTWEST QUARTER OF THE NORTHEAST QUARTER, ALL IN SECTION 35;

CONTAINING 13,920 ACRES, MORE OR LESS.

APPENDIX C

Alternatives Considered by Borderlands Wind

BORDERLANDS WIND PROJECT
APPENDIX C
ALTERNATIVES CONSIDERED BY BORDERLANDS WIND

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

The following alternatives were considered by Borderlands Wind for the Borderlands Wind Project, but are not analyzed in detail in this POD.

1 VRM CLASS IV TURBINE ARRAY LAYOUT

Under this alternative, all 40 wind turbine generators (WTGs) would be located within the designated Visual Resource Management (VRM) Class IV areas that are in the southern end of the project area near U.S. Forest Service–administered lands. The alternative would concentrate the "high" degree of impacts to visual resources in VRM Class IV areas, where such impacts can occur. Additionally, placing all turbines in the VRM Class IV area would minimize impacts to the potential eagle nest located in the northeastern corner of the project area, which is in VRM Class II (10 miles away from the VRM Class IV area). However, this alternative does not provide the standard amount of land and spacing required for commercial energy projects of this size. Therefore, fewer WTGs would be used for the project, and the project would not be able to output the 100 megawatts (MW) required to satisfy the Power Purchase Agreement (PPA) between Tucson Electric Power and NextEra Energy Resources, LLC.

2 VRM CLASS II TURBINE ARRAY LAYOUT

Under this alternative, some of the 40 WTGs would be located within the designated VRM Class II areas located in the northern portion of the project area that follows U.S. Route 60. This alternative would create a "high" degree of impacts to visual resources in VRM Class II areas, where such impacts cannot occur. This alternative would require a plan amendment to the Socorro RMP and approval by the BLM for impacts to occur in VRM Class II areas. Additionally, this alternative would minimize potential impacts to an eagle nest located in the northeastern corner of the project area by moving WTGs away from that area. Since the number of WTGs is the same as the Proposed Action, the terms of the PPA would be met.

3 250-MW TURBINE ARRAY LAYOUT

Under this alternative, the proposed project would deliver up to 250 MW of electricity. This could be achieved by either increasing the size or number of turbines, or a combination of both. The layout of this alternative would likely increase the size of some of the turbines and increase the overall number of WTGs within the project area. No WTGs would occur in VRM Class II areas within the project area. This alternative would increase the impacts to many affected resources within the project area. A site-specific layout would determine the affected resources and extent of impacts. Since the number of WTGs is at least as many as under the Proposed Action, the terms of the PPA would be met.

APPENDIX D

Stormwater Pollution Prevention Plan

BORDERLANDS WIND PROJECT
APPENDIX D
STORMWATER POLLUTION PREVENTION PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

CONTENTS

1 INTRODUCTION

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. A Stormwater Pollution Prevention Plan (SWPPP) is a required component of the POD accompanying the BLM ROW grant.

In compliance with criteria in the U.S. Environmental Protection Agency's (EPA's) Clean Water Act (CWA), all construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more, must obtain a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges (40 Code of Federal Regulations 122 and 123).

NPDES Construction General Permits are issued by the EPA in New Mexico. This permit is issued only after submittal of a Notice of Intent (NOI) for construction activities, and preparation of a SWPPP that describes how erosion and sediment transport to adjacent water bodies would be minimized. Measures to ensure construction activities comply with State and EPA requirements for stormwater management to be incorporated into the SWPPP are outlined in this plan framework.

A project specific SWPPP will be developed by the appropriate party and will obtain coverage under the appropriate Construction General Permit by filing an NOI and appropriate fee in accordance with the NOI instructions.

2 PURPOSE

The purpose of a SWPPP for the proposed project is to identify and implement stormwater pollution prevention measures to reduce the quantity of impacted runoff and to deal with runoff in a manner minimizing environmental impacts during construction of the project.

A SWPPP is needed to minimize the volume of contaminated runoff, including sediment runoff, and to implement the applicable Design Criteria (Proponent Constraints and Mitigation Measures) in a manner minimizing environmental impacts. The SWPPP will also spell out design features for environmental protection specific to storing and handling fuel and oil, cement mix, and other materials that may contaminate stormwater. Temporary stabilization methods (silt-fences, straw bales, etc.) are not guaranteed or fail-safe measures without regular maintenance and field inspection throughout construction activities. In addition to conventional methods of erosion control, there are numerous new and improved products and the construction contractor(s) is encouraged to review these progressive or improved materials in the development and implementation of a SWPPP. The proper implementation of Best Management Practices (BMPs) associated with a SWPPP is imperative during all construction activities. A list of BMPs will be developed in the final SWPPP.

Development and implementation of the SWPPP, and maintenance of the BMPs and other stipulations presented in the SWPPP, will provide the construction contractor(s) with the mechanisms for reducing soil erosion and minimizing pollutants in stormwater during construction. These activities will be conducted in an environmentally sensitive and responsible manner so no discharge of sediment or contaminants may be conveyed directly or indirectly to wetlands, waters of the U.S., or to waters of New Mexico.

3 NOTIFICATION

Before construction begins, Borderlands Wind will develop a SWPPP and will obtain coverage under the NPDES 2017 Construction General Permit by filing an NOI and appropriate fee with the New Mexico Environment Department (NMED) in accordance with NOI instructions. The construction contractor(s) will be responsible for implementing a site-specific SWPPP and will be required to perform routine inspections, recordkeeping, and any reporting throughout the duration of construction activities.

For the project, the main source of potential stormwater contamination would be erosion of soils from construction activities. The primary intent of the erosion and sediment control measures identified in the SWPPP is to control and minimize erosion at the source. The primary means to avoid erosion of soil from a construction site is to keep the amount of disturbed area to an absolute minimum. It will be the responsibility of the construction contractor(s) to implement erosion control measures where necessary to minimize pollutants in stormwater and to keep the project in compliance with the NMED regulations.

There are no impaired or outstanding waters identified in the project area. If during the environmental impact statement (EIS) analysis impaired or outstanding water are identified, within 0.25 mile of a disturbance area, the SWPPP must be submitted to NMED for review and approval and must include a sampling and analysis plan for analytical monitoring, unless the construction contractor(s) can clearly demonstrate there is no reasonable potential for construction activities to be a source of the identified pollutant.

A copy of the SWPPP shall remain at the construction site, and be readily available while the transmission line and substations are under construction, from the start of construction activities until completion of final stabilization for the project. The SWPPP is meant to be a controlled document that identifies potential impacts through inspections and maintenance and also serves as a measure of final site stabilization as part of the general permit requirements. Once construction is complete and final stabilization has been accomplished, the responsible party must file a notice of termination.

The identified responsible party must retain a copy of the SWPPP with copies of all inspections performed over the duration of project construction, and a set of construction site maps for the duration of project construction and for 3 years after the Notice of Termination, that delineate the following items:

- Areas of soil disturbance that have been stabilized
- Areas to be graded along with a time schedule
- Areas of potential soil erosion where control practices will be implemented
- Types of control practices and time schedule for implementation
- Locations of any postconstruction projects

3.1 Project Modifications

The identified responsible party shall maintain an up-to-date SWPPP and shall amend the SWPPP whenever there is a change in construction or operations that may affect the discharge of pollutants to surface waters. The SWPPP shall also be amended if it is in violation of the Construction General Permit, or has not achieved the general objective of eliminating pollutants in stormwater discharges, or if the NMED requires amendments. The SWPPP shall be amended, implemented, and changes communicated to relevant on-site construction personnel in a timely manner, but in no case more than 14 days after it has been determined the SWPPP is inadequate. All amendments will be dated and directly attached to the SWPPP.

3.2 Design Criteria (Proponent Constraints and Mitigation Measures)

Borderlands Wind has developed design criteria (proponent constraints and mitigation measures) to be incorporated as part of the project. The goal of these design critieria is to reduce or avoid potential environmental impacts resulting from project-related activities. The following design criteria will be implemented in the final SWPPP:

- Borderlands Wind will undertake restoration as soon as possible after completion of construction activities to minimize disruption of water flow regimes.
- Borderlands Wind will utilize erosion controls that comply with county, state, and federal standards practices such as jute netting, silt fences, and check dams will be applied near disturbed areas.
- Maintenance of cut-and-fill slopes, culverts, grade separations, and drainage areas would be performed as needed to control and correct erosion issues and manage functionality of drainage structures.
- Borderlands Wind will design roads so that changes to surface water runoff are avoided and erosion is not initiated.

4 MITIGATION MAINTENANCE, INSPECTION, REPAIR, AND MONITORING

The construction contractor(s) will be required to conduct routine maintenance and emergency repair on any structural controls, including the maintenance of erosion and sediment control measures and any required subsequent reporting. As part of the SWPPP, the construction contractor will be required to develop an inspection schedule and conduct routine inspections to identify conditions that could lead to discharges of chemicals or sediment. Schedules will be established for regular inspections of equipment and areas. Inspections of the construction site shall occur in accordance with the general permit applicable to each state to identify areas contributing to a stormwater discharge and to evaluate whether erosion control measures and BMPs are in place and functioning properly. During inspections, the construction contractor will also determine if erosion control measures and BMPs identified in the SWPPP are adequate and whether additional control practices are needed. All monitoring and inspection records produced in association with this SWPPP will be retained for a period of at least 3 years.

5 TRAINING

The construction contractor(s) will be responsible for the SWPPP implementation. The construction contractor(s) and/or the identified responsible party shall be responsible for amendments and revisions to the SWPPP. On-site construction personnel will be responsible for installation and maintenance of on-site erosion control measures and BMPs. Properly trained personnel are more capable of preventing spills, responding safely and effectively to accidents, and recognizing situations that could lead to stormwater contamination. The construction contractor will be responsible for familiarizing their personnel with the information contained within the SWPPP. Training meetings will need to be held for new personnel who join the project after the initial training has been provided. The purpose of these meetings will be to review the proper installation methods and maintenance of all erosion control measures to be used for the project. The monitoring/inspection program and all required maintenance and repair will be conducted by trained personnel.

6 POSTCONSTRUCTION STORMWATER MANAGEMENT

BMPs used to reduce pollutants in stormwater discharges after all construction phases have been completed at the sites will take into account local postconstruction stormwater management requirements, policies, and guidelines, as well as site-specific and seasonal conditions. Post-construction BMPs will be assessed during future maintenance. During maintenance, any areas disturbed by project installation that are observed to be eroding sediment into drainages will be assessed for the appropriate permanent mitigation measure to control sediment movement off the disturbed area. Disturbed areas will also be reclaimed as described in the Integrated Reclamation Plan (Appendix E).

APPENDIX E

Integrated Reclamation Plan

BORDERLANDS WIND PROJECT
APPENDIX E
INTEGRATED RECLAMATION PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

CONTENTS

TABLES

ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
BMP	best management practice
Borderlands Wind	Borderlands Wind, LLC
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
ECCM Plan	Environmental Construction and Compliance Monitoring Plan
GIS	geographic information system
GPS	global positioning system
HDPE	high-density polyethylene
LLC	Limited Liability Company
MW	megawatt(s)
NMDA	New Mexico Department of Agriculture
OHV	off-highway vehicle
O&M	operations and maintenance
Plan	Integrated Reclamation Plan
POD	Plan of Development
project	Borderlands Wind Project
ROW	right-of-way
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
U.S. 60	U.S. Route 60
USDA	U.S. Department of Agriculture

1 INTRODUCTION

1.1 Project Description

Borderlands Wind, LLC (Borderlands Wind), is proposing to construct, operate, and, when appropriate, decommission a new wind-powered electrical generation facility in Catron County, New Mexico. The proposed Borderlands Wind Project (the project) would be within a boundary that encompasses 16,650 acres of lands, with 13,861 acres being public lands administered by the Bureau of Land Management (BLM) Socorro Field Office. The remaining lands in the project area are managed by the State of New Mexico (1,168 acres) and by private landowners (1,621 acres).

The proposed project requires a new right-of-way (ROW) grant from the BLM for long-term commercial wind energy development. Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 megawatts (MW). The BLM assigned the project case file number NMNM136976. This Integrated Reclamation Plan (Plan) is a required component of the POD accompanying the commercial ROW grant. Terms and conditions specified in the Plan shall be binding upon the wind farm owner, Borderlands Wind, and any of its successors, assignees, or heirs. This Plan will only discuss reclamation efforts for the preferred alternative (Alternative 2) as described in Section 1.3 of *Borderlands Wind Project Plan of Development* (NextEra Energy Resources February 2020).

1.2 Regulatory Authority

Federal Land Policy and Management Act Title V requires an applicant for a ROW on BLM-administered lands to submit a plan that includes "rehabilitation for such right-of-way" and further requires the holder of the ROW grant "to furnish a bond, or other security" to secure all of the obligations, including reclamation, under the terms and conditions of the ROW grant. Regulations at 43 Code of Federal Regulations (CFR) 2805.12 detail the terms and conditions for reclamation and the bond securing that obligation on BLM-administered lands.

1.3 Statement of Responsibility

Borderlands Wind will provide a performance bond or other similar security to ensure compliance with the terms and conditions of the ROW authorizations and requirements of applicable regulatory requirements, including reclamation and administrative costs to BLM. The amount of the required bond will be determined prior to notice to proceed, based on site-specific and project-specific factors, including measures identified in this Plan. Financial bonds are implemented in accordance with BLM's final Solar and Wind Energy Rule (Title 43 CFR 2800 and 43 CFR 2880) and BLM Instruction Memorandum 2015-138.

As described in the Environmental Construction and Compliance Monitoring Plan (ECCM Plan) in Appendix P of the POD, during project construction the Agency Environmental Monitors will observe all aspects of construction and environmental compliance, including interim reclamation efforts. The Agency Environmental Monitors have oversight and comment privileges and the mandate to inspect/monitor the reclamation efforts and construction areas. As they provide oversight and review, the Agency Environmental Monitors will inspect and monitor the reclamation process and construction areas to ensure conformity with construction plans and environmental compliance. Should there be deviations from the construction plans or environmental compliance requirements, the Agency Environmental Monitor will be able to offer comments, provide suggestions for corrective actions, or process variance

requests (but will not direct construction activities). Once construction is completed, monitoring of reclaimed areas would be conducted as described in Section 2.4, Monitoring and Contingency Measures.

1.4 Reclamation Plan Purpose

The focus of the integrated reclamation framework is to outline reclamation and weed management and integrated pest management guidelines, with the goal of restoring areas that have been impacted by construction, operation and maintenance, and decommissioning. Reclamation procedures in this document describe the methodologies, monitoring, and reporting requirements for reclaiming disturbances associated with the project. The terms of this Plan will be applied to the project facilities located on BLM-administered lands, New Mexico State Land Office–administered lands, and private landowners. This process will be overseen by the BLM Authorized Officer.

This Plan also incorporates by reference the Stormwater Pollution Prevention Plan (SWPPP) that will be developed to comply with Clean Water Act requirements. The SWPPP (Appendix D of the POD) will include measures to address erosion and sedimentation that could result from ground-disturbing activities. Additionally, the ECCM Plan (Appendix P of the POD) ensures compliance with the project mitigation measures, including measures identified in this Plan.

1.5 Biological Resources Considered

As stated in Section 3.7.1 of the Draft Environmental Impact Statement (DEIS), there are 59 special status species (8 plant, 11 terrestrial wildlife, and 40 bat and bird species) that are known to occur or could potentially occur within the Alternative 2 area (BLM 2012, 2016a). As described in the *Borderlands Wind Project Draft Environmental Impact Statement and Resource Management Plan Amendment* (BLM 2019), several pre-disturbance inventories have been conducted that will provide the baseline information needed to support reclamation planning. Specifically, surveys have been completed to assess the potential for weed infestations, Gunnison's prairie dog colonies, and the presence of special-status plants. This information is summarized below.

1.5.1 *Special Status Plant and Wildlife Species*

SPECIAL STATUS PLANTS

As noted in Section 3.7.1.2 of the DEIS, a 100% survey for special status plant species was conducted within the disturbance footprint for Alternative 2 in July and August 2018. Although there are previously documented occurrences of Apache milkvetch within the Alternative 2 project boundary and in the surrounding area, none of the eight special status plants that could potentially occur within the Alternative 2 project footprint were observed during the 2018 survey.

GUNNISON'S PRAIRIE DOG COLONIES

Surveys were conducted to locate and delineate Gunnison's prairie dog colonies within 0.5 mile of project facilities (i.e., wind turbines, access roads, collection lines, and substation) in July 2018. Seventeen prairie dog colonies (entirely or partially) are within the Alternative 2 area. Approximately 264.4 acres of the 0.25-mile buffer zone would be temporarily impacted, and 40.1 acres of the 0.25-mile buffer zone would be permanently impacted. Additionally, approximately 13.4 acres of prairie dog colonies would be temporarily impacted, and 2.1 acres would be permanently impacted. See Section 3.7 of the DEIS for additional information.

NOXIOUS WEEDS

Between July 9 and August 15, 2018, SWCA Environmental Consultants (SWCA) (2018) conducted 100 percent vegetation surveys for all U.S. Department of Agriculture (USDA) and New Mexico Department of Agriculture (NMDA) noxious weeds within the disturbance footprint for Alternative 2. These surveys meet the requirement for pre-construction inventories of noxious weeds. One NMDA noxious species was found to occur, leafy spurge (*Euphorbia esula*). This species was recorded on private land and land administered by the BLM, along the main access road, Bill Knight Gap Road, and in a disturbed pasture on the eastern edge of the site.

1.6 Plan Variances

The Plan is intended to be dynamic and adaptive to site conditions and incorporate new technologies or methods as they become available. Changes to this Plan will be handled in accordance with the process outlined in this plan, the variance process described in the ECCM Plan (Appendix P of the POD), and the Record of Decision and ROW grant (if approved and issued). If Borderlands Wind constructs or decommissions the project in intervals, these plans would be coordinated with the BLM Authorized Officer to address the treatment of temporary facilities and the reclamation schedule. Adaptive management based on the results of monitoring reclaimed areas during operation and maintenance activities will be handled consistent with the variance process. However, in all cases, these adaptive management changes will be documents and approved by the Authorized Officer or his/her designees.

2 RECLAMATION IMPLEMENTATION

2.1 Areas of Disturbance

When permanently constructed, project features would include wind turbines and associated pad-mounted transformers at the base of each turbine, new and improved access roads, an underground electrical collection system and associated aboveground junction boxes, an electrical interconnection switchyard and substation; an operations and maintenance (O&M) facility, one well for use for the O&M facility, up to two permanent meteorological towers, and a distribution line from the existing Socorro Electric Cooperative, Inc., line to the substation. The temporary features that will be necessary for project construction include three construction laydown areas, one concrete batch plant, and high-density polyethylene (HDPE) water lines. An estimate of acreages to be disturbed, both temporary and permanent, is provided in Table 2-1. A detailed facility description, including the purpose of each of these facility components, is provided in Section 1.3 of the *Borderlands Wind Project Plan of Development* (NextEra Energy Resources February 2020).

Reclamation procedures will depend on the extent of alteration of the soils, vegetation, and topography caused by each construction activity. Final design and construction plans for the project will be used to determine the disturbance limits. All areas to be disturbed will have boundaries marked using stakes delineating the area. For more information, refer to the Flagging, Fencing, and Signage Plan (Appendix K of the POD).

Table 2-1. Facility Components and Temporary and Permanent Estimated Acreage for Alternative 2

Facility Components	Temporary Disturbance	Permanent Disturbance
Wind turbines and pad-mounted transformers	44 turbines permitted, 34 constructed 6.5 acres/turbine for 42 locations 7.1 acres for 1 location* 7.3 acres for another location* – 30 General Electric (GE) 3.0 – 4 GE 2.5 – 10 alternatives 287.4 acres	44 turbines permitted, 34 constructed 0.1 acre/turbine – 30 GE 3.0 – 4 GE 2.5 – 10 alternatives 4.4 acres
Access roads	47.9 miles total 36.8 miles of new roads 100–150 feet wide 845 acres	47.1 miles total 36.8 miles of new roads 1 mile of Bill Knight reroute 16 feet wide for most roads 24 feet wide for Bill Knight Gap Road (6.3 miles) 97 acres
Underground electrical collection system and communication lines	30.4 miles 60 feet wide 203.5 acres 11 junction boxes 0 acres Will be contained within the access road disturbance No new disturbance	0.1 acre for junction boxes All other areas would be reclaimed
O&M facility	5 acres	5 acres
Electrical interconnection switchyard and substation	7 acres	7 acres
Laydown/staging area for construction	61 acres	0 acres All temporary areas would be reclaimed
Concrete batch plant for construction	2 acres needed for concrete batch plant, completely within laydown/staging area	0 acres All temporary areas would be reclaimed
Meteorological towers	14 acres	0.1 acre
Distribution line	1.8 miles 100 feet wide 22.7 acres	1.8 miles 100 feet wide 22.7 acres
HDPE water lines	1.5 miles Will follow access road disturbance No new disturbance	0 acres All HDPE water lines would be removed following construction
Aircraft detection lighting system radar units and associated server rack houses	0 acres Will be contained within the access road disturbance No new disturbance	0.1 acre
Total (acres)	**1,445.6**	**136.4**

Note: All values are approximations. These values may change slightly during final engineering design.

* These locations have an "offset" larger temporary disturbance area to avoid cultural resource impacts.

2.2 Reclamation Goals and Objectives

The goal of reclamation is to restore disturbed areas to a condition approximating or equal to those that existed prior to the disturbance from construction, operations and maintenance, or decommissioning activities. Reclamation objectives emphasize the restoration of the natural vegetation, hydrology, and wildlife habitats. The Plan identifies revegetation standards, erosion and soil stabilization measures, and

noxious weed controls that will be implemented to ensure habitat is restored in disturbed areas. The Plan requires that reclamation occur as soon as practicable after completion of activities to reduce the amount of habitat loss at any one time and to speed up the recovery to natural habitats.

To meet reclamation goals and objectives, the restoration of disturbed areas emphasizes the following reclamation processes:

- Native plant revegetation
- Erosion control and soil stabilization (including SWPPP measures [Appendix D of the POD])
- Stormwater drainage (including SWPPP measures [Appendix D of the POD])
- Noxious weed control

Reclamation goals and objectives would be achieved through implementation of both Interim Reclamation and Final Reclamation.

2.2.1 *Interim Reclamation*

Interim Reclamation is implemented to reclaim areas disturbed during construction or operations and maintenance (temporary disturbance areas) throughout the life of the project. Areas disturbed that are not needed for operation and maintenance will be contoured to blend with the surrounding topography as much as practicable. Existing topsoil in place at the site will be spread over areas not needed for operations and revegetated with native seeds (see Section 2.3.1.2 for additional seed mixture information). In order to operate and maintain the project facilities, it may be necessary to drive, park, and disturb vegetation within areas where Interim Reclamation has been completed. Should this occur, the disturbed area will be reclaimed following use.

2.2.2 *Final Reclamation*

Final Reclamation would be implemented to reclaim permanent disturbance (Table 2-2) within 6 months of the termination of operations unless otherwise approved in writing by the BLM Authorized Officer. All created infrastructure and structures will be removed in accordance with the Decommissioning Plan (Appendix L of the POD). However, turbine foundations would be removed only to a depth of 3 feet because the excavation required to remove the full foundation would result in greater environmental damage than retaining the deep, non-leaching foundation material. Areas disturbed during final reclamation will be reshaped as closely as practicable to the original contour, covered with topsoil, and reseeded. All excavations to remove facilities must be closed by backfilling when materials are dry and free of waste and graded to conform to the surrounding terrain as closely as practicable. Roads must be reclaimed and collector lines removed unless BLM requests that roads be retained for other purposes and that collector lines remain buried to minimize the disturbance associated with their removal.

Table 2-2. Reclamation Objectives, Timing, and Activities by Sequence

Reclamation Sequence	Objectives	Timing	Activities
Interim Reclamation	Minimize disturbance by reclaiming areas not needed during operation and maintenance activities. Establish a healthy native plant community and restore wildlife habitat. Establish native vegetation cover in disturbed areas not needed during operation and maintenance that is self-sustaining, and where practicable, resistant to the introduction or spread of noxious weed species.	As soon as practicable after ground-disturbing construction or operations and maintenance activities have been completed.	Stabilize disturbed soil surface areas to reduce erosion and runoff to or below naturally occurring levels. Regrade disturbed areas to approximate pre-disturbance topography to the extent practicable. Reclaim disturbed areas with native vegetation species. Control noxious weeds on the disturbed areas and control the expansion of these species onto adjacent uninfected areas.
Final Reclamation	Establish a healthy native plant community and restore wildlife habitat. Establish native vegetation cover that is self-sustaining, and where practicable, resistant to the introduction or spread of noxious weed species.	As soon as practicable after initial reclamation of areas where further disturbance is unlikely during operations and maintenance or decommissioning activities. During decommissioning, within 6 months of the termination of operations unless otherwise approved in writing by the BLM Authorized Officer.	Same as Interim Reclamation.

2.2.3 *Reclamation Success Criteria*

The revegetation standard for all areas disturbed during project construction, operations and maintenance, or decommissioning will be relatively uniform native vegetation cover. The goal for reclaimed native vegetation cover (referred to as reclamation success criteria) will be 70% of the native background vegetation cover for the area. These reclamation success criteria are applicable to all disturbed areas for Interim and Final Reclamation.

The 70% native vegetation reclamation success criteria will be used to assess whether the reclamation requirements are being met. These reclamation success criteria are defined as reclaimed vegetation reaching (on average) 70% of the native background vegetation cover within disturbed areas not covered by structures. When background native vegetation cover is less than 100%, the 70% reclamation success criteria will be adjusted as follows: if the native vegetation cover is 50%, then 70% of 50% ($0.70 \times 0.50 = 0.35$) requires 35% total native cover for final stabilization.

The vegetation community established on the reclaimed areas must be capable of persisting without continued intervention, excluding noxious weed management. Persistence of reclaimed vegetation will be determined through qualitative monitoring of reclamation areas (in Years 1–5 of reclamation) and reclamation success determined using ocular estimates (in Year 5 of reclamation), as described in Section 2.4. If in Year 5, reclaimed areas do not meet the 70% reclamation success criteria, the BLM Authorized Officer and Borderlands Wind will discuss adjustments to the reclamation success criteria or the use of adaptive management procedures to address revegetation challenges.

During the reclamation process, the project area will remain open to multiple-use activities, including recreation uses and grazing. Cattle grazing and off-trail or otherwise unauthorized off-highway vehicle (OHV) traffic have the potential to impede reclamation efforts. Cattle may trample or preferentially

consume new growth from reclaimed vegetation, while OHV traffic can destroy vegetation and disrupt surface soils. Borderlands Wind will not be directly responsible for outside (e.g., non-project) disturbances that impact reclamation efforts.

2.3 Project Activities

Reclamation will apply the Reclamation Standards, including best management practices (BMPs) and designated seed mixes, for all project phases and in all reclamation areas. These methods are detailed in the sections below, identifying specific requirements for preconstruction, construction, operations and maintenance, and decommissioning phases of the project.

2.3.1 *Reclamation Standards*

BEST MANAGEMENT PRACTICES

BMPs and other strategies will be implemented on a site-specific basis to mitigate effects and increase reclamation success for all applicable project phases. BMPs included in the Final Environmental Impact Statement, and as detailed on the project SWPPP (Appendix D of the POD) address the site-specific requirements of the project and local environment.

The following list presents the Borderlands Wind proposed BMPs for reclamation standards; however, Borderlands Wind may consult with the BLM and other agencies to determine alternative approaches and BMPs for reclamation standards and success. The BMPs include the following from the *Borderlands Wind Project Draft Environmental Impact Statement and Resource Management Plan Amendment* (BLM 2017):

- Borderlands Wind, LLC will salvage and reapply during reclamation, the topsoil from all excavations and construction activities.
- Borderlands Wind, LLC will reclaim all areas of disturbed soil using weed-free native grasses, forbs, and shrubs. Reclamation activities will be undertaken as early as possible on disturbed areas.
- Borderlands Wind, LLC will undertake restoration in accordance with this plan as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.
- Borderlands Wind, LLC will remove all turbines and ancillary structures.
- Borderlands Wind, LLC will reclaim (using weed-free native shrubs, grasses and forbs) all areas of disturbed soil.
- Borderlands Wind, LLC will ensure that the vegetation cover, composition, and diversity is restored to values commensurate with the ecological setting.
- New Mexico-certified noxious weed-free seed shall be used and tested prior to purchase and planting in the rehabilitation process, all BLM SFO RMP Noxious weeds stipulations shall be followed.
- Disturbed areas should be contoured to blend with the natural topography. Blending is defined as reducing form, line, and color contrast associated with the surface disturbance. Disturbance should be contoured to match the original topography, where matching is defined as reproducing the original topography and eliminating form, line, and color caused by the disturbance, as much as possible.

- Interim reclamation should be implemented concurrent with construction and site operations to the fullest extent possible. Final reclamation actions shall be initiated within 6 months of the termination of operations unless otherwise approved in writing by the authorized officer.
- Fill material should be pushed into cut areas and up over back slopes. Depressions should not be left that would trap water or form ponds unless the authorized officer has determined that dips or depressions may be used to assist reclamation efforts and seed propagation.
- Reclaimed soil would be free of contaminants and would have adequate depth, texture, and structure to provide for successful vegetation reclamation. Vegetation reclamation would be considered successful when healthy, mature perennials are established with a composition and density that closely approximates the surrounding vegetation as prescribed by the BLM, and the reclamation area is free of noxious weeds.
- If necessary after reclamation, a BLM-standard barbed wire fence would be constructed to exclude livestock for a minimum of at least two successful growing seasons. Do not disturb, or leave inoperable at any time, livestock improvements including but not limited to pipeline systems, fences, or water catchments. If they must be disturbed, consult with the grazing allottee and come to a favorable resolution immediately.
- Foundations should be removed to a minimum of three feet below surrounding grade, and covered with soil to allow adequate root penetration for native plants, and so that subsurface structures do not substantially disrupt ground water movements. Three feet is typically adequate for agricultural lands. Wind turbines that are no longer in operation and overhead distribution lines that are no longer needed should be removed.
- All seed shall be certified noxious weed free. Areas would be monitored to determine the success of re-vegetation, the presence of noxious weeds, and would be reseeded if necessary.
- Site Development: Incorporate native plant species into interim and long-term habitat restoration plans for proposed sites. Avoid or minimize negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species. For example, avoid attracting high densities of prey animals (rodents, rabbits, etc.) used by raptors.
- Avoid seeding techniques that could attract birds.
- Potential for creating temporary or permanent habitats suitable for rodents, such as rock piles, eroded slopes with openings or overhangs, or stockpiling of construction debris will be avoided.
- Restoration and rehabilitation efforts within prairie dog habitat would utilize seed mixes conducive to maintaining a native grassland.
- Foundations and trenches shall be backfilled with originally excavated material as much as possible. Excess excavation materials shall be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.
- For soil disturbing actions that would require reclamation, soil and/or seed stocks may be salvaged and stockpiled prior to surface disturbances. Seed stock piles shall be windrowed and protected from wind erosion if they are to be left for more than one growing season. Recontour all disturbed areas to blend as seamlessly as possible with the natural topography prior to revegetation. Rip all compacted portions of the disturbed soil to an appropriate depth based on site characteristics. Establish an adequate seed bed to provide good seed-to-soil contact. Note that stockpiling top soil would increase disturbance areas at road and turbine assembly areas.

- Surface water flows should be restored to pre-disturbance conditions, including removal of stream crossings, roads, and pads, consistent with storm water management objectives and requirements.
- Operators shall develop a plan for control of noxious weeds species, which could occur as a result of new surface disturbance activities at the site. The plan shall address monitoring, education of personnel on weed identification, the manner in which weeds spread, and methods for treating infestations. The use of certified weed-free mulching shall be required. If trucks and construction equipment are arriving from locations with known weed problems, a controlled inspection and cleaning area shall be established to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.
- If fill dirt or gravel is brought onto public lands, the source must be noxious weed-free.
- Construction sites should be monitored for the life of the project for the presence of noxious weeds (includes maintenance and construction activities). If weeds are found, the Socorro Field Office would be notified and it would determine the best method for the control of the particular weed species.
- All seed shall be certified noxious weed-free. Areas would be monitored to determine the success of revegetation and the presence of noxious weeds, and would be reseeded if necessary.
- Consider livestock quarantine, removal, or timing limitations in weed-infested areas.
- All seed, hay, straw, mulch, or other vegetative material transported and used on public land for site stability, rehabilitation, or project facilitation shall be certified noxious weed-free and free of all reproductive parts upon the passage of a weed-free law in the State of New Mexico.
- It is recommended that all vehicles, including off-road and all-terrain and equipment, traveling in or out of weed-infested areas be cleaned before and after use on public land.
- Additional BMPs may be developed from the 2007 and 2016 Vegetation Management EISs and the BLM 1740-2 Handbook.
- Strip and stockpile topsoil ahead of construction of new roads, if feasible. Reapply soil to cut and fill slopes prior to revegetation.
- Fill material should be pushed into cut areas and up over back slopes. Depressions should not be left that would trap water or form ponds unless the Authorized Officer has determined that dips or depressions may be used to assist reclamation efforts and seed propagation.
- Avoid impacts to wetlands by using appropriate erosion control measures to limit runoff to nearby water sources.

SEED MIXTURE

Seed mixtures will be used in revegetation procedures to establish species diversity, composition, and ground cover appropriate for each desired plant community. Only approved, certified weed-free, tested pure live seeds will be used. The seed mixture selection will consider commercial availability and price, growth form, seasonal variety, and prevailing dominant and locally adapted species. The seed mixture may be adjusted or revised (based on site conditions, initial germination success, or native seed availability). Two appropriate seed mixtures were selected by the BLM and are provided below. Seed mixtures will be applied as appropriate in reclamation activities throughout all project phases.

Project Seed Mixture

This seed mixture would be used within the entire project area except within prairie dog habitat (defined below). This seed mixture would be approved by the BLM.

Prairie Dog Habitat Seed Mixture

This seed mixture would be used within the prairie dog colonies and the associated 0.25-mile buffer (approximately 277.8 acres). This seed mixture would be approved by the BLM.

2.3.2 *Pre-Construction/Construction Activities*

Limitations of areas to be disturbed would be clearly defined prior to construction of roads, collection system, and turbine location to support resource protection and to guide reclamation implementation. Limits would be staked or flagged, and other methods for construction staking would be used for the road alignment and turbine construction. The limits of the ROW would also be flagged, where necessary. Construction activities would be confined to these areas, preventing effects on sensitive areas. Flagging and stakes that are damaged during construction would be repaired or replaced prior to resuming construction. When construction and reclamation are complete, stakes and flagging would be removed.

Prior to the initiation of any ground surface disturbance, an on-site meeting would be held with Borderlands Wind and BLM to discuss the approach to the reclamation program, noxious weed management, mulch and topsoil salvage, overall project schedule, and areas to be avoided during the surface-disturbing activity. Modifications to processes/documents/BMPs described in this plan would be documented in variance requests presented in the ECCM Plan (Appendix P of the POD). This meeting would be consistent with the ECCM Plan, and Borderlands Wind would prepare and submit a memorandum to the BLM Authorized Officer summarizing the items discussed at the meeting.

CLEARING AND GRADING

Clearing and grading of project site components and ancillary facilities would be required and would be limited to those areas identified previously (see Section 2.1). Borderlands Wind anticipates that clearing and grading would occur in the following areas: the access road network (including the U.S. Route 60 [U.S. 60] and Bill Knight Gap Road intersection), the O&M facility, wind turbine generator pads, the substation and switchyard, the construction laydown areas, and the underground collection system. Additional site clearing and grading would occur at the meteorological tower locations; however, this is expected to be minimal. Bulldozers, road graders, or other standard earth-moving equipment would be used for clearing and grading. The land clearing and grading process would be performed in accordance with BLM policies and a State-approved SWPPP (Appendix D of the POD).

The total acreage to be temporary cleared and graded, and the acreage to remain permanently disturbed during operations and maintenance is presented in Section 2.1. The clearing and grading would follow applicable BMPs (see Section 2.3.1.1 of this Plan and also Appendix B of the DEIS).

SOIL HANDLING

Topsoil will be salvaged during construction to use for site preparation and support future reclamation efforts. Components of soil management will include soil handling, landscape reconstruction, and surface runoff and erosion control.

For each surface-disturbing activity, topsoil will be salvaged and stockpiled within the limits of disturbed areas. Proper salvaging techniques involve delineating soil type and determining soil depth. Components of soil handling will include the identification, erosion protection, placement, and incorporation of salvaged soil stockpiles. All topsoil and appropriate subsoil will be properly maintained through clearly identifying, delineating, and segregating all salvaged topsoil and subsoil based on a site-specific soil evaluation, including depth, chemical, and physical properties.

Placement of stockpiles will minimize disturbance during interim and final reclamation. Topsoil stockpiles for linear features (e.g., roads, collector lines) will be stored adjacent to the disturbed area on native soil and seeded with the approved seed mixture if not re-spread within 6 months of construction. Other soil and vegetation stockpiles will be stored within the limits of the staked disturbance area. All stored soil material will be protected from erosion, degradation, and contamination. Soil stabilization will be implemented as soon as practicable on all topsoil and/or spoil windrows and stockpiles. Vegetation removed during construction can be stockpiled along with topsoil to provide erosion protection, maintain natural inocula, and incorporate native seeds and organic matter. The soil handling BMPs are discussed in Section 2.3.1.1 and will be followed during interim and final reclamation.

2.3.3 *Operations and Maintenance Activities*

BLM will require reclamation and monitoring of areas disturbed during operation and maintenance. Areas disturbed during operation and maintenance will require implementation of BMPs and application of seed mixtures (see Section 2.3.1), the reclamation procedures described in Section 2.3.2, and the monitoring and contingency measures described in Section 2.4.

In the event that actions are needed to address emergency situations, crews will be dispatched to deal with the emergency. Emergency response procedures will be implemented for the following events discussed in the *Borderlands Wind Project Health and Safety Plan* (Appendix F of the POD). It will be the responsibility of the Site/Plant Leader to assess a developing emergency situation and initiate the appropriate actions to protect personnel, the surrounding environment, and plant equipment from damage.

Reclamation procedures following an emergency will be similar to those prescribed during construction and must meet the reclamation success criteria standards (as determined through qualitative reclamation surveys; see Section 2.4). Borderlands Wind will notify the BLM in writing within 24 hours of the emergency and provide a description of the emergency response and associated impacts.

2.3.4 *Decommissioning Activities*

Project decommissioning is described in the Preliminary Decommissioning Plan (see Appendix L of the POD). Areas disturbed during decommissioning activities will require implementation of BMPs and seed mixtures (see Section 2.3.1), the reclamation procedures described in Section 2.3.2, and the monitoring and contingency measures as described in Section 2.4. Decommissioning activities for the project would include the following:

1. **Modification and removal of public roads**: Any disturbed roadway areas will be reclaimed to preconstruction condition using thorough decompaction techniques and reapplication of topsoil and revegetation. After all hauling activities are completed, the public roads will be restored to pre-decommissioning condition.
2. **Preparation and removal of crane paths:** Following disassembly of the wind turbines, the temporary crossings will be removed, and the crossing areas will be restored to pre-decommissioning conditions. The soil on the crane paths will be decompacted and restored to a tillable condition and revegetated as necessary.

3. **Preparation and removal of crane pads:** Temporary alteration of turbine pads may be necessary to facilitate crane movements during decommissioning of aboveground turbine components. If such alteration is necessary, topsoil from the additional disturbed areas will be stripped and isolated for reapplication after turbines have been dismantled and crane pads removed. Disturbed areas will be restored to preconstruction condition by regrading the area, reapplying topsoil, and decompacting the subsoil and topsoil.
4. **Wind Foundation Removal:** Topsoil and aggregate from the area surrounding the foundations will be stripped, segregated, and stockpiled near the work site for reapplication during restoration. Following the removal of turbines and foundation pedestals, the resulting voids will be backfilled with clean native subsoils and compacted to a density similar to surrounding subsoils. Topsoil will then be reapplied to the site and graded to blend with the surrounding grade and preserve preexisting drainage patterns. The soil and topsoil will be decompacted and restored to a tillable preconstruction condition and reseeded to promote revegetation. If necessary, the site will be temporarily or permanently revegetated, depending on location, time of year, and anticipated post-decommissioning land use.
5. **Access Road and Meteorological Tower Removal:** During road removal, the topsoil adjacent to both sides of the roads will be stripped and stockpiled in a windrow paralleling the road. Following removal, topsoil will be reapplied and graded to blend with surrounding contours to promote preconstruction drainage patterns. Topsoil to cover the access roads and meteorological tower rings will be acquired from the areas where it was stockpiled (or wasted) during the original construction. Since topsoil stayed with each landowner in the construction of the wind farm, there will be adequate topsoil to restore each area to its preconstruction condition. The soil and topsoil will then be decompacted to a minimum depth of 18 inches and restored to preconstruction tillable condition and revegetated.
6. **Underground Electrical Collection Lines:** The majority of underground cables will be left in place, non-functional and well below the depth farming implements impact. Following cable, junction box, and route marker removals, disturbed areas will be restored by the reclamation methods described above for access roads, including the reapplication of topsoil to match the surrounding grade and preserve or promote preexisting drainage patterns and revegetated as necessary.
7. **Substation:** Substation infrastructure including permanent stormwater treatment facilities, if any, such as retention basins, will be removed. Topsoil will be reapplied to blend with the surrounding grade to promote preconstruction drainage patterns. Soil and topsoil will be decompacted and the site will be restored to the preconstruction tillable condition and revegetated.
8. **Operations and Maintenance Facility:** If demolition is undertaken, all associated materials, concrete, and rock will be removed from site using backhoes and bulldozers and hauled off-site in dump trucks. Within the disturbed area, surfaces will be graded to blend with the surrounding grade to promote existing drainage patterns, and topsoil will be reapplied. The topsoil will be decompacted and restored to a preconstruction tillable condition and revegetated.

2.4 Monitoring and Contingency Measures

After construction of the project is completed, Borderlands Wind will be responsible for monitoring reclaimed areas until reclamation success criteria (Section 2.2.3) are met. Operations and maintenance monitoring for the project will include qualitative surveys and ocular estimates of native vegetation cover. The goals and objectives of monitoring are as follows:

- evaluate whether reclamation success criteria are being met in areas disturbed by the project through qualitative surveys of vegetation conditions and ocular estimates of native vegetation cover;
- assess the effectiveness of temporary and permanent erosion-control structures (e.g., water bars) to ensure the stability of the ROW and to ensure that runoff is naturally controlled in place, with no accelerated erosion or washouts, in accordance with the SWPPP (Appendix D of the POD);
- monitor and assess noxious weeds, in accordance with Section 3.0, Integrated Weed and Pest Management Plan; and
- identify the need for adaptive management intervention (if reclamation is unsuccessful in some areas).

2.4.1 *Reclaimed Area Monitoring*

Borderlands Wind will annually inspect and review the condition of disturbed areas associated with the project for a minimum of 5 years (minimum of 5 years of qualitative monitoring [Years 1–5] and a minimum of 1 year of ocular estimates of native vegetation cover [Year 5]), according to the stipulations and time frames specified in Table 2-3. The monitoring protocol should follow the methods detailed below, but any significant adjustments to this protocol will be provided by Borderlands Wind and approved by the Authorized Officer prior to survey implementation. Borderlands Wind or its representative will apply this protocol to determine the success and effectiveness of reclamation efforts and noxious control. Adaptive management measures may be recommended, if necessary, and discussed with the Authorized Officer. However, implementation of adaptive management methods, other than those described herein, would require written approval from the Authorized Officer or designee.

RECLAMATION MONITORING SCHEDULE

Reclamation monitoring will occur in the peak growing season (to align with the period of maximum vegetative production) until the area has met the success criteria, following the requirements and schedule outlined in Table 2-3. Monitoring reclaimed areas would begin during the first growing season (Year 1) following reclamation implementation.

Table 2-3. Reclamation Objectives, Timing, and Activities

Year*	Activity	Goal or Target
1	**Qualitative surveys of vegetation condition.** Surveys should identify general site conditions, the presence of germinating native or noxious species, and the need for vegetation management interventions (if any).	Surveys are used to document the need for management intervention to boost reclamation or to treat weed infestations.
2	**Qualitative surveys of vegetation condition.**	Surveys are used to document the need for management intervention to boost reclamation or to treat weed infestations.
3	**Qualitative surveys of vegetation condition.**	Surveys are used to document the need for management intervention to boost reclamation or to treat weed infestations.
4	**Qualitative surveys of vegetation condition.**	Surveys are used to document the need for management intervention to boost reclamation or to treat weed infestations.

Year*	Activity	Goal or Target
5	**Qualitative surveys of vegetation condition. Ocular estimate surveys of native vegetation cover.** Ocular estimate surveys of native vegetation cover will be conducted to determine whether reclamation success criteria have been met.	If reclamation success criteria have (on average across the project) met the 70% native cover reclamation success criteria (according to ocular estimates), no additional surveys or interventions will be required. If reclamation success has not been met, the 70% success criteria, and all reasonable reclamation methods have been attempted, the BLM may consider revising reclamation success criteria. Borderlands Wind may also implement additional adaptive management measures in consultation with the BLM.

* Year is defined by the number of growing seasons from initial reclamation implementation, with Year 1 being the first growing season post-reclamation.

RECLAMATION MONITORING METHODS AND ANALYSES

Reclamation monitoring will include qualitative data collection to inform reclamation and weed treatment management interventions during surveys Years 1–5 (see Table 2-3) and ocular estimates of native vegetation cover in Year 5 to determine whether reclamation success criteria have been achieved. Both qualitative surveys and ocular estimates will be conducted across the project area, generally following the methods detailed below. However, should methods or metrics be identified to better assess the need for management intervention or to estimate reclamation success, these techniques may be adapted.

Qualitative Surveys

Qualitative surveys are designed to be relatively rapid assessments that capture 1) presence and relative density of noxious weeds,[1] 2) significant soil erosion, and 3) relative revegetation success. These surveys should cover the entire project area and would be conducted by driving all of the access roads and turbine pads by truck or all-terrain vehicle. During the survey, locations of noxious weed infestations, areas with relatively limited revegetation success (i.e., low native recruitment), and significant erosion will be mapped and recorded with a global positioning system (GPS) unit. For the purposes of GPS records, the relative density of the noxious weed infestations can be recorded into density classes. Areas where revegetation success is limited can also be mapped into classes (high, medium, or low native recruitment). These data will be used to produce weed and revegetation maps that identify any areas where weed treatment or follow-up reclamation treatment may be needed. Qualitative weed surveys should be timed to capture weed germination early in the species' growing season to support effective herbicide or manual treatment, in accordance with methods outlined in Section 3.0. Reclamation qualitative surveys should align with the timing of maximum vegetative production.

Ocular Estimates of Native Vegetation Cover

Ocular estimates of native vegetation cover will be performed across the project area to determine whether the project has, on average, reached its 70% reclamation success criteria (see Section 2.2.3). In this method, baseline native vegetation cover will be approximated through ocular estimates to calculate the 70% restoration success criteria (as described in Section 2.2.3). Depending on site conditions, success criteria may vary across the project according to vegetation community composition or soil type. Surveys will be conducted by driving all of the access roads and turbine pads by truck or all-terrain vehicle (similar to qualitative surveys). Surveyors will map out the entire project area according to cover classes of native vegetation (percent native cover classes). These cover classes will be compared with restoration success criteria (for each soil or vegetation type, if necessary) to determine whether

[1] Surveys will focus on mapping noxious weed infestations. The presence of invasive species will be noted during surveys and reported to the BLM.

individual portions of the facility have reached these criteria. These results will be aggregated to determine whether the project has met its success criteria, on average, across the entire facility.

2.4.2 *Adaptive Management*

If the Authorized Officer's and Borderlands Wind's evaluation of monitoring results indicates that sites disturbed by project activities are not meeting reclamation success criteria, adaptive management measures beyond those described here may be implemented as soon as practicable. Adaptive management measures will be selected based on discussions with the Authorized Officer and Borderlands Wind and documented in a memorandum that describes the rationale, area, and specific adaptive management measure implemented. Adaptive management implemented based on the results from monitoring reclaimed areas.

3 INTEGRATED WEED AND PEST MANAGEMENT PLAN

"Noxious weed" is a legal term, meaning any plant officially designated by a federal, state, or local agency as injurious to public health, agriculture, recreation, wildlife, or property. The more general term "invasive species" refers to species that are non-native to the ecosystem under consideration and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health. Invasive plant species include those that are legally designated as noxious, as well as additional species that may be considered noxious in some areas but not others, and other non-native species that are already widespread.

BLM Manual 9015 – *Integrated Weed Management* (BLM 1992) contains guidelines that ensure BLM compliance with all federal laws regulating noxious weeds and sets forth the BLM's policy relating to the management and coordination of noxious weed activities on BLM-administered lands. The BLM Integrated Weed Management manual directs the BLM to manage noxious weeds and undesirable plants on BLM lands by preventing establishment and spread of new infestations, reducing existing population levels, and managing and controlling existing stands (BLM 1992). Required management for ground-disturbing actions includes determining the risk of spreading noxious weeds associated with the project and ensuring that contracts contain provisions that hold contractors responsible for the prevention and control of noxious weeds caused by their operations if the activity is determined to be moderate to high risk (i.e., Class A weeds as defined by the BLM).

This Plan includes a discussion of 1) noxious weed species and their potential to occur, 2) the noxious weed inventory, 3) noxious weed monitoring, and 4) weed management measures.

There is the potential for noxious weed seed transport and establishment during project construction activities because vehicles can cross through lands that lack noxious weeds after driving through lands that contain noxious weeds and distribute seeds, thereby spreading the species. This could lead to potential noxious weed establishment.

To minimize the introduction of undesirable plant species into the project area, BMPs would be implemented as described in Section 2.3.1.1.

3.1 Federal and New Mexico State Noxious Weeds

The noxious weeds evaluated in this plan include the federal list of noxious weeds maintained by the USDA (2020a) and the NMDA (2016) list of noxious weeds.

Nearly all noxious species in New Mexico are found on rangelands and wildlands. Noxious species of weeds may result in reductions in available forage for wildlife and livestock. NMDA is directed by the Noxious Weeds Management Act to create a noxious weed list for the state, educate the public about these noxious weeds, and identify methods of control for specific species. NMDA coordinates with local, state, and federal land managers, as well as private landowners, about weed management practices. The New Mexico noxious weed list was last updated in 2016, and all the species in the list (NMDA 2016) would be covered under this Plan.

3.2 Noxious Weed Inventory

Between July 9 and August 15, 2018, SWCA (2018) conducted 100 percent vegetation surveys all USDA and NMDA noxious weeds within the disturbance footprint for Alternative 2, which meets the need for preconstruction noxious weed surveys. One NMDA noxious species was found to occur: leafy spurge (*Euphorbia esula*). This species was recorded on private land and land administered by the BLM, along the main access road, Bill Knight Gap Road, and in a disturbed pasture on the eastern edge of the site. The approved Resource Management Plan for the Socorro Field Office indicates that only the weeds known to occur on BLM-managed public land within Catron County were saltcedar (*Tamarix* spp.) and Russian olive (*Elaeagnus angustifolia*) (BLM 2010).

Because the potential to occur and distribution of noxious weeds near the project vicinity is not known, all species on the NMDA and USDA noxious weed species lists that are known to occur within Catron County, New Mexico, are included in Table 3-1. Table 3-1 also includes the habitat preferences and best control methods for each species. Because the spread of noxious weeds into new areas can be rapid and unpredictable, it is possible over the life of the project that species that do not currently occur in Catron County may move into this county. Thus, noxious weed inventory, mapping, and control would include all federally and New Mexico listed noxious weed species and would not be limited only to those listed in Table 3-1.

The USDA federal noxious weed list contains 107 genera and species of plants; however, only one is known to occur in Catron County. There is a total of 43 NMDA noxious weed species listed in New Mexico (and 7 on the watchlist). Of these, 12 are known to occur in the project area or currently occur in Catron County, New Mexico. The species that are known to occur in the project area or that are known to occur in Catron County are included in Table 3-1, along with the habitat preferences and best control methods for each species.

Table 3-1. Noxious Weed Species that Are Known to Occur in Catron County with Potential to Occur in the Project Area

Scientific Name	Common Name	Status	Potential for Occurrence in Project Area	Habitat	Best Control
Acroptilon repens	Russian knapweed	NMDA (Class B)	May occur	Pastures, degraded croplands, rangeland, roadsides, riparian areas, and irrigation ditches.	1, 2, 4
Cardaria spp.	Hoary cress	NMDA (Class A)	May occur	Moist areas including irrigated pastures, rangeland; also roadsides and ditches.	4, 6, 8, 15
Carduus nutans	Musk thistle	NMDA (Class B)	May occur	Open areas, waste areas, streambanks, ditches, and roadsides.	4, 8, 9, 14, 17
Centaurea stoebe ssp. *Micranthos*) (=*Centaurea biebersteinii*)	Spotted knapweed	NMDA (Class A)	May occur	Disturbed areas (e.g., roadsides, ditches, fields, deserts, rangelands, and grasslands).	2, 4, 6, 14, 17
Cirsium vulgare	Bull thistle	NMDA (Class B)	May occur	Disturbed areas (e.g., roadsides, ditches, streams, fences). Can be confused with native thistles.	4, 9, 8, 17
Conium maculatum	Poison hemlock	NMDA (Class B)	May occur	Open fields, pastures, ditches, riparian areas and crop fields. It extremely toxic to humans and livestock.	4, 7, 13
Convolvulus arvensis	Field bindweed	NMDA (Class C)	May occur	In well-drained soils within native vegetation and agricultural areas. May smother neighboring plants.*	4, 14, 15*
Cuscuta spp.	Dodder	USDA	May occur	Both native and introduced species occur. Parasitic plant of particular concern for the damage it does to agricultural plants.†	3, 4, 18‡
Elaeagnus angustifolia	Russian olive	NMDA (Class C)	Known to occur in BLM lands in Catron County	Grasslands, woodlands, desert shrubland, especially within riparian areas. Also disturbed areas.	1, 5, 8
Euphorbia esula	Leafy spurge	NMDA (Class A)	Known to occur in the project area	Pastures, rangelands, roadsides, wastelands, riparian areas, mountain ridges, and prairies. Prefers semi-arid areas where competition from other species is low.‡	2, 4, 16†
Myriophyllum spicatum	Eurasian watermilfoil	NMDA (Class A)	May occur	Aquatic in lakes, ponds, irrigation ditches.	4, 10
Tamarix spp.	Saltcedar (=Tamarisk)	NMDA (Class C)	Known to occur in BLM lands in Catron County	Riparian areas (e.g., lakes, rivers, pond shores, irrigation ditches) and roadsides and rangeland.	2, 4, 11

Scientific Name	Common Name	Status	Potential for Occurrence in Project Area	Habitat	Best Control
Ulmus pumila	Siberian elm	NMDA (Class C)	May occur	Rangelands, grasslands, pastures, semi-arid areas, and roadsides, ditches, and open fields.	4, 12

Sources: Plant names follow USDA Plants Database (USDA 2020b); Occurrence in Catron County from New Mexico State University (2020) or USDA (2020b); Habitat and Best Control Methods are from New Mexico State University (2020) unless otherwise noted.

* Habitat and Best Control are from CABI (2019).

† Habitat and Best Control are from New Mexico State University (2005).

‡ Habitat and Best Control are from New Mexico State University (2018).

Best Control Codes:

1 = Prevention: Early detection and prevent infestations from getting large

2 = Prevention: Maintain a healthy plant community; establishing competitive vegetation

3 = Prevention: Take care not to introduce; remove host plants

4 = Chemical: Herbicides are effective

5 = Chemical: herbicides are somewhat effective

6 = Mechanical: must remove root system

7 = Mechanical: Limited effectiveness for large infestations

8 = Mechanical: Mowing or cutting can be effective under certain conditions or at certain times in the plant's growth cycle

9 = Mechanical: Removal should cut roots below soil

10 = Mechanical: Repeated mechanical removal effective

11 = Mechanical: effective if root crown is removed; individual tree methods should be used in low density situations

12 = Mechanical: effective for small trees; girding effect for mature trees

13 = Mechanical: Hand removal or cutting below root crown is effect for small infestations

14 = Biological control agent available (may not be legal in New Mexico or permitted on BLM lands)

15 = Repeated cultivation can be effective

16 = Continuous tillage or grazing

17 = Do not use fire

18 = Remove or do not plant host plants

3.2.1 *Leafy spurge* (Euphorbia esula)

Leafy spurge is the only confirmed noxious weed found within the footprint of Alternative 2. General life history information for the species and management techniques for its control are provided below.

General Information: Leafy spurge is a relatively long-lived herbaceous species in the spurge (Euphorbiaceae) family native to Eurasia (New Mexico State University 2005). It typically invades disturbed and undisturbed areas such as rangelands, pastures, croplands, roadsides, wastelands, woodlands, floodplains, riparian areas, mountain ridges, and prairies. It thrives in semi-arid areas where competition from other species is low and may go dormant during the summer in New Mexico. This species is a major economic pest in the northwestern and north-central portion of the United States and was first identified in Colfax County, New Mexico, in 1987. Leafy spurge can reproduce through both vegetative and sexual reproduction and has a deep, extensive root system. Once established, this species spreads rapidly to crowd out desirable species and secretes allelopathic chemicals to prevent the growth and reestablishment of desirable species.

Management: The best way to manage this species is to prevent infestations or to eradicate populations before they become established (New Mexico State University 2005). Because they produce many seeds and have extensive, long-lived root systems, leafy spurge is difficult or impossible to remove once populations become large and established. Thus, prevention is the best strategy. To prevent infestations, contaminated machinery, feed, or livestock should be avoided, and weed-free forage, seed, and gravel should be used. Continuous tillage or grazing is an effective way to combat this species. However, herbicides along and in combination with other management strategies are the most effective measures for controlling leafy spurge. Hand-removal is not effective or recommended as a management strategy for this species. Although repeated mowing or hand-cutting could control seed production, it will not control spread. Biological control agents have had varying levels of success in New Mexico.

3.3 Noxious Weed Species Monitoring

The location of noxious weed species will be mapped using GPS and geographic information system (GIS)-based tools, and the files with the species' location and information will be provided to the BLM (see the monitoring schedule in Section 2.4). Borderlands Wind will map noxious weed populations that are adjacent to project components, within disturbed areas within the project area, or for components and disturbance that continue outside the project boundary that result from Borderlands Wind's actions. This would include along the existing facility access corridor up to the junction with New Mexico Department of Transportation's ROW at the intersection with U.S. 60. Monitoring will apply to all areas disturbed or used by the project activities during construction, operations and maintenance, and decommissioning. A memorandum summarizing observations and recommendations will be provided to the Authorized Officer following each semi-annual monitoring event (refer to Section 3.4, Weed Management Measures).

The purpose of monitoring during operation and maintenance and decommissioning activities will be to determine whether noxious weed populations identified during pre-disturbance surveys have increased in density or spread as a result of the project activities or whether new noxious weed species that were not previously detected are present. Monitoring would begin during the first growing season following disturbance, which will be defined by the growth cycle of the noxious weed species that were documented during pre-construction surveys or other surveys. Monitoring duration, season, and conditions may vary from year to year, depending upon species present within the area that has been disturbed by the project.

Monitoring in the project area will focus on 1) areas where weed species have previously been observed and/or treated; 2) reclaimed areas, and 3) along roadways and access routes (see Section 2.4 for additional

details). Any areas where a spread of noxious weeds is noted will be further evaluated in terms of the need for remedial action and additional treatment. The Authorized Officer will be notified, and GPS points and photographs will be taken of infested areas. All non-native species and their relative distribution and percentage of cover will be noted using the following system:

1. A few (<1% cover) scattered populations containing few individuals
2. A few (1%–10% cover) scattered populations containing a large number of individuals
3. A moderate (10%–25% cover) number of populations containing few individuals
4. Common (25%–50% cover), but few individuals at any one location
5. Numerous (>50% cover), dense populations

This system will be modified, as needed, based on observed distributions and densities of the species.

Noxious weeds within the disturbed areas associated with the project would be monitored for 5 years following construction, with noxious weed infestations being recorded and mapped in accordance with protocol and then subsequently removed or controlled in conjunction with the BLM (see Section 2.4). After reclamation success criteria have been met, noxious weeds will be monitored through visual inspection by operations and maintenance staff. A minimum of one visual inspection will be completed per growing season, with any noxious weed infestations subsequently treated and removed. These inspections will be completed early in the growing season, to allow treatment before weeds mature or set seed. If weather conditions are dry (prior to early season surveys), a second noxious weed survey may be performed to capture later season germination.

3.3.1 *Weed Identification*

Monitoring and removal of weeds requires skill and training in plant identification. Training in plant identification and field manuals with photographs of common weeds and of native desert plants commonly occurring in reclaimed areas will be provided by Borderlands Wind to field staff, including biological monitors, weed abatement contractors, plant operators and staff, and construction workers.

3.4 Weed Management Measures

Soil disturbances, such as those caused by construction of the project, could result in the establishment of new populations and spread of existing populations of noxious weeds. The focus of noxious weed control efforts will be to reduce/eliminate existing infestations in the project area and prevent the spread of new infestations resulting from project activities.

Weed management for this project will be conducted using an Integrated Pest Management approach, balancing cost, effectiveness, and environmental risk in selecting the best treatment(s) to use for any given target species at any given location. BLM Manual 9015 – *Integrated Weed Management* (BLM 1992) will be used as a reference. Methods that may be implemented as part of the weed management effort include 1) prevention (including revegetation of disturbed areas), 2) manual control, and 3) chemical control. For optimum results, multiple methods will likely need to be implemented either in concert or over time.

BLM's preferred practice of noxious weed management is to prevent infestation or to treat small infestations prior to their spread throughout a larger area (BLM 1992). BLM uses an integrated approach to manage infestations, with methods that include combinations of biological, mechanical, and chemical

control. Chemical pesticides are used if they are the most effective control and after considering other control methods (BLM 2007a).

To ensure that this project does not spread weeds during operation and maintenance and decommissioning activities, following completion of construction, monitoring for noxious weed species surveys will be conducted as described in Section 3.3. Borderlands Wind will treat and/or eradicate infestations of weeds for these areas as required by the weed plan. Depending on the species identified, weed management methods may include the following:

- Manual removal such as hand dethatching, pulling, excavating, or cutting can be used for small areas of infestation or in areas where non-native plants occur within sensitive habitats. Where manual methods are used, removed plant material will be properly disposed of off-site.
- Mechanical methods also may include but not be limited to: use of equipment to disk weed populations; equipment with a scarifer may be used to rip weed populations; farm tillage equipment may be used to "till" weed populations as necessary for control and eradication; Depending on the species present, mowing may be used to control noxious weed infestations. All equipment used in removing weeds must be cleaned of weed seeds, rhizomes, and other plant parts prior to and after use, before being transported across the project area. Mechanical control methods will be used prior to or during flowering to prevent seed production.
- Chemical methods will only use BLM-approved herbicides, and these will only be applied by a licensed applicator holding a BLM Pesticide Use Permit. Any chemical treatment will be consistent with BLM Manual Section 9011 (BLM 2007b), BLM's Programmatic Environmental Impact Statement for vegetation treatments using herbicides (BLM 2007a), and BLM's Programmatic Environmental Impact Statement for the addition of three additional U.S. Environmental Protection Agency registered herbicide active ingredient (BLM 2016b). Herbicides will be applied consistent with BLM's Manual 9011, permits issued by the U.S. Army Corps of Engineers, and any Pesticide Use Permits issued by BLM. Herbicide-free buffer zones will be established for habitats, and species/populations of interest, to ensure that drift will not affect these areas, nearby residences and/or landowners, and other sensitive areas. Width of the herbicide-free buffer zone depends on the pesticide used, method of application, climatic conditions, and form applied Additional tiers of National Environmental Policy Act analysis may be required for local, site-specific decisions regarding herbicide application:
    - All reasonable provisions will be made to avoid herbicide spills. In the event of a spill, cleanup will occur immediately. To facilitate a timely cleanup effort, contractors will keep spill kits in their vehicles and in herbicide storage areas.
    - The level of response required for each herbicide spill will vary with the size and location of the spill, and response will include immediate notification to the BLM Authorized Officer and BLM.

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APPENDIX F

Health and Safety Plan

BORDERLANDS WIND PROJECT
APPENDIX F
HEALTH AND SAFETY PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

CONTENTS

Attachments

1 INTRODUCTION

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. A Health and Safety Plan (herein called the Plan) is a required component of the POD accompanying the commercial ROW grant. Terms and conditions specified in the Plan shall be binding upon the wind farm owner and any of its successors, assignees, or heirs.

1.1 Plan Purpose

Borderlands Wind is fully committed to a program of responsible management in all areas of health, safety, security, and the environment. Every contractor company is empowered and expected to adhere to the requirements of this Plan at a minimum.

Compliance with federal, state, and local safety regulations as well as the safety and training requirements of the contractor and Borderlands Wind is mandatory on this project. Specifically, compliance with Occupational Safety and Health Administration (OSHA) safety and health regulations for construction is required (Title 29 Code of Federal Regulations [CFR] Part 19260). BLM ROW grants require health and safety plans, unless the written safety policies and procedures of the contractor or subcontractor are more stringent, in which case the most stringent shall apply. Subcontractor personnel are to comply with the intent of this Plan in implementing their safety program on-site. This does not relieve subcontractors from their responsibility to address any specific hazards not identified in this Plan.

Contractors will be responsible for the actions and work performed by their subcontractors on the project site. Contractors are responsible for implementing this Plan and the contractor's comprehensive safety program will be enforced for its employees and the employees of its subcontractors while on the project site or to ensure that the individual subcontractor's program equals or exceeds same.

In day-to-day operations, all work on the project site will use and conform to this Health and Safety Plan. Additionally, such work will comply with the environmental requirements of the ROW grant.

1.2 Health and Safety Statement

All project employees, contractors, and visitors are essential to this team effort and must be committed to conduct themselves in a safe and responsible manner. Every employee and contractor has the responsibility to follow established safety, health, and environmental requirements as well as enforcing accident prevention procedures within their function of responsibility. If you should determine that a situation would cause harm to personnel, loss of property, or damage to the environment, you are authorized and required to stop the work until the safety concerns have been adequately addressed.

Should you become aware of any practice, condition, or information that you believe is contrary to these commitments, inform your supervisor or a Borderlands Wind representative.

1.3 Health and Safety Plan Requirements

This Health and Safety Plan addresses the project's health and safety program. The Plan will be refined as needed prior to the construction stage of the project to address health and safety risks and requirements. As the project moves into the operational stage, the components of the Plan will be modified to adapt to operations and maintenance (O&M) activities.

The following topics are covered in the Health and Safety Plan:

- Key Safety Personnel
- Health and Safety Training Program
- Hazard Analysis
- Hazard Identification and Control
- Personnel Protective Equipment
- Site Control and Communications
- Incident Reporting
- Emergency Action plan
- Fire Protection Plan
- Spill Response
- Hazardous Materials Management
- Waste Handling Plan

Contractors or subcontractors will provide Borderlands Wind with comprehensive health and safety plans prior to the start of construction. Borderlands Wind will provide the BLM with a copy of all contractor or subcontractor health and safety plans.

2 EMERGENCY ACTION PLAN

An Emergency Action Plan was developed for the Borderlands Wind project (Attachment 1). The purpose of the Emergency Action Plan is to establish the planned response actions that will be taken by personnel at the Borderlands Wind facility in the event of an emergency situation. These actions are intended to minimize health risks to plant personnel and people in the surrounding community, as well as minimize adverse impacts to the environment.

This Emergency Action Plan serves as guidance and is intended to be a "living" document such that revisions over time, based on experiences, will continue to increase the speed of identification of threats and decrease response time. This procedure applies to all employees, contractors, vendors, and visitors performing work at NextEra Energy Resources facilities in the United States.

3 WASTE AND HAZARDOUS MATERIALS MANAGEMENT PLAN

A Waste and Hazardous Materials Management Plan has been developed for the project (Attachment 2). The purpose of the Waste and Hazardous Materials Management Plan is to outline the practices and

procedures for the disposition of solid and hazardous wastes generated by project activities during construction, operation and maintenance, and decommissioning of the facility.

4 FIRE PROTECTION AND PREVENTION PLAN

A Fire Protection and Prevention Plan has been developed for the project (Attachment 3). The purpose of the Fire Protection and Prevention Plan is to eliminate the causes of fire, prevent loss of life and property by fire, and to comply with OSHA's standard on fire prevention, 29 CFR 1926.24. Additionally, it provides employees and the public with information and guidelines that will assist them in recognizing, reporting, and controlling fire hazards.

ATTACHMENT 1. BORDERLANDS WIND EMERGENCY ACTION PLAN

DOCUMENT STORAGE AND INFORMATION

This Borderlands Wind Emergency Action Plan is stored in the OpModel.

REVISION HISTORY

PURPOSE AND SCOPE

The purpose of this Emergency Action Plan is to establish the planned response actions that will be taken by personnel at the Borderlands Wind Project in the event of an emergency situation. These actions are intended to minimize health risks to plant personnel and people in the surrounding community, as well as minimize adverse impacts to the environment.

This plan serves as guidance intended to be a "living" document such that revisions over time, based on experiences, will continue to increase the speed of identification of threats and decrease response time. This procedure applies to all employees, contractors, vendors, and visitors performing work at NextEra Energy Resources facilities in the United States.

Note: Each plant/site will maintain a sign in / sign out list for visitors and contractors. This is critical so that in the event of an emergency, the plant will be able to accurately determine if all personnel are accounted for. All employees, contractors, and visitors should have a picture identification (ID) so in the event of an accident or illness, the identity of the injured can quickly be determined (site management may elect to require names on hard hats in place of the picture ID).

REFERENCES AND COMMITMENTS

OSHA 29 CFR 1910.38 (Emergency Action Plans)

OSHA 29 CFR 1910.39 Fire prevention plans (Subpart E - Means of Egress)

PUCT ruling 25.53 Electric Service Emergency Operations Plans

NextEra Energy Safe Work Practices Manual

SMS 222 – Fire Protection Plan Procedure

PGD Hurricane Management ("White Paper")

SMS 209 – Health and Safety Inspections Procedure

NEE-SAF-1610 Electric Shock – Required Medical Evaluation

SMS 247 - Severe Weather Guidelines

Corporate Security – Drones

DEFINITIONS / ACRONYMS

AED – Automated External Defibrillator

CPR – Cardiopulmonary Resuscitation

FPDC – Fleet Performance and Diagnostic Center

O&M – Operations and Maintenance

OSHA – Occupational Safety and Health Administration

PGD – Power Generation Division

PPE – Personal Protective Equipment

SMS – Safety Management System

SWPM – Safe Work Practices Manual

PREREQUISITES AND INITIAL CONDITIONS

Power Generation Division requires the use of Personal Protective Equipment (PPE). SMS/SOPR 214 provide a standardized method to define requirements for PPE. The requirements for PPE are dictated based upon the expected hazards of the work. During emergencies, prudent judgment is required as conditions that may pose a risk to safety may be amplified by the nature of the event. Teammates are expected to STOP and evaluate risks associated with the situation to ensure mitigation of safety hazard to self and others in the vicinity. PPE Hazard Assessment Forms should be used as part of emergency drills to help assess the need for additional special protection during emergency situations.

RECORDS

Paper copies of this Emergency Action Plan shall be maintained locally on-site and shall be easily accessible to all at normally occupied location(s):

1. The TBD Building
2. The TBD Building
3. Site Control Room at the facility O&M building – utilize alternate location if NERC-CIP entrance hinders access to the plan.

An electronic copy of this plan will also be accessible on the facility's local area network (LAN).

This plan will be reviewed upon implementation, whenever revisions are made, and at least annually by the NextEra Emergency Coordinator.

PROCEDURE

Statement of Compliance

It is noted that this Emergency Action Plan was prepared in June 2018 by NextEra Borderlands Wind Project.

Thus, I hereby state that the NextEra Borderlands Wind has evaluated the requirements of all applicable State and Federal Laws and recognizes that this Plan has been prepared in accordance with the requirements therein.

Name: _____

Signature: _____

Title: _____

Date: _____

Designation of Facility Emergency Coordinators

It will be site/plant policy that the Facility Representative (as formally designated to the New Mexico State Emergency Response Commission in the facility's 40 CFR 355.30(b) notification letter) will be known as the "Facility Emergency Coordinator" for the purposes of defining roles in this Emergency Action Plan.

Alternate personnel may serve as the Facility Emergency Coordinator when necessary.

Primary Facility Emergency Coordinator:

NAME TBD Site/Plant Leader TBD

Alternate Facility Emergency Coordinator:

NAME TBD Title / Position TBD

Personnel who may be contacted for further information or explanation of duties under this plan are as follows:

NAME TBD Site/Plant Leader **PHONE NUMBER TBD**
NAME TBD General Manager **PHONE NUMBER TBD**

Training

All NextEra Energy Resources employees at the facility shall receive training on this Emergency Action Plan whenever it is modified or on at least an annual basis.

Employees will also be trained when this plan is initially implemented.

If the facility has an alarm system, each plant employee, visitor, and contractor must understand the types of local plant alarms and what they are expected to do in the event of each alarm. The plant safety team must ensure that the alarms are audible at all plant buildings and locations.

Contractors and visitors who will enter operating areas of the facility will be trained on plant alarms, mustering locations, and evacuation procedures before they enter the facility for the first time, and at least annually thereafter.

A listing of contractors with current training on this plan will be maintained at the facility for reference purposes.

Facility Location Information for Outside Emergency Responders

The Borderlands Wind Project is located on 40,348 acres of land south of U.S. 60 in Catron County near Quemado, New Mexico, and the Arizona–New Mexico border.

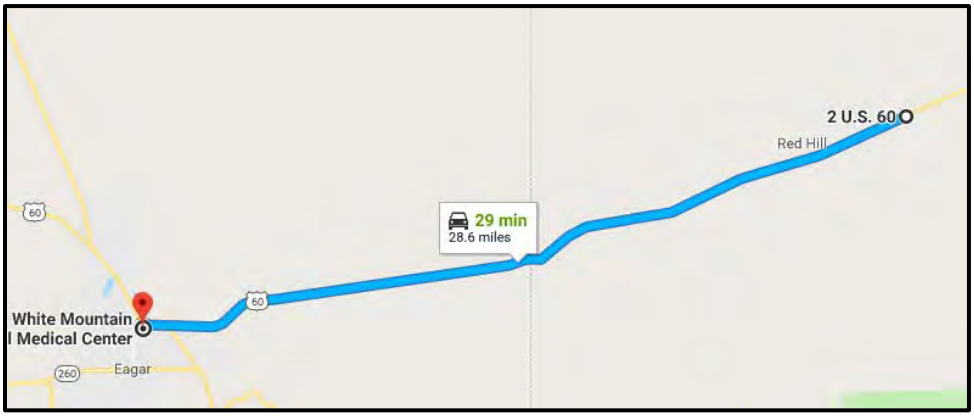
Outside responders can gain access to the facility from State Route 60 at the Bill Knight Gap Road/Country Road intersection.

Closest Medical Facilities from the Operations and Maintenance Building

White Mountain Regional Medical Center
118 S. Mountain Ave
Springerville, AZ 85938
Telephone: (928) 333-4368

Directions

1. Turn left onto State Route 60 entering Arizona (28.5 miles)
2. Turn left onto South Mountain Avenue
3. **White Mountain Regional Medical Center will be on the left (0.1 miles)**



Plant / Site General Emergency Procedure

This emergency plan was developed for the following plausible contingencies that could transpire at the facility:

- Natural Disaster / Severe Weather Event (ATTACHMENT 1.A)
- Fire Response Event (ATTACHMENT 1.B)
- Physical Security Event (ATTACHMENT 1.C)
- Cyber Security Event (ATTACHMENT 1.D)

- Capacity/Transmission Event (ATTACHMENT 1.E)
- Environmental Event (ATTACHMENT 1.F)
- Pandemic Event (ATTACHMENT 1.G)
- Immediate Site Evacuation Procedure (ATTACHMENT 1.H)
- Delayed Site Evacuation Procedure (ATTACHMENT 1.I)
- Designated Egress Routes & Muster Areas For Evacuations (ATTACHMENT 1.J)
- Personnel Injuries and Serious Health Conditions (ATTACHMENT 1.K)
- Summary of Weatherization Plans & Procedures (ATTACHMENT 1.L)

It will be the responsibility of the Site/Plant Leader to assess a developing emergency situation and initiate the appropriate actions in this plan to protect personnel, the surrounding environment, and plant equipment from adverse damages.

In the event of an emergency where personnel should be protected, the following actions will be immediately performed:

- Contact 911 immediately.
- Ensure that the following are also contacted:

Title	Name	Office Phone	Cell Phone	Home Phone
Site/Plant Leader	NAME TBD	PHONE NUMBER TBD	PHONE NUMBER TBD	PHONE NUMBER TBD
Emergency Coordinator	NAME TBD	PHONE NUMBER TBD	PHONE NUMBER TBD	PHONE NUMBER TBD
FPDC	NAME TBD	PHONE NUMBER TBD	PHONE NUMBER TBD	PHONE NUMBER TBD
Security Operations	NAME TBD	PHONE NUMBER TBD	PHONE NUMBER TBD	PHONE NUMBER TBD

- Any work-related permits in effect shall be immediately voided, and personnel involved in such work shall cease all activities.
- All sources of ignition, including hot work, burning cigarettes, portable tools, and motor vehicles shall be immediately secured.

Based upon the type and extent of the emergency, the Site/Plant Leader should assess whether an evacuation should be initiated.

The following criteria should be considered in rendering a decision to conduct an evacuation of the facility:

- The affected parts of the facility and severity of the emergency: Reference PGD-OD-SAF-005 (Control Room evacuation) as applicable
- Restrictions in egress routes caused by the emergency
- Wind direction (if the emergency involves gases/vapors)
- People currently located at the facility (day shift, night/weekend shift, visitors/contractors, etc.)

If the Site/Plant Leader determines that a facility evacuation is necessary, he/she must determine which type of evacuation to direct.

The following sections describe the types of evacuations that can be performed:

- Immediate Site Evacuation
  - This type of evacuation would be used only in the event of an emergency grave enough to warrant immediate evacuation of all personnel.
  - In this type of evacuation, operating area personnel should evacuate without regard for shutdown of plant systems or for placing plant systems in the safest mode possible.
  - This type of evacuation should only be utilized if the safety of personnel in operating areas is in immediate and severe danger, such that any delay in evacuating could result in deaths or injuries to personnel.
  - The production leader will designate production technicians to assist with the evacuation of any employee, visitor, or contractor who may have special needs that could limit their ability to evacuate safely.
- Delayed Site Evacuation
  - This type of evacuation would be used in a serious emergency situation where non-essential personnel (those not involved in plant operations or emergency coordination) are immediately evacuated as a precaution, and essential personnel remain in operating areas to perform a controlled shutdown of the facility prior to evacuating.
  - It is anticipated that this would be the primary type of evacuation used in response to serious emergencies at the facility.
  - The Site/Plant Leader and/or Facility Emergency Coordinator must assess whether or not the prevailing circumstances warrant keeping essential personnel in plant operating areas to perform a controlled shutdown of the facility.
  - If personnel will not be exposed to unnecessary danger to perform facility shutdown and/or place the facility into a safe condition, then this is the preferred type of evacuation, as opposed to an Immediate Site Evacuation.

Although the Site/Plant Leader (or Facility Emergency Coordinator) may initially designate an evacuation to be a Delayed Site Evacuation, he/she should always keep in mind that conditions may change rapidly, and result in the need to call for an Immediate Site Evacuation.

If the Site/Plant Leader (or Facility Emergency Coordinator, as appropriate) determines that an evacuation is necessary, he/she shall ensure that a sounding of the plant alarm is initiated.

In this case, an evacuation alarm should be sounded and all employees/visitors accounted for.

The Site/Plant Leader (or Facility Emergency Coordinator, as appropriate) will designate an employee(s) to assist with the evacuation of any employee, visitor, or contractor who may have special needs that could limit their ability to evacuate safely.

If an evacuation has been directed, and following the sounding of the evacuation alarm, the Site/Plant Leader shall ensure that instructions for evacuation are communicated to personnel over the plant radio system. These instructions should include the following items at a minimum:

- The type of evacuation to be performed (Immediate Site Evacuation or Delayed Site Evacuation)
- The nature of the emergency

- The location(s) of the emergency
- Any egress routes that should not be used by evacuating personnel (if known and applicable)

If an evacuation has been ordered, personnel shall follow one of the following evacuation procedures, as appropriate, based upon the direction of the Site/Plant Leader and/or Facility Emergency Coordinator:

- Immediate Site Evacuation Procedure (ATTACHMENT 1.H)
- Delayed Site Evacuation Procedure (ATTACHMENT 1.I)

Perform the appropriate follow-up per the attachments listed on 8.5.1 above.

Emergency Action Plan Annual Drills

It is the responsibility of the Site/Plant Leader to ensure 4 Emergency Action Plan Drills are performed each year.

Emergency Action Plan Drills are to be held quarterly to ensure all site teammates have gone through at least one drill per year

In addition to performing the drills, the Emergency Action Plan must be reviewed for accuracy and:

- Make updates as required and forward revised plan to the Plant/Site emergency coordinator.
- Ensure site team has been trained on any changes.

Each drill's content will be determined by the Site/Plant Leader based on current needs.

The type of drill (tabletop, full functional drill, etc.) will be determined by the Site/Plant Leader based on current needs, but it must include a documented evacuation of the O&M / service building. Every site should have (and practice) an alternate emergency evacuation path.

The targeted drill response time is less than 4 minutes. Monitor and record the response time to determine if all employees responded in a timely manner.

Each site shall contact the FPDC as part of the drill.

A roster of drill attendees and date of drill will be filed with sites' Emergency Action Plan documents.

Any gaps or action items that are a result of the drill will be identified, resolved, fully documented, and filed with the sites' Emergency Action Plan documents. Note that MAXIMO is to be used to document actual tasks to be completed to close gaps.

Note: The following are examples of site emergency plans and may need to be edited to meet each location's specific requirements.

ATTACHMENT 1.A. NATURAL DISASTER / SEVERE WEATHER EVENT

Natural emergencies considered in this procedure are associated with weather disturbances such as tornadoes, flooding, hurricanes, blizzards, high wind conditions, earthquakes, and severe thunderstorms. Flooding waters, lightning, high winds and heavy rains may be detrimental to the employees, the environment and/or equipment and structures at the facility. Warnings about developing weather emergencies are issued by local radio stations or tracked by on-site weather systems. These warnings should provide adequate information of the approach of weather-related emergency conditions. The Plant Leader at the facility has several means to monitor these weather-related emergencies. These include:

Internet access to weather-related websites; **accuweather.com**

- AM/FM radio to monitor local news stations
  - FM 92.5 KTHQ, *Eagar, AZ*
  - FM 95.7 KWKM, *Saint Johns, AZ*
  - FM 101.7 KQAZ, *Springerville, AZ*
  - FM 106.7 KNKI, *Pinetop, AZ*
  - AM 980 KMIN, *Grants, NM*
- PGDAPPS WeatherSentry Online

When information is received that a severe weather watch or warning has been issued for the facility area the following actions shall be taken:

- The Plant Leader should notify the General Manager.

The General Manager shall make a determination about whether or not the plant should be shut down due to the weather situation.

Personnel should seek indoor shelter in the plant in a designated secure location, or other reinforced structure. Personnel should remain indoors if the severe weather is affecting the immediate area of the facility.

NOTE: The Earthquake Preparedness - At Home - At Work - At Play check sheet can be found on the PGD Emergency Preparedness SharePoint for reference.

Flash Flooding has been determined to be a hazard for Catron County. Flash flooding is likely to occur during periods of heavy and sudden rainfall (typically occurring during monsoon season from June to September). Flash floods may take minutes or hours to develop, and flash floods from upstream rain events can appear without witnessing rain in the area. Flooding would be expected in washes and streambeds across the county, including the unnamed wash channels across the project site. Flooding would likely cause cascade effects, such as debris and water on roadways, power failures, and traffic accidents.

Severe Weather Preparatory Checklist:

- **NAME** Site Leader / Plant Leader or Other Person in Charge

In the event of a natural disaster / severe weather event, where advance warning is known (such as a hurricane, blizzard, etc.), the plant / site personnel shall closely coordinate with the NextEra Emergency Response Coordinator, during pre- and post-event activities.

In the event of a natural disaster / severe weather event such as tornadoes, a severe thunderstorm, high wind conditions, earthquake, etc., where advance warning may not be known, the plant / site shall refer to the site-specific operating plans to take the actions necessary to ensure the safety of all employees and the public. Additionally, site personnel will take reasonable action to prepare for the event to address environmental exposure and the securing of equipment, consistent with the event conditions. However, under no circumstances are personnel to place themselves in harm's way.

The following list represents actions that should be taken at the site in order for it to be secured. The listing is not intended to be all inclusive and will vary in applicability pending advance warning of the onset of the event:

- Ensure all personnel evacuate towers if lightning is in the area or if there are other unsafe conditions that warrant climbing to be unsafe.
- Ensure site personnel are safe and accounted for.
- Review staffing levels and arrange for additional staffing "Storm Riders" as applicable.
- Secure plant equipment as necessary and as weather conditions permit, noting to properly follow established guidelines to safeguard personnel while working outdoors in preparation for severe weather. Reference the Wind Speed Matrix in SMS 247 - Severe Weather Guidelines to assess preparation work conditions.
- Seek safe shelter. If in your vehicle in winter, ensure survival kit and enough gas is in place.
- Ensure all portable equipment is stored indoors.
- Ensure that switchgear, load center, and tower doors are closed and latched.
- Ensure that the building doors are closed and latched.
- Place all trashcans in locations not exposed to weather.
- Make a general housekeeping inspection and ensure that all loose objects and debris that could potentially become airborne are secured or inside.
- Ensure all radios are fully charged.
- Secure all CONEX Storage buildings.
- Monitor the weather conditions.
- Ensure that there is an ice plan in place for walkways.
- Ensure all compartments accessory doors and closed and latched.
- Ensure all sump pumps are in good working condition.
- Ensure the proper condition and location of all mobile and gantry cranes, hoists, and booms.
- Test the DC emergency equipment and other back-up systems.

Note: Self-locking CONEX boxes pose a risk of locking someone within it which may cause an unsafe condition.

The control room operator or other person appointed by the Person in Charge will:

- Monitor the weather radio, TV, or other monitoring equipment, and report any changes in the situation that could affect site personnel and/or equipment to the Person in Charge.
- Sound plant alarm system if a tornado or other similar severe weather warning is issued.

- Follow instructions from the Person in Charge in the case of equipment shutdown is necessary.
- Notify the FPDC of the potential of a natural disaster / severe weather event.

Operations:

- Operate the plant consistent with instructions provided from the Transmission Operator (TOP). If, the instructions cannot be followed, i.e., safety, environmental, reliability, etc., immediately notify the Transmission Operator to discuss alternative operating actions. Document discussions in the Operators log.
- When conditions are "forecasted" such as high winds associated with a hurricane, or other related conditions such as floods and/or storm surge, considerations for equipment shutdown should be taken consistent with the site's operating practices/plans and as applicable, general recommendations described in the PGD Hurricane Management ("White Paper").

Note: The decision to remove units from service will be discussed between Plant Management / Person in Charge, the PGD Emergency Response Coordinator, and the appropriate Vice President (VP) of Operation in conjunction with the respective Transmission Operator, to produce the operation plan for the plant.

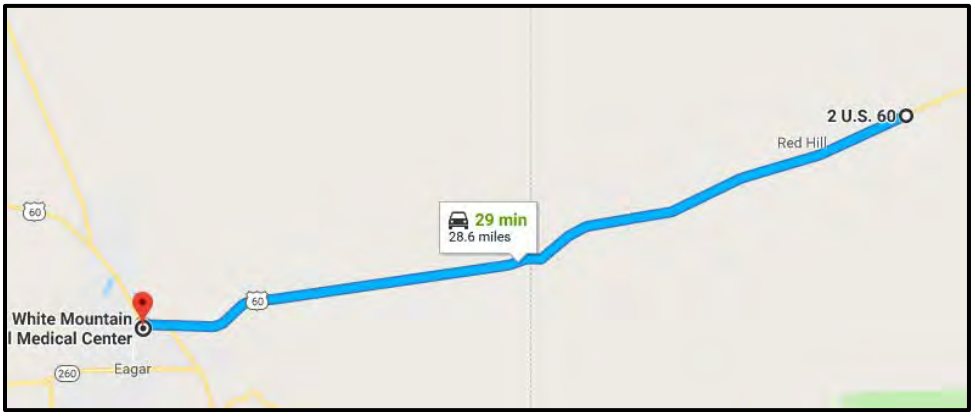
Local Emergency Contact Information:

Closest Medical Facilities from the Operations and Maintenance Building

White Mountain Regional Medical Center
118 S. Mountain Ave
Springerville, AZ 85938

Directions

1. Turn left onto State Route 60 entering Arizona (28.5 miles)
2. Turn left onto South Mountain Avenue
3. White Mountain Regional Medical Center will be on the left (0.1 miles)



ATTACHMENT 1.B. FIRE RESPONSE EVENT

This section describes measures taken at the **Borderlands Wind Project** to prevent, minimize the severity of, and proactively prepare for the event of a fire emergency.

In the event that a fire should occur at the facility, this section describes the actions that should be taken by plant personnel. Safe and expedient response actions are essential to protect the health and safety of plant personnel, the surrounding environment, and minimize damage to plant equipment.

A Best Practice to prevent fires is to maintain excellent housekeeping. Any accumulation of combustible material should be reported during the daily Inspection of Watch (IOW) or the Monthly Site Inspection (SMS 209 Health and Safety Inspections Procedure).

Any person who discovers a fire in the facility should immediately make radio contact with the plant control room, and provide the following information:

a. That a fire has been discovered.
b. The location and source of the fire.
c. Any injuries that have occurred.
d. The cause of the fire (if known).
e. Actions he/she will be taking to extinguish the fire (if appropriate).
f. Request activation of the fire alarm system.
    - **Note:** Notifying others of the emergency and getting trained responders on the way is the most important step in minimizing injuries to personnel and damage to equipment. In the event that the person discovering a fire would be significantly delayed in attempting to extinguish it in its incipient stage by first getting to a radio to report it, the priority would be to extinguish the fire in the incipient stage.

Example: A fire commences in the immediate vicinity of a person who does not have immediate access to a plant radio. If the person can quickly extinguish the fire, he/she should do so first, and then get to a radio to report the fire as soon as possible thereafter. If a fire progresses to, or is discovered in a state beyond the incipient stage, the immediate action is to notify others over the radio and get help.

Any person discovering a fire in its incipient stage should take action as quickly as possible to extinguish the fire. In general, a fire should be considered to be in its incipient stage if it meets two primary criteria:

a. The fire can be extinguished or controlled with a single portable fire extinguisher, and,
b. The person discovering the fire perceives an adequate level of safety in attempting to extinguish the fire.

As long as the fire is in its incipient stage, as defined above, the person discovering the fire should utilize all appropriate and readily available fire extinguishing equipment to extinguish the fire. Firefighting efforts beyond the incipient stage will be performed by trained outside responders only.

All plant personnel will be provided with initial and periodic refresher training on the types and locations of firefighting equipment at the facility.

The Fire Extinguisher Deployment Plot, detailing the location of portable fire extinguishing equipment deployed at the facility, is provided at the end of this attachment. Additionally, the Fire Protection System Plot details locations of key fire hydrants near or on the facility.

In response to the fire, the Site/Plant Leader will need to make the following determinations:

a. The equipment or activities that need to be shut down and/or ceased.

b. If any automatic fire suppression systems were activated as a result of the fire, when to secure such systems.

Site Control Room Operator or other person appointed by the Person in Charge will:

a. Sound the fire alarm if appropriate

b. Shut down equipment as instructed

c. Announce the type and location of the emergency over the Public Address (P.A.) system or radio system

d. Notify the Site Leader / Plant Leader or other Person in Charge

e. Contact local emergency response services and provide the following information:

   1) Type of emergency

   2) Magnitude and location

   3) Any immediate danger to people on- or off-site

   4) Any known injuries

   5) Any other pertinent information

   6) Contact the FPDC

   7) Contact the System Operator or Transmission Operator if appropriate

   8) Assign an individual to meet the emergency services at the gate in order to provide directions

Site Leader/Plant Leader or other Person in Charge will:

a. Proceed to the fire area

b. Determine the extent of the fire

c. Determine the area to be isolated

d. Determine if evacuation is necessary

e. Determine what equipment or activities will need to be shut down and/or ceased

f. Instruct the control room to notify the local emergency response services of the need for assistance if the fire has progressed, or has the potential to progress beyond the incipient level

g. Determine if any automatic fire suppression systems were activated as a result of the fire

h. Determine when to secure any automatically activated suppression systems

Site personnel assigned to escort the emergency services:

a. Shall escort emergency service to the location of the fire. This individual may also be called on to provide emergency services with specific information about the dangers of plant equipment, chemicals nearby, electrical sources, fuel storage and supply, etc.

b. NOTE: Having routine drills and regular site visits by local emergency services adds value for helping them become familiar with the site layout and the hazards associated at the site.

All other site personnel not directly involved with responding:

a. All other personnel that are not directly involved with responding to the fire shall report to their designated muster stations to ensure all persons are accounted for. These employees will remain at the muster stations until the "all clear" is received.

Media Relations (561) 694-4442

In the event of an emergency or critical incident at a NextEra Energy Resources facility, it is important that the NextEra *Marketing and Communications Duty Officer* receive prompt notification from the FPDC. This is essential to be responsive to media inquiries. Depending on the magnitude of the incident, Marketing and Communications personnel may be dispatched to the location to handle public information activities and/or assistance may be requested of specially trained area media liaisons.

NOTE: Local Emergency Contacts in the Event of a Fire:

Springerville Fire Department
418 E. Main Street, Springerville, AZ 85938
(928) 333-2422 or 911

INSERT Fire EXTINGUISHERS AND FLAMMABLE MATERIAL MAP

Fire Extinguisher Deployment Plot

TBD SITE MAP INDICATING FIRE EXTINGUISHERS AND FIRE HYDRANTS AND SOURCES OF MAJOR FIRE HAZARDS INCLUDING LUBE OIL TANKS, FUEL OIL TANKS, HYDROGEN STORAGE, FLAMMABLE GAS STORAGE, OIL PRODUCTS AND DRUMS, ETC.

Note: The fire extinguishers at the plant location are only to be used for small incipient fires. Only trained firefighters should attempt to mitigate a fire that is beyond the incipient stage. Portable fire extinguishers are classified according to their size and intended use on four classes of fires.

The general operating instructions can be remembered by the letters P-A-S-S.

1. **P** Pull the pin at the top of the extinguisher that keeps the handle from being pressed.
2. **A** Aim the nozzle or outlet low toward the base of the fire.
3. **S** Squeeze the handle above the carrying handle to discharge the agent inside.
4. **S** Sweep the nozzle back and forth at the base of the flames to disperse the extinguishing agent.

Fire Classifications

Class A – Fires involving ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics. Water is used in a cooling or quenching effect to reduce the temperature of the burning material below its ignition temperature.

Class B – Fires involving flammable liquids, greases, and gases. The smothering or blanketing effect of oxygen exclusion is most effective. Other extinguishing methods include removal of fuel and temperature reduction.

Class C – Fires involving energized electrical equipment. This fire can sometimes be controlled by a non-conducting extinguishing agent. The safest procedure is always attempt to de-energize high voltage circuits and treat as a Class A or B fire depending upon the fuel involved.

Class D – Fires including combustible metals such as magnesium, titanium, zirconium, sodium and potassium. The extremely high temperature of some burning metals makes water and other common extinguishing agents ineffective. There is no agent available that will effectively control fires in all combustible metals. Special extinguishing agents are available for control of fire in each of the metals and are marked specifically for that metal.

NOTE: Do not use elevators in areas affected by fire events.

ATTACHMENT 1.C. PHYSICAL SECURITY EVENT

The purpose of this document is to describe the roles, responsibilities, and the associated actions in response to a PHYSICAL SECURITY incident, which includes but is not limited to INTRUSION, DRONES, BOMB THREATS, SABOTAGE, VANDALISM, TERRORISM, or OTHER similar security events at a NextEra Energy Resources facility.

RECOGNIZING ACTS OF TERRORISM, HOSTILE INTRUDER & SIGNS OF POTENTIAL VIOLENCE

If a hostile intruder enters the **Borderlands Wind Project**, each person shall quickly determine the most reasonable way to protect his/her own life. Visitors and contractors are likely to follow the lead of employees and managers during a hostile intruder situation.

During such an event, each person shall take the following actions, accordingly:

1. EVACUATE
    - Have an escape route and plan in mind
    - Leave your belongings behind
    - Keep hands visible
2. HIDE OUT
    - Hide in area out of intruder's view
    - Block entry to your hiding place and lock the doors
    - Mute or turn off your cell phone

3 TAKE ACTION (as last resort and only when your life is in imminent danger)

- Attempt to incapacitate the intruder
- Act with physical aggression and throw items at the intruder

4 Call 911 when it is safe to do so.

For additional information refer to Corporate Security Policy, Procedure #NEE-SEC-1720. Hostile Intruder Response Procedure.

An active shooter may be a current or former employee, or an outsider. Call Corporate Security at (561) 694-5000 or (888) 694-6444 or your Human Resources Department if you believe an employee exhibits potentially violent behavior.

For employees, indicators of potentially violent behavior may include one of the following:

- Increased use of alcohol and/or illegal drugs
- Unexplained increase in absenteeism, and/or vague physical complaints
- Depression/withdrawal; increased talk of problems at home
- Increased severe mood swings, noticeably unstable or emotional responses
- Increase in unsolicited comments about violence, firearms, other dangerous weapons and crimes

For additional information refer to Corporate Security Safe and Secure Workplace Policies, Procedure #NEE-SEC-1756.

In the event that the site receives threatening correspondence either by telephone or by other means of communications, the following actions should be performed immediately:

- Actions by the person receiving the threat:
  - Gather as much information as possible from the person making the threat.
  - If the threat is via written correspondence, place the correspondence in a location in which it will not be touched or otherwise disturbed until police can be contacted.
  - If the threat is being made verbally (telephone, or other), communicate and obtain information from the individual making the threat for as long as possible. For telephone threats note the time of the call, do not interrupt the caller, and describe the tone of voice as well as any background sounds.
  - Inform the Site/Plant Leader and/or General Manager of the situation.
  - Contact Security Operations at (561) 694-5000
  - Contact the Fleet Performance & Diagnostic Center (FPDC)
  - Wind: (561) 694-3636 or Solar: (561) 694-3600
  - Contact local law enforcement, as applicable (e.g., 911)
  - Communicate the Physical Security Event to all on-site personnel.
  - Document / update the event in the Service Request application in Maximo.
- Refer to the PGD Sabotage Reporting procedure at: eWeb→Policy/Procedure→ Florida Power & Light & FPL Energy Services>>NextEra Energy, Inc→Security (SEC)→ NEE-SEC-1764 - Security Notifications and Event Reporting through this link: Security Notifications and Event Reporting - Sabotage
- This document should be consulted in order to ensure adherence to the latest definitions and reporting instructions for sabotage and vandalism.
- Refer to the following procedure: PGD NERC Event Reporting EOP-004-2 Operating Plan (DOC #: PGD-JB-FPDC-ON-1315181201)

During the report describe what you have discovered/witnessed and the location of the affected facilities to include the items outlined below, as available:

- The date and time of the incident
- Description of the incident
- Likely target
- Number of people involved
- Suspect and/or vehicle information
- Type of equipment or material used for the activity
- Generation capacity affected in Megawatts
- Was there an actual or suspected physical attack that could cause a major impact to the Bulk Electrical System (e.g., generator, transformer, fuel supply)?
- Was there any destruction of any security systems (cameras, badge readers, security barriers, locks) or any of its components?

- Was there any actual or suspected cyber or communication attack that could impact the Bulk Electrical System adequacy or vulnerability? (See the Cyber Security Response section [Attachment 1.D] for more details regarding Cyber Security events.)
- Are there mitigation measures in place to correct the event?
- The name and contact number for the point of contact.

The Plant Leader and/or General Manager may consider any or all of the following actions to take in response to the threat situation, depending upon the circumstances of the threat:

- Never use radios or use cell phones near a suspected bomb.
- Order an evacuation of the facility.
- Call **911** for Police or Fire Assistance when it is safe to do so if they have not already been notified.
- Arrange for additional security personnel for the facility.
- Direct plant personnel to commence a controlled shutdown of the facility.
- Direct searches to be performed on vehicles entering the facility.

NOTE: The latest version of the corporate bomb threat report may be found through the following link:

http://eweb.fpl.com/bunit/corpservices/security/ReportIncidents/FormBombThreat.shtml

In case of an evacuation due to a bomb threat, please refer to the information below to maintain a safe distance.

THREAT	THREAT DESCRIPTION	EXPLOSIVES CAPACITY[1] (TNT EQUIVALENT)	BUILDING EVACUATION DISTANCE[2]	OUTDOOR EVACUATION DISTANCE[3]
	PIPE BOMB	5 LBS/ 2.3 KG	70 FT/ 21 M	850 FT/ 259 M
	BRIEFCASE/ SUITCASE BOMB	50 LBS/ 23 KG	150 FT/ 46 M	1,850 FT/ 564 M
	COMPACT SEDAN	500 LBS/ 227 KG	320 FT/ 98 M	1,500 FT/ 457 M
	SEDAN	1,000 LBS/ 454 KG	400 FT/ 122 M	1,750 FT/ 534 M
	PASSENGER/ CARGO VAN	4,000 LBS/ 1,814 KG	640 FT/ 195 M	2,750 FT/ 838 M
	SMALL MOVING VAN/DELIVERY TRUCK	10,000 LBS/ 4,536 KG	860 FT/ 263 M	3,750 FT/ 1,143 M
	MOVING VAN/ WATER TRUCK	30,000 LBS/ 13,608 KG	1,240 FT/ 375M	6,500 FT/ 1,982 M
	SEMI-TRAILER	60,000 LBS/ 27,216 KG	1,570 FT/ 475 M	7,000 FT/ 2,134 M

NOTE: At the first sign of a potential intruder trespassing into a wind turbine, immediately proceed to back off, observe from a safe distance and call Corporate Security as well as the local law enforcement. Law enforcement responders are trained to protect and serve their communities. Emergency responders from the local law enforcement department may require a quick training/briefing to safely enter and climb the tower (if applicable) as well as fall protection equipment. After they provide a verbal command to the potential intruder(s), they may need access to the tower. To the extent possible, facilitate their ability to enter without interfering with their efforts.

ATTACHMENT 1.D. CYBER SECURITY EVENT

Detection:
Site Instructions:

Site personnel may become aware of a cyber incident or the potential for a cyber incident and take the roll of a First Responder. The First Responder may become aware from any of the following sources:

- A system page/email alert to an administrator/operator.
- Notification may come from the FPDC.
- An employee or Business Unit (BU) that first recognizes a potential incident that needs to be reported to Corporate Security or the IMSC.
- A Business Unit designated to be contacted by an outside agency such as NERC, FERC, SERC or other outside source to the First Responder.
- A business partner
- A manager
- An outside source
- Notification may come as part of NEE's Security Notifications and Event Reporting Policy (NEE-SEC-1764 - Security Notifications and Event Reporting to Corporate Security or System Operator).
- The First Responder should be prepared to describe the incident in detail to the IMSC or Corporate Security. The First Responder is not required to investigate and determine if the event is an actual cyber security incident.
- The First Responder will notify their immediate supervisor and the FPDC.
- First Responder may reference the PGD Cyber Security Incident Response Plan – First Responder – Diagram (Flow Chart) to guide you through the detection, response and reporting steps.

Link to Corporate First Responder

NOTE: PGD-CIP-008-DIA-001 PGD Cyber Security Incident Response Plan – First Responder – Diagram

Site verifies the condition (fleet team, vendors, information security, etc. may be required to help determine if event is cyber related).

Response:
Site Instructions:

Site makes the unit safe or stabilizes the unit as needed, plans the recovery if appropriate.

Site communicates to the appropriate parties:

a. Immediate Supervisor

b. Corporate Security (561-694-5000, the number is also listed on the back of our ID badges) or the IMSC (305-552-4357)

c. Plant General Manager

d. FPDC will release awareness notification via fpdc_one - Reference PGD-JB-FPDC-ON 1315181201, PGD NERC Security & Event Reporting procedure from FPDC for cyber-attack reporting purposes

e. Local Emergency Services, if appropriate

f. System Operator, if appropriate

g. Transmission Operator, if appropriate

h. Establishes the appropriate Incident Command structure

i. Executes Incident Command

Recover:
Site Instructions:

1. The team restores the cyber assets affected by the incident to normal operations. This may require reloading data from backup tapes, or reinstalling cyber assets from their original distribution media.
2. Once the affected cyber assets have been restored, they are tested to make sure they are no longer vulnerable to the vulnerability that caused the incident.
3. The impacted system(s) are tested to ensure they will function correctly when placed back in production.

NOTE: The PGD-CIP-008-DIA-001 Cyber Security Incident response Plan–First Responder–Diagram

ATTACHMENT 1.E. CAPACITY / TRANSMISSION EVENT

Plant Site Roles and Responsibilities

1. Site Control Room Operator, FPDC Operator, or Person Receiving CAPACITY SHORTFALL

    a. If the communication of a Capacity Shortfall is for informational purposes and no operator action is required, the individual receiving the communication shall notify the FPDC, Site Leader / Plant Leader, or other person in charge providing the information outlined below as available.

    b. If the communication of a Capacity Shortfall requires operator action, the Site Control Room Operator, FPDC Operator, or person receiving a CAPACITY SHORTFALL notification from the respective Transmission Operator or other Reliability Entity (e.g., Balancing Authority, Reliability Coordinator), shall immediately comply with directive / operating instructions received from the Transmission Operator or provide an explanation as to why the directive / operation instruction cannot be performed (i.e., safety, environmental, reliability, regulatory etc.).

    c. Three-part communication with the Reliability Entity shall be used and the communication shall be logged. The FPDC, Site Leader / Plant Leader, or other person in charge shall be contacted and provided the information outlined below as available.

        1) Content of communication from the Reliability Entity

        2) Name of individual who called

        3) Time of call

        4) The general communication received or the directive / operating instruction received.

2. Site Leader/Plant Leader or other Person in Charge

    a. In response to receiving a CAPACITY SHORTFALL communication, the Site Leader/Plant Leader or other Person in Charge will:

        1) Validate the notification with Transmission Operator if appropriate

        2) Validate the notification with the Control Room Operator

        3) Once validated, direct the Control Room Operator to follow the notification instructions

        4) Communicate the notification to site management

            a. If site management is not available, communicate directly with the Operations VP.

            b. For a NEER facility also contact project business management and ensure that other facility agreements are not violated. It is recommended that the potential for Transmission Operator requests should be vetted and documented before commercial operation of the facility.

        5) Communicate notification to the FPDC

        6) Prepare and review procedures for maximizing output and energy conservation

        7) Advise site personnel not to perform any discretionary maintenance, testing, or evolutions (with the exception of approved thermal performance testing) which could present a risk to generation

3. All other site personnel not directly involved with responding:

    a. All other personnel that are not directly involved with responding to the CAPACITY SHORTFALL shall not perform any maintenance or activities that would put MWs at risk.

ATTACHMENT 1.F. ENVIRONMENTAL EVENT

The spill or release of any chemical/oil or heat transfer fluid is a potentially serious event, and appropriate response actions must be taken to minimize health hazards to personnel, as well as potential impacts to the environment. It is the policy of the facility that plant personnel will not respond to spills/releases, but will instead call for trained outside responders to perform this function. For the purpose of clarification to plant personnel, the term "respond" in this context refers to actions taken to perform cleanup operations of spilled substances, and in some cases may even take the meaning of actually stopping the source of a spill. Taking basic response actions to a spill such as setting up barricades, placing containment media, and stopping spills in situations such as the Step 1 Example below should not be construed to be acting in the role of a "responder," as it is defined in OSHA HAZWOPER regulations.

The basic actions to be taken in response to a chemical/oil or heat transfer fluid spill or release are the following:

1. If the spill or release is the direct result of an operational action performed on the system from which the release has originated, the person who performed the action should attempt to stop the release (if possible) if it can be stopped without incurring additional personal exposure to the substance.

Example: A person opens the drain valve on a line that results in an unexpected release. If the person can immediately stop the release by closing the valve, this action should be taken if no additional exposure to the chemical will occur by doing so.

2. The person discovering a spill/release should immediately move to a location that is a safe distance from the affected area.

    a. If it is safe to do so under prevailing conditions, remain within observation distance.

    b. If safe conditions are in doubt, do not risk exposure—leave the area immediately.

3. The person discovering the spill should look for other personnel in the area, and warn them by any means available of the event that has occurred. The Site/Plant Leader should be notified immediately over the radio. Information provided should include all of the following that are known:

    a. What type of chemical has been spilled/released?

    b. The location(s) of the spill/release.

    c. If the source of the spill/release has been stopped.

    d. If any injury or chemical exposure has occurred to personnel.

    e. Boundaries describing the area of the spill.

    f. Whether or not the spill is contained.

    g. Quantity released (if it can be estimated).

    h. Environmental impacts (water bodies, streams, ground, roadways).

Based upon the report from the person discovering the spill, the Site/Plant Leader shall evaluate whether the circumstances pose a threat to the surrounding community or the environment.

If a threat is imposed to the community or environment, 911 should be notified immediately.
The Site/Plant Leader shall also contact at least one of the following specialized emergency responders:

Organization	Expected Response Time	Contact Number
National Response Center	2–4 hrs	1-800-424-8802
New Mexico Environment Department Emergency Hotline	2–4 hrs	Environmental Emergency Response (505) 827-9329; Spill Reporting (866) 428-6535 (voice mail, 24 hours/day)
Safety Kleen	2–4 hrs	(505) 884-2277
EPA State Emergency Response Commission	2–4 hrs	(505) 476-9650

4. The Plant Environmental Leader shall make a determination as to whether the spill/release is of a quantity that must be reported to agencies, and if so, which agencies to notify. To perform this step, the Site/Plant Leader shall use the Spill Prevention, Control, and Countermeasures Plan (SPCC Plan). The Plant Environmental Leader shall ensure that all required notifications are made.

5. The Site/Plant Leader or the Plant Environmental Leader shall make notification to the FPDC as soon as possible so the FPDC can issue a "deviation" to a pre-determined distribution list. If the Environmental Event is significant where outside organizations may request information the distribution may be expanded to include employees from Corporate Security, Media Relations, and the Corporate Emergency Preparedness Group. The PGD Emergency Response Coordinator will be made aware of the situation via the FPDC notification, or by the Operating Fleet VP, or by a direct call from the site depending on the magnitude of the incident.

6. If applicable, the Site/Plant Leader or the Plant Environmental Leader shall closely coordinate with the PGD Emergency Response Coordinator, during pre- and post-event activities.

7. While remaining at a safe distance from the spill/release, the person discovering the spill should locate and place temporary containment around the outer boundaries of the spill, and place absorbent mats over any plant drains that are near the location of the spill.

   Note: This should be performed only if it is safe to do so without risking chemical exposure.

8. The person discovering the spill should attempt to barricade, restrict access, or otherwise mark off safe boundaries around the spill to prevent others from inadvertently approaching the spill area.

   Note: This should be performed only if it is safe to do so without risking chemical exposure.

9. The person discovering the spill should remain at a safe distance from the source of the spill/release until additional assistance or instructions are received.

10. Unless the person discovering the spill has reported unsafe conditions for approach of the area, the Plant Environmental Leader shall immediately proceed to the spill area to evaluate the severity of the incident.

    Note: If any personnel are discovered to be unconscious or otherwise incapacitated upon approach to the spill scene, all personnel must immediately move away to a safe distance from the unknown threat.

11. The Site/Plant Leader shall evaluate the adequacy of containment, barricades, and any other efforts that have been taken to prevent the spill from migrating to any additional areas or systems, and direct

additional actions to be performed (unless it is deemed that any additional actions are unsafe to perform).

a. The adequacy or need for PPE should also be assessed. Upon completing this assessment, the Site/Plant Leader shall notify/inform the Facility Emergency Coordinator of the status of the emergency.

12. Once the Site/Plant Leader (or Emergency Coordinator, as appropriate) has determined that adequate containment and barricading of the spill area exists, he/she shall ensure that an adequately trained observer remains positioned a safe distance from the scene to observe the status of the spill and arrange for proper cleanup/mitigation actions.

ATTACHMENT 1.G. PANDEMIC EVENT

Refer to the PGD (Power Generation Division) Pandemic Plan. Link to Corporate Pandemic Plan on SharePoint

ATTACHMENT 1.H. IMMEDIATE SITE EVACUATION PROCEDURE

1. Personnel present in the Administrative Building or control room shall immediately take the following actions:

   a. Locate and obtain the visitor/contractor sign-in sheet.

   b. Locate and obtain all immediately accessible hand-held radios.

   c. Determine the safest muster area to proceed to, depending upon the known circumstances of the emergency (Attachment 1.C). Every site should have an identified off-site muster area.

   d. Assign designated plant employees to assist any employees or visitors with special needs that would restrict their ability to get safely and expediently to the muster area.

      NOTE: The ***primary*** muster area must be a predetermined location; alternate muster areas are to be selected only when egress routes to the primary muster area are unsafe to proceed along.

   e. Pass the following information over the plant radio system:

      1) The muster area the employees will be proceeding to.

      2) Visitors/contractors known to be in the operating areas (as indicated by the visitor/contractor sign-in sheet).

   f. Once emergency personnel have completed the preceding steps, they shall immediately proceed to their designated muster area.

   g. Personnel in the Administrative Building should not delay in evacuating, or wait on other personnel that they anticipate may arrive.

   h. Upon arriving at the designated muster area(s), the group shall designate a Person in Charge and take a head count of all personnel who are at the muster area, including contractors and visitors.

      1) After a roll call of all personnel present at the muster area is taken, the Person in Charge shall identify which operating area personnel are not accounted for.

      2) The Person in Charge will query by radio or cell phone for personnel who are unaccounted for.

      3) The Person in Charge shall establish radio communication with the Emergency Coordinator (if applicable) and relay information on personnel who are unaccounted for.

   i. All personnel at the muster location shall remain at the muster location until an "ALL CLEAR" signal is sounded, or if directed by the Emergency Coordinator (if applicable) to leave the muster location.

      1) The "ALL CLEAR" signal will be communicated by radio or cellular telephone.

   j. The Person in Charge shall continuously monitor the plant radio system when at the muster location.

2. Personnel present in the facility operating area (other than Administrative Building) shall immediately perform the following actions:

   a. If not monitoring the plant radio system, immediately turn on hand-held radios.

b. Proceed to the designated muster area, unless the egress route to the muster area is not safe for travel. In such a case, proceed to an alternate muster area.

c. Instruct any personnel (including visitors and contractors) who are seen along the way to proceed to the designated muster area.

d. Upon reaching the appropriate muster area, report to the Person in Charge and continue to monitor the plant radio system.

1) If no other personnel are present at the muster area upon arrival, communicate this to the Site/Plant Leader.

3. Personnel not in the operating areas of the plant (to include the Administration Building and inside parking areas) shall immediately perform the following actions:

a. Locate and obtain all immediately accessible hand-held radios.

b. Proceed to the designated muster area.

1) A Person in Charge shall be designated for the muster area. In many cases, this will be the Emergency Coordinator.

i. In the event that the Emergency Coordinator is in plant operating areas or has proceeded to an alternate muster area, he/she may elect to designate the muster area Person in Charge to act in the capacity of Emergency Coordinator during the emergency.

ii. If the Emergency Coordinator is not present at the muster area, the Person in Charge at the muster area will coordinate outside responding agency activities until the Emergency Coordinator arrives.

iii. The Person in Charge shall establish radio communications with operating area personnel and compare roll call lists to determine if any personnel are unaccounted for in the facility.

ATTACHMENT 1.I. DELAYED SITE EVACUATION PROCEDURE

1. Personnel present in the Administrative Building shall immediately perform the following actions:

    a. Take necessary operating actions to place the facility in the most stable condition, based upon the type of emergency.

    b. Locate and obtain the visitor/contractor sign-in sheet.

        1) Communicate names of visitors/contractors currently in the operating areas to outside operating personnel.

        2) Instruct outside operating personnel to locate and direct all visitors/contractors to proceed to the Administrative Building for egress instructions.

    c. When all visitors, contractors, and non-essential operating personnel have been accounted for and are present in the Administrative Building, the Site/Plant Leader (or Emergency Coordinator, as appropriate) shall designate a trained person to escort all non-essential personnel to the designated muster area along the safest egress route.

    d. Notify the Emergency Coordinator and Production Staff of the current facility status, and evacuation details.

    e. Perform a controlled shutdown in accordance with appropriate procedures and directions from the Emergency Coordinator.

    f. Once the shutdown has been completed, all essential personnel shall gather in the Administrative Building and take roll call.

    g. When all essential operating personnel are present and accounted for, evacuation to the designated muster area shall be performed, unless the egress route is not safe for travel.

        1) If evacuation route to the designated muster area is not safe for travel, proceed to the alternate muster area.

2. Personnel present in the facility operating areas (other than Administrative Building) shall immediately perform the following actions:

    a. Continuously monitor the radio system for information and instructions.

    b. Perform immediate response actions, as appropriate, to place the facility in the most stable condition, based upon the type of emergency.

    c. Locate and direct non-essential personnel to proceed to the Administrative Building immediately.

    d. Perform facility shutdown instructions as directed by the Site/Plant Leader.

    e. Upon completion of shutdown, or upon direction by the Emergency Coordinator, proceed to the Administrative Building for instructions.

3. Personnel not in the operating areas of the facility (to include the Administration Building and parking areas) shall immediately perform the following actions:

    a. Locate and obtain all immediately accessible hand-held radios.

    b. Proceed to the designated muster area (Attachment 1.J).

    c. A Person in Charge shall be designated for the muster area.

1) The Person in Charge shall establish radio communications with operating area personnel and compare roll call lists to determine if any personnel are unaccounted for in the facility.

2) The Person in Charge at the designated muster area will coordinate outside responding agency activities and provide assistance (to include personnel, resources, and administrative functions) to the Administrative Building as directed by the Emergency Coordinator and/or Site/Plant Leader.

4. The Emergency Coordinator shall immediately perform the following actions:

   a. Proceed to the Administrative Building, or to the location on the facility most appropriate for directing response actions for the emergency.

   b. Coordinate actions related to the emergency and provide directions to muster area Persons in Charge.

   c. In the event that the emergency escalates in severity or immediate danger to personnel, direct immediate evacuation of all essential operating personnel involved in plant shutdown activities.

ATTACHMENT 1.J. DESIGNATED EGRESS ROUTES & MUSTER AREAS FOR EVACUATIONS

TBD INSERT FACILITY MAP WITH EGRESS DIRECTIONS AND MUSTER AREAS

NOTE:

Each plant will assign emergency muster points. These are the locations that all employees, visitors, and contractors are to report to in the event of an emergency, or a drill. Muster points should be identified with proper signage and the site manager should have means of communication. In the event of an emergency the site manager or designee should bring the plant sign-in book to the muster point or designate someone to provide the information from the sign-in book so that the site manager can account for all employees and visitors. The location of the muster points will be shown to all contractors and visitors as a part of the initial plant orientation. Exit routes will be kept clear of clutter, and easily identified.

The Primary Muster Area is located at the **TBD**

The Alternate Muster Area is located **TBD**

The Primary Muster Area is the preferred gathering point for personnel, and should be used during evacuations unless the emergency has rendered egress routes to the Primary Muster Area unsafe for travel. The Alternate Muster Area is the alternate gathering point for such circumstances.

ATTACHMENT 1.K. PERSONNEL INJURIES AND SERIOUS HEALTH CONDITIONS

The following sections provide basic guidelines for response actions to be taken in the event of emergencies related to personnel health.

Although facility personnel should take the most aggressive response actions that are prudent in an emergency situation, the first and foremost action will be to call **911** to initiate the response of trained outside medical responders. Outside medical responders will not be asked to enter the facility, with the exception of the facility's Operations and Maintenance Building. It will be the responsibility of facility personnel to undertake all high-angle rescues at the facility to a ground-level location where outside medical responders can safely respond to the victim.

To prepare facility personnel for such contingencies, it will be the facility policy that all operating personnel and as many other personnel as possible should be trained in CPR (Cardiopulmonary Resuscitation), blood-borne pathogens, and in the use of an AED (Automated External Defibrillator) if one is available.

Each site will maintain at least one well-stocked first aid kit at the control room or O&M building and one in each site vehicle. These will be inspected at least monthly. Each plant will determine the locations of their nearest non-emergency Worker's Compensation–approved medical facility as well as the Occupational Nurse and post the name, address, and phone number. In the event of an emergency, the 911 responders will determine the best location for emergency care.

If present on-site, the AED will be maintained at the facility at a designated location known and accessible to all staff.

Automated External Defibrillators (AED) – NextEra sites with AEDs will perform the following:

- Test the AED every 6 months and after each use, per the manufacturer's requirements
- Inspect all AEDs at least every 90 days or per the manufacturer's requirements and document the inspection, including verification that the batteries and pads have not expired.
- Maintain records of maintenance and testing.
- Annually notify employees of location(s) of AEDs.
- Provide information on how to take CPR or AED training.
- Annually demonstrate how to use an AED.
- Post instructions (14-point font) next to the unit on how to use the AED.

1. Basic First Response Actions

    a. Check for responsiveness. Responsiveness is when the person is able to respond when you call their name or touch them.

    b. If the person is unresponsive, immediately call 911 for outside medical assistance and ask other personnel to bring the AED (if present) to the scene.

        1) Other personnel should assist with 911 notifications and expediting the delivery of the AED to the scene.

c. Check to see if the victim is breathing normally.

1) If no signs of breathing are observed, the responder should check for visible signs of airway blockage.

i. If obvious signs of airway blockage are noticed, attempt to remove the blockage

2) Initiate two rescue breaths into the victim.

3) After the rescue breaths, a pulse should be checked for on neck.

i. If a pulse is present, continue with recovery breathing, but do not initiate chest compressions.

ii. If no pulse is observed, commence CPR with assisted breathing.

d. If CPR is being performed and the AED arrives to the scene, direct an assistant to begin setting up the AED for operation on the victim.

1) CPR should be continued during the time that the AED is being set up.

2) If the AED is placed into operation, remain near the victim and follow all AED instructions to ensure safety and proper victim monitoring. Maintain the victim with AED monitoring until trained medical responders arrive at the scene.

e. If the victim is responsive, but shows signs of shock or has an obvious severe injury, call 911 immediately and take additional actions as described in the sections below.

f. If the victim has obvious broken bones or is bleeding profusely or may have neck or spine injuries, do not attempt to move the victim unless their immediate safety would be jeopardized by leaving them in that particular location. Make the victim as comfortable as possible, and apply pressure to mitigate areas of profuse bleeding until trained medical personnel arrive at the scene.

g. Immobilize all injured parts of the victim.

h. Prepare victim for transportation if the victim can be safely moved.

2. Physical Shock

a. Symptoms

1) Pallid face.

2) Cool and moist skin.

3) Shallow and irregular breathing.

4) Perspiration appearing on the victim's upper lip and forehead.

5) Increased, but faint pulse rate.

6) Nausea.

7) Detached semi-conscious attitude towards what is occurring around him/her.

b. Treatment

1. Request professional medical aid immediately.

2. Remain with and attempt to calm the victim.

3. Electric Shock <50 volts (For ≥50 volts, refer to NEE-SAF-1610 Electric Shock – Required Medical Evaluation)

   a. Symptoms

      1) Pale bluish skin that is clammy and mottled in appearance.
      2) Unconsciousness. No indications that the victim is breathing.

   b. Treatment

      1) Turn off electricity if possible.
      2) Call for professional medical assistance and an ambulance immediately.
      3) Remove electric contact from victim with non-conducting material.
      4) Perform CPR and call for the AED, if required.
      5) Electric Shock <50 volts (For ≥50 volts, refer to NEE-SAF-1610 Electric Shock – Required Medical Evaluation)

4. Burns

   a. Symptoms

      1) Deep red color; or
      2) Blisters; or
      3) Exposed flesh.

   b. Treatment

      1) Cooled immediately if at all possible, and
      2) Free of any jewelry or metal if it is safe to remove it.
      3) Do not pull away clothing from burned skin tissue.
      4) Do not apply any ointment to burn area.
      5) Seek professional medical assistance as soon as possible.

5. Heat Stroke

   a. Symptoms

      1) Face will be red.
      2) Face will be dry to the touch.
      3) The pulse will be extremely strong and fast.

   b. Treatment

      1) Rapidly cooled or death can occur.

2) Sponged with water.
3) Fanned to allow evaporation to occur.
4) Moved into a cool environment.

6. Heat Exhaustion

a. Symptoms

1) Increased heart rate.
2) Exhaustion can follow.
3) An impaired ability to think can exist.
4) A lack of coordination may be present.
5) Body temperature may be normal.
6) Skin can be clammy.
7) Weakness and dizziness may result.

b. Treatment

1) Remove from the hot environment.
2) Lay victim on their back with feet slightly elevated.

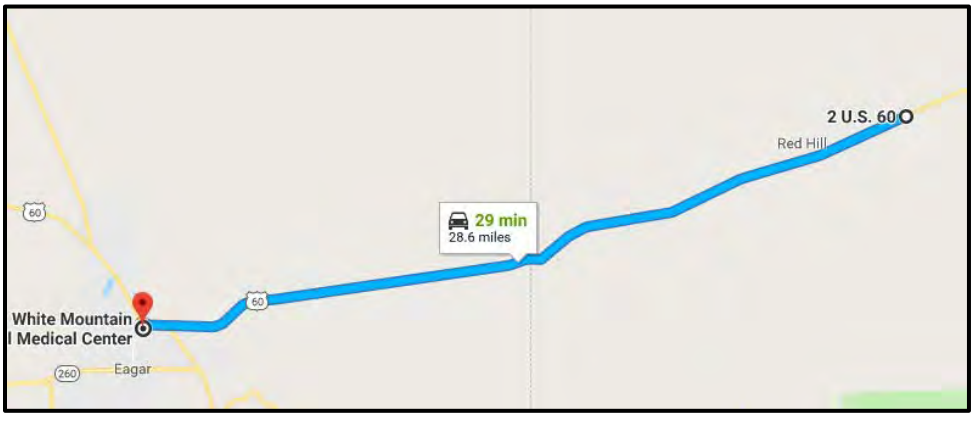
7. Local Emergency Contact Information (if needed)

Closest Medical Facilities from the Operations and Maintenance Building

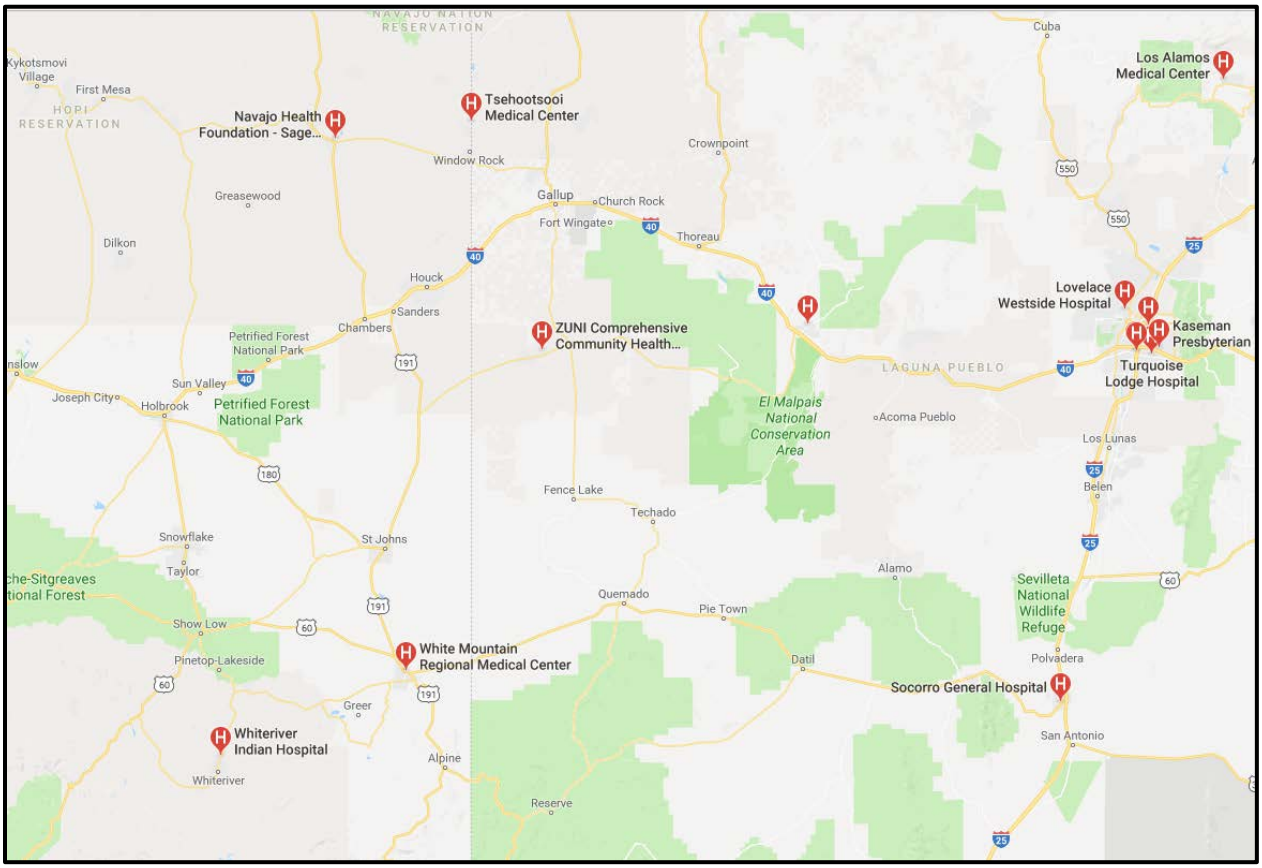
White Mountain Regional Medical Center
118 S. Mountain Ave
Springerville, AZ 85938

Directions

1. Turn left onto State Route 60 entering Arizona (28.5 miles)
2. Turn left onto South Mountain Avenue
3. White Mountain Regional Medical Center will be on the left (0.1 miles)



Other Regional Medical Centers



CODE BLUE INFORMATION FOR WIND ONLY

Note: For NEER Wind Fleet only, reference site specific Code Blue Books for additional relevant information regarding injury and health conditions. These books shall be reviewed annually by site personnel during one of the quarterly drills.

The Borderlands Wind Project Code Blue Book is stored in the OpModel under **ENTER OPMODEL DOCUMENT HERE.**

WIND CODE BLUE PACKETS

Each wind site shall fill out and maintain an emergency quick reference guide "Code Blue" packet. The sites will supply each truck or crew with two Code Blue packets. One shall be kept in the work truck and the second in the emergency up-tower kit. Central maintenance shall also be supplied with two Code Blue packets per truck, at each site they work at.

Each site shall review their Code Blue annually to ensure the information is current. A new Project Manager shall be created in MAXIMO to ensure this is completed.

Updating Code Blue packets

Enter Here the current instructions for updating the code blue packets.

New Code Blue packets

Enter Here the current instructions for ordering the code blue packets.

ATTACHMENT 1.L. SUMMARY OF WEATHERIZATION PLANS & PROCEDURES

1. Cold Weather Plan

Borderlands Wind Project prepares for the reliability of generation assets and supplementary systems during the winter period through the use a winter readiness procedure and a site specific check sheet. The inspections and checks include but are not limited to:

1) Inspection and maintenance of insulation quality for piping, instrumentation, and water lines.
2) Inspection and maintenance of insulation quality for instrumentation systems, instrument sensing lines, and control valves.
3) Freeze Protection Assessment
4) Review of generator fuel supply and delivery contracts.
5) Check fluid-filled systems using anti-freeze for freeze protection/fuel systems.
6) Building/Equipment enclosure checks.
7) Winter supplies check including winter survival kits for vehicles, including gas.

2. Hot Weather Plan

Borderlands Wind Project prepares for the reliability of generation assets and supplementary systems during the summer period through the use a summer readiness procedure and a site-specific check sheet. The inspections and checks include but are not limited to:

1) Verify operation of all fans
2) Check all fan blades for damage
3) Clean or replace air filters
4) Clean radiators
5) Verify all heaters are off
6) Open all ambient air vents
7) Verify radiator coolant mixture and top off as needed

NextEra has incorporated lessons learned into the summer and winter preparation procedures/checklists.

ATTACHMENT 2. BORDERLANDS WIND WASTE AND HAZARDOUS MATERIALS MANAGEMENT PLAN

INTRODUCTION

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. This Waste and Hazardous Materials Management Plan (Plan) is a required component of the POD accompanying the commercial ROW grant. Terms and conditions specified in the Plan shall be binding upon the wind farm owner and any of its successors, assignees, or heirs.

Objectives

The objectives of this Plan are to disclose the anticipated solid and hazardous wastes generated by the project and to outline the practices and procedures for the disposition of solid and hazardous wastes generated by project activities during construction, operation and maintenance, and decommissioning of the facility.

Borderlands Wind and its contractor(s) will be required to follow the program and procedures outlined in this Plan. All solid and hazardous wastes generated by project activities during construction, operation and maintenance, and decommissioning of the facility will be handled, stored, and disposed of in accordance with this Plan and all applicable federal, state, and local laws and regulations. Borderlands Wind and its contractors and subcontractors will be responsible for all applicable waste handling licenses, permits, fees, and taxes.

PROJECT WASTE SUMMARY

The following is a preliminary assessment of the anticipated wastes generated by the project during construction, operation and maintenance, and decommissioning of the facility.

Municipal Solid Wastes

Construction

During construction, the project will generate municipal solid waste and construction wastes from various activities, including road constructions, turbine foundations and installation, collection systems construction, substation and interconnection switchyard construction, and from construction and use of

on-site buildings. An estimate of the amount of municipal solid waste generated over the 11- to 12-month construction period will be provided to the BLM prior to notice to proceed. Estimated construction waste is detailed in Table 1.

Table 1. Construction Waste Estimate

Construction Category	Waste Estimate – 8 to 10 months(tons per year)
Access roads (primary and secondary)	TBD
Interior turbine access roads	TBD
Collection system	TBD
Wind turbine foundation	TBD
Wind turbine installation	TBD
Interconnection switchyard	TBD
Collection substation(s)	TBD
Transmission line	TBD
On-site buildings (O&M facility)	TBD
Materials Source	TBD
Total	**TBD**

Operations and Maintenance

An estimate of the amount of waste generated during the 30-year operations and maintenance period will be provided to BLM before construction begins.

Decommissioning

Borderlands Wind anticipates recycling or salvaging a majority of the decommissioned project components and materials. It is anticipated that as the project turbines reach the end of their expected life, technological advances may allow for a repowering where the existing turbines would be replaced with more efficient and cost-effective generators that extend the life of the project. Many older wind energy facilities have been repowered by upgrading or replacing existing towers and other infrastructure with more efficient turbines and related equipment.

In accordance with the proposed BLM ROW, decommissioning of the project will include removal of the following infrastructures:

- Aboveground equipment, including towers, concrete pads (does not include foundations), anchors, guy wires, fences, fixtures, materials, buildings, structures, improvements, and personal property installed by Developer or by its agents, will be removed and recycled or disposed of at approved off-site facilities.
- Where feasible, wind turbines, including blades and towers, will be removed in a manner to allow for refurbishment and resale of each component. Removal will require cranes, construction of temporary crane pads, plus some access road improvements to accommodate large cranes and trucks.
- Foundations will be removed to a depth of 3 feet below the surface. Structures and debris located below the soil surface will also be removed to a depth of 3 feet (or such greater depth as required

under the applicable lease agreement) below the surface. All pit holes, trenches, or other borings or excavations (but not roads) created during decommissioning will be properly filled and compacted.

- Underground power and communication lines will be decommissioned in place. Underground cables will be cut off at ground surface at the cabinets. Transformers will be removed from the site.

Solid waste and hazardous material will be disposed of off-site in accordance with applicable state and federal regulations. Decommissioned gearboxes, transformers, and hydraulic systems will be drained of fluids, put into appropriate containers before dismantling, and then transported and disposed of off-site in accordance with state and federal regulations.

An estimate of the amount of waste generated during the 6-month decommissioning will be provided to BLM before decommissioning begins.

Hazardous Wastes

Hazardous materials are those chemicals listed in the U.S. Environmental Protection Agency Consolidated List of Chemicals Subject to Reporting under Title III of the Superfund Amendments and Re-authorization Act of 1986 (SARA 1986). Hazardous materials as well as non-hazardous solid wastes such as oils and lubricants are managed under the Resource Conservation and Recovery Act (RCRA, 42 United States Code 6901 et seq. [1976]). No extremely hazardous materials are expected to be produced, used, stored, transported, or disposed of as a result of the project. Hazardous materials anticipated being used or produced for the project would include:

- Lubricants: grease (potentially containing complex hydrocarbons and lithium compounds, and motor oil)
- Fuels: gasoline (potentially containing benzenes, toluene, xylenes, methyl-tert-butyl ether, and tetraethyl lead), and diesel fuel
- Combustion emissions: nitrogen oxide, carbon monoxide, and methane hydrocarbons
- Transmission line emissions: ozone and nitrogen oxide
- Explosives
- Aerosols

Approximately 1 ton per year of hazardous wastes is anticipated to be generated during each phase of the project (construction, operations, and decommission). All production, use, storage, transport, and disposal of hazardous materials related to the project during construction would comply with all applicable federal, state, and local laws and regulations. All regulations regarding any toxic substances that are used, generated by, or stored at the project area would be followed in accordance with the Toxic Substances Control Act of 1976, as amended. Additionally, any release of toxic substances in excess of the reportable quantity established by 40 Code of Federal Regulations (CFR) Part 117 would be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The Spill Prevention, Control, and Countermeasures (SPCC) rule, which includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines, would be followed (see POD Appendix I).

Borderlands Wind will review any hazardous materials to be used on-site prior to authorizing their use on the project and will monitor and limit the quantities of hazardous materials brought on-site to minimize

the amount of hazardous waste generated. Borderlands Wind will develop procedures for the storage, use, transportation, and disposal of hazardous materials prior to introducing the hazardous materials on-site. The procedures will identify all hazardous materials that will be used, stored, or transported on-site and will establish requirements for inspection, storage, inventory control, product substitutions, and disposition of excess materials. The procedures will also identify requirements for notices to emergency response agencies. Potentially hazardous materials used in the operations and maintenance of the project will be stored in the O&M facility in approved, aboveground containers with appropriate spill containment features.

WASTE HANDLING

All materials will be stored within designated temporary waste collection areas until they are collected for transport to an approved facility (e.g., landfill, recycling facility).

Solid Waste Disposal

Solid wastes and refuse materials will be removed from the project site on a regular basis. Depending upon the availability of local municipal waste services, refuse materials will be contracted for on-site pick-up, or refuse materials will be transported by Borderlands Wind's contractor or subcontractor to the nearest landfill. Borderlands Wind and its contractor(s) will not allow refuse to accumulate on-site for extended periods of time. Burning of refuse material is not permitted. Any concrete waste will be hauled and disposed of at an approved, permitted site.

Recycling

Recyclable materials may include paper, glass, plastic, aluminum cans, corrugated cardboard, wood, and metals. Materials identified for recycling will be stored separately from solid and hazardous wastes, in labeled recycling containers. Depending upon the availability of local recycling facilities, recycling services will be contracted for on-site pick-up, or recyclable materials will be transported by Borderlands Wind and its contractor(s) to the nearest recycling facility.

Empty Containers

As regulated by the RCRA and defined in 40 CFR 261.7, a container or an inner liner that held any chemical or hazardous material, except a substance identified as an acute hazardous waste, is defined as an empty container if all material has been appropriately removed by pumping, pouring, or aspirating, and one of the following applies:

- no more than 1 inch of residue remains on the bottom of the container;
- no more than 3% by weight of the total capacity of the container remains in the container if the container is less than or equal to 119 gallons in size;
- no more than 0.3% by weight of the total capacity of the container remains in the container if the container is greater than 119 gallons in size.
- Containers holding compressed gases that are hazardous wastes are considered empty when the pressure in the container approaches atmospheric pressure (§261.7(b)(2)).

Containers meeting the definition of "empty" are not subject to the hazardous waste regulations under RCRA and can be recycled or reconditioned. Chemical or hazardous material containers will be managed separately and marked with the words "Empty Container" until they have been inspected.

Other Wastes

Used oil will not be mixed with other solid or hazardous waste and will be stored separately within appropriate secondary containment in accordance with all applicable rules and regulations. Used oil will be pumped into a truck and hauled to a recycling facility in Albuquerque, New Mexico, on an as-needed basis. Any project wastewater will be disposed of in accordance with federal, state, and county regulations.

ATTACHMENT 3. BORDERLANDS WIND FIRE PROTECTION AND PREVENTION PLAN

INTRODUCTION

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. This Fire Protection and Prevention Plan (Plan) is a required component of the POD accompanying the commercial ROW grant. Terms and conditions specified in the Plan shall be binding upon the wind farm owner and any of its successors, assignees, or heirs.

PURPOSE AND OBJECTIVES

The objective of this Fire Protection and Prevention Plan is to reduce the causes of fire, prevent loss of life and property by fire, and to comply with the Occupational Safety and Health Administration (OSHA) standard on fire prevention, 29 Code of Federal Regulations (CFR) 1926.24. Additionally, it provides employees and the public with information and guidelines that will assist them in recognizing, reporting, and controlling fire hazards.

The project activities will occur in remote and sometimes isolated areas. Consequently there is a probability that wildland fires may be encountered. Additionally, fire hazards normally associated with the construction industry can be anticipated. This Plan serves to reduce the risk of fires at the project site and includes the following:

- identifies materials that are potential fire hazards and their proper handling and storage procedures;
- distinguishes potential ignition sources and the proper control procedures of those materials;
- describes fire protection equipment and/or systems used to control fire hazards;
- identifies persons responsible for maintaining the equipment and systems installed to prevent or control ignition of fires;
- identifies persons responsible for the control and accumulation of flammable or combustible material;
- describes good housekeeping procedures necessary to ensure the control of accumulated flammable and combustible waste material and residues to avoid a fire emergency; and
- provides training to employees with regard to fire hazards to which they may be exposed.

Borderlands Wind and its contractor(s) will be required to follow the program and procedures outlined in this Plan. The 2018 International Building Code requirements shall be followed on this project.

RISKS IDENTIFICATION AND ASSESSMENT

The identification and assessment of fire hazards is outlined in Section 6 of this plan. The Borderlands Wind Emergency Action Plan spells out the procedures for responding to fires (Attachment 1 of Appendix F).

ASSIGNMENT OF RESPONSIBILITY

Fire safety is everyone's responsibility. All employees should know how to prevent and respond to fires, and are responsible for adhering to company policy regarding fire emergencies.

Management

NextEra Energy Resources Management determines Borderlands Wind fire prevention and protection policies. Management will provide adequate controls to provide a safe workplace, and will provide adequate resources and training to its employees to encourage fire prevention and the safest possible response in the event of a fire emergency.

Plan Administrator

The project Health and Safety Administrator shall manage the Plan and shall maintain all records pertaining to the Plan. The Plan Administrator shall also:

- Develop and administer a fire prevention training program.
- Ensure that fire control equipment and systems are properly maintained.
- Control fuel source hazards.
- Conduct fire risk surveys and make recommendations.

Supervisors

Supervisors are responsible for ensuring that employees receive appropriate fire safety training, and for notifying site safety personnel when changes in operation increase the risk of fire. Supervisors are also responsible for enforcing these fire prevention and protection policies.

Employees

All employees shall:

- Complete all required training before working without supervision.
- Conduct operations safely to limit the risk of fire.
- Report potential fire hazards to their supervisors.
- Follow fire emergency procedures.

RISK CONTROL

Good Housekeeping

To limit the risk of fires, employees shall take the following precautions:

- Minimize the storage of combustible materials.
- Make sure that all exit or evacuation routes are kept free of obstructions.
- Dispose of combustible waste in accordance with all applicable laws and regulations.
- Use and store flammable materials in areas away from ignition sources.
- Keep incompatible (i.e., chemically reactive) substances away from each other.
- Perform "hot work" (i.e., welding or working with an open flame or other ignition sources) in controlled areas. Hot work areas will be wetted down as necessary before hot work is performed.
- Any fire restrictions issued by local authorities will be followed at all times.
- Keep equipment in good working order (i.e., inspect electrical wiring and appliances regularly and keep motors and tools free of dust and grease).
- Ensure that heating units are safeguarded.
- Report all fuel or petroleum leaks immediately. All leaks will be repaired immediately upon notification.
- Repair and clean up flammable liquid leaks immediately.
- Keep work areas free of combustible materials.
- Do not rely on extension cords if wiring improvements are needed, and take care not to overload circuits with multiple pieces of equipment.
- Turn off electrical equipment when not in use.
- Turn off idling vehicles as much as appropriate.

Maintenance

All equipment is to be maintained according to manufacturers' specifications. Only properly trained individuals shall perform maintenance work.

The following equipment is subject to the maintenance, inspection, and testing procedures:

- portable fire extinguishers;
- fire alarm systems;
- water trucks and associated equipment; and
- emergency backup systems and the equipment they support.

TYPES OF RISK

The following sections address the major workplace fire risks at the Borderlands Wind project site and the procedures for controlling those risks.

Electrical Fire Hazards

Electrical system failures and the misuse of electrical equipment are leading causes of workplace fires. Fires can result from loose ground connections, wiring with frayed insulation, or overloaded fuses, circuits, motors, or outlets.

To prevent electrical fires, employees shall:

- Make sure that worn wires are replaced.
- Use only appropriately rated fuses.
- Never use extension cords as substitutes for wiring improvements.
- Use only approved, and inspected, extension cords (i.e., those with the Underwriters Laboratory [UL] or Factory Mutual [FM] label).
- Check cords and equipment in hazardous locations where the risk of fire is especially high.
- Check electrical equipment to ensure it is properly grounded or double insulated.

Portable Heaters

All portable heaters shall be approved by the project Health and Safety Administrator. Portable electric heaters shall have tip-over protection that automatically shuts off the unit when it is tipped over. There shall be adequate clearance between the heater and combustible furnishings or other materials at all times.

Office Fire Hazards

Fire risks are not limited to the job site. Fires in offices have become more likely because of the increased use of electrical equipment, such as computers and fax machines. To prevent office fires, employees shall:

- Avoid overloading circuits with office equipment.
- Turn off nonessential electrical equipment at the end of each workday.
- Keep storage areas clear of rubbish.
- Ensure that extension cords are not placed under carpets.
- Ensure that trash and paper set aside for recycling is not allowed to accumulate.

Cutting, Welding, and Open Flame Work

Supervisors will ensure the following:

- A job site evaluation for fire hazards is completed prior to work beginning.
- Cutting and welding are done by authorized personnel in designated cutting and welding areas whenever possible.
- Torches, regulators, pressure-reducing valves, and manifolds are UL listed or FM approved.

- Oxygen-fuel gas systems are equipped with listed and/or approved backflow valves and pressure-relief devices.
- Cutters, welders, and helpers are wearing eye protection and protective clothing as appropriate.
- Cutting or welding is prohibited in areas where explosive atmospheres of gases, vapors, or dusts could develop from residues.
- Small tanks, piping, or containers that cannot be entered are cleaned, purged, and tested before cutting or welding on them begins.

Flammable and Combustible Materials

The presence of combustible materials on-site shall be regularly monitored. Certain types of substances can ignite at relatively low temperatures or pose a risk of explosion if ignited. Such substances obviously require special care and handling.

CLASS A MATERIALS

These include common combustible materials (wood, paper, cloth, rubber, and plastics) that can act as fuel and are found in non-specialized areas such as offices.

To handle Class A materials safely:

- Dispose of waste daily.
- Keep trash in metal-lined receptacles with tight-fitting covers (metal wastebaskets that are emptied every day do not need to be covered).
- Keep work areas clean and free of fuel paths that could allow a fire to spread.
- Keep combustibles away from accidental ignition sources, such as hot plates, soldering irons, or other heat- or spark-producing devices.
- Store paper stock in metal cabinets.
- Store rags in metal bins with self-closing lids.
- Do not order excessive amounts of combustibles.
- Make frequent inspections to anticipate fires before they start.
- Water, multi-purpose dry chemical (ABC), and CO2, are approved fire extinguishing agents for Class A materials.

CLASS B MATERIALS

These include flammable and combustible liquids (oils, greases, tars, oil-based paints, and lacquers), flammable gases, and flammable aerosols.

To handle flammable liquids safely:

- Use only pumps that are approved/recognized by an authority (i.e., National Fire Protection Association, UL, etc.) to dispense liquids from tanks, drums, barrels, or similar containers (or use approved self-closing valves or faucets).

- Do not dispense Class B flammable liquids into containers unless the nozzle and container are electrically interconnected by contact or by a bonding wire. Either the tank or container must be grounded.
- Store, handle, and use Class B materials only in approved locations where vapors are prevented from reaching ignition sources such as heating or electric equipment, open flames, or mechanical or electric sparks.
- Do not use a flammable liquid as a cleaning agent inside a building or tool van (the only exception is in a closed machine approved for cleaning with flammable liquids).
- Do not use, handle, or store Class B materials near areas normally used as exits.
- Do not weld, cut, grind, or use unsafe electrical appliances or equipment near Class B materials.
- Do not generate heat, allow an open flame, or smoke near Class B materials.
- Know the location of and how to use the nearest portable fire extinguisher rated for Class B fire.
- Water should not be used to extinguish Class B fires caused by flammable liquids. Water can cause the burning liquid to spread, making the fire worse. To extinguish a fire caused by flammable liquids, exclude the air around the burning liquid.
- The following fire-extinguishing agents are approved for Class B materials: carbon dioxide, multi-purpose dry chemical (ABC).

Grasslands

The job site contains grassland areas. Strong efforts on the part of everyone must be taken to prevent fire within these areas.

All supervisors and employees are to ensure that:

- All company pickup trucks shall be equipped with a first-aid kit, and fire extinguisher.
- All pieces of equipment with an internal combustion engine are equipped with a fire extinguisher.
- All vehicles equipped with catalytic converters are not parked or operated in crop or grasslands unless on a designated roadway.
- When it is necessary to cross with or operate equipment on crop or grasslands, the travel route or place of operation shall be wetted down with a water truck, or otherwise rendered inert.
- No hot work is to be performed upon or immediately adjacent to crop or grasslands unless all precautions have been taken to ensure the work zone has been rendered inert.

Smoking

Smoking is prohibited on the job site unless within an enclosed vehicle, or designated smoking area. All designated smoking areas shall have a cigarette-butt receptacle approved and in accordance with Section 307 of the 2006 International Building Code.

VALUES TO BE PROTECTED

In the event of a wildfire, life, safety, environmental, project production, and infrastructure values would be affected. Additionally, the production use and economic value of crop and pastureland would be

severely impacted. Recreational use of these and adjacent lands would be also affected. The loss of vegetation may result in unnecessary stormwater runoff, silting of waterways, and other related environmental concerns.

PROTECTION CAPABILITY

Protection capability and response times are limited to the following factors.

- The project will have water trucks equipped with pumps and hoses. However, project-owned/controlled water trucks will operate in a "support only" capacity (i.e., haul/resupply water) to professional firefighters.
- Additionally, each company pickup truck is equipped with first-aid kits and fire extinguishers.
- Project personnel are not trained firefighters and are not to fight fires beyond the incipient or initial stages, or as required to facilitate personal safety/egress. Personnel have been trained to summon professional help and evacuate to designated zones of safety.
- Personnel have not been equipped with or trained in the use of professional firefighting equipment.

IMPLEMENTATION OF PLAN

In the event of a fire incident, employees will follow the protocols set forth in the Emergency Action Plan and site-specific safety handbook (i.e., notify site safety/management via telephone or radio, immediately). Upon receiving notification from the field, the 911 Emergency Action Plan will be activated and professional assistance summoned.

TRAINING

The Borderlands Wind contractor(s) site health and safety personnel shall present basic fire prevention training to all employees and subcontractors during the site-specific orientation and shall maintain documentation of the training, which includes:

- review of 29 CFR 1926.24, including how it can be accessed;
- this Fire Prevention Plan, including how it can be accessed;
- good housekeeping practices;
- proper response and notification in the event of a fire;
- instruction on the use of portable fire extinguishers (as determined by company policy in the Emergency Action Plan); and
- recognition of potential fire hazards.

The Borderlands Wind contractor(s) shall provide training to all project employees about the fire hazards associated with the specific materials and processes to which they are exposed, and will maintain documentation of the training. Employees will receive this training:

- upon initial assignment,
- annually, and

- when changes in work processes necessitate additional training.

PROGRAM REVIEW

The Borderlands Wind Health and Safety Administrator shall review this Plan at least annually for necessary changes.

APPENDIX G

Spill Prevention, Control, and Countermeasures Plan

BORDERLANDS WIND PROJECT
APPENDIX G
SPILL PREVENTION, CONTROL, AND COUNTERMEASURES PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

CONTENTS

1 INTRODUCTION AND PURPOSE

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. This Spill Prevention, Control, and Countermeasures (SPCC) Plan is a required component of the POD accompanying the commercial ROW grant.

Terms and conditions specified in the SPCC Plan shall be binding upon the wind farm owner and any of its successors, assignees, or heirs. The SPCC Plan and all controls and countermeasures will be implemented prior to construction. This SPCC Plan is not a complete plan, but rather serves as the framework document for the development of a complete SPCC Plan and will lay the foundation for both the construction and the operation and maintenance phases of the project.

An SPCC Plan addresses prevention and control of oil, hydraulic fluid, and petroleum fuel spills, primarily spills that could enter navigable waters of the U.S. This SPCC Plan addresses four basic issues:

- design, operation, and maintenance procedures to prevent and control oil spills;
- measures designed for the prevention of operational error and equipment failure involving oil, which are the causes of most spills;
- control and recovery of oil spills by containment structures to prevent a spill from entering navigable waters; and
- oil discharge response procedures for project personnel. This encompasses countermeasures (a contingency plan) to contain, clean up, and mitigate the effects of an oil spill at or from the project.

This SPCC Plan is required in defined circumstances by the U.S. Environmental Protection Agency (EPA) regulations contained in Title 40, Code of Federal Regulations, Part 112 (40 CFR 112), titled “Oil Pollution Prevention.” This SPCC Plan provides preventive procedural actions associated with spills or releases of oil, including fuel, lubricant, or heat transfer media, during construction refueling activities and during operation and maintenance. This SPCC Plan also presents applicable Proponent Constraints and Mitigation Measures as methods to minimize the environmental impact.

2 RESPONSIBILITY OF IMPLEMENTATION

The SPCC Rule, administered by the EPA, is a rule that includes requirements for oil spill prevention, preparedness, and response to prevent discharges to navigable waters and adjoining shorelines. Specifically, the rule requires facilities to prepare, amend, and implement SPCC Plans. A facility is subject to SPCC Plan regulations if the total aboveground storage capacity of oil and oil products exceeds

1,320 gallons; or if the underground storage capacity exceeds 42,000 gallons; and if, because of its location, the facility could reasonably be expected to discharge oil into navigable waters of the U.S. Containers with a capacity of less than 55 gallons of oil or oil products are exempted from the requirements under the Oil Pollution Prevention regulations.

Borderlands Wind, its construction contractor(s), and their inspectors shall be responsible for the implementation of the procedural actions, best management practices (BMPs), and other specific stipulations and methods of any and all applicable SPCC Plans. The construction contractor(s) will implement the SPCC Plan to ensure compliance with applicable federal, state, and local regulations applicable to the location of refueling, storage, waste removal, and other activities involving fuels and petroleum products in coordination with Borderlands Wind. The final plan(s) shall be reviewed by Borderlands Wind as appropriate.

A key component of SPCC Plan implementation is training. All oil-handling personnel including construction contractor employees and subcontractors involved with transporting or handling fueling equipment or maintaining construction equipment will be required to complete spill training before they commence work on the project. Spill training will also be required for all contractor and subcontractor personnel before beginning work on the project.

Spill training programs will be conducted by the construction contractor and the site safety coordinator and will accomplish the following:

- Provide information concerning pollution control laws, regulations, and rules
- Inform personnel of the proper operation and maintenance of fueling equipment
- Inform personnel of spill prevention and response requirements, including the operation and maintenance of equipment to prevent discharges
- Describe the measures and provisions of the SPCC Plan and discharge procedure protocols
- Assign roles and responsibilities for implementing the SPCC Plan

Measures, responsibilities, and provisions of this SPCC Plan and spill training will be provided through ongoing safety briefings, which will discuss safety and spill prevention and response, including personal responsibility to initiate appropriate procedures.

3 SPILL PREVENTION

It is anticipated that fuel and petroleum products will be stored and used in the project area in various quantities. Therefore, BMPs are to be used to minimize the potential for spills and for pollutants to enter the environment. The most economical and effective control for pollutants generated on construction sites is the exercise of “good housekeeping” practices and an awareness by construction workers, planners, engineers, and developers of the need for and purpose of compliance with federal, state, and local regulations. The following general “good housekeeping” practices will be used:

- Borderlands Wind shall develop a spill prevention and response plan identifying where hazardous materials and wastes are stored on-site, spill prevention measures to be implemented, training requirements, appropriate spill response actions for each material or waste, the locations of spill response kits on-site, a procedure for ensuring that the spill response kits are adequately stocked at all times, and procedures for making timely notifications to authorities.
- An aboveground storage tank with secondary containment spill prevention would be used to store fuel for the project.

- Assessment of potential spills and secondary containment.
- Spill prevention and response procedures for the facility.

Petroleum products are widely used during construction activities. These products are used as fuels and lubricants for vehicular operations and power tools. For general operation and equipment maintenance, these products include oils and fuels such as gasoline, diesel oil, kerosene, lubricating oils, and grease. Most of these pollutants adhere to soil particles and other surfaces easily. Oil and oily wastes, such as crankcase oil, cans, rags, and paper dropped in oil and lubricants, can be best disposed of in proper receptacles or recycled. Used oil for recycling will not be mixed with degreasers, solvents, antifreeze, or brake fluid. A further source of these pollutants is leaky vehicles. Proper refueling and maintenance of equipment will further reduce pollution by this source.

General practices for storing petroleum products and solvents include the following:

- Store products in weather-resistant sheds, where practical.
- Line the storage area with a durable impervious material.
- Create an impervious berm around the perimeter or appropriate parts of the perimeter to contain any spills.
- Capacity of bermed area will be at a minimum 110 percent of the capacity of the largest container.
- Clearly label all products.
- Keep tanks off the ground, where feasible, and keep lids securely fastened.
- Locate the storage area where it is protected from vehicle traffic.
- Post or provide access to information for procedures in case of spills. Persons trained in handling spills will be on site or on call at all times.
- Materials for cleaning up spills will be kept on-site and easily available. Spills will be cleaned up immediately and the contaminated material disposed of properly.
- Specify a staging area for all vehicle refueling and maintenance activities. This area will be located away from all drainage courses.
- All storage facilities will be regularly monitored for leaks and repaired as necessary. Workers will be reminded during subcontractor or safety meetings about proper storage and handling of materials.
- Construction activity accumulating dangerous wastes that do not contain free liquids will be protected from stormwater run-on.
- Where material is temporarily stored in drums, a containment system can be used.
- Drums stored in an area where unauthorized persons may gain access must be secured in a manner that prevents accidental spillage, pilferage, or any unauthorized use.
- An employee trained in emergency spill cleanup procedures will be present when dangerous wastes, liquid chemicals, or other wastes are loaded or unloaded.
- No material, liquid or otherwise, is to be discharged through any storm drain system.
- Cleaning agents that can be recycled will be chosen where practical.

4 PETROLEUM SPILLS AND EMERGENCY RESPONSE

While each spill, leak, or response is unique, standard procedures generally apply. These may include the following steps:

1. First response/assessment and initiation of action (internal and agency notification may be required)
2. Spill control and containment
3. Cleanup
4. Disposal
5. Documentation and reporting
6. Agency notification/external reporting
7. Assessment

These steps are covered in detail below.

4.1 First Response / Assessment and Initiation of Action

When a leak or spill is detected, human health and safety is paramount. Once the situation is deemed safe, the priority will become preventing further damage. The responsibility of the first responder is to first determine the immediate threat to human health and safety, and to the environment, then to evaluate the extent of the spill, its source, whether the release can be stopped, and whether available resources are sufficient to mitigate it. Additional personnel and resources should be requested if needed.

4.2 Spill Control and Containment

All releases will be stopped as soon as possible. The spill will be contained as soon as possible to minimize damage to human health and the environment. This could involve placement of absorbent socks or booms, constructing an earthen dike, spreading absorbent materials on the affected area in the event of small spills, or simply shoveling all contaminated soil into a plastic bag or drum that would be carried on vehicles specifically available for the purpose.

4.3 Cleanup

Cleanup operations will begin as soon as possible after the active spill has been stopped and the spread of spilled materials has been contained. Cleanup could be as simple as placing absorbent socks in a bin for proper disposal, or as complex as excavation and hauling of contaminated soil followed by confirmatory soil and water testing.

4.4 Disposal

The correct method of waste disposal varies with the material. Contaminated soils, liquids, and cleanup materials will be managed through a licensed waste management firm or treatment, storage, and disposal company. Copies of shipping/disposal manifests will be filed with the documentation of the event.

4.5 Documentation and Reporting

Appropriate forms documenting the release and cleanup must be completed and signed, and stored along with any sample results, manifests, chains of custody, photographs, and other relevant materials.

4.5.1 *Agency Notification/External Reporting*

If a spill occurs on federal or state land, the appropriate agency office or landowner will be notified, and a copy of the manifest for disposal of the affected materials will be provided to the appropriate agency if required. Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Section 102b. A copy of any report required or requested by any federal agency or state government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved federal agency or state government.

The EPA has determined that discharges of oil into navigable waters of the U.S. in quantities that may be harmful to public health or the environment include those that:

- violate applicable water quality standards;
- cause a film or "sheen" upon, or discoloration of the surface of the water or adjoining shorelines; and/or
- cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

The National Response Center (NRC) shall immediately be notified of such discharges, as shall any required state and/or municipal agencies. This notification will be documented by the SPCC Coordinator. Information on the notification will follow the requirements described in the beginning of this subsection.

For discharges more than 1,000 gallons in a single event; or discharges more than 42 U.S. gallons of oil in each of two discharges occurring within any 12-month period, the final SPCC Plan, with the site-specific information listed in 40 CFR 112.4(a), will be submitted within 60 days to the EPA Regional Administrator.

The written report will contain the following information:

- Name, telephone number, and address of facility where spill occurred
- Name of owner/operator
- Name, title, telephone number, and address of reporter
- Name and telephone number of the person responsible for facility operations at the spill site
- Date and time of the spill or release
- Maximum storage or handling capacity of oil on the site and normal daily throughput
- Corrective action taken, with description of equipment repairs and replacements
- Facility description with maps, flow diagrams, and topographical information
- Estimated quantity of material released or spilled and the time/duration
- Exact spill location, including the name of the waters threatened or other affected media

- Source of the release or spill
- Cause of accident/spill
- Steps being taken or proposed to contain/clean up the spill, and precautions taken to minimize impacts
- SPCC Plan and failure analysis
- Cause of spill, with failure analysis
- Additional preventive measures taken or contemplated to minimize recurrence
- Other information pertinent to the SPCC Plan or spill event

Additionally, the state of New Mexico has their own reporting requirements for spills, which is detailed below.

NEW MEXICO REPORTING REQUIREMENTS

According to the New Mexico Environment Department (NMED), a discharge of any material in a quantity that may, with reasonable probability, injure or be detrimental to human health, animal/plant life, or property; or may unreasonably interfere with the public welfare or the use of the property, must be reported. This includes chemicals, biohazard materials, petroleum products, and sewage. In addition to recent spills, the discovery of evidence of previous unauthorized discharges, such as contaminated soil or groundwater, also must be reported.

- Emergency: (505) 827-9329, Non-Emergency: (866) 428-6535
- Website: http://www.nmenv.state.nm.us/gwb/nmed-gwqb-NotificationofSpillsandUnauthori.htm

Oral notification must be provided to NMED as soon as possible after learning of a discharge, but in no event more than 24 hours thereafter.

4.5.2 *Assessment*

This is time to reflect on the cause of the spill, the response, and how the situation could have been improved. The assessment will include:

- Evaluation of what caused the spill, how it could have been prevented, and what other locations this may apply to.
- Evaluation of the emergency response and how it could be improved.
- Evaluation of the availability and utility of the equipment that was necessary to mitigate the spill.
- Implementation of changes to the facility, this SPCC Plan, and personnel training as appropriate.

4.6 Design Criteria (Proponent Constraints and Mitigation Measures)

The following BMPs will be implemented in conjunction with this SPCC Plan:

- Borderlands Wind will ensure that secondary containment is provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) will be a temporary activity occurring only for as long as is needed to support construction activities.

- Borderlands Wind will ensure wastes are properly containerized and removed periodically for disposal at appropriate off-site permitted disposal facilities.
- In the event of an accidental release to the environment, Borderlands Wind will document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event will be provided to the BLM authorized officer and other federal and state agencies, as required.
- Borderlands Wind will ensure that any wastewater generated in association with temporary, portable sanitary facilities will be periodically removed by a licensed hauler and introduced into an existing municipal sewage treatment facility. Temporary, portable sanitary facilities provided for construction crews will be adequate to support expected on-site personnel and will be removed at completion of construction activities.

4.7 Emergency Contacts

National Response Center (Washington, D.C.)

The NRC is the sole federal point of contact for reporting all hazardous substances releases and oil spills. The NRC receives all reports of releases involving hazardous substances and oil that trigger federal notification requirements under several laws.

Phone: (800) 424-8802
Website: http://www.nrc.uscg.mil/

U.S. Environmental Protection Agency

Superfund, Toxic Release Inventory, Emergency Planning and Community Right-to-Know Act, Risk Management Program, and Oil Information Center:
Phone: (800) 424-9346

Type of Coverage: Staffed by live Information Specialists. Assistance is also available through the Emergency Management Frequently Asked Question Database, which provides answers to frequently asked questions and an option to submit questions electronically to the Information Center.

Description: A publicly accessible service that provides up-to-date information on the regulatory requirements of the Oil Pollution Prevention Program, including Spill Prevention, Control, and Countermeasures (SPCC) Plans, Facility Response Plans (FRPs), and oil discharges. The Information Center does not provide regulatory interpretations. It does, however, maintain up-to-date information on the availability and distribution of publications and other resources pertaining to its program areas.

Additional Notes: This hotline is shared and managed by the following EPA Programs: the Toxics Release Inventory, EPCRA, Risk Management Plans, Superfund, and Oil Spill Prevention.

EPA Region 6 Customer Service Line:
Phone: (800) 887-6063
Outside Region 6 call (214) 665-6444

Serving Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas).

Bureau of Land Management, Socorro Field Office

901 South Old U.S. Highway 85, Socorro, NM 87801
Phone: (575) 835-0223

Field Manager: Mark Matthews

New Mexico Environment Department

Emergency Phone: (505) 827-9329,
Non-Emergency Phone: (866) 428-6535 or (505) 476-6000
Website: http://www.nmenv.state.nm.us/gwb/nmed-gwqb-NotificationofSpillsandUnauthori.htm

APPENDIX H

Design Criteria

BORDERLANDS WIND PROJECT
APPENDIX H
DESIGN CRITERIA

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

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The following design criteria (proponent constraints and mitigation measures) would be implemented during each applicable phase of the proposed project. These design criteria and measures are based upon the BLM's Final Programmatic Environmental Impact Statement on Wind Energy Development (BLM 2005) and BLM Wind Energy Development Policy (BLM 2009).

1 SITE MONITORING AND TESTING

- The area disturbed by installation of meteorological towers (i.e., footprint) shall be kept to a minimum.
- Existing roads shall be used to the maximum extent feasible. If new roads are necessary, they shall be designed and constructed to the appropriate standard.
- Meteorological towers shall not be located in sensitive habitats or in areas where ecological resources known to be sensitive to human activities (e.g., prairie grouse) are present. Installation of towers shall be scheduled to avoid disruption of wildlife reproductive activities or other important behaviors.
- Meteorological towers installed for site monitoring and testing shall be inspected periodically for structural integrity.

2 GENERAL

- Borderlands Wind will plan for efficient use of the land. Any necessary infrastructure requirements will be consolidated wherever possible, and current transmission and market access will be evaluated carefully.
- Borderlands Wind will utilize existing roads and utility corridors to the maximum extent feasible, and to minimize the number and length/size of new roads, laydown areas, and borrow areas.
- Borderlands Wind will develop "good housekeeping" procedures to ensure that during operation the site will be kept clean of debris, garbage, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards.

2.1 Wildlife and Other Ecological Resources

- Borderlands Wind will design the project to avoid (if possible), minimize, or mitigate impacts to important, sensitive, or unique habitats in the project vicinity (e.g., locate the turbines, roads, and ancillary facilities in the least environmentally sensitive areas; i.e., away from riparian habitats, streams, wetlands, drainages, or critical wildlife habitats).
- Borderlands Wind will design the project to minimize or mitigate the potential for bird and bat strikes.
- Borderlands Wind will site turbines to avoid landscape features known to attract raptors (to the extent practical) if site studies show that placing turbines there would pose a significant risk to raptors.
- Borderlands Wind will avoid placing turbines near known bat hibernation, breeding, and maternity/nursery colonies; in known migration corridors; or in known flight paths between colonies and feeding areas (to the extent practicable).
- Borderlands Wind will consider measures to reduce raptor use at a project site.

- Borderlands Wind will design facilities to discourage facility structure's use as perching or nesting substrates by birds (to the extent practicable).
- Design the project to avoid (if possible), minimize, or mitigate impacts to these resources. Mitigation may include seasonal use restrictions, if other mitigation is not possible, during construction and operation.

2.2 Visual Resources

- Borderlands Wind will integrate the turbine array with the surrounding landscape to the extent practicable. Design elements to be addressed include visual uniformity, use of tubular towers, proportion and color of turbines, nonreflective paints, and prohibition of commercial messages on turbines.
- Borderlands Wind will integrate other site design elements with the surrounding landscape to the extent practicable including minimizing the profile of the ancillary structures, burial of cables, prohibition of commercial symbols, and lighting. Borderlands Wind will minimize the need for and amount of lighting on ancillary structures.
- Borderlands Wind will prepare an access road siting and management plan incorporating existing BLM standards regarding road design, construction, and maintenance such as those described in the BLM 9113 Manual (BLM 1985).
- Design the project to avoid (if possible), minimize, or mitigate impacts to these resources.

2.3 Noxious Weeds and Herbicides

- Borderlands Wind will use certified weed-free mulching. Trucks and construction equipment are arriving from locations with known invasive vegetation problems, will undergo a controlled inspection and a cleaning area will be established to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.
- Borderlands Wind may use herbicides on the site, and an integrated weed management plan will be developed to ensure that applications would be conducted within the framework of BLM and U.S. Department of the Interior policies and entail only the use of EPA-registered herbicides. Borderlands Wind will only apply herbicides in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications.
- Design the project to avoid (if possible), minimize, or mitigate impacts to these resources.

2.4 Cultural/Historic Resources

- Borderlands Wind will avoid cultural resources to the extent practicable and coordinate with BLM and/or tribes on other mitigation measures.
- Borderlands Wind will include in their construction worker training and operations staff training, the protocols for unanticipated discoveries and the consequences of unauthorized collection and destruction of artifacts on public land.
- Design the project to avoid (if possible), minimize, or mitigate impacts to these resources.
- Borderlands Wind will develop a discovery plan for construction activities in case of inadvertent cultural resource discoveries.

2.5 Paleontological Resources

- Borderlands Wind will avoid paleontological resources to the extent practicable.
- Borderlands Wind will include in their construction worker training and operations staff training, the protocols for unanticipated discoveries and the consequences of unauthorized collection and destruction of fossils on public land.
- Design the project to avoid (if possible), minimize, or mitigate impacts to these resources.

3 CONSTRUCTION

To minimize impacts during construction, the following design criteria (proponent constraints and mitigation measures) will be implemented.

3.1 General

- Borderlands Wind will minimize the area disturbed by construction and operation of the project (i.e., footprint).
- Borderlands Wind will minimize the number and size/length of roads, temporary fences, laydown areas and borrow areas.
- Borderlands Wind will salvage and reapply during reclamation, the topsoil from all excavations and construction activities.
- Borderlands Wind will reclaim all areas of disturbed soil using weed-free native grasses, forbs, and shrubs. Reclamation activities will be undertaken as early as possible on disturbed areas.
- Borderlands Wind will bury all electrical collector lines in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance).
- Borderlands Wind will avoid creating excessive slopes during excavation and blasting operations. Special construction techniques will be used, where applicable, in areas of steep slopes, erodible soil, and stream channel crossings.
- Borderlands Wind will utilize erosion controls that comply with county, state, and federal standards. Practices such as jute netting, silt fences, and check dams will be applied near disturbed areas.

3.2 Wildlife

- Borderlands Wind will undertake restoration in accordance with the habitat restoration plan as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.
- Borderlands Wind will implement a worker environmental awareness training to educate/instruct all construction employees to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. Borderlands Wind will not allow employees' pets on-site during construction.

3.3 Visual Resources

- Borderlands Wind will reduce visual impacts during construction by minimizing areas of surface disturbance, controlling erosion, using dust suppression techniques, and restoring exposed soils as closely as possible to their original contour and vegetation.

3.4 Roads

- Borderlands Wind will use existing roads but only if in safe and environmentally sound locations. If new roads are necessary, roads will be designed and constructed to the appropriate standard and be no higher than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Excessive grades on roads, road embankments, ditches, and drainages will be avoided, especially in areas with erodible soils. Special construction techniques will be used, where applicable. Abandoned roads and roads that are no longer needed will be recontoured and revegetated.
- Where appropriate, Borderlands Wind will use aggregate materials on road surfaces.
- Borderlands Wind will design any new roads to follow natural contours and minimize side hill cuts.
- Borderlands Wind will locate roads away from drainage bottoms and avoid wetlands, if practicable.
- Borderlands Wind will design roads so that changes to surface water runoff are avoided and erosion is not initiated.
- Borderlands Wind will locate roads to minimize stream crossings. All structures crossing streams will be located and constructed so that they do not decrease channel stability or increase water velocity. All applicable federal and state permits will be obtained.
- Borderlands Wind will not alter existing drainage systems, especially in sensitive areas such as erodible soils or steep slopes. Potential soil erosion will be controlled at culvert outlets with appropriate structures. Catch basins, roadway ditches, and culverts will be cleaned and maintained regularly.
- Borderlands Wind will construct gates along access roads that intersect allotment pasture fences as necessary.

3.5 Ground Transportation

- Borderlands Wind construction personnel and contractors will be instructed and required to adhere to speed limits commensurate with road types, traffic volumes, vehicle types, and site-specific conditions, to ensure safe and efficient traffic flow and to reduce wildlife collisions and disturbance and airborne dust.
- Borderlands Wind will restrict traffic to the roads developed for the project. Use of other unimproved roads shall be restricted to emergency situations.
- Borderlands Wind will place signs along construction roads to identify speed limits, travel restrictions, and other standard traffic control information.

3.6 Air Emissions

- Borderlands Wind will use dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust.
- Borderlands Wind will post and enforce speed limits (e.g., 25 mph [40 km/h]) to reduce airborne fugitive dust.
- Borderlands Wind will cover construction materials and stockpiled soils if they are a source of fugitive dust.
- Borderlands Wind will implement dust abatement techniques before and during surface clearing, excavation, or blasting activities.

3.7 Excavation and Blasting Activities

- Borderlands Wind will avoid creating hydrologic conduits between two aquifers during foundation excavation and other activities.
- Borderlands Wind will backfill foundations and trenches with originally excavated material as much as possible. Excess excavation materials will be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.
- Borderlands Wind will obtain borrow material only from authorized and permitted sites and existing sites may be used instead of new sites.
- Borderlands Wind will coordinate with BLM and other federal and state agencies to establish the parameters for use of explosives with respect to timing, specified distances from sensitive wildlife or streams and lakes.

3.8 Noise

- Borderlands Wind will limit noisy construction activities (including blasting) to the least noise-sensitive times of day (i.e., daytime only between 6 a.m. and 10 p.m.) and weekdays.
- Borderlands Wind will ensure that all construction equipment will have sound-control devices no less effective than those provided on the original equipment. All construction equipment used will be adequately muffled and maintained.
- Borderlands Wind will ensure that all stationary construction equipment (i.e., compressors and generators) will be located as far as practicable from nearby residences.
- Borderlands Wind will notify nearby residents in advance if blasting or other noisy activities are required during the construction period.

3.9 Cultural and Paleontological Resources

- Borderlands Wind will bring to the attention of the BLM authorized officer any unexpected discovery of cultural or paleontological resources during construction. Work will be halted in the vicinity of the find to avoid further disturbance to the resource(s) while the resource(s) is being evaluated and appropriate mitigation measures are being developed.

3.10 Hazardous Materials and Waste Management

- Borderlands Wind will ensure that secondary containment is provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) will be a temporary activity occurring only for as long as is needed to support construction activities.
- Borderlands Wind will ensure wastes are properly containerized and removed periodically for disposal at appropriate off-site permitted disposal facilities.
- In the event of an accidental release to the environment, Borderlands Wind will document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event will be provided to the BLM authorized officer and other federal and state agencies, as required.
- Borderlands Wind will ensure that any wastewater generated in association with temporary, portable sanitary facilities will be periodically removed by a licensed hauler and introduced into an existing municipal sewage treatment facility. Temporary, portable sanitary facilities provided for construction crews will be adequate to support expected on-site personnel and will be removed at completion of construction activities.

3.11 Public Health and Safety

- Borderlands Wind will install temporary fencing around staging areas, storage yards, and excavations during construction to limit public access.

4 OPERATIONS

To minimize impacts during the operations phase of the project, the following design criteria (proponent constraints and mitigation measures) will be implemented.

4.1 General

- Borderlands Wind will ensure that inoperative turbines will be repaired, replaced, or removed in a timely manner. Borderlands Wind understands that requirements to do so will be incorporated into the due diligence provisions of the ROW authorization. Borderlands Wind will be required to demonstrate due diligence in the repair, replacement, or removal of turbines; failure to do so could result in termination of the ROW authorization.

4.2 Wildlife

- Borderlands Wind will ensure that employees, contractors, and site visitors will be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. Borderlands Wind will also ensure that no pets will be allowed on-site to avoid harassment and disturbance of wildlife.
- Borderlands Wind will ensure that observations of potential wildlife problems, including wildlife mortality, willl be reported to the BLM authorized officer. Threatened and endangered species fatalities, as well as eagle fatalities, will be reported within 24 to 48 hours to the BLM authorized officer. All other fatality events will be reported in a year-end report. This includes following the methodology outlined in the Bird and Bat Conservation Strategy (Appendix M), which will

include specifics for a downed wildlife observation program and reporting, as well as a post-construction fatality monitoring and searcher efficiency program for general avian species, eagles, and bats.

4.3 Ground Transportation

- Borderlands Wind will ensure that ongoing ground transportation planning will be conducted to evaluate road use, minimize traffic volume, and ensure that roads are maintained adequately to minimize associated impacts.

4.4 Monitoring Program

- Borderlands Wind will ensure that any site monitoring protocols defined in this POD and plans associated with this POD will be implemented. These will incorporate monitoring program observations and additional mitigation measures into standard operating procedures and BMPs to minimize future environmental impacts.
- Borderlands Wind will provide the results of monitoring program efforts to the BLM authorized officer.

4.5 Public Health and Safety

- Borderlands Wind will install and maintain permanent fencing around the electrical substation/switchyard. Turbine tower access doors will be locked to limit public access.
- In the event the project results in EMI, Borderlands Wind will work with the owner of the impacted communications system to resolve the problem. Additional warning information may also need to be conveyed to aircraft with onboard radar systems so that echoes from wind turbines can be quickly recognized.

5 DECOMMISSIONING

To minimize impacts during the decommissioning phase of the project, the following design criteria (proponent constraints and mitigation measures) will be implemented.

5.1 General

- Borderlands Wind will remove all turbines and ancillary structures.
- Borderlands Wind will salvage and reapply topsoil from all decommissioning activities during final reclamation.
- Borderlands Wind will reclaim (using weed-free native shrubs, grasses and forbs) all areas of disturbed soil.
- Borderlands Wind will ensure that the vegetation cover, composition, and diversity is restored to values commensurate with the ecological setting.

APPENDIX I

Blasting Plan

BORDERLANDS WIND PROJECT
APPENDIX I
BLASTING PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

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TABLES

1 INTRODUCTION

B Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative.
The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976.This Blasting Plan (herein called the Plan) is a required component of the POD accompanying the commercial ROW grant. Terms and conditions specified in the Plan shall be binding upon the wind farm owner and any of its successors, assignees, or heirs.

1.1 Purpose and Objective

The purpose of this Plan is to outline the necessary requirements for blasting (explosives) operations, worker and environmental health and safety requirements, communication protocol, and permit requirements of the blasting subcontractor. This Plan shall only be applicable if blasting is required for project-related activities. Prior to any explosive work beginning, a detailed blasting implementation plan will be developed, outlining the procedures and methods that will be used. The Blasting Implementation Plan must be submitted to BLM for approval. At a minimum it must include the following:

- Complete insurance and bonding requirements of subcontractor
- Documented proof of the supervisor’s blasting qualifications
- Documentation from a similar project and details of any previous problems
- Storage area procedures and requirements
- Emergency procedures
- Methods of detonation
- Signage
- Communications
- Signals
- Transportation of explosives
- Loading of explosives
- Firing procedures
- Inspection procedures
- Misfire procedures
- If applicable, procedures for protection of surrounding buildings

Additionally, a blasting permit must be issued prior to any blasting.

2 EXISTING CONDITIONS REPORT

The blasting subcontractor shall provide a complete analysis of the area where the proposed blasting would occur. At a minimum, the following data must be included:

- current use and activity including livestock or wildlife;
- existence of pipelines, above or below grade, and underground locate reports; and
- available geotechnical analysis.

Any existing brush will be removed before operations begin.

3 PERMITS

The blasting subcontractor will possess a current Bureau of Alcohol Tobacco and Firearms (BATF) license to purchase explosives. The applicable state and/or local county additional licenses or permits to purchase or use explosives will be provided by Borderlands Wind prior to any blasting work being done (BATF license attached, as well as extension letter if applicable).

4 JOB HAZARD ANALYSIS

Fire suppression concerns in the affected areas will be evaluated. The blasting subcontractor will have the local fire department and/or other local entity's visit the project site and give demonstrations and lectures to the entire project team on how to deal with such occurrences. The blasting subcontractor will confirm that the project does not present any other known hazards beyond the noted pipelines than those normally associated with a construction site in which blasting is used. The blasting analysis will be performed to determine if the vibration limits can be maintained below 1 inch per second peak particle velocity 100 feet from any known gas pipelines. If more stringent requirement are desired, the blast could be further adjusted. The safest and surest method to establish the blast design would be to blast on locations farther away from the pipeline and measure the vibrations with a seismograph. After receiving the pipeline owners' vibration requirements in their ROW, computations can be done to project the estimated vibration level for a given distance, and blasting of foundations farther away can be done to confirm the projections. Some of the methods of controlling the vibration levels would be adjusting the hole sizes (diameter) to limit the amount of explosives in the blast hole, and adjusting the surface delays to limit the number of blast holes during each 8-millisecond delay period during a shot. Decking (the firing of multiple charges in the same blast hole with different delays) is another method to reduce vibration levels. If the requirements of the pipeline owners cannot be met, then the foundations in the area of the pipeline will not be blasted.

Radios will be allowed and used in the blast area. Non-electric shock tube detonators (blasting caps) which are not susceptible to radio frequency detonation and less susceptible to static electricity will be used. Safety has made this type of detonator the industry standard over electric detonator caps, which are presently rarely used.

Only qualified and trained personnel will be allowed in the blasting area. All non-blasting personnel will be required to maintain a 0.25-mile distance during blasting. This perimeter will be maintained by manning a truck with flashing beacons across all roads leading to the blasting area.

Daily reporting will be in compliance with the requirements of the Borderlands Wind project manager or designee. This report will include but not be limited to, a daily blasting schedule given every morning stating blasting area and estimated time of blasting. Daily reporting will also include, by site, work performed including the quantity of explosives brought to the site that day, amount used, and the amount returned with the explosive material supplier. Explosive material will not be stored on-site. Explosive material will be transported in and out on an as-needed basis. Explosives will be transported as per OSHA 1926.902 – Surface Transportation of Explosives.

A Job Hazard Analysis (JHA) will be reviewed daily for the blasting and drilling operation and signed by the blasting contractor's employees. The information provided in the following sections will be contained in their respective JHAs.

4.1 Drilling

The primary hazards in drilling are dust and noise. The operator is in a sealed and pressurized cab. Anyone required to work around an operating drill will be required to wear hearing protection and respirator as needed, as well as a hard hat, eye protection, steel-toed footwear, and a high-visibility safety vest.

4.2 Blasting and Public and Craft Worker Safety

The primary hazards related to blasting are site security, improper handling of explosives, and thunderstorms. These hazards are addressed in the following blasting protocol in Section 4.4 below.

4.3 Public and Craft Worker Safety

Only personnel required and trained for blasting operations will be allowed in the blasting area. All non-blasting personnel will be required to evacuate an area within a 0.25-mile radius of the blast site. Section 4.4 is the safety protocol that will be used on this project.

4.4 Blasting, Safety, and Communication Protocol

- The blast area will be secured and posted with warning signs prior to the start of loading blast holes by the blasting contractor. Warning signs and blasting personnel will be posted at all roads accessing the blast area. Only trained and necessary personnel assigned by the blaster in charge will be allowed on the shot while it is being loaded. In the event of a lightning storm or other hazard the blaster in charge will vacate the shot area and will move personnel to a safe location away from the blast area, and blasting personnel will secure the area until the hazard has passed.
- In preparation for the blast, the blasting crew will secure the area a safe distance from the blasting zone, 0.25 mile as a minimum. This perimeter will be maintained by manning a truck with flashing beacons across all roads leading to the blasting area. An air horn will be used to warn all personnel of an impending blast as well as radio communications with the Borderlands Wind project manager. The Borderlands Wind project manager's designee will then go over the radio and announce at 5 minutes and then at 1 minute that the area needs to be clear and stay cleared until authorization over the radio is given.
- During the loading operations, the blast area will be guarded from unauthorized personnel by the blasting personnel. Only trained personnel will be handling explosives.

- Three long blasts of the air horn will indicate a 1-minute warning to the blast. After the blast is determined to be all clear, one long blast on the air horn will indicate that the blast is over and that is safe to re-enter the area. After the blasting crew notifies the Borderlands Wind project manager or designee that the area is clear to work in, the all-clear notification will be given over the radio to the entire project site.
- After a blast has occurred, the blaster in charge will inspect the blast site for misfires and general safety of the area. Then an all-clear horn will be sounded.
- The amount of blasting required, if any, is unknown at this time. However, if blasting were to occur, it would be limited to the hours between 6 a.m. and 8 p.m and would last about 1.5 seconds, two to four times per day, over a 40 to 50 day period. Nearby residents would be notified in advance if blasting occurs.
- This protocol will be given and reviewed daily when blasting operations are anticipated at the morning stretch, as well as at anticipated times and location of the blast. In a best-case scenario, all blasts will take place at a certain time each day.

Copies of Material Safety Data Sheets will be carried by blasting supervisory personnel and also will be provided at the central job offices in the Borderlands Wind project management's office trailer. A map will be attached to this plan for location of blasting sites.

5 DRILLING AND BLASTING OPERATIONS

The blasting subcontractor or designee will furnish all blasting products. The primary blasting products that will be used are listed below.

5.1 Types of Explosives

- ANFO – non-cap sensitive blasting agent used for dry hole applications
- Blastex – non-cap sensitive emulsion blasting agent used for wet hole applications
- Unimax – cap sensitive high explosive dynamite
- Unigel – cap sensitive high explosive dynamite
- EZdet Blasting Caps – delay blasting caps
- Primacord – detonating cord
- Cast Boosters – cap sensitive high explosive

All of these explosives will be transported in approved magazines in accordance with OSHA 1926.902 – Surface Transportation of Explosives.

5.2 Production Blasting

In general, the following blasting details will be used. Drilling patterns and powder factors will be adjusted on an as-needed basis as the project develops and as the rock conditions dictate.

- Production blast holes will vary from 3 inches to 4 ½ inches with an 8 × 8–foot spacing. Condition and results may dictate the adjustments of the spacing of the holes.

- Typical dry blast holes will be loaded with ANFO and primed with Unimax dynamite or cast boosters and Wet holes will be loaded with Blastex and primed like the dry holes.
- Stemming will be with ½-inch chips.
- Disposal of explosives packaging materials will be done off-site.

5.3 Storage of Explosives

No explosives will be stored on-site.

5.4 Transportation of Explosives

All transportation of explosives will be in compliance with OSHA 1926.902. All explosives will be transported to the blasting site via pickup truck or pickup and trailer in an approved magazine. The blasting caps and high explosives will be kept separated while being transported, either in different vehicles or in compartments separated by a 4-inch hardwood barrier.

A list of licensed responsible parties and explosive possessors from the U.S. Department of Justice is attached. The license expiration date and any extension letter from the BATF will also be provided.

The blasters in charge on this project will be [TBD] (Table 1):

Table 1. Blaster License Information

Name	License Number	State Issuing Licensed
TBD	TBD	TBD
TBD	TBD	TBD
TBD	TBD	TBD

5.5 Communication and Blast Protocol

The distance to nearest dwelling or neighbor from the proposed blast site will be assessed. This distance poses no danger to dwellings from the blasting operations. Pipeline owners will be notified and their blasting recommendations will be followed or those areas of conflict will not be blasted. Landowners will also be given this document and notified of blasting operations. This will add in the prevention of non-project personnel entering the blast area at sensitive times.

Before each blast, blasting personnel will notify project management and safety personnel and follow blasting protocol outlined in Section 4.4.

6 EMERGENCY RESPONSE

Emergency response plan in case of accident will follow the job site protocol for the project and is required to be used by the blasting subcontractor. This plan and maps are distributed by the blasting subcontractor to all job site personnel at safety orientation.

The following is a list of the emergency information for this project **[TBD]**:

Project Address (Mail): TBD

Project Address (Delivery): TBD

Telephone: TBD

Facsimile: TBD

Medical Clinic: Mountain Avenue Clinic
606 N. Main St.
Eager, AZ, 85925
(928)-333-5333

Hospital: White Mountain Regional Medical Center
118 S. Mountain Ave.
Springerville, AZ 85938
(928)-333-4368

Ambulance Service: White Mountain Ambulance Services
118 S. Mountain Ave.
Springerville, AZ 85938
(928)-333-4202

APPENDIX J

ROAD DESIGN, TRAFFIC AND TRANSPORTATION PLAN

BORDERLANDS WIND PROJECT
APPENDIX J
ROAD DESIGN, TRAFFIC AND TRANSPORTATION PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

CONTENTS

TABLES

1 INTRODUCTION

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. This Road Design, Traffic and Transportation Plan (Plan) is a required component of the Plan of Development (POD) accompanying the commercial ROW grant, if approved.

The terms of this Plan shall be binding upon the wind farm owner and any of its successors, assigns, or heirs. The Plan will be implemented to ensure that the project and associated structures are removed after operations cease and that the property is reasonably restored in accordance with the BLM ROW grant.

1.1 Road Design, Traffic and Transportation Plan Purpose

The purpose of this document is to provide a summary of the manner in which transportation to the site will be managed, and how any associated traffic will be managed. Borderlands Wind has obtained a Temporary Driveway Access Re-Installation permit from New Mexico Department of Transportation (NMDOT) regarding the detailed design and permitting needs for the proposed primary access improvement from U.S. Route 60 (U.S. 60).

The details and plan provided in this document are primarily in relation to transport and traffic during construction. The operations of the facility require little special transport and add little traffic. The project will require the use of oversized vehicles for delivery of turbine components; the remainder of the facility components and construction equipment will use standard transport vehicles and therefore will not have special transport requirements. The origin of turbine components, equipment, and materials is not known at this time, and subcomponents are generally not tracked by Borderlands Wind. Further, Borderlands Wind has limited control over what routes are used outside the immediate surrounding area. In general, Borderlands Wind develops traffic and transportation plans from the exit off of federal interstates or from local railyards. This transportation and traffic plan follows that model.

2 SURROUNDING AREA AND ROUTES TO SITE

The project area is located south of U.S. 60 in Catron County near Quemado, New Mexico, and the Arizona–New Mexico border.

The main access point for the project will be the intersection of U.S. 60 and Bill Knight Gap Road/Country Road. To determine how to sufficiently improve the access point, Borderlands Wind consulted with the New Mexico Department of Transportation (NMDOT), which is acting on behalf on the Federal Highway Administration. During this consultation, Borderlands Wind and NMDOT agreed

that the access point should be improved by construction of a 1,000-foot, permanent left-turn lane off U.S. 60 and a permanent gravel turn-off.

U.S. 60 runs east-west adjacent to the north side of the project area and exists as a two-lane highway with posted speeds ranging between 45 and 65 miles per hour. The roadway is centered within an approximately 200-foot-wide ROW, and eastbound and westbound travel lanes are not separated. In general, site visibility along U.S. 60 is good and the pavement is in good condition. Currently, this intersection of U.S. 60 and Bill Knight Gap Road/Country Road includes deceleration lanes on both sides of the road.

During construction, Bill Knight Gap Road would be temporarily widened to 150 feet (i.e., the limit of construction disturbance) and an alignment change would occur. Due to the proximity of cultural resources, the temporary limits of construction disturbance would shift in the 150-foot-wide corridor to avoid or minimize impacts to cultural resources when possible. These shifts could include limiting construction disturbance to a particular side of the construction disturbance (i.e., construction disturbance would be limited to the east side). The alignment shift would be located near the northern portion of Bill Knight Gap Road and would be modified in the area where known flooding occurs. This alignment change is located on private property and has been discussed and agreed to with the county and the landowner given the extensive flooding that occurs on Bill Knight Gap Road in this section. Following construction, Bill Knight Gap Road would be reclaimed to a permanent width of 24 feet. The modified alignments would continue to be used and would be reclaimed to 24 feet as well. The mileage, location, and construction of this component would be the same under all alternatives.

The internal access roads are those roads depicted that are not Bill Knight Gap Road or those that have been identified as a secondary access road. All internal access roads would total between 100 and 150 feet in width during construction (i.e., the limit of construction disturbance). Following construction and during operations, almost all of these roads would be reclaimed and maintained to a 16-foot width. The only portion of the internal access roads that would be reclaimed and not used during operations is the access road leading from Bill Knight Gap Road to the borrow pit (up to 0.8 miles, or 13.2 acres; the reclamation effort on this road is to be determined through consultation with the landowner). The remaining internal access road routes used during construction would continue to be used during operations and maintenance. It is anticipated that approximately 47.9 miles of access roads would be needed, with 36.8 miles considered new access roads. If internal access roads intersect with grazing allottee fences, new gates will be constructed.

For both Bill Knight Gap Road and internal access roads, local landowners would be consulted and the roads would be developed in accordance with local building requirements where the roads intersect with public roads. All roads would require engineering surveys and would be required to meet or exceed the BLM's Surface Operating Standards and Guidelines for Oil and Gas Development – The Gold Book.

The secondary access road would require no widening or modifications during construction or operations, except for 1.8 miles between a utility pole and substation. This is required for the safe construction of the distribution line. For this segment, the access road would be widened to a total of 150 feet during construction. Following construction and during operations, this segment of the road would be reclaimed and maintained to a 16-foot width. This segment of the secondary access road would continue to be used during operations and maintenance. The mileage, location, and construction of this component would be the same under all alternatives.

As project engineering progresses, identification of the other areas for culverts or other drainage crossings will be considered. All access roads (except for the non-improved secondary access road) would be graded, include sufficient drainage, and be surfaced with an aggregate surface material. Surface material

may include gravel, caliche, or other locally sourced gravel-like material. Borderlands Wind anticipates no asphalt/paving on any of the access road network, except for the main access point improvement.

3 EQUIPMENT TO BE TRANSPORTED

The general categories of items to be transported include: turbine components, facility and construction equipment, and facility and construction material. Further detail on each category is provided below.

3.1 Turbine Components

Turbine components are the most visible transportation requirement for the project. Turbine components generally are described in three sections: blades, towers, and the nacelle. The weights and dimensions for all these components are approximate and are provided as shipped.

Each blade typically weighs 31,747 pounds. Blade lengths would be approximately 199 feet, with a diameter of approximately 9 feet.

Tower sections vary in length and dimension depending on where they are in the tower. In general, lower (base) sections are the shorter and heavier, while higher (top) sections are taller and lighter. Tower sections vary in weight from 112,436 pounds to 149,914 pounds. Tower lengths typically range from 77 feet to 118 feet, with diameters ranging from 11 feet to 15 feet.

The nacelle (the section of the turbine at the top of the tower) would weigh approximately 76,941 pounds, would be approximately 35 feet in length, 13 feet in width, and 13 feet high.

3.2 Facility and Construction Equipment

Major equipment for the facility (beyond the turbines) include the main step-up transformers, pad-mounted transformers, substation equipment, and substation control building. Major construction equipment includes turbine installation cranes, turbine offloading cranes, earthmoving equipment, trenching equipment, and miscellaneous cranes, forklifts, and lifting equipment.

3.3 Facility and Construction Material

Significant material for the project includes road aggregate, concrete, rebar steel, underground electrical conductor and fiber-optic cable, grounding cable, transmission poles, transmission wire, water, and materials for the Operations and Maintenance (O&M) building.

4 TRANSPORTATION REQUIREMENTS

Transport requirements vary depending on the type of equipment being transported. Details on the transport requirements are provided below and correspond to the categories described in Section 3.

4.1 Turbine Components

The turbine components transportation requirements will generally govern the road design and access design. This is due to the length and weight of the equipment being transported. The length of the

components (especially the blades and tower sections) generally result in a requirement of a 150 to 200-foot turning radius for all turns and a maximum of a 12-inch hump or dip per 100-foot stretch of road. The weight of the turbine components generally results in a requirement for grades on public roads not to exceed 8 percent, and Maximum Load Class (MLC) ratings of 10 tons per axle or greater (MLC ratings are generally only an issue on local roads). Lead and trail flag vehicles, as well as flaggers, may be used for oversized loads (comprised mainly of the turbine components) entering from U.S. 60 and Bill Knight Gap Road/Country Road, and possibly police escort vehicles.

4.2 Facility and Construction Equipment

The majority of the facility and construction equipment will use standard transport vehicles and therefore will not have special transport requirements. The main step-up transformer(s) generally are permitted loads due to the weight of the transformer. Since the weight of the transformer and axle loading will be equal or less than for the turbine components, this transport requirement will generally not be a factor. The large turbine installation cranes will be transported to the site in pieces and assembled on-site; accordingly there are generally no special transport requirements for the turbine installation cranes.

4.3 Facility and Construction Material

The majority of the facility and construction material will use standard transport vehicles and therefore will not have special transport requirements. Depending on the type of transmission structure used, an oversized vehicle permit may be required to transport them (if single-piece transmission poles over a certain length are used). These loads will have similar transport requirements as the turbine blades. Aggregate loads for the roads and foundation will not have specific transport requirements, but due to the high volume will require dust control measures and a road maintenance program.

5 ESTIMATED TRANSPORT VEHICLE TRIP COUNTS

As stated previously, this Transportation and Traffic Plan focuses on trip generation during construction of the wind facility, which is expected to last between 11 to 12 months. The operations phase of the wind facility is expected to generate negligible traffic to U.S. 60. During the operations phase of the wind facility (post-construction), it is anticipated that there will be approximately five operations and maintenance staff. Vehicles used by Operations staff will likely be passenger vehicles and light-duty trucks.

For estimating purposes, the transport vehicle trip count will be based on the number of round trips that transport vehicles will make from the last major highway (U.S. 60) to the main construction area via the access road. Trip counts are summarized in Table 1.

A detailed breakdown of anticipated trip generation is provided in the paragraphs below, however to summarize, trip generation will be from mobilization/demobilization of equipment, construction personnel, turbine component deliveries, and deliveries of other facility materials (i.e., transformers, substation, transmission equipment, steel, cables, and concrete materials to be mixed on-site).

A contributor to trip generation will be the daily commute of workers to and from the site during construction. It is assumed that most workers will take company or personal vehicles (cars and light-duty trucks) from their place of residence or temporary residence to the main job site once per day. All workers will receive a traffic route map during orientation and will be encouraged to carpool during orientation. The main employee parking lot will be at the laydown yard at the project site near the O&M building,

accessed from the access route. It is expected that the construction duration between 11 to 12 month, requiring at least 50 to 70 workers at any given time, and a maximum 250 workers daily during peak construction. During peak construction, it is estimated that 320 trips per day on U.S. 60 would be generated due to construction personnel (for a total of 76,800 trips assuming an 8-month peak construction period). Outside peak construction, it is estimated that a 50 trips per day on U.S. 60 would be generated due to construction personnel (for a total of 6,000 trips assuming a 4-month non-peak construction period). This would be a total of 82,800 trips on U.S. 60 associated with construction personnel.

Of the total construction duration, Borderlands Wind estimates that the project oversized vehicle trip generation will continue, on a daily (6-day work week) basis for approximately 6 to 8 months. Over the course of the turbine component delivery period, approximately 340 oversized vehicle loads (enough to construct 34 turbines, at an average "component per turbine" rate of 10), will be delivered to the project site. A summary of all the trip generation for the project during construction is included in Table 1.

It is estimated that approximately 18,000 cubic yards of aggregate will be required for the turbine pad foundations, building foundations, and gravel for road surfaces and as required for work areas, i.e., substations, interconnection facility, and operations and maintenance area. It is assumed that 12 to 15 aggregate and four to six water trucks are needed for the project. The total number of truck trips generated external to the project area over a 26-week period of a 6-day work week is approximately 1,950 for aggregate trucks and 780 for water trucks. However, if truck drivers elect to leave trucks on-site overnight, this number of round trips would be reduced accordingly. The project will use an on-site concrete mixing and batching plant. Therefore, concrete trucks will make only one round trip per day, as they start work and finish work. Assuming 10 to 12 concrete trucks working over a 26-week period (6-day work week), 1,560 round trips will be required for concrete delivery trucks.

Site mobilization and demobilization will require significant transport as well. Each mobilization and demobilization activity will require two round trips (for example, the delivery of one construction trailer will require one round trip at the start of the project and one round trip at the conclusion of the project). Equipment and material included in the mobilization and demobilization trip counts includes the construction equipment, substation equipment, electrical and transmission equipment and materials, and miscellaneous facilities equipment. Based loosely on previous projects, it is expected there would be approximately 500 round trips based on mobilization and demobilization activities.

Table 1. Estimated Number of Vehicle Round Trips into the Borderlands Wind Project Area

Transport Vehicle Category	Expected Number of Round Trips
Turbine Components	340
Aggregate and Water	2,730
Concrete Delivery Vehicles	1,560
Mobilization and Demobilization	500
Personnel Transport	82,800
Total	**87,624**

6 ESTIMATED TRAFFIC CONGESTION

There would be an estimated 420 trips per day on U.S. 60 during the peak construction period of 6 to 8 months into the project area. The number of trips is expected to be substantially less outside of this peak

construction period. At this level, it is not expected that construction traffic would have a significant impact on U.S. 60 or the surrounding areas.

Annual Average Daily Traffic for U.S. 60 is 66 vehicles per day,[1] and it is expected that construction traffic for the project will not represent a significant increase. While limited impacts are expected to traffic along the majority of U.S. 60, there will likely be some temporary impact to traffic in the vicinity of Bill Knight Gap Road/Country Road south-side turnout to the proposed wind facility as slow-moving vehicles enter and exit. Traffic-control personnel will be present to direct any impacts to traffic.

During the operations phase of the wind facility (post-construction), it is anticipated that traffic impact to U.S. 60 existing traffic will be negligible. There will be approximately five O&M staff during operation of the wind facility. Vehicles used by operations staff will likely be passenger vehicles and light-duty trucks.

7 PROPOSED TRAFFIC CONTROL MEASURES

7.1 U.S. Route 60 Access Improvements

As stated previously, improvements to the existing access point into the project from U.S. 60 will require improvements to be able to accommodate oversized equipment transport vehicles. Traffic will be reduced to one lane in each direction while the improvements are constructed and traffic-control personnel will be present to direct flow of traffic on U.S. 60. Construction of the access improvements is expected to last approximately 14 to 18 weeks.

7.2 Wind Facility Construction

During construction of the wind facility, it is anticipated that construction signage and LED advanced warning signs will be used ahead of the intersection, and flaggers will likely be used when oversized transport vehicles are entering and exiting the project. Borderlands Wind is requesting that the 65 mile-per-hour speed limit be reduced temporarily to 45 miles per hour during the construction of the wind facility in this location.

8 PERMITS REQUIRED FOR TRANSPORTATION

Borderlands Wind has obtained a Temporary Driveway Access Re-Installation permit from New Mexico Department of Transportation (NMDOT) regarding the detailed design and permitting needs for the proposed primary access improvement from U.S. Route 60 (U.S. 60). A Class “C” oversize permit is required for oversized transport vehicles and heavy loads.

[1] *TIMS Road Segments by Posted Route/Point with AADT Info. NM-Routes.* New Mexico Department of Transportation. Available at: http://dot.state.nm.us/content/dam/nmdot/Data_Management/NM_AADT_Listing.pdf.

APPENDIX K

Flagging, Fencing, and Signage Plan

BORDERLANDS WIND PROJECT
APPENDIX K
FLAGGING, FENCING, AND SIGNAGE PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

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Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. This Flagging Plan (Plan) is a required component of the Plan of Development (POD) accompanying the commercial ROW grant.

It is the responsibility of Borderlands Wind's construction contractors working with third-party Construction Inspectors contracted for the BLM to ensure this Plan is implemented.

2 PURPOSE

This Plan establishes flag color designations to be used during construction of the project. The objective is to provide for the orderly identification of a wide variety of proposed activities in the field using colored plastic ribbon (preferably biodegradable) or paint. All activities associated with the construction, operation, maintenance, and termination of the project will occur within authorized limits. Staking will consist of centerline or boundary of linear facilities with relevant offset direction, ROW boundaries, temporary work areas, and environmentally sensitive areas.

Borderlands Wind will mark exterior boundaries of project components and temporary work areas with a stake and/or lath at 100- to 200-foot intervals. Intervals may be varied at the time of staking at the discretion of the jurisdictional representative. Tops of the stakes and/or lath will be painted and flagged in a distinctive color as listed below. Survey station numbers will be marked on linear survey stakes and/or laths at jurisdictional property lines. Project construction/design sheets will be used by the contractor to guide placement of stakes and flagging.

3 COLOR CODE

Colors of plastic flagging shall be used for the purposes shown in Table 1. Colors may be changed with agreement among BLM, Borderlands Wind, and construction contractors.

Table 1. Purpose and Designated Color of Flagging

Purpose	Color
Invasive weeds (individuals or populations)	Aqua
Boundaries of tower construction sites, operations and maintenance building area, storage/staging areas, and substation	Blue-and-white striped
Transmission line centerline	Orange

Purpose	Color
Edge boundaries of linear types of ROW and/or reference stakes	Yellow
Special attention resource areas	Blue
Access roads (boundaries of disturbance areas)	Red
Reclamation special treatment areas (boundaries)	Fluorescent green
Underground crossings (pipelines, cables, etc.)	Green

4 CONDITIONS

The BLM and Borderlands Wind, and construction contractors would agree to color changes and assign additional flagging requirements as needed. This will be coordinated with all involved parties and approved by the Agency, before use on the project.

Flagging will be maintained throughout construction and reclamation until final cleanup and restoration is completed and approved. The stakes and/or lath will then be removed.

APPENDIX L

Decommissioning Plan

Westwood

DECOMMISSIONING PLAN

Borderlands Wind Power

Catron County, New Mexico

February 2020

Prepared For:

NextEra Energy Resources, LLC
700 Universe Blvd
Juno Beach, FL 33408

Table of Contents

1.0 INTRODUCTION / PURPOSE

The Borderland Wind Project (the "Facility") is a wind power generation project proposed by NextEra Energy Resources, LLC (the "Applicant"[1]) in Catron County (the "County"), New Mexico. The Facility includes the construction of permanent facilities of approximately 34 wind turbine generators (31 of which are on Bureau of Land Management land, two are on State Trust land and one is on private land) access roads, two met towers, a substation, underground collection lines, and an operation and maintenance (O&M) facility. The purpose of this "Decommissioning Plan" (and its succeeding and revised Decommissioning Plans, (the "Plans") is to describe the means and methods that can be used to remove project facilities, and reclaim, restore, and return the land altered during the construction and operation of the wind project to its predevelopment condition to the extent feasible. The Plans identify components which may be removed, and the areas that may be restored once the Facility has been abandoned, not operated for twelve consecutive months, or when the Facility has surpassed the useful lifespan of the turbines and facilities. This includes the disrepair of individual turbines which may pose health or safety issues. The useful life of commercial size turbines is generally considered to be 30 years.

Applicant acknowledges that decommissioning is accomplished at Applicant's (and its successors-in-interest and assigns) expense. Applicant also commits that if Applicant does not complete decommissioning within the time specified, the Bureau of Land management (BLM) may take action as necessary to complete decommissioning, including drawing on the financial assurance.

2.0 PROPOSED FUTURE LAND USE

Prior to the development of the Facility, the land use in the areas affected by development was primarily arid to semi-arid, open grazing/range land and vacant land predominantly state and federal government owned. After affected areas are decommissioned, these areas will be returned to their predevelopment condition.

3.0 ENGINEERING TECHNIQUES

Decommissioning includes several phases and activities such as:

- Preparation of crane paths to accommodate movement of large industrial cranes to and from each turbine location;
- Preparation of crane pads for removal of turbine components;
- Removal of above ground components (turbines, transformers, met towers, substation, and the operation and maintenance facility);
- Removal of turbine, transformer, met tower, substation, and O&M building foundations;
- Removal of underground collection system and fiber optic cables;
- Removal of access roads (unless the landowners request the roads to remain) and crane paths;
- Restoration of crane paths and access roads, including decompaction;
- Reclamation, re-grading, and restoration of disturbed areas including top soil reapplication and decompaction of soils;
- Application of necessary sediment and erosion controls during and following decommissioning; and
- Repair of public roads and culverts to pre-decommissioning condition

[1] "Applicant" refers to any operator, subsequent owner, or transferee of the Facility.

During decommissioning, participating landowners will be consulted to determine the scope and extent of removal and reclamation work to be completed. Some Facility infrastructure such as the access roads may be left in place at the landowner's requests.

Decommissioning will include the removal and transportation of turbine components from the Facility site as stipulated in participating landowner lease agreements. Decommissioning may include the removal of cabling, electrical components, access roads, and any other associated facilities in the manner described in the Plan, unless otherwise agreed upon by Applicant and the applicable landowner. All dismantling, removal, recycling, and disposal of materials generated during decommissioning will comply with rules, regulations, and prevailing laws at the time decommissioning is initiated, and will use approved local or regional disposal or recycling sites as available. Recyclable materials will be recycled to the furthest extent practicable. Non-recyclable materials will be disposed of in accordance with state and federal law.

There are no known hazardous materials contemplated for incorporation in the Facility with the exception of certain lubricants, oils and hydraulic fluids described in the section on the O&M facility. These same fluids are found in the nacelle of the wind turbine. During decommissioning the then current regulations for identifying, handling, and disposing of hazardous materials will be followed.

3.1 DECOMMISSIONING

Public Road Modifications and Removal

Temporary turning radius modifications are not expected to be needed for decommissioning as turbines that have reached the end of useful life have scrap value, but little resale value and therefore turbine components will be cut on-site into smaller pieces that conform to scrap metal recycling requirements and can be transported off-site using conventional over the road trucks. Following removal of the decommissioned turbine components, if any turning radius modifications are required for decommissioning, those radius modifications will be removed, and any disturbed areas will be restored to preconstruction condition using thorough decompaction techniques and re-application of topsoil. After all hauling activities are complete the public roads will be restored to pre-decommissioning condition.

Crane Path Preparation and Removal

To facilitate the movement of the large industrial cranes used to disassemble the turbines, crane paths will be required between the turbine sites. A crane path network was designed for the construction of the wind project. The same corridors are likely to be used for decommissioning. Some turbine access roads may be temporarily widened from their operational width of 16 feet to approximately 36 feet wide, by compacting in place soils to create crane shoulders on roads that were configured to accommodate crane travel during the construction of the Facility. In any case, all ground impacts will be limited to the permit corridors. Preparations include compaction of the native soils, construction of temporary road crossings, and construction of crane mat crossings, low water crossings, and/or temporary culverts to cross streams. Following disassembly of the wind turbines, the temporary crossings will be removed and the crossing areas will be restored to pre-decommissioning conditions. The soil on the crane paths will be decompacted and restored to a tillable condition.

Crane Pad Preparation, Removal, and Restoration

A crane pad will be prepared at each turbine location to be used during dismantling of the turbines. Temporary alteration of turbine pads may be necessary to facilitate crane movements during decommissioning of above-ground turbine components. If such alteration is necessary, topsoil from the additional disturbed areas will be stripped and isolated, for re-application after turbines have been dismantled and crane pads removed. After removal of all turbine components, the crane pad area will be removed by excavating any granular materials placed during the initial construction of the crane pad. Disturbed areas will be restored to preconstruction condition by re-grading the area, reapplying topsoil, and de-compacting the subsoil and topsoil. See section 3.2 for additional information on reclamation and restoration.

Wind Turbine Removal

Each turbine consists of three (3) steel tower segments, nacelle, rotor and hub assembly, and three blades. The turbine disassembly will be accomplished using large industrial cranes. If it is not cost effective to resell the turbines, the components will be processed on site into sizes which conform to scrap metal recycling requirements. The materials can then be sold for scrap material value and recycled. The tower sections, in particular, represent a substantial amount of high quality steel materials. The processed scrap materials will be loaded on tractor-trailers and removed from the site to a prearranged receiving location, or directly to a recycling or disposal facility. If the components are resold, the individual components will be loaded onto turbine transport vehicles similar to the vehicles originally used to deliver the turbine parts.

Turbine Foundation Removal and Restoration

Turbine foundations are fabricated of concrete and rebar. Topsoil and aggregate from the area surrounding the foundations will be stripped, segregated, and stockpiled near the work site for to reapplication during restoration. The turbine foundation will be exposed using backhoes, bulldozers, or other earth moving equipment. The pedestal (upper part of the turbine foundation) will be removed. Demolition of mass concrete is generally accomplished using hydraulic hammers mounted on a backhoe or similar equipment (hoe ram), or by the use of expansive chemicals placed in holes drilled in the concrete. Concrete and rebar will be broken into manageable-sized pieces and loaded into dump trucks to be hauled off site for recycling as aggregate or disposal.

Following the removal of turbines and foundation pedestals, the resulting voids will be backfilled with clean native subsoils and compacted to a density similar to surrounding subsoils. Topsoil will then be reapplied to the site and graded to blend with the surrounding grade and preserve pre-existing drainage patterns. The soil and topsoil will be de-compacted and restored to a tillable pre-construction condition, or re-seeded to promote re-vegetation. If necessary, the site will be temporarily or permanently re-vegetated, depending upon location, time of year, and anticipated post-decommissioning land use.

Access Road/Met Tower Road Removal and Restoration

Access roads will be removed or left in place based on the individual landowner's request. Removal of access roads will entail removal of the road base aggregate and any other materials used for constructing the roads. During removal, the topsoil adjacent to both sides of the roads will be stripped and stockpiled in a windrow paralleling the road. The road base materials will then be removed by bulldozers and wheeled loaders, or backhoes, and hauled off site in dump trucks to be recycled or disposed at an off-site facility. On site processing may allow much of the aggregate

to be re-used to improve nearby public and/or private roads. If geotextile fabric was utilized under the aggregate base, it will be removed and disposed of in a landfill off-site. The access road removal will proceed from the turbine area to the public roads to limit tracking and provide a stable access during removal. Following removal, topsoil will be reapplied and graded to blend with surrounding contours to promote pre-construction drainage patterns. Topsoil to cover the access roads, turbine rings, and met tower rings will be acquired from the areas where it was stockpiled (or wasted) during the original construction. Since topsoil stayed with each landowner in the construction of the wind farm there will be adequate topsoil to restore each area to its pre-construction condition. The soil and topsoil will then be decompacted to a minimum depth of 18 inches and restored to pre-construction tillable condition or re-vegetated.

Underground Electrical Collection Lines

The electrical cables and fiber optic conduits are installed at a depth of a minimum of 48 inches (by plan), and contain no material known to be harmful to the environment. The only exception to the minimum depth is cables entering ground mounted transformers and junction boxes, both of which are ground-mounted. Accordingly, the majority of underground cables will be left in place, non-functional and well below the depth farming implements impact. Following cable, junction box, and route marker removals, disturbed areas will be restored by the restoration methods described above for access roads, including the reapplication of topsoil to match the surrounding grade and preserve or promote pre-existing drainage patterns.

Substation

All steel framing, conductors, switch gear, transformers, security fence and other components of the step-up facility will be disassembled and recycled or reused off-site. The rock base will be removed using bulldozers and wheeled loaders or backhoes. The material will be hauled from the site using dump trucks to be recycled or disposed at an off-site facility. Permanent storm water treatment facilities, if any, such as retention basins, will be removed. Topsoil will be reapplied to blend with the surrounding grade to promote pre-construction drainage patterns. Soil and topsoil will be decompacted and the site will be restored to the pre-construction tillable condition or re-vegetated.

Operations and Maintenance Facility

The Borderlands project will construct a new building for its O&M building. Hydraulic oil and lubricants may be stored in the building during operation of the wind project. The project will have a Spill Prevention Control and Countermeasure plan in place during operations that will require immediate clean-up of any spilled hazardous materials, so the cleanup of any hazardous materials is an operating cost and not a decommissioning cost.

The O&M facility will likely be a sturdy, general purpose, steel building. Buildings have a longer useful life than wind turbines so the building will not likely be at the end of its useful life when the Facility is decommissioned. Decommissioning will consist either of the sale of the building, the donation of the facility, or the demolition and removal of the structure, foundation, and rock base parking lot and associated storm water treatment facilities. If demolition is undertaken, all associated materials, concrete and rock will be removed from site using backhoes and bulldozers, and hauled off site in dump trucks. All materials which are able to be recycled will be brought to an approved facility. The remaining materials will be disposed of at an approved landfill. Topsoil will be reapplied to the site and graded to blend with the surrounding grade to promote existing drainage patterns. The topsoil will be de-compacted and restored to a pre-construction tillable condition or re-vegetated.

3.2 RECLAMATION

In addition to the reclamation activities described above for each decommissioning activity, all unexcavated areas compacted by equipment and activity during the decommissioning will be de-compacted. All materials and debris associated with the Facility decommissioning will be removed and properly recycled or disposed of at off-site facilities.

As necessary, the topsoil will be stripped and isolated prior to removal of structures and facilities for reapplication. The topsoil will be reapplied following backfill, as necessary, and graded to blend with adjacent contours to maintain pre-construction drainage patterns. The topsoil reapplied will be free from rocks larger than four inches and will not contain debris from decommissioning. If the area is not going to be used for crops, the topsoil will then be re-vegetated using seed mixes approved by the local Farm Service Agency, Soil and Water Conservation District, or Natural Resource Conservation Service. Temporary erosion protection such as mulch, hydromulch or erosion control blanket will be applied blanket will be applied in accordance with the requirements of the project Storm Water Pollution Prevention Plan (SWPPP).

A weed control plan may be required for this work. If so, the plan will be developed and implemented to minimize the introduction or spread of invasive species.

4.0 BEST MANAGEMENT PRACTICES (BMPs)

During decommissioning, erosion and sediment control BMPs will be implemented to minimize potential for sedimentation of surface waters and waters of the state. Because decommissioning will entail disturbance to more than one acre of soil, Applicant will prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to initiating soil disturbing activities. Potential BMPs described below are examples which will be subject to refinement in the SWPPP. Because virtually all of the project area is currently used to raise crops or is in area of exposed soil, exposed soil is a common condition and only minor erosion and sediment control is expected.

4.1 EROSION CONTROL

Erosion control measures are described generally here, but will be refined based on the standard of practice current at the time the SWPPP is developed for decommissioning. All disturbed areas without permanent impermeable or gravel surfaces, or planned for use as crop land, will be vegetated for final stabilization. All slopes steeper than 4:1 should be protected with erosion control blankets. Restoration should include seed application prior to application of the blanket. All slopes 4:1 or flatter should be restored with seed and mulch, which will be disc anchored.

Project Phasing/Design BMP: Time periods during which disturbed soils are exposed should be minimized the degree possible. Stabilization of soils will generally be accomplished immediately following decommissioning of the access roads, turbine sites, electrical and fiber optic cables, step-up substation, and O&M facilities. Where this is not possible, temporarily exposed soils will be temporarily stabilized with vegetation in accordance with the SWPPP for decommissioning.

Erosion Control Blankets and Seed BMP: Erosion control blanket (double sided netting with wood fiber or weed-free straw fiber blanket) will be used as temporary stabilization for areas of slopes steeper than 4:1 and for areas of concentrated flow, such as ditches, swales, and similar areas around culverts. Seed will be applied in these areas with the blanket for temporary and/or permanent vegetative growth as necessary. The SWPPP developed for decommissioning will provide detailed specifications for erosion control blankets to be used under various slope and drainage conditions.

Ditch/Channel Protection: Where new channels are formed, as in the case of culverts removed from access roads and the removal of low water crossings, the resulting channel will be protected with erosion control blankets as described in the section above.

Surface Roughening: Surface roughening or slope tracking is the act of running a dozer or other heavy tracked equipment perpendicular to the grade of disturbed slopes with a grade of 3H:1V and steeper with a continuous length of 75 feet or greater. The tracks will provide a rough surface to decrease erosion potential during an interim period until a smooth grade, seed and erosion control blanket can be applied.

Temporary Mulch Cover and Seed BMP: Temporary mulch cover (wood fiber to resist loss from grazing by wildlife or domestic animals) will be applied at a rate of two tons per acre to provide temporary erosion protection of exposed soils areas with slopes flatter than or equal to 3:1. Seed will be applied with the mulch for temporary and/or permanent vegetative growth as called for in the SWPPP. Mulch will be used for all soil types where slopes are flatter than 3:1 and no significant concentrated flows are present. The mulch will be disc-anchored to the soil to keep it from blowing away. The mulch prohibits the impact of the rain drop from dislodging soil and subsequently carrying the soil away during sheet drainage. In sandy soils tackifier may be used to assist the disc anchoring if the mulch cannot be secured to the sandy soils.

Soil Stockpiles: Topsoil that is stripped from the construction site and base materials will be stockpiled on site. Stockpile areas will be located in areas that will not interfere with the decommissioning activities, and be located away from pavement, site drainage routes, or other areas of concentrated flow. Stockpiles should also be located away from wetlands and surface waters. Perimeter controls, such as silt fence, will be installed around all stockpiles if stockpiles are not placed within existing silt fences or other sediment control, where the potential exists for material to be eroded and transported to sensitive nature resources. Soils that are stockpiled for longer durations will be temporarily seeded and mulched, or stabilized with a bonded fiber polymer emulsion.

Permanent seed and temporary mulch and/or erosion control blanket BMP: In areas at final grade that will not be used for agriculture, permanent seed will be applied to promote vegetative cover for permanent erosion control. Temporary mulch and/or erosion control blanket will be applied as appropriate in areas to provide temporary erosion protection until the permanent seed is established.

4.2 SEDIMENT CONTROL

Removal of Ditch Crossing BMP: Temporary ditch crossings may be needed to accommodate the movements of cranes or other heavy equipment. Perimeter controls such as silt fence will be used at crossing locations to minimize runoff from exposed soils. Crossings will be done during dry conditions, if possible. If a stream is wet at the time of the crossing, alternative BMPs will be applied. These could include a temporary dam and bypass pump to install the crossing in dry conditions. Timber construction mats will be used as needed to prevent compaction and rutting at crossing locations. All temporary fills and construction mats will be removed immediately after the crossing is successfully completed and the temporarily disturbed area restored using the appropriate BMPs as described above.

Dewatering: A temporary sump and rock base will be used if a temporary pump is used to dewater an area of accumulated water. If a rock base cannot be used, the pump intake will be elevated to draw water from the top of the water column to avoid the intake and discharge of turbid water. Energy dissipation riprap will be applied to the discharge area of the pump hose. The water will

be discharged to a large flat vegetated area for filtration/infiltration prior to draining into receiving waters of conveyances/ditches. If discharge water is unavoidably turbid, dewatering bags, temporary traps, rock weepers, or other adequate BMP will be used to control sediment discharge.

Silt Fence BMP or Fiber Logs: Silt fences or fiber logs will be used as perimeter controls downgradient of exposed soils during construction to capture suspended sediment particles on site, to extent possible. The standard silt fence or fiber logs will also be used in smaller watershed areas where the contributing areas are typically less than 1/4 acre of drainage per 100 feet of standard silt fence or the fiber logs. Standard silt fence or fiber logs will also be used for stockpiles 8 feet high or higher which have slopes of 3:1 or steeper. Standard silt fence or fiber logs should not be used in areas of highly erodible soils which are found within streams, slopes, or banks of creeks and streams within the Facility's site.

Rock Entrance/Exit Tracking Control BMP: Rock construction entrances will be installed where access to a construction area is needed from adjacent paved surfaces.

Street Scraping/Sweeping BMP: Street scraping and sweeping will be used to retrieve sediment tracked or washed onto paved surfaces at the end of each working day, or as needed.

4.3 CONTROLLING STORMWATER FLOWING ONTO AND THROUGH THE PROJECT

Given that the majority of the project area is on high ground relative to the surroundings, controlling stormwater flow that enters the project area will likely require minimal effort during decommissioning activities. Only newly disturbed areas may require new, temporary stormwater control. The access roads that traverse steep slopes will likely require some or all of the control methods described below.

Diversion Berms/Swales/Ditches: It may be necessary to direct diverted flow toward temporary settling basins via berms, swales, or ditches. If diversion controls are deemed necessary for decommissioning activities, these must be stabilized by temporary mulch and seeding, erosion control blankets, or by installing riprap to protect the channel from erosive forces.

Rock Check Dams: It may be necessary to install temporary check dams within swales or ditches that convey storm water from areas disturbed by decommissioning activities. Rock check dams are effective for velocity control, sediment control, and to augment temporary stabilization of channels. Filter fabric can be utilized to help filter the flow, minimize the scour of the soil under the rock, and facilitate removal of the check dams once permanent stabilization is achieved. The height of check dams should be at least two feet. Spacing depends upon slope. Downgradient rock checks should have the top elevation at the same elevation as the bottom of the previous (upgradient) rock check.

Hay Bale Check Dams: Hay bale check dams may be used for velocity control within swales of the project to slow the water runoff within the drainage channels/swales. The bales should be approximately three feet in length and anchored into the soil. The midpoint elevation of the top of the bale (i.e. ponding height) must be lower than the end points of the bale where the bale meets grade, to prohibit water from flowing around the bales thus causing erosion and scour. If the bales cannot be applied properly in the field, the use of rock checks as a replacement is recommended.

Temporary Sedimentation Basins: Sedimentation basins serve to remove sediment from runoff from disturbed areas of the site. The basins allow runoff to be detained long enough to allow

the majority of the sediment to settle out prior to discharge. The location and dimensions of temporary sedimentation basins, if any are necessary, will be verified in accordance with New Mexico Department of Natural resources (NMDNR) requirements at the time of decommissioning.

5.0 TIMELINE

Decommissioning of the wind farm will be initiated if the project has not produced electricity for a period of one (1) year unless other mitigating circumstances prevail. The following sections outline a timetable for the decommissioning plan; steps towards compliance with applicable air and water quality laws and regulations; and steps for compliance with health and safety standards.

5.1 DECOMMISSIONING SCHEDULE

It is anticipated that the decommissioning activities for the project can be completed in an eight (8) month period. The estimated schedule length for decommissioning are tied to assumptions about the amount of equipment mobilized, the crew sizes, weather and climate conditions, and the productivity of the equipment and crews.

5.2 HEALTH AND SAFETY STANDARDS

Work will be conducted in strict accordance with Applicant's health and safety plan. The construction contractor hired to perform the decommissioning will also be required to prepare a site-specific health and safety plan. All site workers, including subcontractors, will be required to read, understand, and abide by the Plans. A site safety office will be designated by the construction contractor to ensure compliance. This official will have stop-work authority over all activities on the site should unsafe conditions or lapses in the safety plan be observed.

APPENDIX M

Bird and Bat Conservation Strategy and Eagle Management Plan

BIRD AND BAT CONSERVATION STRATEGY FOR THE BORDERLANDS WIND PROJECT

Prepared for

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SWCA Project No. 51742

February 2020

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Appendices

Tables

Figures

1 INTRODUCTION

This Bird and Bat Conservation Strategy (BBCS) summarizes measures taken by Borderlands Wind, LLC (Borderlands Wind), a wholly owned subsidiary of NextEra Energy Resources, LLC (NextEra), to avoid, minimize, and compensate for potential adverse impacts to birds and bats as a result of construction and operation of the Borderlands Wind Project (Project). This BBCS is considered a living document; revisions will be incorporated, as warranted, in coordination with the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and New Mexico Department of Game and Fish (NMDGF) as the Project design is finalized, post construction data for the Project are evaluated, sensitive species statuses change, and new post-construction survey and analysis techniques, industry standards, or policies are developed.

The proposed 100-megawatt (MW) nameplate capacity facility will be built and operated by Borderlands Wind. The Project will be developed within a 16,650-acre project area (also referred to as the "project boundary") located primarily on BLM Socorro Field Office–administered lands, but also on state and private lands, in Catron County, New Mexico, approximately 19 miles west-southwest of Quemado, New Mexico, and 20 miles east of Springerville, Arizona (Figure 1; see the Project's Plan of Development [POD; Borderlands Wind 2020]). The POD and draft environmental impact statement (DEIS; BLM 2019a) describe three action alternatives; however, hereafter, unless specifically noted, this document focuses on the Project's preferred alternative, Alternative 2 (see Section 1.3.1 of the POD; Figure 1).

The specific objectives of this document are twofold: 1) to describe the steps Borderlands Wind has taken or will take to mitigate for adverse impacts, and 2) to address the post-construction monitoring efforts Borderlands Wind intends to undertake. A separate Eagle Management Plan for the Project (SWCA Environmental Consultants [SWCA] 2020a) describes eagle-specific risk-reducing and offsetting measures implemented for the Project; eagle-specific survey results and conclusions are not covered under the purview of this BBCS document.

1.1 Document Organization

Following the USFWS's *Land-Based Wind Energy Guidelines* (WEG) (USFWS 2012), this BBCS has been developed using a tiered approach. The iterative decision-making process explains the Project-specific analyses, studies, and reasoning that supported progressing from one tier to the next.

The five-tier approach is described in the WEG as follows:

- Tiers 1 and 2 provide an initial landscape-scale screening and site-level characterization that addresses potential risk the Project would pose to species of concern and their habitats.
- Tier 3 site-specific data provide quantitative and qualitative assessments used to determine 1) whether a project should be developed or abandoned, 2) avoidance and minimization measures, 3) compensatory mitigation measures if adverse impacts cannot acceptably be avoided, and 4) duration and level of effort of post-construction monitoring.
- Tier 4 post-construction fatality monitoring is designed to estimate collision-related impacts.
- Tier 5 studies are not necessary for most wind energy projects; they are aimed at understanding and adaptively rectifying potentially significant impacts identified in Tier 4.

The document includes best management practices (BMPs) developed for the Project as identified by Borderlands Wind, BLM, and USFWS.

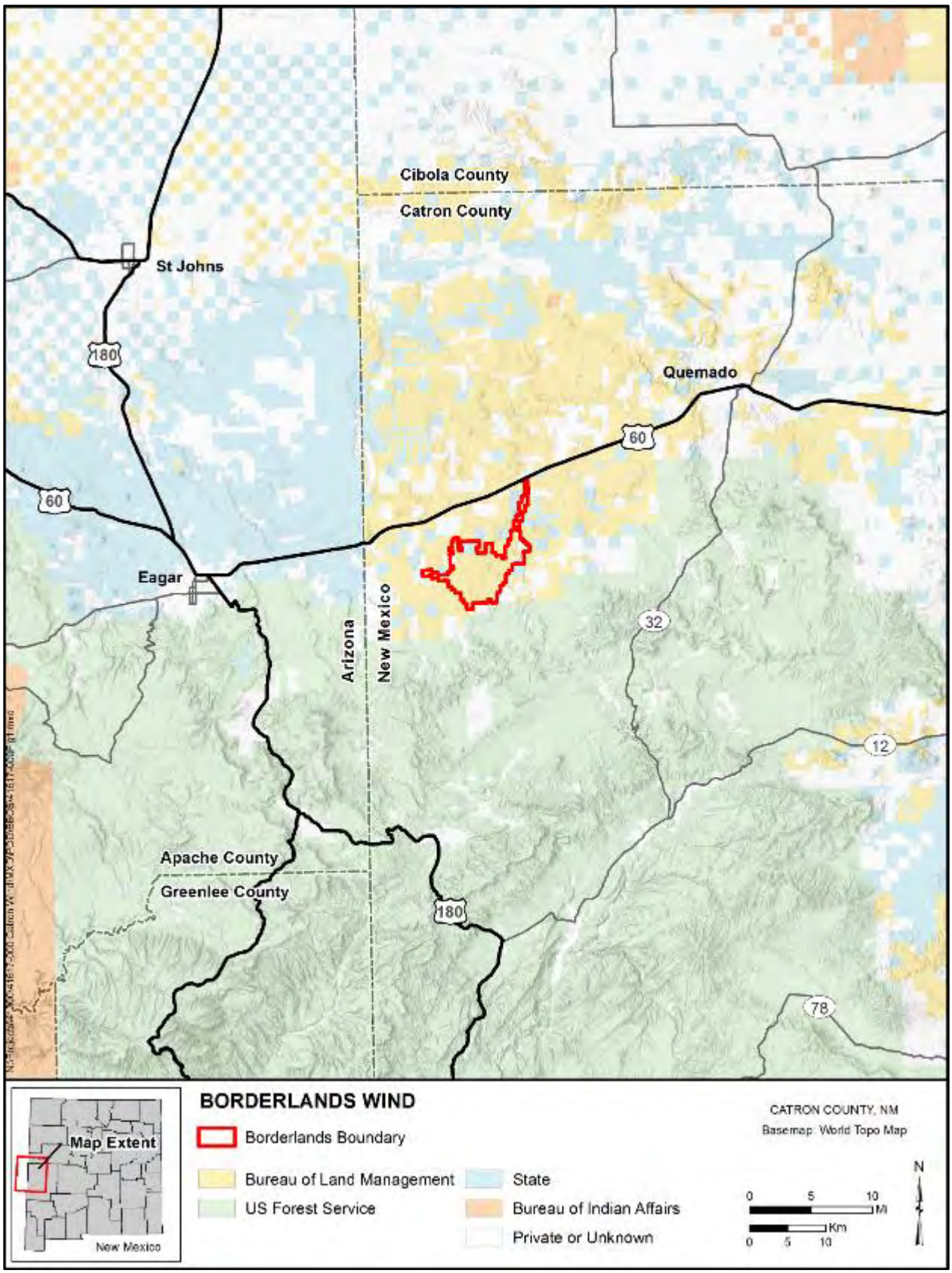

Figure 1. Borderlands Wind Project location.

1.2 Project Description and Current Progress

As of this writing (February 2020), the Project is projected to achieve commercial operation in September 2021, with construction beginning in September to October 2020. The Project life is considered to be 35 years, planned for decommissioning in 2055; however, a determination may be made to extend the right-of-way grant through the renewal process, which would extend the term of the right-of-way.

The Alternative 2 project design includes 44 permitted wind turbine generator (WTGs; hereafter, turbine[s]) locations, 34 of which will be built. These 34 turbines will consist of 30 3.0-MW turbines, each with a 98–117-meter (m) (322–384-foot)[1] hub height and 192-m (630-foot) maximum top height, and four 2.5-MW turbines, each with a 90-m (295-foot) hub height and 152-m (499-foot) maximum top height. Up to two permanent meteorological (MET) towers, no more than 361 feet (110 m) tall, will be installed; these will either be guyed—wires spanning 300 feet from the tower on four sides—or unguyed. Details regarding other Project infrastructure (e.g., roads, collection lines, substation, operations and maintenance building), including extent of temporary and permanent surface disturbance, are provided in the POD and DEIS. Figure 2 illustrates the proposed Alternative 2 project design.

The BLM's purpose and need for the Project is detailed in Section 1.1 of the DEIS and the proponent's project objectives are detailed in Section 1.2 of the DEIS (BLM 2019a).

1.3 Consultation History

Borderlands Wind has coordinated with state and federal agencies during Project development through conference calls, in-person meetings, and site visits. This voluntary consultation began in February 2017 and has continued through the development of this BBCS with BLM, USFWS Region 2, and New Mexico Department of Game and Fish (NMDGF) representatives. The names and contact information for agency staff who have provided technical assistance for the Project are provided in Table 1.

Agency communication has included the following:

- Initial data sharing with Borderlands Wind by Bob Murphy, former USFWS Region 2 Nongame Migratory Bird Biologist, on February 21, 2017.
- Ongoing conference calls conducted twice monthly, initiated on January 31, 2018; participants include BLM, Borderlands Wind, LSD, and SWCA personnel.
- August 25, 2017, meeting attended by Borderlands Wind, BLM, and USFWS personnel.
- January 25, 2018, site visit attended by BLM, Borderlands Wind, SWCA, and LSD personnel.
- March 7, 2018, conference call; participants included Borderlands Wind, BLM, USFWS, and LSD personnel.
- May 16, 2018, BLM requested Borderlands Wind to conduct Gunnison's prairie dog (*Cynomys gunnisoni*) occupancy and colony delineation surveys.
- May 29, 2018, Tier 1 and 2 site characterization and evaluation report, wildlife survey plan, and 2018 raptor nest survey technical memorandum for the Project submitted to BLM, USFWS, and NMDGF by SWCA and Borderlands Wind for comment.

[1] A range of hub heights are provided herein because the final design turbine specifications are not yet known.

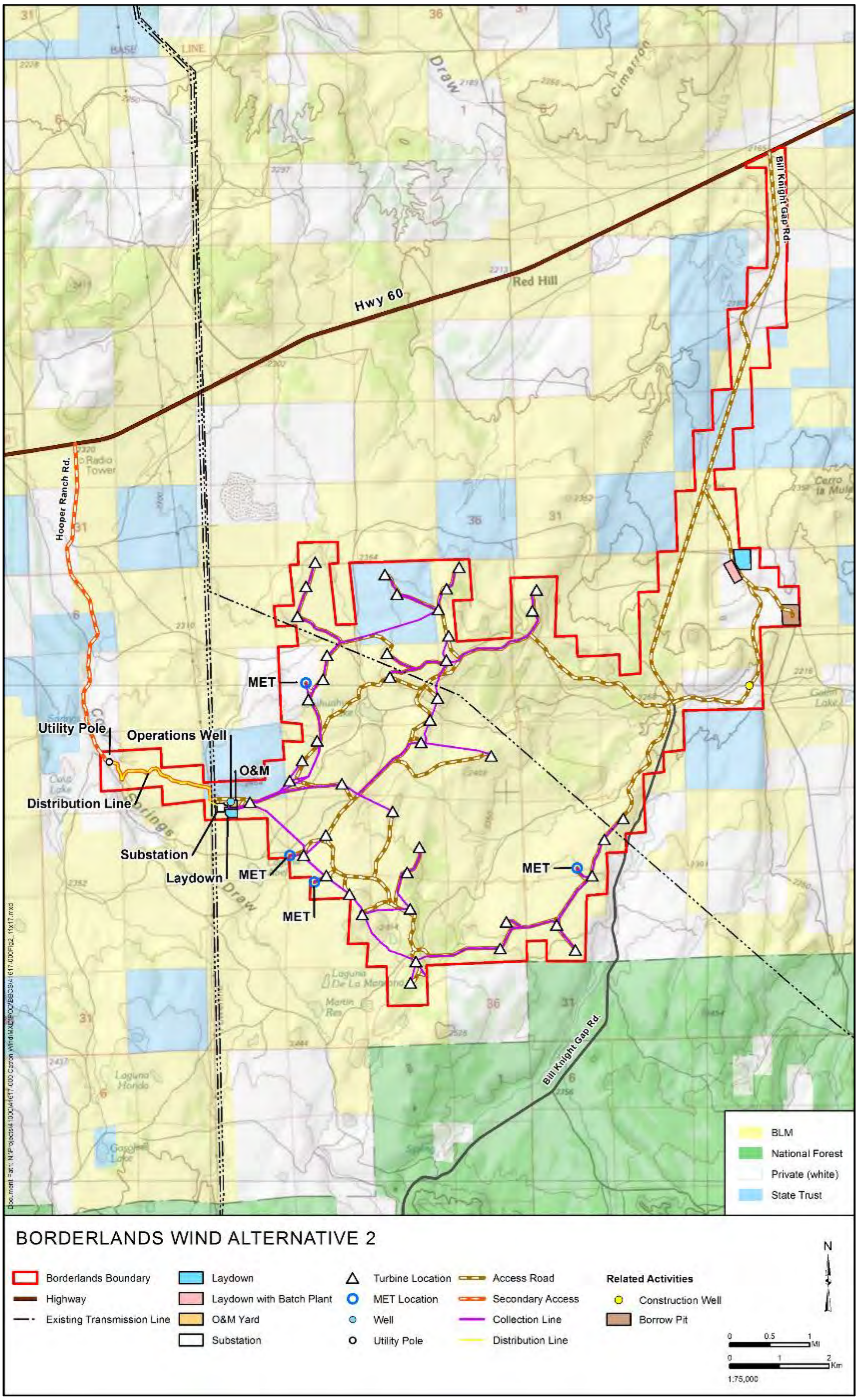

Figure 2. Alternative 2 project design. This design was developed after bird and bat risk-reducing avoidance considerations (Section 3.3)

- May 30, 2018, WEG Tiers 1–3 and ECPG Stages 1–4 meeting held at USFWS's Region 2 New Mexico Ecological Services Field Office attended by USFWS, NMDGF, Borderlands Wind, and SWCA personnel.
- June 19, 2018, meeting held at BLM's Socorro Field Office attended by Borderlands Wind, BLM, and USFWS personnel.
- July 6, 2018, ECPG Stages 1–4 technical memorandum and prairie dog survey plan submitted to BLM, USFWS, and NMDGF by SWCA and Borderlands Wind for comment.
- July 17, 2018, site visit attended by Borderlands Wind, SWCA, and NMDGF personnel.
- July 18, 2018, ECPG Stages 1–4 meeting held at USFWS's Region 2 Migratory Birds Main Office attended by BLM, USFWS, NMDGF, Borderlands Wind, SWCA, and LSD personnel.

Table 1. Federal and State Agency Staff Who Have Provided Bird and Bat Technical Assistance for the Project

Agency, Employee	Contact Information
USFWS Region 2 Migratory Birds Kristin Madden, Corrie Borgman, Kammie Kruse, Kirsten McDonnell, Bob Murphy (former)	Migratory Birds Main Office, 500 Gold SW, Albuquerque, NM 87102 (505) 248-7885
USFWS Region 2 New Mexico Ecological Services Field Office Jennifer Davis	2105 Osuna Road NE, Albuquerque, NM 87113 (505) 346-2525
NMDGF Ecological and Environmental Planning Division and Wildlife Management Ron Kellermueller, Chuck Hayes, Jim Stuart	1 Wildlife Way, Santa Fe, NM 87507 (505) 476-8159, (505) 476-8114, (505) 476-8107
BLM National Project Support Team Jason Sutter (former)	1387 S. Vinnell Way, Boise, ID 83709 (208) 373-3903
Christine Fletcher	176 East DL Sargent Drive, Cedar City, UT 84721 (435) 865-3035
BLM New Mexico State Office Marikay Ramsey	301 Dinosaur Trail, Santa Fe, NM 87508 (505) 954-2000
BLM Socorro Field Office Carlos Madril	901 South Highway 85, Socorro, NM 97801 (575) 835-0412

1.4 Regulatory Context

The federal regulatory framework for protecting birds includes the Endangered Species Act of 1973, as amended (ESA), the Migratory Bird Treaty Act of 1918, as amended (MBTA), and the Bald and Golden Eagle Protection Act of 1940, as amended (Eagle Act). All migratory birds are covered under the MBTA, whereas the Eagle Act specifically protects bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). There are no federal regulatory protections for bat species that have the potential to occur in the project area; however, the New Mexico Wildlife Conservation Act (1978) authorizes the NMDGF to designate state-threatened and endangered species. Take of these species is prohibited.

The site evaluation report for the Project (SWCA 2018a) identified the following legally protected bird and bat species that may occur in the project area:

- Bald eagle (Eagle Act; state threatened)
- Golden eagle (Eagle Act)
- Gray vireo (*Vireo vicinior*; state threatened)

- Mexican spotted owl (*Strix occidentalis lucida*; federally threatened)
- Peregrine falcon (*Falco peregrinus*; state threatened)
- Spotted bat (*Euderma maculatum*; state threatened)

1.4.1 *Endangered Species Act*

The ESA protects imperiled species (i.e., those species listed as threatened and endangered) and their habitats, prohibiting anyone without a permit to "take" these species; permits are generally available for conservation and scientific purposes. *Take* is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." *Harm* may include significant habitat modification or degradation that results in killing or injuring listed species by significantly impairing essential behavioral patterns. Section 7 of the ESA requires federal agencies to consult with the USFWS to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of designated critical habitat—the result of such conference is a concurrence letter or "biological opinion" addressing the proposed action.

1.4.2 *Migratory Bird Treaty Act*

The MBTA prohibits incidental "take" of migratory birds—more than 1,000 species (50 Code of Federal Regulations [CFR] 10 and 21)—their parts, eggs, or nests. *Take* is defined by the MBTA as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities." In December 2017, the U.S. Department of the Interior Solicitor's Office issued an "M Opinion" (M-37050), concluding that the MBTA's take prohibitions only apply to direct and affirmative purposeful actions. Conversely, conduct that results in the unintentional injury or death of migratory birds is not prohibited under the act. In February 2020, the USFWS published a proposed rule that would codify the M-Opinion.

1.4.3 *Bald and Golden Eagle Protection Act*

The Project's Eagle Management Plan (EMP) (SWCA 2020a) provides a summary of the Bald and Golden Eagle Protection Act.

1.4.4 *Bureau of Land Management Sensitive Species*

On BLM-administered lands, the BLM is responsible for conserving BLM special-status species (BLM Manual 6840) including ESA-listed species and BLM sensitive species. BLM sensitive species are those requiring special management considerations to promote their conservation and reduce the likelihood and need for future ESA listing. The BLM New Mexico State Office provides a list, and pertinent management guidance for, the BLM sensitive species relevant to the Project (BLM 2019b).

1.4.5 *Birds of Conservation Concern*

USFWS Birds of Conservation Concern (BCC) are migratory and non-migratory bird species, beyond those designated as federally threatened or endangered, that represent USFWS's highest conservation priorities.

1.4.6 *New Mexico State Threatened and Endangered Species*

The New Mexico Wildlife Conservation Act of 1978 prohibits take of state-listed species. A state-endangered species is one in jeopardy of extinction or extirpation from the state; a state-threatened species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the state.

1.4.7 *State Wildlife Action Plan for New Mexico*

The State Wildlife Action Plan for New Mexico (NMDGF 2016) is a non-regulatory planning document providing a high-level view of the needs and opportunities to conserve New Mexico's wildlife and their habitats. The main components of the plan include identification and assessment of wildlife species and key habitats; a review of threats and potential conservation actions; an overview of climate change; descriptions of the state's six ecoregions; a review of monitoring efforts; and implementation plans. The document identifies Species of Greatest Conservation Need (SGCN): species that are indicative of the diversity and health of the state's wildlife, including low and declining populations, warranting heightened attention.

1.4.8 *Land-Based Wind Energy Guidelines*

USFWS's WEG (USFWS 2012) are designed for utility-scale land-based wind energy projects to reduce potential impacts to species of concern at all stages of development. When used in concert with appropriate regulatory tools, the WEG form the best practical approach for conserving species of concern. The WEG tiered approach provides a decision framework for collecting information in increasing detail to evaluate risk and make siting and operational decisions. It provides the opportunity for evaluation and decision-making at each tier, enabling a developer to abandon or proceed with project development, or to collect additional information if required. This approach does not require that every tier, or every element within each tier, be implemented for every project. Instead, the tiered approach allows efficient use of developer and agency resources with increasing levels of effort until sufficient information and the desired precision is acquired for the risk assessment.

Adherence to the WEG is voluntary and does not relieve any individual, company, or agency of the responsibility to comply with laws and regulations. However, if a violation occurs, USFWS will consider a developer's documented efforts to communicate with the USFWS and adhere to the WEG in its enforcement decision.

1.4.9 *New Mexico Wind Energy Guidelines*

NMDGF's *Recommendations to Minimize Adverse Impacts of Wind Energy Development on Wildlife 2012* (NMDGF 2012) provide guidelines for wind energy developers. The guidelines, adapted from USFWS (2003), encourage developers to contact NMDGF for project-specific comments and recommendations. Components include potential impacts to wildlife; pre- and post-construction studies; and best management practices.

1.4.10 *Avian Power Line Interaction Committee Guidance*

The Avian Power Line Interaction Committee has developed guidance documents identifying avian-safe power line construction and design standards. Guidance documents include *Avian Protection Plan Guidelines* (developed in conjunction with USFWS; APLIC 2005), *Suggested Practices for Avian Protection of Power Lines: State of the Art in 2006* (APLIC 2006), *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012), and *Recommendations for Power Pole Configurations*

185 *and Wind Energy Projects* (APLIC 2018). Key avian-safe design elements identified by APLIC include
186 installing line marking devices (also known as diverters) in collision risk areas, removing ground wires,
187 spacing energized and grounded parts appropriately, and capping energized parts.

2 TIERS 1 AND 2 – SITE EVALUATION AND CHARACTERIZATION

In accordance with the recommendations in the WEG, a Tier 1 and 2 site evaluation and characterization report (SCR) was completed in May 2018 (SWCA 2018a). Table 2 presents a report index corresponding to our evaluation summary of Tier 1 and 2 questions aimed at determining probability of significant adverse impacts to wildlife (USFWS 2012).

Table 2. WEG Tier 1 and 2 Site Evaluation and Characterization Questions.

WEG Tier 1 and 2 Questions	Section in This Document
Are there species of concern or their habitats (including designated critical habitat) present?	2.2, 3.1, and 3.2.3
Are there areas precluded by law for development or areas designated as sensitive such as federally designated critical habitat, high-priority conservation areas for non-government organizations, or other local, state, regional, federal, tribal, or international designations?	2.2.1 and 2.3
Are there known critical areas of wildlife congregation, such as maternity roosts, hibernacula, staging areas, winter ranges, nesting sites, migration stopovers or corridors, leks, or other areas of seasonal importance?	2.4, 3.1.2, 3.1.4.1, and 3.3.1.2
Are there large areas of intact habitat with the potential for fragmentation, with respect to species of habitat fragmentation concern, needing large contiguous blocks of habitat?	2.4
Which species of birds and bats, especially those known to be at risk by wind energy facilities, are likely to use the proposed site based on an assessment of site attributes	2.2, 3.1, and 3.2.1
Is there a potential for significant adverse impacts to special-status species based on the answers to the questions above, and considering the design of the Project?	3.2, 3.4

The SCR was developed by reviewing available landscape-level digital layers, databases, and reports; and through repeated site visits from March 2017 to April 2018. The following is a summary of SWCA's (2018a) findings; updates are provided where relevant.

2.1 Environmental Setting

The project area is characterized by hills and rolling plains at elevations between 7,000 and 8,300 feet. Topography is generally characterized by hills and rolling plains. Notable landforms/landmarks within the project vicinity include southeast to northwest-trending Cow Springs Draw to the west of the project area (and extending into the western extreme of the project area), Cerro la Mule to the east, and Cimarron Hill to the northeast. Vegetation cover within the project area includes sparsely vegetated short-grass grassland interspersed with rock outcrops and semi-desert grassland/shrub steppe/juniper savanna with scattered and locally dense patches of pinyon-juniper woodland. Few low-canopy cover ponderosa pine (*Pinus ponderosa*) trees are present in the southern extreme of the project area. Dominant plant species include blue grama (*Bouteloua gracilis*), broom snakeweed (*Gutierrezia sarothrae*), one-seed juniper (*Juniperus monosperma*), and two-needle pinyon (*Pinus edulis*). Rubber rabbitbrush (*Ericameria nauseosa*) is also relatively common throughout the site.

Two intermittent drainages, including Cow Springs Draw, are located in the western extreme and eastern portions of the project area. Scattered playa wetlands, containing water seasonally, are found in the general vicinity, including within the project area (i.e., Chihuahua Lake situated in the west-central portion of the project area) (Figure 3). Livestock tanks are scattered within the site. Land uses include cattle ranching/ grazing and recreation (primarily hunting).

For additional detail on the Project's environmental setting, see SWCA (2018a).

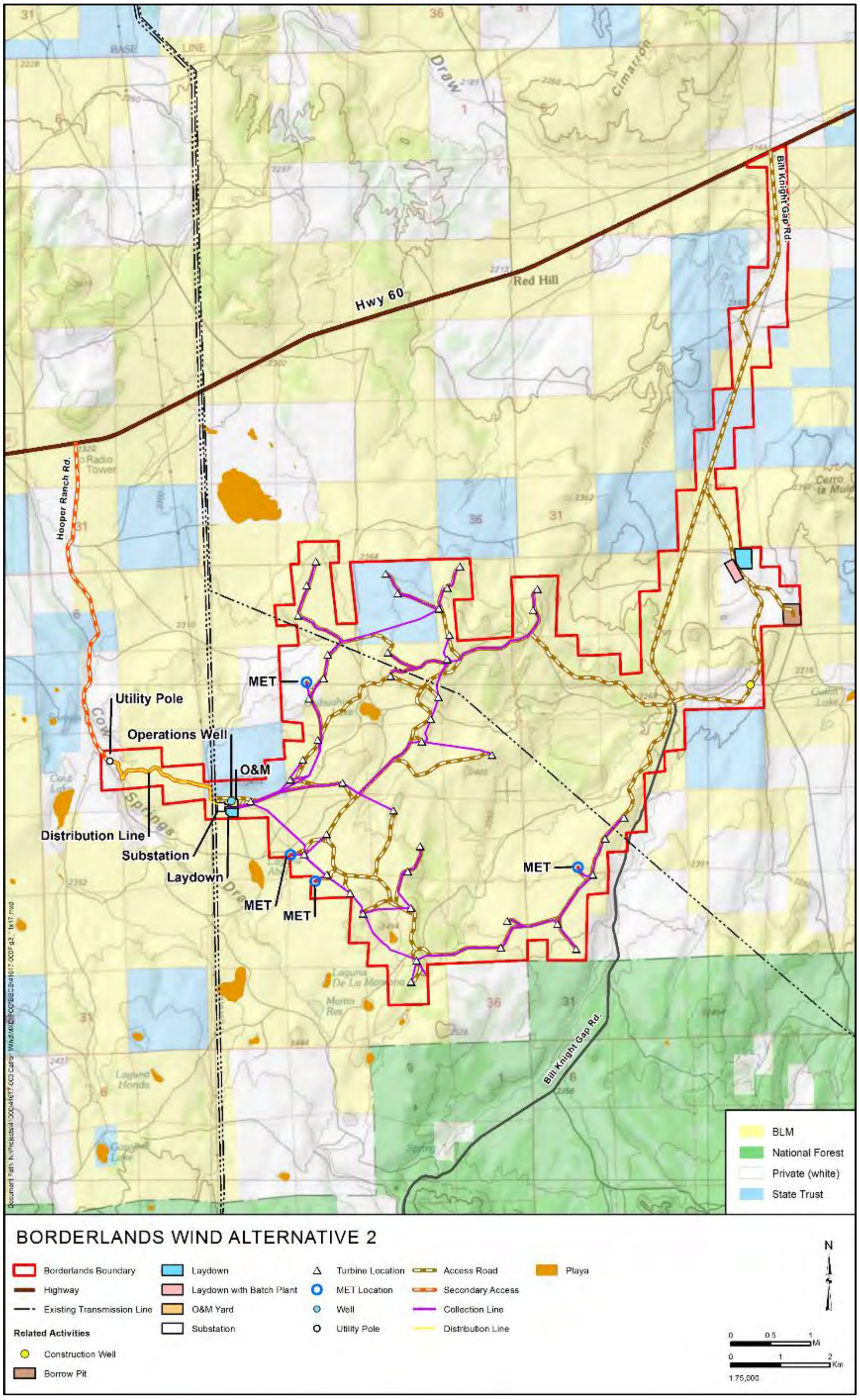

Figure 3. Playa wetlands located within the project area and its vicinity.

2.2 Presence of Special-Status Species and Their Habitats

Potential for occurrence of special-status bird and bat species and their habitats was fully reviewed by SWCA (2018a). The species review has been updated herein to incorporate BLM's (2019b) revision to the New Mexico BLM sensitive species lists. In addition to BLM sensitive species, special-status species considered in the review included 1) federally protected (endangered and threatened) species (USFWS 2017), 2) both Eagle Act-protected species, 3) State-listed endangered, threatened and SGCN species (Biota Information System of New Mexico [BISON-M]) 2018), and 4) BCC for Bird Conservation Regions (BCRs) 16 and 34 (USFWS 2008). The potential for occurrence of each species was based on 1) documented records; 2) existing information on distribution; and 3) qualitative comparisons of the habitat requirements of each species with vegetation communities or landscape features in the project area.

Forty-two special-status bird and bat species, including one federally listed and four state-listed species, are known to or may occur within the project area. Tables 3 and 4 present the regulatory and occurrence statuses of these species. For additional detail on the species-specific habitat requirements that informed occurrence determinations, see SWCA (2018a).

Table 3. Federally Listed, Eagle Act, and State-Listed Bird and Bat Species that May Occur or are Known to Occur within the Project Area

Common Name (Scientific Name)	Status		Occurrence Status
	Federal*	State†	
Birds			
Bald eagle (*Halliaeetus lecocephalus*)	Eagle Act, BCC (BCR 16, 34)	T, SGCN	Known to occur
Golden eagle (*Aquila chrysaetos*)	Eagle Act (BCC BCR 16)	–	Known to occur
Gray vireo (*Vireo vicinior*)	BCC (BCR 16, 34)	T, SGCN	Known to occur
Peregrine falcon (*Falco peregrinus*)	BCC (BCR 16, 34)	T, SGCN	May occur
Mexican spotted owl (*Strix occidentalis lucida*)	T w/CH	SGCN	May occur
Bats			
Spotted bat (*Euderma maculatum*)	BLM S	T, SGCN	May occur

* Federal status definitions: BCC = Bird of Conservation Concern; BCR = Bird Conservation Region; CH = designated critical habitat; T = threatened (threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of their range).

† State status definitions: T = threatened (Threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of their range in the state); SGCN = Species of Greatest Conservation Need (species that are indicative of the diversity and health of the state's wildlife).

Table 4. Other Special-Status Bird and Bat Species that May Occur or are Known to Occur within the Project Area

Common Name (Scientific Name)	Status		Occurrence Status
	Federal*	State†	
Birds			
Bendire's thrasher (*Toxostoma benderei*)	BCC (BCR 16, 34), BLM S	SGCN	May occur
Black-chinned sparrow (*Spizella atrogularis*)	BCC (BCR 34)	SGCN	May occur
Black-throated gray warbler (*Setophaga nigrescens*)	BCC (BCR 34)	SGCN	Known to occur
Brewer's sparrow (*Spizella breweri)*	BCC (BCR 16)	–	Known to occur

Common Name (Scientific Name)	Status		Occurrence Status
	Federal*	**State†**	
Burrowing owl (*Athene cunicularia*; western burrowing owl: *A.c. hypugaea*)	BCC (BCR 16), BLM S	SGCN	Known to occur
Canyon towhee (*Melozone fusca*)	BCC (BCR 34)	–	Known to occur
Cassin's finch (*Haemorhous cassinii*)	BCC (BCR 16)	SGCN	Known to occur
Cassin's sparrow (*Peucaea cassinii*)	–	SGCN	May occur
Chestnut-collared longspur (*Calcarius ornatus*)	BCC (BCR 16, 34), BLM S	SGCN	Known to occur
Clark's nutcracker (*Nucifraga columbiana*)	–	SGCN	May occur
Common nighthawk (*Chordeiles minor*)	–	SGCN	Known to occur
Eared grebe (*Podiceps nigricollis*)	–	SGCN	May occur
Elf owl (*Micrathene whitneyi*)	BCC (BCR 34)	SGCN	May occur
Evening grosbeak (*Coccothraustes vespertinus*)	–	SGCN	Known to occur
Ferruginous hawk (*Buteo regalis*)	BCC (BCR 16), BLM S	–	Known to occur
Flammulated owl (*Psiloscops flammeolus*)	BCC (BCR 16, 34)	SGCN	May occur
Grace's warbler (*Setophaga graciae*)	BCC (BCR 16, 34)	SGCN	May occur
Juniper titmouse (*Baeolophus ridgwayi*)	BCC (BCR 16)	SGCN	Known to occur
Lark bunting (*Calamospiza melanocorys*)	BCC (BCR 34)	–	May occur
Lewis's woodpecker (*Melanerpes lewis*)	BCC (BCR 16, 34)	SGCN	May occur
Loggerhead shrike (*Lanius ludovicianus*)	–	SGCN	Known to occur
Long-billed curlew (*Numenius americanus*)	BCC (BCR 16)	SGCN	May occur
McCown's longspur (*Rhynchophanes mccownii*)	BLM S	SGCN	Known to occur
Mexican whip-poor-will (*Antrostomus arizonae*)	BLM S	SGCN	May occur
Mountain bluebird (*Sialia currucoides*)	–	SGCN	Known to occur
Mountain plover (*Charadrius montanus*)	BCC (BCR 16, 34)	SGCN	May occur
Olive-sided flycatcher (*Contopus cooperi*)	–	SGCN	May occur
Pinyon jay (*Gymnorhinus cyanocephalus*)	BCC (BCR 16, 34), BLM S	SGCN	Known to occur
Prairie falcon (*Falco mexicanus*)	BCC (BCR 16)	–	Known to occur
Pygmy nuthatch (*Sitta pygmaea*)	–	SGCN	Known to occur
Red-faced warbler (*Cardellina rubrifrons*)	BCC (BCR 34)	SGCN	May occur
Vesper sparrow (*Pooecetes gramineus*)	–	SGCN	Known to occur
Virginia's warbler (*Oreothlypis virginiae*)	BLM S	SGCN	May occur
Western bluebird (*Sialia mexicana*)	–	SGCN	Known to occur
Williamson's sapsucker (*Sphyrapicus thyroideus*)	–	SGCN	May occur
Bats			
Townsend's big-eared bat (*Corynorhinus townsendii*)	BLM S	SGCN	Known to occur

Note: Occurrence statuses presented in table informed by Tier 3 site-specific survey data.

* Federal status definitions: BCC = Bird of Conservation Concern; BCR = Bird Conservation Region; BLM S = BLM sensitive species for Catron County.

† State status definitions: SGCN = Species of Greatest Conservation Need (species that are indicative of the diversity and health of the state's wildlife).

2.2.1 *Critical Habitat*

There are no critical habitats within the project area (USFWS 2017). The nearest critical habitat—for Mexican spotted owl—is located in the Gila National Forest approximately 5.5 miles southwest of the project area.

2.3 Other Special Designations

There are no Important Bird Areas (Audubon 2019), Western Hemisphere Shorebird Reserve Network (WHSRN) sites (WHSRN 2019), Wetlands of International Importance (Ramsar 2014), national wildlife refuges (USFWS 2019), or state parks (New Mexico Energy, Minerals and Natural Resources Department 2019) within the project area. There are no areas of critical environmental concern (ACEC), back country byways, national trails, special management areas, special recreation management areas, wild and scenic rivers, wilderness, or wilderness study areas (WSAs) within the project area (BLM 2010).

Among these special designation areas, two ACECs and two WSAs are located within 10 miles of the project area, namely, the Cerro Pomo and Zuni Salt Lake ACECs and Eagle Peak and Mesita Blanca WSAs are located >3 miles northeast of the project area. These ACECs are managed for protection of their geological, paleontological, cultural, scenic, and hydrological resources. The WSAs are under consideration for possible inclusion as wilderness areas.

2.4 Potential Areas of Bird and Bat Species' Congregation

There are no known areas that would congregate non-eagle bird and bat species (SWCA 2018a). Specifically, the Tier 1 and Tier 2 review determined the following:

- There are no known features (e.g., caves, abandoned mines) that would congregate large numbers of roosting bats.
- There are no staging areas (areas with abundant, predicable food resources where birds prepare for an energetic challenge requiring substantial food stores).
- Though stopover strategies and avian migration patterns are complex—influenced by factors such as weather, local topography, regional geography, time of season, and finer properties of the atmosphere (reviewed in Van Doren and Horton 2018)—there are no areas that would be considered important stopover habitats (sites where birds rest and feed during migration to refuel or avoid adverse conditions, such as fragments of forested areas and riparian corridors) for migrating birds. There are no negative barriers, such as large bodies of water, or mountain ridges that offer energy-efficient flight via updrafts that would funnel migrant raptors.
- There are no populations of a species of habitat fragmentation concern that would be isolated or displaced by Project construction and operation.
- There are no leks.

Areas of seasonal importance identified for the Project, include Gunnison's prairie dog colonies, which may be used by such species as ferruginous hawk (*Buteo regalis*) when the prairie dogs are active from March–October. Burrowing owls may also occupy prairie dog burrows for breeding between March and early August (NMDGF 2007). Dead cows or other large mammal carrion, when present, may provide an attractant for raptor species. Because of their size, the project area playas are not expected to support large concentrations of migrating/wintering waterfowl or shorebirds; however, some use by waterfowl and shorebirds would be expected from October–February and July–October, respectively (Rodewald 2015).

Bat species may use the project area playas, drainages, and edge habitats for movement and foraging activities relative to other featureless areas of the project area; however, landscape features and other mechanisms driving bat fatalities at wind farms are not well understood (Bennett and Hale 2018; Roemer et al. 2019).

Section 3.2 further contextualizes bird and bat risk for the Project.

2.5 Tiers 1 and 2 Conclusion

The main outcome of the site evaluation and characterization was that low to moderate potential risk to birds and bats was anticipated; however, answers to one or more of the Tier 1 and Tier 2 questions were inconclusive. For example, the following was unclear:

- To what extent species of concern are present.
- Presence of nesting sites.
- Location and characterization of areas of seasonal importance (e.g., prairie dog colony delineation).
- Specific baseline bird and bat species composition and use.
- Whether there would be significant adverse impacts to special-status species considering the design of the Project.

Therefore, in an effort to answer these questions and identify relevant mitigation measures, Borderlands Wind proceeded to continue Tier 3 site-specific surveys and the tiered decision-making process.

3 TIER 3 – SITE-SPECIFIC SURVEYS AND MITIGATION MEASURES DEVELOPED FOR THE PROJECT

3.1 Site-Specific Surveys

Tier 3 site-specific surveys were conducted from March 2017 to March 2019 to assess potential Project risk to birds and bats using quantitative and qualitative approaches. The survey methods (SWCA 2018b) were provided to USFWS and NMDGF on May 29, 2018, and to USFWS, NMDGF, and BLM on July 6, 2018 for comment and discussed during in-person meetings conducted on May 30, 2018 and July 18, 2018. Agency feedback on the initial study plan included a request by BLM on May 16, 2018 to conduct Gunnison's prairie dog occupancy and colony delineation surveys. All surveys were designed to meet or exceed USFWS guidelines and regional precedent. The bird and bat surveys were designed to answer the following WEG questions:

Table 5. WEG Tier 3 Site-Specific Survey Questions.

WEG Tier 1 and 2 Questions	Section in This Document
Do field studies indicate that species of concern are present on or likely to use the proposed site?	3.1.1, 3.1.2, and 3.1.3
Do field studies indicate the potential for significant adverse impacts on affected populations of species of habitat fragmentation concern?	2.4
What is the distribution, relative abundance, behavior, and site use of species of concern, and to what extent do these factors expose these species to risk from the proposed Project?	3.1.1, 3.1.2, 3.1.3, and 3.2
What are the potential risks of adverse impacts of the proposed Project to individuals and local populations of species of concern and their habitats?	3.2
How can (the developer) avoid, minimize, and mitigate identified adverse impacts?	3.3
Are there studies that should be initiated at this stage that would be continued in postconstruction?	3.4

Table 6 presents the 2-year wildlife survey schedule.

Table 6. Tier 3 Site-Specific Bird and Bat Survey Schedule for the Project

Survey Type	Time Frame
Eagle, large bird, and small bird use surveys	March 2017–March 2019; surveys conducted twice per month
Eagle and other raptor species nest surveys	March–April 2017, March–April 2018; two surveys each season
Bat acoustic surveys	September 2017–February 2019; units recorded data daily
Gunnison's prairie dog occupancy and colony delineation	July 2018

This section provides a summary of key findings. More detailed methods and findings are provided in SWCA (2018b, 2018c, 2018d, and 2020b).

3.1.1 *Diurnal Avian Use Surveys*

Diurnal avian use surveys were conducted from March 28, 2017, to March 5, 2019. Ten 800-mm-radius plots were initially established to cover 30% of the area within 1 kilometer (km) of proposed Project

turbines[2]. Two additional plots were added in May 2017, and eight additional plots were added in March 2018 to ensure 30% coverage of all possible turbine array alternatives. Among these 20 plots, 13 were within or partially within the 1-km buffer of the final (Alternative 2) turbine array design (Figure 4), and these covered 36% of that area. Metrics reported herein exclude data recorded from the seven plots outside of the 1-km buffer. Survey plots were distributed to represent the site spatially and accounted for varying habitat conditions.

From the center point of each plot, surveyors counted small birds within 100 m for 10 minutes followed by a 1-hour large bird 800-m-radius count. Each plot was surveyed twice per month, with start times representing all daylight hours.

Table 7 presents the species of concern identified in Tiers 1 and 2 (Section 2) that were detected during the formal surveys and incidentally (Section 3.1.4). No federally listed birds were detected.

[2] USFWS (2013) recommendation.

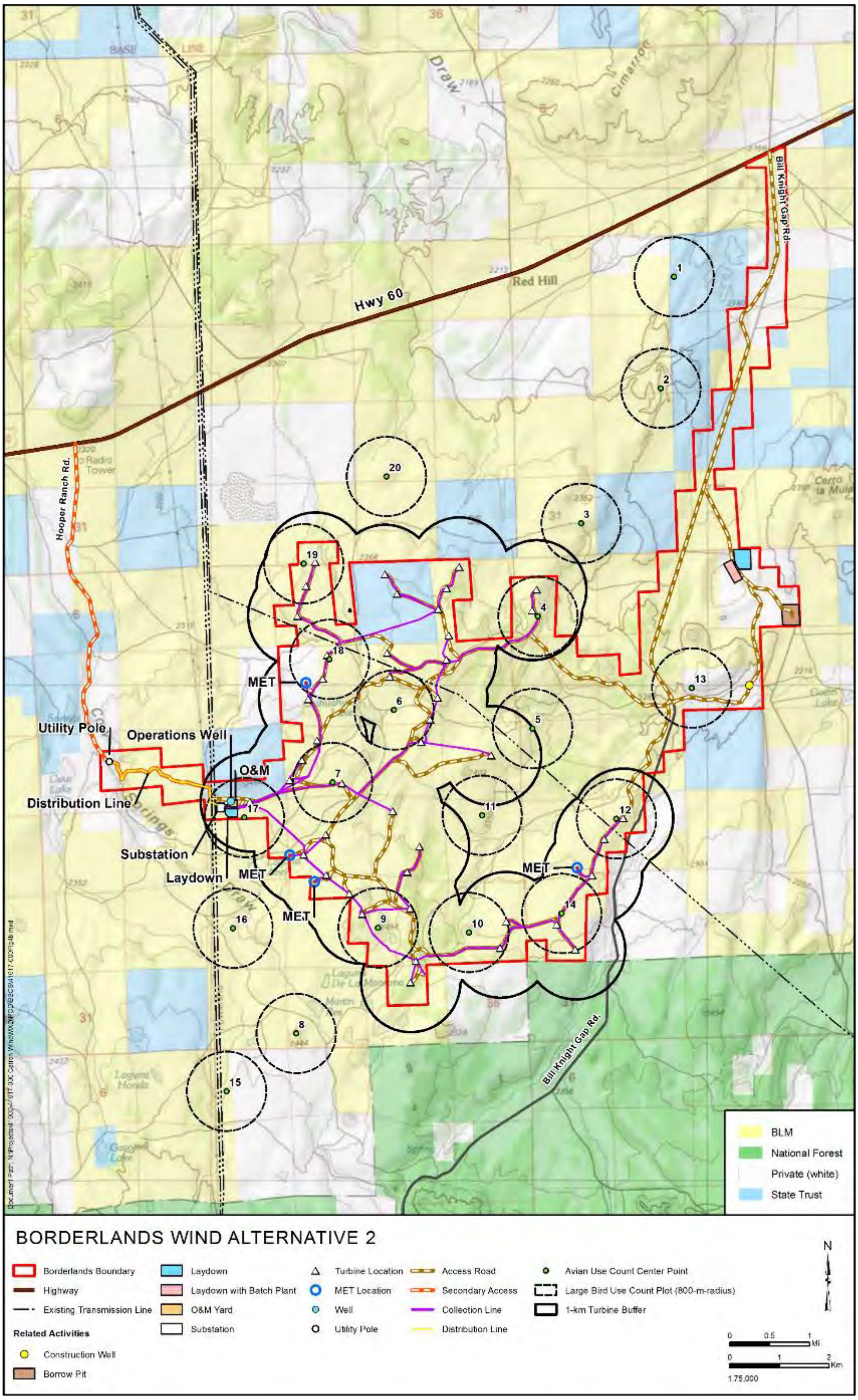

Figure 4. Tier 3 diurnal avian use count locations. Figure illustrates the 1-km buffer associated with the Alternative 2 turbine array design. Survey plots were placed outside of the turbine array design and Alternative 2 project area boundary to account for all potential Project alternatives.

Table 7. Special-Status Bird Species Detected Incidentally or During Formal Diurnal Avian Use Surveys

Species (Scientific Name)	Status	
	Federal*	**State†**
Large Birds		
Bald eagle (*Haliaeetus leucocephalus*)	Eagle Act, BCC (BCR 16, 34)	T, SGCN
Common nighthawk (*Chordeiles minor*)	–	SGCN
Ferruginous hawk (*Buteo regalis*)	BCC (BCR 16), BLM S	–
Golden eagle (*Aquila chrysaetos*)	Eagle Act, BCC (BCR 16)	–
Prairie falcon (*Falco mexicanus*)	BCC (BCR 16)	–
Small Birds		
Black-throated gray warbler (*Setophaga nigrescens*)	BCC (BCR 34)	SGCN
Brewer's sparrow (*Spizella breweri*)	BCC (BCR 16)	–
Burrowing owl (*Athene cunicularia*)	BCC (BCR 16), BLM S	SGCN
Canyon towhee (*Melozone fusca*)	BCC (BCR 34)	–
Cassin's finch (*Haemorhous cassinii*)	BCC (BCR 16)	SGCN
Chestnut-collared longspur (*Calcarius ornatus*)	BCC (BCR 16, 34)	SGCN
Evening grosbeak (*Coccothraustes vespertinus*)	–	SGCN
Gray vireo (*Vireo vicinior*)	BCC (BCR 16, 34)	T, SGCN
Juniper titmouse (*Baeolophus ridgwayi*)	BCC (BCR 16)	SGCN
Loggerhead shrike (*Lanius ludovicianus*)	BLM S	SGCN
McCown's longspur (*Rhynchophanes mccownii*)	BLM S	SGCN
Mountain bluebird (*Sialia currucoides*)	–	SGCN
Pinyon jay (*Gymnorhinus cyanocephalus*)	BCC (BCR 16, 34)	SGCN
Pygmy nuthatch (*Sitta pygmaea*)	–	SGCN
Vesper sparrow (*Pooecetes gramineus*)	–	SGCN
Western bluebird (*Sialia mexicana*)	–	SGCN

* Federal status definitions: BCC = Bird of Conservation Concern; BCR = Bird Conservation Region; BLM S = BLM sensitive species for Catron County.

† State status definitions: T = threatened (threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of their range in the state); SGCN = Species of Greatest Conservation Need (species that are indicative of the diversity and health of the state's wildlife).

Tables 8–11 present overall and seasonal compilations of large bird and small bird species composition, number of detections, relative abundance, use, and frequency of occurrence. Summary metrics were defined as follows:

Total detections: the total number of observations per species; surveyors attempted to avoid double-counting individuals per survey such that the term "observation" generally equates to the term "individual."

Relative abundance: the number of detections per species in relation to the total number of detections (i.e., the total detections for a given species divided by total detections across all species, multiplied by 100).

Use: the average number of observations per species during a survey (i.e., total detections divided by the total number of surveys).

Frequency of occurrence: the percentage of surveys that a given species was detected (i.e., the number of positive detection surveys for a given species divided by the total number of surveys, multiplied by 100).

Seasons were defined as spring (March 1–May 31), summer (June 1–August 31), fall (September 1–November 30), and winter (December 1–February 28/29).

The following is a summary of SWCA (2020b) findings.

Overall, surveyors recorded 1,677[3] detections of 16 large bird species and 3,149[4] detections of 67 small bird species. Large bird detections comprised five species groups: corvids (75% of all detections), diurnal birds of prey (15%), vultures (9%), waterfowl/waterbirds (1%), and goatsuckers (<1%). Common raven (*Corvus corax*) made up the majority of large bird detections overall (75%) (and by season [spring: 83%, summer: 65%, fall: 65%, winter: 92%]) followed by turkey vulture (*Cathartes aura*; 9%) and American kestrel (*Falco sparverius*; 7%). Swainson's hawk (*Buteo swainoni*) were also an important component of large bird detections in the fall (see Table 9). Surveyors recorded more large bird detections in the spring (526) and summer (564) relative to other seasons (fall: 313, winter: 274).

Small bird detections comprised 5 species groups: passerines (91% of all detections), corvids (7%), woodpeckers (1%), hummingbirds (1%), and upland gamebirds (<1%). Among small birds, horned lark (*Eremophila alpestris*; 32%), bushtit (*Psaltriparus minimus*; 13%), and western bluebird (*Sialia mexicana*; 9%) comprised the majority of all detections, followed by pinyon jay (*Gymnorhinus cyanocephalus*; 6%), dark-eyed junco (*Junco hyemalis*; 6%), chipping sparrow (*Spizella passerina*; 5%), and mountain bluebird (*Sialia currucoides*; 4%). More small bird detections were recorded in the fall (1,100) relative to other seasons (summer: 884, winter: 669, spring: 536).

Table 8. Overall Large Bird Species Composition, Detections, Relative Abundance, Use, and Frequency of Occurrence

Common Name	Total Detections	Relative Abundance	Use	Frequency of Occurrence
Common raven	1,259	75.07	2.421	64.42
Turkey vulture	146	8.71	0.281	10.58
American kestrel	119	7.10	0.229	13.27
Red-tailed hawk	55	3.28	0.106	9.04
Swainson's hawk	46	2.74	0.088	2.31
Mallard	17	1.01	0.033	0.19
Golden eagle	9	0.54	0.017	1.54
Prairie falcon*	6	0.36	0.012	0.96
Ferruginous hawk*	4	0.24	0.008	0.77
Northern harrier	4	0.24	0.008	0.77
Sharp-shinned hawk	4	0.24	0.008	0.77

Note: Species with <4 detections excluded from table data including great blue heron and osprey which are mentioned in Cumulative Impacts Section 3.2.3

* Special-status species (see Table 7).

[3] Two of the 1,677 detections could not be identified to species.

[4] Twenty-nine of the 3,149 detections could not be identified to species.

Table 9. Large Bird Species Composition, Detections, Relative Abundance, Use, and Frequency of Occurrence by Season

Common Name	Total Detections	Relative Abundance	Use	Frequency of Occurrence
Spring				
Common raven	434	82.51	3.709	76.07
Turkey vulture	43	8.17	0.368	13.68
American kestrel	20	3.80	0.171	12.82
Red-tailed hawk	18	3.42	0.154	13.68
Summer				
Common raven	368	65.25	2.667	64.49
Turkey vulture	86	15.25	0.623	22.46
American kestrel	73	12.94	0.529	25.36
Mallard	17	3.01	0.123	0.72
Red-tailed hawk	14	2.48	0.101	8.70
Fall				
Common raven	205	65.50	1.553	63.64
Swainson's hawk	42	13.42	0.318	6.06
American kestrel	23	7.35	0.174	12.12
Turkey vulture	17	5.43	0.129	6.06
Red-tailed hawk	14	4.47	0.106	9.09
Winter				
Common raven	252	91.97	1.895	54.89
Red-tailed hawk	9	3.28	0.068	5.26

Note: Species with <4 detections excluded from table data.

Table 10. Overall Small Bird Species Composition, Detections, Relative Abundance, Use, and Frequency of Occurrence

Common Name	Total Detections	Relative Abundance	Use	Frequency of Occurrence
Horned lark	1,002	31.82	1.927	26.15
Bushtit	420	13.34	0.808	7.88
Western bluebird*	295	9.37	0.567	14.04
Pinyon jay*	193	6.13	0.371	7.50
Dark-eyed junco	181	5.75	0.348	8.85
Chipping sparrow	157	4.99	0.302	6.15
Mountain bluebird*	131	4.16	0.252	6.73
Juniper titmouse*	81	2.57	0.156	10.96
Violet-green swallow	48	1.52	0.092	3.08
Vesper sparrow*	42	1.33	0.081	4.81
Purple martin	39	1.24	0.075	3.27
Yellow-headed blackbird	39	1.24	0.075	0.38
American robin	37	1.17	0.071	3.46
Canyon towhee*	36	1.14	0.069	5.96

Common Name	Total Detections	Relative Abundance	Use	Frequency of Occurrence
Brewer's sparrow*	35	1.11	0.067	1.92
Yellow-rumped warbler	30	0.95	0.058	3.27
Chestnut-collared longspur*	25	0.79	0.048	0.77
Mountain chickadee	22	0.70	0.042	1.73
Woodhouse's scrub-jay	22	0.70	0.042	4.04
Northern flicker	21	0.67	0.040	3.85
Rock wren	21	0.67	0.040	3.46
Lark sparrow	20	0.64	0.038	2.88
Northern mockingbird	18	0.57	0.035	3.08
Townsend's solitaire	18	0.57	0.035	3.08
Eastern meadowlark	16	0.51	0.031	2.88
Ruby-crowned kinglet	15	0.48	0.029	2.69
Cassin's finch*	14	0.44	0.027	1.73
Blue-gray gnatcatcher	13	0.41	0.025	2.31
Broad-tailed hummingbird	11	0.35	0.021	2.12
Unidentified sparrow	10	0.32	0.019	0.58

Note: Species with <10 detections excluded from table data including northern pygmy owl and scale quail which are mentioned in Cumulative Impacts Section 3.2.3.

* Special-status species (see Table 7).

Table 11. Small Bird Species Composition, Detections, Relative Abundance, Use, and Frequency of Occurrence by Season

Common Name	Total Detections	Relative Abundance	Use	Frequency of Occurrence
Spring				
Horned lark	199	37.13	1.701	39.32
Pinyon jay*	76	14.18	0.650	11.97
Bushtit	40	7.46	0.342	9.40
Western bluebird*	38	7.09	0.325	11.11
Juniper titmouse*	21	3.92	0.179	13.68
Mountain bluebird*	20	3.73	0.171	7.69
Purple martin	13	2.43	0.111	3.42
Dark-eyed junco	11	2.05	0.094	5.98
Northern mockingbird	10	1.87	0.085	7.69
Summer				
Horned Lark	251	29.74	1.819	22.46
Chipping sparrow	88	10.43	0.638	11.59
Bushtit	83	9.83	0.601	8.70
Pinyon jay*	56	6.64	0.406	10.87
Western bluebird*	41	4.86	0.297	10.87
Yellow-headed blackbird	39	4.62	0.283	1.45
Vesper sparrow*	31	3.67	0.225	13.04

Common Name	Total Detections	Relative Abundance	Use	Frequency of Occurrence
Juniper titmouse*	29	3.44	0.210	14.49
Purple martin	26	3.08	0.188	9.42
Violet-green swallow	22	2.61	0.159	4.35
Canyon towhee*	17	2.01	0.123	10.14
Lark sparrow	17	2.01	0.123	9.42
Brewer's sparrow*	14	1.66	0.101	1.45
Eastern meadowlark	13	1.54	0.094	8.70
Rock wren	13	1.54	0.094	7.25
Fall				
Horned lark	273	24.82	2.068	23.48
Bushtit	191	17.36	1.447	7.58
Western bluebird*	157	14.27	1.189	25.00
Mountain bluebird*	83	7.55	0.629	12.12
Chipping sparrow	62	5.64	0.470	7.58
Dark-eyed junco	56	5.09	0.424	12.12
Pinyon jay*	31	2.82	0.235	4.55
American robin	27	2.45	0.205	7.58
Juniper titmouse*	26	2.36	0.197	12.12
Yellow-rumped warbler	26	2.36	0.197	9.85
Chestnut-collared longspur*	23	2.09	0.174	1.52
Violet-green swallow	18	1.64	0.136	4.55
Mountain chickadee	17	1.55	0.129	3.79
Brewer's sparrow*	15	1.36	0.114	4.55
Northern flicker	13	1.18	0.098	9.09
Winter				
Horned lark	279	41.70	2.098	21.05
Dark-eyed junco	114	17.04	0.857	17.29
Bushtit	106	15.84	0.797	6.02
Western bluebird*	59	8.82	0.444	9.02
Pinyon jay*	30	4.48	0.226	3.01
Mountain bluebird*	24	3.59	0.180	6.02

Note: Species with <10 detections excluded from table data.

* Special-status species (see Table 7).

3.1.2 *Raptor Species Nest Surveys*

The methods and findings presented in this section are based on the Alternative 2 project area.

The inventory and occupancy nest survey effort included surveys of the project site and out to 10 miles. The objective of the 10-mile survey was to inventory eagle nests and to document eagle nest occupancy[5] during the 2017 and 2018 breeding seasons (see SWCA 2020a). Within 1-mile of the project area, surveyors inventoried and recorded occupancy data for any raptor species nests. Though non-eagle raptor species nests[6] were recorded incidentally during the eagle-focused 10-mile surveys (SWCA 2018c), this section summarizes the survey findings within 1 mile of the project area.

Because the project area boundary changed slightly during the design phase of the Project, the 1-mile inventory was conducted in 2017 (inventory of most of the survey area) and 2018 (inventory of additional areas needing coverage) (Figure 5). Both 1-mile surveys took place in April, timed to maximize species identification and detection of nest occupancy. Though most nest structures within the 1-mile survey area were visited once (i.e., either in April 2017 or April 2018), some (e.g., a ferruginous hawk nest and a possible golden eagle nest) were visited during multiple surveys (see SWCA 2018c, 2020a).

A Bell 2016L-series "Long Ranger" helicopter was used for the nest surveys, which allowed for close approach to accurately determine nest contents. Surveyors conducting the 1-mile surveys generally followed north-south transects spaced at 200-m intervals (see Figure 5), veering off the transects when certain habitat features (e.g., tall trees, rock outcrops) required further investigation.

Though aerial-based surveys were selected over ground-based surveys as the preferred method to identify nests and determine nest occupancy for the Project given the rugged terrain, nesting substrates, and large survey area, some nests were also found incidentally by surveyors conducting other Tier 1–3 Project activities which involved full ground coverage of the project area;[7] these nests are included in the overall survey result tallies provided below.

Among 157 nest structures identified within 10 miles of the project area, 37 were located within the 1-mile of the project area, 20 were located within 0.5 mile of proposed project construction activities. Species determinations were as follows:

- Common raven (7)
- Ferruginous hawk (1)
- Undetermined; structure resembles *Buteo* spp. or golden eagle (1)
- Undetermined; structure resembles *Buteo* spp. or common raven (27)
- Undetermined; structure resembles *Buteo* spp., common raven, or ferruginous hawk (1)

Among the 37 nest structures, 12 were documented as occupied or active[8] (Table 12; Figure 6).

[5] The term *nest occupancy* is defined as a nest in which one or more of the following occur: 1) young are raised, 2) eggs are laid, 3) an adult is observed sitting, presumably in incubation or brooding posture, in the nest, 4) two adults are observed perched on or near the nest, 5) an adult and a bird in immature plumage are observed on or near the nest, if mating behavior was observed (e.g., display flights, copulation), and/or 6) recent repairs (e.g., fresh greenery, sticks with fresh breaks), mute (i.e., whitewash), or feathers are visible at or near the nest (Driscoll 2010; Postupalsky 1974; Steenhof and Newton 2007).

[6] Common raven (*Corvus corax*) and other non-raptor species nests are also commonly recorded using the method described herein.

[7] Incidental observations included full project area ground coverage via turbine micro-siting (see Section 3.3), prairie dog surveys (see Section 3.1.4.1), and other Tier 1–3 activities.

[8] An *active* nest is one in which an egg or eggs are laid and/or young are raised (Driscoll 2010; Postupalsky 1974).

123 **Table 12. Occupied/Active Nests Documented within 1 Mile of the Project Area, 2017 and 2018**

Nest ID	Species	Nest Occupancy/Activity Status
CA036	Undetermined, structure resembles *Buteo* spp. or common raven†	Occupied (2017)
CA041	Undetermined, structure resembles *Buteo* spp. or common raven†	Occupied (2017)
CA048	Undetermined, structure resembles *Buteo* spp. or golden eagle	Occupied (2017 and 2018)
CA098	Undetermined, structure resembles *Buteo* spp. or common raven	Occupied (2017)
CA113	Common raven†	Occupied – active (2017)
CA116	Common raven†	Occupied – active (2017)
CA117	Common raven†	Occupied – active (2017)
CA119	Common raven	Occupied – active (2017)
CA123	Ferruginous hawk*	Not occupied (2017); occupied – active (2018)
CA124	Common raven	Occupied – active (2017)
CA125	Common raven	Occupied – active (2017)
CA126	Common raven	Occupied – active (2017)

124 Note: See Figure 6.
125 * Special-status species (see Table 7).
126 † Located within 0.5 mile of proposed project infrastructure (access roads, turbines, collection lines, etc.)

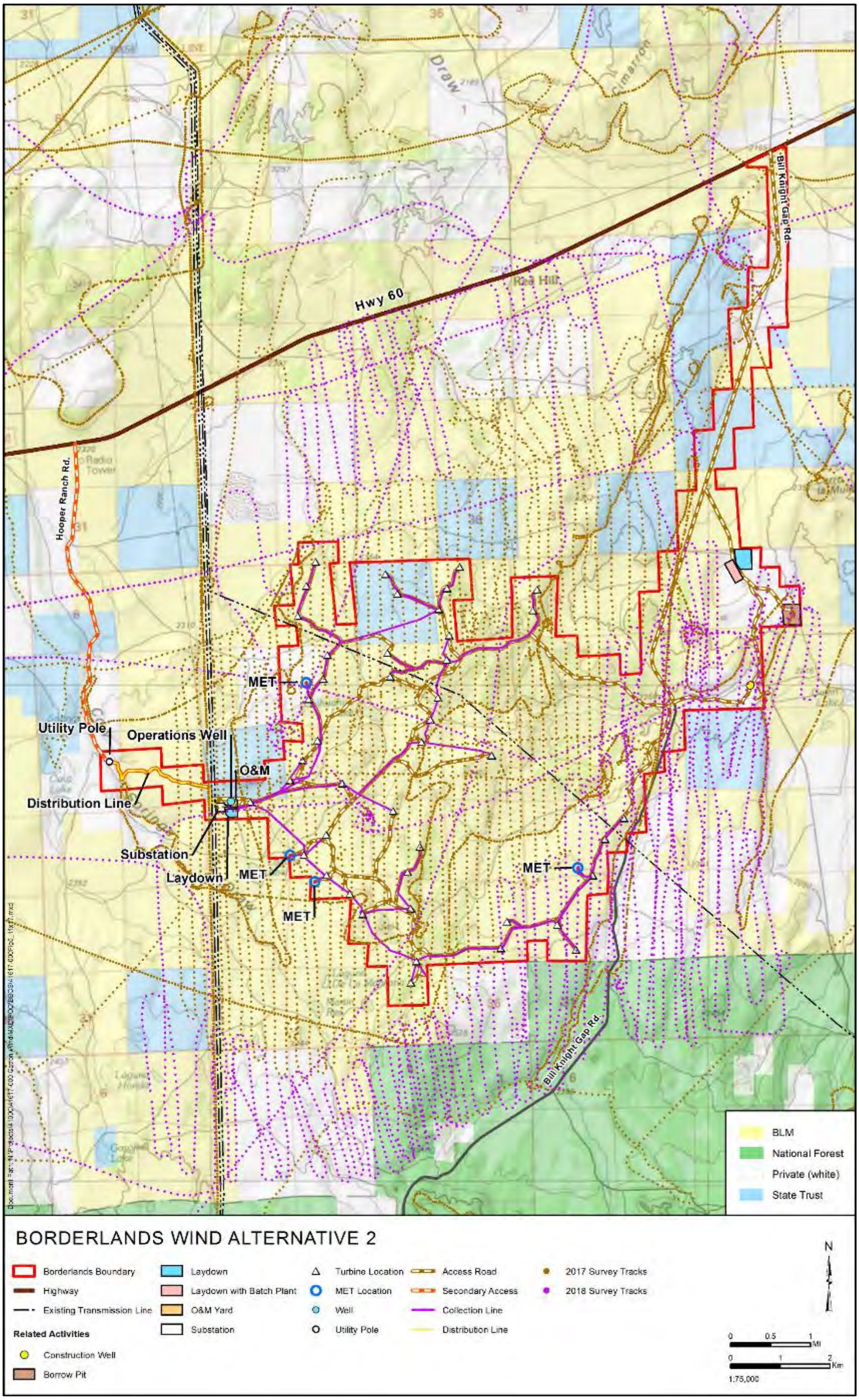

Figure 5. 2017 and 2018 1-mile raptor nest survey tracks.

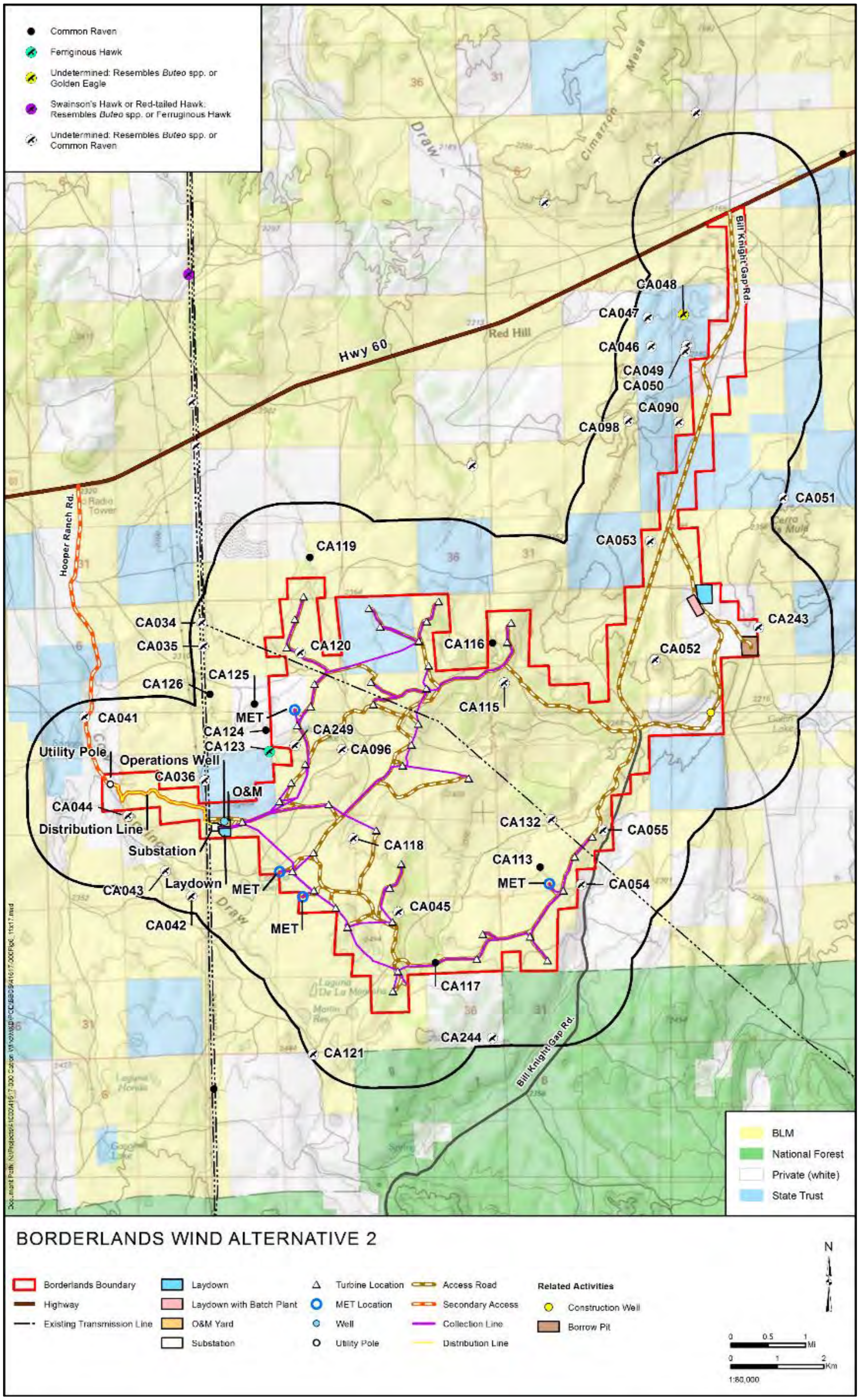

Figure 6. Nests documented within 1 mile of the project area.

3.1.3 *Bat Acoustic Surveys*

Two bioacoustics monitoring stations were installed at an ephemeral playa wetland (Laguna de la Manzana) and at a Project MET tower (Figure 7). The playa wetland station was placed approximately 300 feet south of the playa. This playa was selected because it has regular water availability relative to other nearby playas (as determined by evaluating multiple years of imagery in GIS). During the survey period, the playa contained water except for some of the winter and early spring months. After heavy rains in August 2018, it was noted to be at full capacity. Vegetation cover immediately adjacent to the station consisted of semi-desert grassland, shrub steppe, and juniper savanna on rolling terrain at approximately 7,900 feet. The MET tower was situated on top of a hill at 7,600 feet (200-foot elevation gain from the bottom of the hill). The vegetation community immediately adjacent to the tower consisted of short-grass grassland with patches of wolfberry and scattered junipers; denser pinyon-juniper woodlands flank the hill.

The stations included a Song Meter SM4BAT FS (Wildlife Acoustics, Inc.) full-spectrum acoustic data collection device attached to an ultrasonic microphone (mic). A low (3 m) and high (45 m) mount was used at the water feature and MET station, respectively. Microphones were positioned to point away from prevailing winds.

The low-mic station was deployed from September 26, 2017 to January 31, 2019 (493 potential survey nights). The high-mic station was deployed from March 26, 2018 to February 8, 2019 (320 potential survey nights). Detectors were programmed to record from two hours before sunset to two hours after sunrise. Surveyors conducting Tier 3 diurnal avian use surveys maintained (collected data cards and replaced batteries) the stations twice per month.

Data files were processed using Wildlife Acoustics Bats of North America 5.1.0 AutoID species classifier in Kaleidoscope Pro 5.1.8 (Wildlife Acoustics, Inc.). To improve accuracy of the batch species identification process, those species that would not occur within the project area because of range requirements were filtered out. Table 13 presents the bat species that could occur based on range requirements, whether the species is included in the AutoID species classifier, and those species that were filtered out because they clearly would not occur in the project area based on range requirements. Because the AutoID species classifications are only "suggested classifications" due to a number of factors (reviewed in SWCA 2020b), call sequences for each species were manually vetted.

Table 13. Bat Species AutoID Species Classifier Analysis Inclusion Status for the Project

Species (Scientific Name)	Included in AutoID Classifier	Excluded from Analysis Due to Range Requirements
Allen's big-eared bat (*Idionycteris phyllotis*)	No*	No
Arizona myotis (*Myotis occultus*)	Yes	No
Big brown bat (*Eptesicus fuscus*)	Yes	No
Big free-tailed bat (*Nyctinomops macrotis*)	Yes	No
Brazilian free-tailed bat (*Tadarida brasiliensis*)	Yes	No
California leaf-nosed bat (*Macrotus californicus*)	Yes	Yes
California myotis (*Myotis californicus*)	Yes	No
Canyon bat (*Parastrellus hesperus*)	Yes	No
Cave myotis (*Myotis velifer*)	Yes	No
Eastern red bat (*Lasiurus borealis*)	Yes	Yes
Eastern small-footed myotis (*Myotis leibii*)	Yes	Yes

Species (Scientific Name)	Included in AutoID Classifier	Excluded from Analysis Due to Range Requirements
Evening bat (*Nycticeius humeralis*)	Yes	Yes
Florida bonneted bat (*Eumops floridanus*)	Yes	Yes
Fringed myotis (*Myotis thysanodes*)	Yes	No
Ghost-faced bat (*Mormoops megalophylla*)	Yes	Yes
Gray myotis (*Myotis grisecens*)	Yes	Yes
Greater bonneted bat (*Eumops perotis*)	Yes	No
Hoary bat (*Lasiurus cinereus*)	Yes	No
Indiana myotis (*Myotis sodalis*)	Yes	Yes
Little brown myotis (*Myotis lucifugus*)	Yes	Yes
Long-eared myotis (*Myotis evotis*)	Yes	No
Long-legged myotis (*Myotis volans*)	Yes	No
Northern long-eared bat (*Myotis septentrionalis*)	Yes	Yes
Pallas's mastiff bat (*Molossus molossus*)	Yes	Yes
Pallid bat (*Antrozous pallidus*)	Yes	No
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	Yes	Yes
Seminole bat (*Lasiurus seminolus*)	Yes	Yes
Silver-haired bat (*Lasionycteris noctivagans*)	Yes	No
Southeastern myotis (*Myotis austroriparius*)	Yes	Yes
Southwestern myotis (*Myotis auriculus*)	No*	No
Spotted bat (*Euderma maculatum*)	Yes	No
Townsend's big-eared bat (*Corynorhinus townsendii*)	Yes	No
Underwood's bonneted bat (*Eumops underwoodi*)	Yes	Yes
Western red bat (*Lasiurus blossevillii*)	Yes	No
Western small-footed myotis (*Myotis ciliolabrum*)	Yes	No
Western yellow bat (*Lasiurus xanthinus*)	Yes	Yes
Yuma myotis (*Myotis yumanenis*)	Yes	No

* Species not included in AutoID classifier; therefore, using this method, presence must be determined by manually identifying echolocation calls.

Seasons were defined as spring (March 1–May 31), summer (June 1–August 31), fall (September 1–November 30), and winter (December 1–February 28/29).

Of the potential 493 survey nights, the low-mic station functioned for 447.5 nights recording 3,664 .wav audio files. Of the potential 320 survey nights, the high-mic station functioned for 229.5 nights recording 3,611 files. The longest period of inactivity at the high-mic station (July 20–September 29, 2018; 72 nights) was the result of a lightning strike and subsequent ordering and deployment of new equipment. Of the 7,275 files, 4,058 were recognized as bat calls (versus noise) and were used for further analysis. After manual vetting and data filtering procedures, confident species identifications were gleaned from 1,123 files (SWCA 2020b).

Table 14 presents bat species composition, passes per detector night, and activity; these summary metrics were defined as follows:

> **Bat pass:** a recorded .wav file; recordings ended after there were no more bat pulses detected for the length of the trigger window (3 seconds), up to the maximum file length (15 seconds).

Activity: bat passes per species in relation to the total number (expressed as a percentage).

Among the 1,123 "confident" identifications/passes, 15 species were identified (see Table 14) representing 4 species groups: tree bats (51% of activity), other vesper bats (31%), free-tailed bats (16%), and long-eared vesper bats (2%). Hoary bat (*Lasiurus cinereus*; 30%) and silver-haired bat (*Lasionycteris noctivagans;* 21%) comprised the majority of activity, followed by western small-footed myotis (*Myotis ciliolabrum;* 16%), and Brazilian free-tailed bat (*Tadarida brasiliensis*; 14%) (see Table 14). Overall, bat activity peaked in the summer with a pronounced increase from mid-spring to summer and pronounced decrease from summer through fall (Figure 8).

The high-mic station detected fewer species than the low-mic station and did not detect any species that the low-mic station did not also detect. Species detected at the high-mic station tended to be louder, open-air foraging species, such as big brown bat, big-free-tailed bat, Brazilian free-tailed bat, hoary bat, and silver-haired bat.

Table 14. Bat Species Composition, Passes per Detector Night, and Activity

Common Name (Scientific Name)	Bat Passes per Detector Night	Bat Activity (%)
Hoary bat (*Lasiurus cinereus*)	1.569	30
Silver-haired bat (*Lasionycteris noctivagans*)	0.585	21
Western small-footed myotis (*Myotis ciliolabrum*)	0.402	16
Brazilian free-tailed bat (*Tadarida brasiliensis*)	0.468	14
Fringed myotis (*Myotis thysanodes*)	0.160	7
Big brown bat (*Eptesicus fuscus*)	0.020	4
Arizona myotis (*Myotis occultus*)	0.062	2
Big free-tailed bat (*Nyctinomops macrotis*)	0.030	1
Long-eared myotis (*Myotis evotis*)	0.046	1
Long-legged myotis (*Myotis volans*)	0.041	1
Townend's big-eared bat (*Corynorhinus townsendii*)*	0.030	1
Pallid bat (*Antrozous pallidus*)	0.059	1
Greater bonneted bat (*Eumops perotis*)	0.012	1
Canyon bat (*Parastrellus hesperus*)	0.001	<1
California myotis (*Myotis californicus*)	0.001	<1

Note: Table data based on the 1,123 "confident" identifications.

* Special-status species (see Table 4).

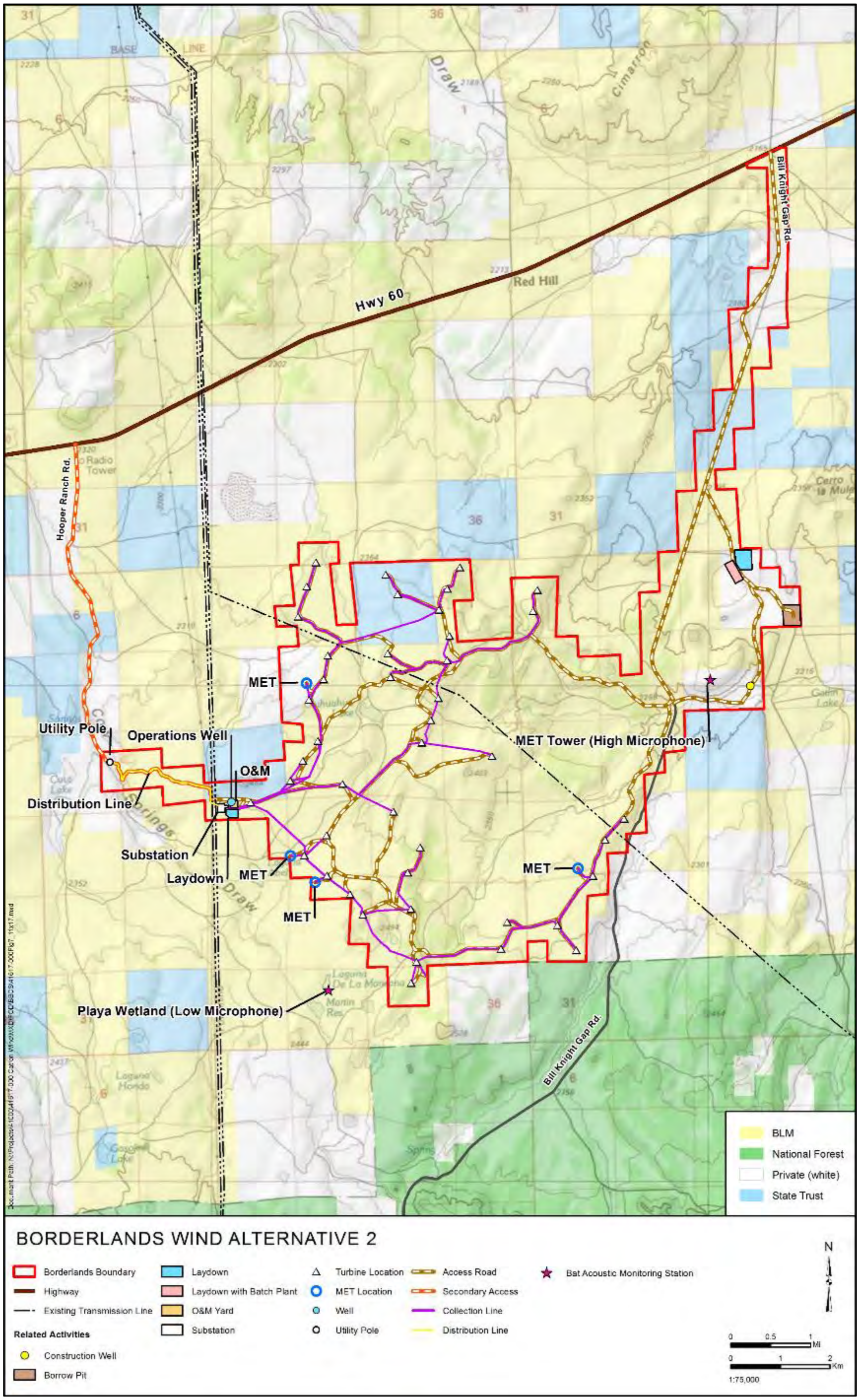

Figure 7. Tier 3 bat acoustic monitoring station locations.

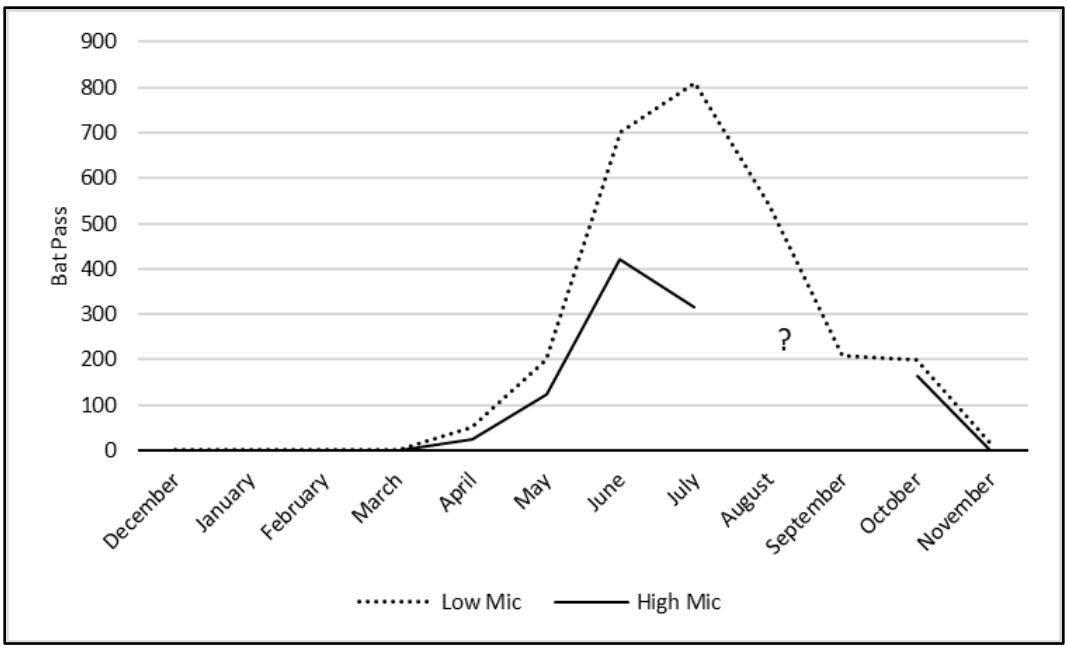

Figure 8. Bat activity recorded at the low- and high-mic acoustic stations, 2018. Question mark indicates a data gap in August and September associated with the high-mic station. Figure data based on 4,058 files recognized as bat calls.

3.1.4 *Other Tier 3 Surveys*

3.1.4.1 GUNNISON'S PRAIRIE DOG SURVEYS

In July 2018, SWCA conducted comprehensive Gunnison's prairie dog occupancy surveys and colony mapping within the project area to inform potential golden eagle use of the site and turbine siting (see SWCA 2018d, 2020a). Avoidance (see Sections 3.3.1 and 3.3.2) of the occupied colonies will also provide a benefit to other bird species that use prairie dogs (for prey) and their burrows (e.g., burrowing owl, ferruginous hawk). Thirty-one distinct, occupied colonies, containing 0-192 observed individuals, were mapped in the field (Figure 9). Of these, 17 were located entirely outside of the project area boundary, including the largest colonies—by size and number of detected individuals—which were situated northeast, west, and southeast of the project area (Figure 9).

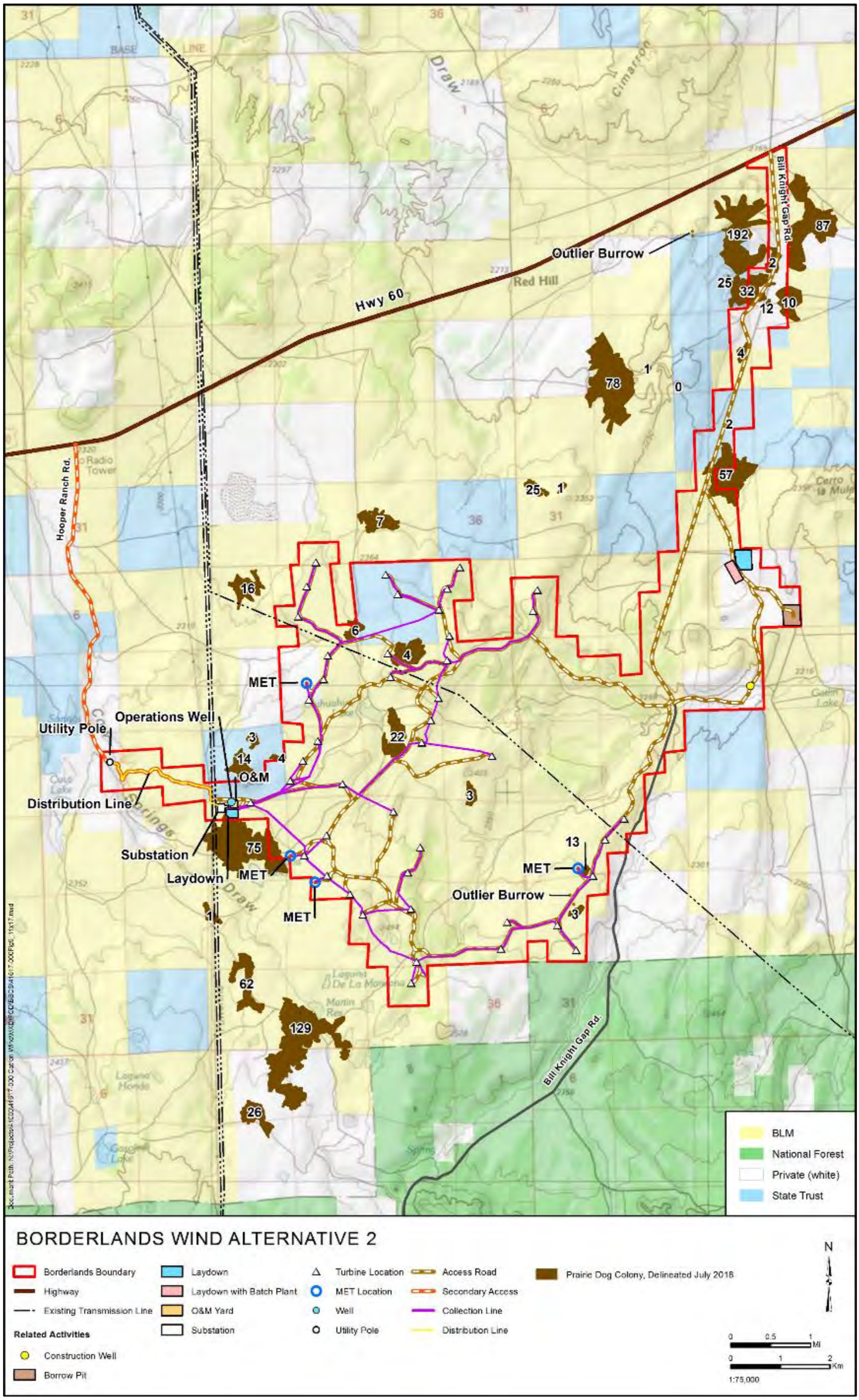

Figure 9. Tier 3 Gunnison's prairie dog occupancy and colony delineation results.

3.1.4.2 INCIDENTAL WILDLIFE OBSERVATIONS

All SWCA personnel conducting Tier 1–3 activities on-site were instructed to record incidental data pertinent to bird use of the project area. These incidental data included:

- active prairie dog locations;
- large carrion (e.g., dead cows, dead elk);
- playas of wildlife value (those containing enough water seasonally to potentially congregate waterfowl);
- bird nests (small bird nests or raptor/raven nests missed during helicopter surveys);
- bird flocks; and
- a running list of bird species seen and heard.

This incidental data is incorporated in the Tier 1–3 documentation of this BBCS and related reporting (SWCA 2018b, 2018c, 2018d, and 2020b).

3.2 Bird and Bat Risk Assessment

3.2.1 *Direct Impacts*

3.2.1.1 COLLISION

Birds and bats are typically the focus of impact evaluation for wind-energy projects because of direct mortality associated with collision with wind turbines, electric power lines, communication towers, and vehicles on project roads.

General species composition and seasonal distribution patterns of bird and bat turbine collision fatalities observed at other wind energy facilities in the United States are well documented (Allison et al. 2019; Arnett et al. 2008; American Wind Wildlife Institute [AWWI] 2018; Erickson et al. 2001; Erickson et al. 2014; Hayes 2013; Kunz et al. 2007; Loss et al. 2013; National Academy of Sciences [NAS] 2007; Strickland et al. 2011).

Although baseline use of the project area by bird and bat species has been collected for the project (Section 3.1.), predicting the potential collision risk to bird and bat species is limited, as researchers have not demonstrated a clear link between pre-construction risk predictions and post-construction mortality rates (AWWI 2018; Ferrer et al. 2011; Hein et al. 2013; Loss et al. 2013). Indeed, Ferrer et al. (2011) found that some of the "safer" sites showed some of the higher collision rates and vice versa. Despite these limitations, it is universally recognized that areas of high conservation value (e.g., wetlands, migratory routes, critical habitats) should be avoided when siting a project (Allison et al. 2019; AWWI 2018; de Lucas et al. 2012; Katzner et al. 2012; NAS 2007; Smallwood and Thelander 2008).

The Tier 1–3 evaluations for the Project did not identify areas that would congregate non-eagle bird and bat species (SWCA 2018a), but did identify areas of seasonal importance, namely, the Gunnison's prairie dog colonies, playa wetlands, and active ferruginous hawk nest. Avoidance prescriptions aimed at reducing potential impacts to birds and bats were identified in Tier 3 (see Section 3.3.1.2.1).

Population-level impacts posed to birds and bats by operation of the project are considered low, due to the overall low rate of occurrence across the site, and absence of unique habitats within the project area.

Discussion of these trends and Project-specific data are presented for birds and bats separately in the following sections.

3.2.1.1.1 Birds

Primary factors contributing to avian collision risk with turbines, power lines, and meteorological towers include species biology (e.g., bird age, size and wing span for both threats; maneuverability, flocking behavior, flight speed, migration behavior, distribution and abundance, and vision), environmental and site attributes (e.g., topography, vegetation, and prey availability for both threats; weather conditions and exposure to human disturbances for collision), and 3) configuration and location of project infrastructure (APLIC 2019; Loss et al. 2014; Rioux et al. 2013).

Wind Turbines

Collision with wind turbines is estimated to account for 0.01 to 0.02 percent of all avian fatalities associated with structure collision in the United States (Erickson et al. 2001). Avian fatalities at wind energy facilities are distributed among many species (approximately 300 species have been documented), but certain groups of birds may be disproportionately impacted by collision with wind turbines (Allison et al. 2019; Erickson et al. 2014; Loss et al. 2013). Overall, passerines constitute the majority (approximately 57%%) of bird fatalities at facilities in the United States, and these fatalities generally result in spring and fall peaks of avian fatality rates (AWWI 2018; Strickland et al. 2011). Some avian species, such as ravens, appear to avoid turbine collisions (AWWI 2018; NAS 2007), others (e.g., waterbirds, waterfowl) appear to collide with turbines infrequently (Allison et al. 2019; AWWI 2018), while bird groups such as diurnal raptors and pheasants appear to be vulnerable to collision (AWWI 2018). There is some evidence linking raptor abundance with raptor fatalities due to collision with turbines (Carrete et al. 2012; Dahl et al. 2012),[9] but a similar correlation has not been demonstrated for other bird groups (Allison et al. 2019).

Power Lines

Most collisions with power lines involve avian species which are larger, maneuver slowly (i.e., high wing loading and low wing aspect ratio), fly in flocks, fly rapidly, are young, migrate at night, and/or have poor vision (e.g. cranes, waterfowl) (APLIC 2012; Erickson et al. 2001; Jones et al. 2007; Manville 2005; Martin and Shaw 2010; Rioux et al. 2013). Shorebirds (*Charadriiformes*), grebes (*Podicipediformes*), passerines (*Passeriformes*), and falcons (*Falconiformes*) also appear to be susceptible (Hunting 2002 as cited in Rioux et al. 2013; Rioux et al. 2013; Science Applications International Corporation [AIC] 2000). Collision with power lines tend to be associated with landscape features which may concentrate bird populations (e.g. wetlands, canyons), and weather conditions which result in poor visibility and tailwinds (BLM 2011; Rioux et al. 2013).

Meteorological Towers

While collision with wind turbines is estimated to account for 0.01 to 0.02 percent of all avian fatalities associated with structure collision in the United States (Erickson et al. 2001), bird collisions with meteorological towers have mostly been documented at taller (>305 m agl), guyed towers, and are associated with weather conditions which result in poor visibility (e.g. rain, overcast, fog) (Gehring et al. 2011; Erickson et al. 2001). As with wind turbines and power lines, collisions associated with meteorological towers tend to impact certain groups of birds more than others; neotropical nocturnal migrants account for the majority of bird fatalities documented at these sites (Gehring et al. 2011; Erickson et al. 2001).

[9] But see Ferrer et al. (2011).

Taken together, site-specific project data and the wind-wildlife interaction patterns presented above suggest that among the species observed in the Project area passerines, turkey vulture, American kestrel, Swainson's hawk, and red-tailed hawk may be more vulnerable to direct mortality from collision with wind turbines, while waterfowl may be more susceptible to collision with power lines. Potential impacts to these or any other avian species will not have population-level effects.

APLIC provides electric utilities, wildlife agencies, and other stakeholders with suggested practices, guidance, and recommendations for managing avian interactions with electric facilities (See Section 1.4.10). The adoption of these project design recommendations from APLIC (APLIC 2006, 2012), as well as those from NMDGF mitigate the potential collision risks posed to birds by operation of the project (See Section 3.3.2).

3.2.1.1.2 Bats

As with birds, pre-construction studies involving bat acoustic detectors have not yet been able to accurately predict bat turbine collision risk (AWWI 2018; Hein et al. 2013), although several studies have reported higher numbers of bat fatalities, limited to specific species, relative to bird fatalities at wind energy facilities (Barclay et al. 2007; Ellison 2012). Landscape features predictive of bat fatalities are less understood; however, it is generally recognized that foraging habitats, hibernacula, and maternity colonies should be avoided when siting a project (Baerwald and Barclay 2009; Bennett and Hale 2018; Ferreira et al. 2015).

Bat fatalities generally occur during specific periods of time and weather conditions and tend to impact certain groups and species of bats disproportionately (AWWI 2018; Arnett et al. 2008; Hayes 2013). Migratory tree-roosting species—hoary bat, silver-haired bat, and eastern red bat—constitute the majority (approximately 72%) of bat fatalities at other North American wind energy facilities, and most bat fatalities occur during low-wind periods in late summer and early fall migration, coinciding with migration and mating seasons (Allison et al. 2019; AWWI 2018; Arnett et al. 2008; Baerwald and Barclay 2009; Johnson 2005; Kunz et al. 2007). Where publicly available studies exist within their range (the southern half of the United States), Brazilian free-tailed bats have been documented to be particularly susceptible to turbine collision (Arnett et al. 2008; Piorkowski and O'Connell 2010).

Based on the documented low use by bat species in the Project area, and known trends in bat fatalities related to the operation of wind facilities, impacts to bats from the Project are expected to be negligible to minor overall, seasonal, and more likely to impact a few select species. It is expected that the risk to bats is greatest during late summer and early fall during migration and foraging activities; there is minimal to no risk to bats from late fall through early spring based on the expected lack of bat activity during this period. Among the bat species known to occur in the Project area, risks specifically to hoary bat, silver-haired bat, and Brazilian free-tailed bat from the Project are possible as all three species are known to be at risk for collision with turbines in the western United States (Arnett et al. 2008)

3.2.1.2 ELECTROCUTION

APLIC has identified electrocution as a primary risk posed to migratory birds from electric facilities, including those associated with wind energy projects. Bird electrocutions from wind energy project electric facilities may occur due to a combination of biological, environmental, and electrical design factors, including:

- Habitat type
- Bird species
- Body size

- Behavior
- Distribution
- Abundance
- Prey availability

Most electrocutions are of large birds, such as eagles, hawks (*Accipitriformes*), and ravens (APLIC 2017). Electrocutions occur primarily at distribution lines (small power lines with voltages <60 kilovolts) when a bird completes a circuit by touching fleshy parts (e.g., wrist, feet, bill) to two energized parts or an energized and grounded part (APLIC 2006, 2019; Lehman 2001; Lehman et al. 2007). Electric power lines of 69 kV and above pose a very low risk of electrocution because the lines are designed with sufficient spacing between conductors (electric wires or lines) such that phase to phase or phase to ground contact is not generally possible (APLIC 2006). Low-voltage electric power lines have closer conductor spacing, which presents a greater electrocution hazard to larger avian species (APLIC 2006).

APLIC provides electric utilities, wildlife agencies, and other stakeholders with suggested practices, guidance, and recommendations for managing avian interactions with electric facilities (See Section 1.4.10). The adoption of these project design recommendations from APLIC (APLIC 2006, 2012), as well as those from NMDGF mitigate the potential risk of electrocution posed to birds by operation of the project (See Section 3.3.2).

3.2.1.3 NESTING TERRITORIES AND BEHAVIOR

The activity and noise that occurs during facility construction, maintenance, and operation has the potential to disrupt normal bird nesting, hunting and roosting behavior (APLIC 2006).

Based on the Tier 1 and 2 analyses there are no known areas that would congregate non-eagle bird species within or proximate to the project area (SWCA 2018a). Tier 3 raptor nest surveys conducted for the project identified 37 potential raptor nest structures within 1 mile of the project boundary, of which only 12 have been documented as active. Additionally, burrowing owls may occupy prairie dog burrows in the project area.

Measures have been put in place to avoid and reduce impacts to nesting raptors and burrowing owls from the project, including the siting of project infrastructure away from nests and potential nesting areas (i.e. prairie dog town colonies), and limitations on periods of activity on site. These includes restrictions on project activity within 0.5 miles of active raptor nests, and a limitation on surface disturbance activities during the raptor (February 1–August 15) and non-raptor (March 1–August 31) nesting seasons to the extent practicable. Preconstruction MBTA, including raptor, species nest clearance surveys will be conducted prior to construction activities and areas of active nests will be avoided, as described in Section 3.2.2. These siting measures and adopted practices for the Project are explicitly adopted to avoid known nesting territories and any potential disturbance to normal nesting activity (See Section 3.3.2).

3.2.2 *Indirect Impacts*

Indirect impacts to birds and bats are further addressed in the Project's FEIS.

Indirect impacts may include displacement of individuals from suitable habitat and demographic effects due to habitat fragmentation, habitat modification (e.g., changes to prey resource availability), or disturbance from construction and operation (AWWI 2018). BMPs addressing potential indirect impacts to birds and bats have been developed for the Project (see Section 3.3.2).

3.2.3 *Cumulative Impacts*

Impacts to birds and bats could include adverse habitat impacts. Cumulative effects are anticipated to be low for this Project. Though detailed studies investigating habitat fragmentation effects have shown mixed results, with some individuals experiencing deleterious effects (e.g., temporary displacement, some species exhibiting delayed decline) (Allison et al. 2019), population-level impacts are not anticipated for this Project. The total amount of land transformed will constitute approximately 5-10 percent of the total project area, some of which will be temporary disturbance. See Section 3.10.4.3 of the Project's DEIS for more information regarding which species of concern or their habitats are most at risk of significant adverse impacts in the context of other reasonably foreseeable significant adverse impacts.

While most bird species appear to be at low risk of population-level impacts due to turbine collision fatalities (e.g., cumulative collision mortality at wind energy facilities has been estimated to represent ≤0.01% of estimated songbird population sizes), some species (e.g., species with special-status designations, specialized habitat preferences, or those that are long-lived with low reproductive rates) may be at risk (Allison et al. 2019; AWWI 2018; Beston et al. 2016; Erickson et al. 2014). There is currently a lack of understanding across taxa regarding potential population consequences (Beston et al. 2016) because of uncertainty around several factors (e.g., population sizes, other sources of mortality, impacts associated with climate change, reproductive potential, existing fatality estimates reported at wind energy facilities). Among 40 bird species highlighted by Beston et al.'s (2016) conservation status and turbine risk ranking approach, 10 are known to occur in the project area: bald eagle, ferruginous hawk, golden eagle, great blue heron (*Ardea herodias*), McCown's longspur (*Rhynchophanes mccownii*), northern harrier (*Circus hudsonius*), northern pygmy-owl (*Glaucidium gnoma*), osprey (*Pandion haliaetus*), scaled quail (*Callipepla squamata*) and Swainson's hawk. Two of the 40 bird species may occur in the project area: black-chinned sparrow (*Spizella atrogularis*) and long-eared owl (*Asio otus*). Among these species, four—bald eagle, black-chinned sparrow, ferruginous hawk, and golden eagle—are special-status species (see Table 7).

Because population sizes for bats are largely unknown, population consequences are unknown (AWWI 2018). Frick et al. (2017) indicated that hoary bats may be susceptible to population-level impacts.

3.3 Avoidance and Minimization Measures

Based on the Tier 1–3 findings, and in coordination with cooperating agencies, Borderlands Wind developed the following mitigation measures. Adaptive management designed for the Project is presented in Section 5.

3.3.1 *Pre-Construction Avoidance and Minimization Measures*

3.3.1.1 PROJECT MACRO-SITING

As wind, environmental, and visual resources information were gathered for the Project, Borderlands Wind designed several turbine array iterations from December 2016 to May 2018. During the design process, a 1.7-MW/2.0-MW turbine combination design contemplated very early in the development of the project has been refined to utilize a 2.5-MW/3.0-MW turbine combination design. This allows for fewer turbines (51 versus 34) with a greater generating capacity. The cumulative rotor-swept area was reduced by 4% in the final turbine array design.

Prior to micro-siting turbine locations, the Project turbine array was altered substantially to avoid all areas within 2 miles of the possible eagle nest (see Section 3.1.2, Figure 6, and described further in the Project's

EMP [SWCA 2020a]). Throughout development, the project footprint and turbine locations continued to be refined and have ultimately resulted in turbines being located 4.7 miles from the nearest potential eagle nest.

3.3.1.2 TURBINE MICRO-SITING

3.3.1.2.1 Avoidance Prescriptions Identified in Tiers 1–3

The following avoidance setbacks relevant to reducing potential Project impacts to raptors, waterfowl, and bats were identified prior to conducting the turbine micro-siting field effort; the prescriptions were informed by BLM (2010) and USFWS Region 2 precedent for other wind energy projects in the region. The approach was later vetted with the Project's coordinating agencies:

- 0.25-mile (400-m) setback from occupied Gunnison's prairie dog towns[10]
- 0.3-mile (500-m) setback from playa wetlands that may attract waterfowl and bats[11]
- 0.5-mile (800-m) setback from the active ferruginous hawk nest[12]

3.3.1.2.2 Micro-Siting Field Effort Followed by Project Re-Design

In May 2018, 107 possible turbine locations (Figure 10) were evaluated in the field by a team of biologists, archaeologists, and wind resource specialists, engineers and construction specialists, and land surveyors. Guided by the avoidance spatial data[13] described above (see Section 3.3.1.2.1) and identified at that time, locations were moved as necessary and if practical (i.e., they were moved up to hundreds of meters if the alternative location met constructability parameters and avoided other environmental resources considerations). Final locations were then scored on a scale from 1 (best) to 6 (worst) to inform the final turbine array design. Specific to potential bird and bat risk considerations, a turbine location received a score of 4 if it overlapped with the playa wetland setback or was within a possible bat movement corridor (i.e., within a drainage corridor leading to a playa wetland), and a score of 5 if it overlapped with the prairie dog or ferruginous hawk nest setbacks.

Following the micro-siting effort, the Project was redesigned to permit 44 permitted turbines—among the 107 evaluated locations—that received a score of 3 or less. Thus, at that time, all bird and bat risk-reducing setbacks were avoided. Relative to the initial, elongated northeast-southwest turbine array design, the final Project footprint was condensed to the center of the project area, resulting in a 13% area reduction (reduced by approximately 2,000 acres).

Alternate turbines were incorporated in the design to provide for flexibility for unforeseen constraints during additional pre-construction assessments and construction.

[10] Avoidance BMP for long-duration and short-duration land use activities recommended in BLM (2010). BLM (2010) specifically states that long duration land use activities will not be allowed to occur within the species-specific spatial buffer zone (0.25 mile) of occupied prairie dogs towns. Short duration activities will be limited to the spatial buffer zone outside of the boundary of the occupied prairie dog town and will not occur within the occupied town. At the time of the field micro-siting effort, all active prairie dog locations, recorded incidentally over the course of 13+ months, were buffered by 0.25-mile (400-m).

[11] Recommended by USFWS for other Region 2 projects with the caveat that this prescription may or may not be adequate depending on the quality/connectivity of playas.

[12] Avoidance BMP for long-duration land use activities recommended in BLM (2010).

[13] Observations of active prairie dogs recorded during the micro-siting effort within 150 m of proposed turbine locations and in other areas while walking to each location also contributed to the evaluated spatial dataset.

The Tier 3 prairie dog occupancy and colony delineation surveys (see Section 3.1.4.1 and SWCA 2018d, 2020a) were conducted in July 2018, after turbine locations were micro-sited in the field, scored, and incorporated in the project design. The results of these surveys indicated that, among the 44 permitted turbine locations, five conflicted with the updated prairie dog setback layer; none conflicted with the colonies themselves (Figure 11). Because Gunnison's prairie dog colonies may expand or contract prior to Project construction, appropriate turbines among the permitted locations (which includes 10 alternate turbines) will be selected prior to construction (see BMPs, Section 3.3.2.1).

Figures 10 and 11 illustrate the possible turbine locations evaluated as part of the turbine micro-siting field evaluation and the final turbine array design. The spatial avoidance layers depicted in the figures incorporate the July 2018 prairie dog survey data. A half-mean inter-nest distance setback associated with the potential eagle nest is also depicted in these figures; this area was evaluated during micro-siting and was avoided in the project design (see SWCA 2020a).

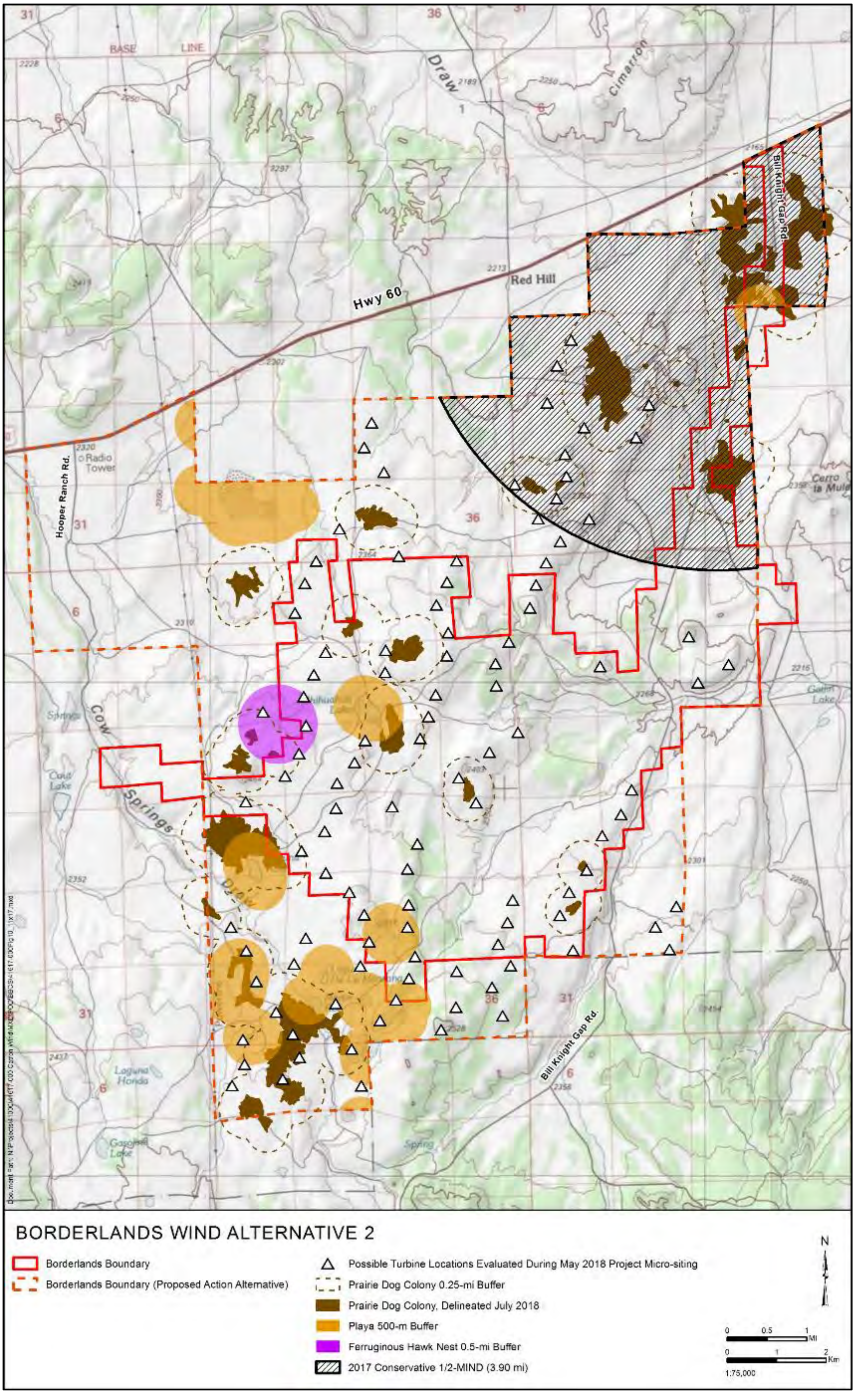

Figure 10. Possible turbine locations evaluated during the May 2018 field micro-siting effort in relation to bird and bat risk-reducing avoidance constraints identified for the Project.

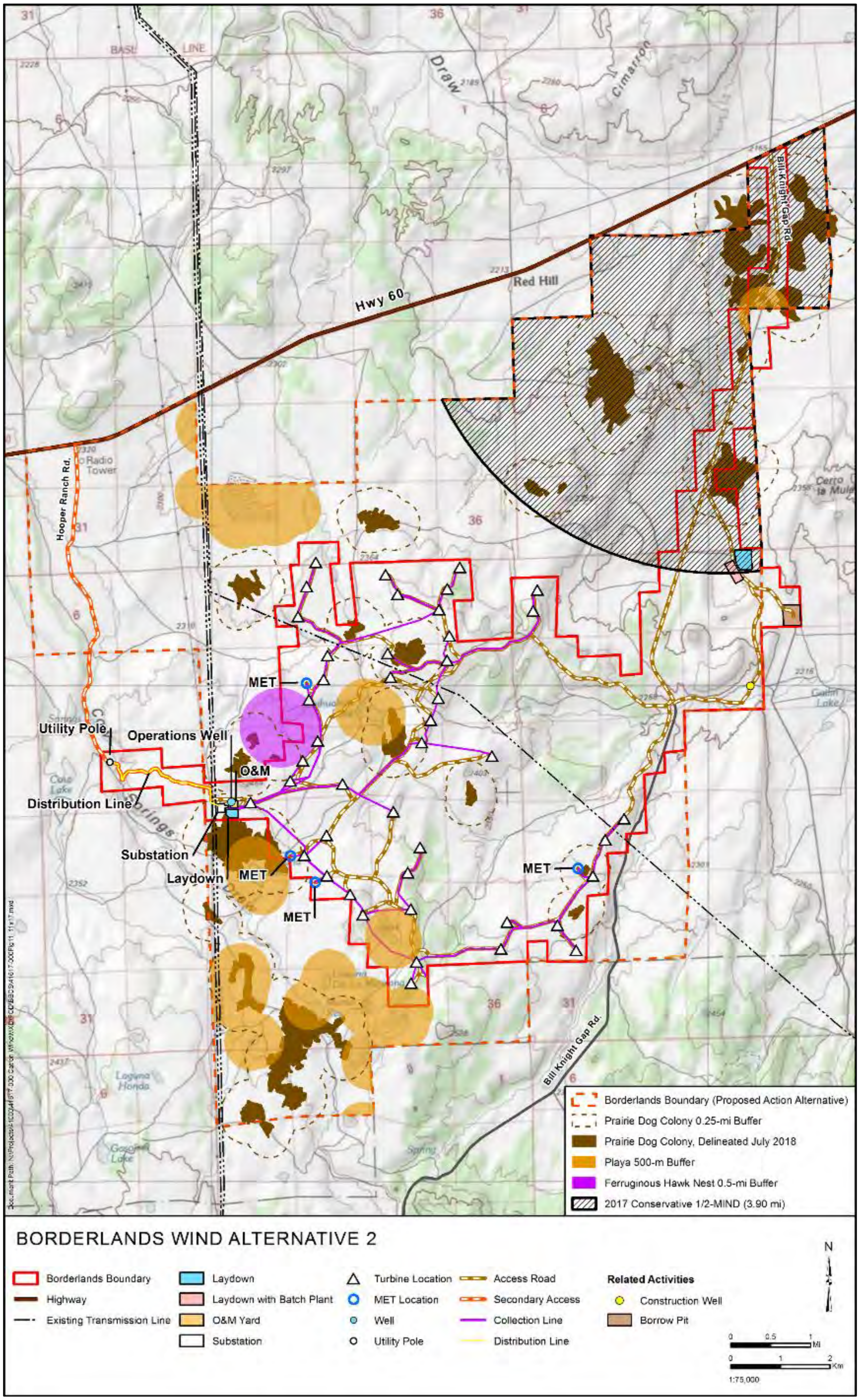

Figure 11. Final turbine array design in relation to bird and bat risk-reducing avoidance constraints identified for the Project.

3.3.2 *Best Management Practices*

In addition to the avoidance prescriptions described above in Section 3.3.1.2.1, Borderlands Wind will incorporate the following bird and bat risk-reducing BMPs during the Project (see the Project's DEIS for a complete listing of BMPs developed for the Project; BLM 2019a). BMPs provided herein are from the Project's DEIS list of BMPs (BLM 2019a) unless otherwise noted.

- Site turbines back from ridge edges and drainages, as warranted; in the final proposed design, all proposed turbines have been sited at least 100 m from steep slopes and drainages.
- Minimize the area and intensity of disturbances:
  - Minimize roads, power lines, and other Project infrastructure to the maximum extent feasible; use existing transmission corridors and roads to the extent feasible.
  - Avoid or minimize the use of structures that are attractive to raptors for perching or bats for roosting.
  - Use the minimum number of permanent meteorological (MET) towers.
- "Good housekeeping" procedures shall be developed to ensure that the site would be kept clean of debris, garbage, carrion, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards during operation.
- Avoid creating temporary or permanent habitats suitable for rodents, such as rock piles, eroded slopes with openings or overhangs, or stockpiling of construction debris
- Avoid seeding techniques that could attract birds.
- Avoid creating wildlife enhancements (e.g., water features, guzzlers, brush piles, nest platforms, nest boxes, feeders) that could attract wildlife to the site.
- Operators shall develop a Waste Management Plan that identifies the waste streams that are expected to be generated at the site and addresses hazardous waste determination procedures, waste storage locations, waste-specific management and disposal requirements, inspection procedures, and waste minimization procedures. This plan shall address all solid and liquid wastes that may be generated at the site.
- A Comprehensive Fire Safety Plan shall be prepared for construction and operation of the project. The objective of this plan is to eliminate the causes of fire, prevent loss of life and property by fire, and to comply with the Occupational Safety and Health Administration (OSHA) standard on fire prevention, 29 CFR 1926.24.
- Operators shall develop a plan for control of noxious weeds and invasive species, which could occur as a result of new surface disturbance activities at the site.
- Facilities shall be designed to discourage their use as perching or nesting substrates by birds. For example, power lines and poles shall be configured to minimize raptor electrocutions and discourage raptor and raven nesting and perching.
- Avoid impacts to wetlands by using appropriate erosion control measures to limit runoff to nearby water sources.
- Instruct Project personnel, including contractors, to drive at low speeds (<25 mph) and be alert for wildlife, especially in low-visibility conditions.
- Project personnel would not be allowed to bring firearms or pets to any Project area to minimize harassment or killing of wildlife and to prevent the introduction of destructive animal diseases to native wildlife populations.

- All construction employees shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons.
- Avoid long-duration land use activities within 0.25 mile of occupied prairie dog colonies (BLM 2010) to the extent practicable.
- From February 15 to June 15, avoid short-duration surface-disturbing activities within 0.25 mile of occupied prairie dog colonies (BLM 2010) to the extent practicable.
- Avoid long-duration land use activities within 0.5 mile of the identified ferruginous hawk nest (BLM 2010).
- From February 1 to July 15, avoid short-duration activities within 0.5 mile of the identified ferruginous hawk nest (BLM 2010).
- Avoid long-duration land use activities within 0.5 mile of other active raptor nests (BLM 2010).
- During observed nest establishment through fledging or failure, avoid short-duration activities within 0.5 mile of other raptor species nests, if identified (BLM 2010).
- Avoid ground-disturbing, short-duration activities during the raptor (February 1–August 15) and non-raptor (March 1–August 31) nesting seasons to the extent practicable.
- Prior to construction, Borderlands Wind, LLC would remove all existing raptor nests (excluding eagle nests) from existing structures that would be affected by Project construction following approval by the BLM. Removal of nests would occur during the non-breeding season (August 16–January 31). If it is necessary to remove an existing raptor nest during the breeding season, a qualified biologist approved by the BLM would survey the nest prior to removal to determine activity status. The qualified biologist will ensure that the nest does not contain viable egg(s) or nestlings immediately (on the same day) prior to destruction and that no possession occurs.
- All surface disturbing activities associated with the project conducted during the non-raptor bird nesting season (March 1–August 31) will require surveys 1–2 weeks prior to initiating surface disturbing activities by a qualified biologist. The biologist will inspect the area for nests, or signs of nesting behavior. If active nests or signs of nesting are observed and recorded, the BLM Biologist will be contacted for specific mitigation. If there is a lapse in construction activities of two or more weeks, a second survey will be required.
- Review project clearance guidelines (NMDGF 2007) to consider whether preliminary (pre-construction) measures should be taken to survey for burrowing owl and to prevent burrow occupancy. Burrow occupancy surveys will be conducted by a qualified biologist approved by BLM prior to construction activities (preferably in February prior to the breeding season [March 1– August 1]). If surveys are conducted during the breeding season, the best time to detect owls is March–early June. The NMDGF guidelines provide survey and mitigation recommendations. Mitigation measures include spatial and seasonal avoidance, and relocation if owls will be negatively impacted by Project activities. Key elements of the guidelines tailored to the Project include:
    - Assess burrowing owl habitats within 150-m of project activities
    - Surveys within this buffer area should be conducted within 30 days of ground-disturbing activities by a qualified biologist approved by the BLM. If ground-disturbing activities are delayed or suspended for more than 30 days, the site should be resurveyed.
    - No disturbance should occur within 50 m of occupied burrows during the non-breeding season (September 1–February 28/29) or within 75 m during the breeding season (March 1-August 1)

  - Avoidance requires that a minimum of 6.5 acres of foraging habitats be maintained in undisturbed habitat condition.
  - Specific preliminary measures—collapsing unoccupied burrows of suitable dimensions and passive exclusion of owls—may be taken during the non-breeding season. Prior to burrow destruction, occupancy will be determined by a qualified biologist approved by BLM. If burrows are destroyed during the non-breeding season, undestroyed burrows should be enhanced, or new burrows created, at a ratio of 2:1 with a minimum of 6.5 acres of foraging habitats maintained.
  - To ensure compliance with MBTA and New Mexico state laws and regulations, Borderlands Wind will contact the USFWS, NMDGF, and BLM to confirm that any construction activities resulting in destruction of burrows will not result in a taking of burrowing owls.
- Encourage landowners/lessees to reduce availability of carrion by practicing responsible animal husbandry (removing carcasses, fencing out cattle, etc.) to avoid attracting golden eagles and other raptors.
- Dismantle non-permanent/non-operational MET towers.
- Bury power lines to reduce avian collision and electrocution to the extent practicable.
- If overhead lines are necessary, follow the Avian Power Line Interaction Committee (APLIC) guidance (APLIC 2006, 2012) on power line construction and design to limit collision and electrocutions:
  - To reduce collision risk, avoid siting power lines within collision risk areas (i.e., between roosting and feeding areas or nesting sites). If power lines are placed within collision risk areas, install line marking devices (also known as diverters) and design lines without ground wires (APLIC 2019; Loss et al. 2014).
  - To reduce raptor electrocution risk, cap energized parts and ensure 60 inches of horizontal separation and 40 inches of vertical separation between phases and grounds (APLIC 2006, 2019).
- To avoid avian electrocution and collisions, place low and medium voltage electric power lines underground (see NMDGF Trenching Guideline) or on the surface as insulated, shielded wire where feasible unless greater adverse impacts to sensitive resources would result. To avoid and minimize bird electrocution or collisions associated with on- or off-site above-ground lines, transformers or conductors, refer to the NMDGF Powerline Guideline, and design and construct structures following the published recommendations of APLIC (APLIC 1994, 2006, 2012).
- The use of self-supported MET towers is preferred if feasible. The structures should be painted so that they stand out from the surrounding environment to provide optimum visibility for birds. If guy wires are necessary, bird flight diverters will be used. Avoid placing lines within wetlands, over canyons, or within important avian movement corridors (i.e., between foraging and nesting sites) to the extent practicable.
- Employ only red, or dual red and white strobe, strobe-like, or flashing lights, not steady burning lights, to meet Federal Aviation Administration (FAA) requirements for visibility lighting of wind turbines, permanent met towers, and communication towers. Aircraft safety lighting should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. Only a portion of the turbines within the wind project should be lighted, and all pilot warning lights should fire synchronously.
- During construction and operation, measures would be taken to avoid/minimize the impact of light intrusion into adjacent native/undisturbed/sensitive habitats. Night lighting during

construction would not occur to the maximum extent practicable. Any night lighting used during construction and operation would be the lowest illumination allowed for human safety, selectively placed, down shielded, and directed away from all areas of native habitat to the maximum extent practicable. All unnecessary lighting should be turned off at night to limit attracting migratory birds and bats in search of insects.

- Except as required to meet the minimum safety and security requirements (e.g., collision markers required by the FAA, or other emergency lighting triggered by alarms), all permanent lighting should use full cutoff luminaires, which are fully shielded (i.e., not emitting direct or indirect light above a horizontal plane passing through the light source), and must meet the Illuminating Engineering Society (IES) glare requirement limiting intensity of light from the luminaire in the region between 80° and 90° from the ground. All fixtures must be mounted properly, at the proper angle.
- Lighting for facilities should not exceed the minimum number, intensity, and coverage required for safety and basic security. All area lighting should be divided into separately controlled zones to focus lighting on smaller areas where tasks are being performed and to avoid illuminating unused space. Area lighting should be controlled by timers, sensors, or switches available to facility operators; dusk-to-dawn lighting controlled by photocell alone should not be allowed except where required for safety. The facility operators should identify those components/structures that do not require continuous lighting for safety reasons. Area lights should only be switched on when there is a specific need (e.g., cleaning mirrors and panels at a solar facility, pumping fuel, persons occupying an area, or alarm situation). When not needed, lights should be switched off. Exceptions to switched-off lighting for safety purposes should be articulated in the lighting plan (see BMP 6.5.1). Focused task lighting, portable light towers, or flashlights should be used instead of area lighting, and retro-reflective or luminescent markers should be used in lieu of permanent lighting where feasible.
- Keep lighting at both operation and maintenance facilities and substations located within half a mile of the turbines to the minimum required:
  - Use lights with motion or heat sensors and switches to keep lights off when not required.
  - Lights should be hooded downward and directed to minimize horizontal and skyward illumination.
  - Minimize use of high intensity lighting, steady-burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights.
  - All internal turbine nacelle and tower lighting should be extinguished when unoccupied.
- Operators shall determine the presence of active raptor nests (i.e., raptor nests used during the breeding season). Measures to reduce raptor use at a project site (e.g., minimize road cuts, limit tree growth around the turbines) should be implemented.
- Informed by avian and bat fatality monitoring results, Borderlands Wind will adaptively identify operations modifications if warranted, in coordination with BLM, USFWS, and NMDGF.
- Avoid guy wires on communication towers and permanent met towers. If guy wires are necessary, bird flight diverters or high visibility marking devices should be used at intervals specified and approved by the BLM and USFWS.
- All control and mitigation measures established for the project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the operational phase, as appropriate. These control and mitigation measures shall be reviewed, revised, and approved by the BLM, as needed, to address changing conditions or

requirements at the site, throughout the operational phase. This adaptive management approach would help ensure that impacts from operations are kept to a minimum.

- All management plans, BMPs, and stipulations developed for the construction phase shall be applied to similar activities during the decommissioning phase.

3.4 Tier 3 Conclusion

The main outcome of the Tier 3 evaluation is that the Project has a low probability of significant adverse impacts. In the context of the WEG, risk refers to the likelihood that adverse impacts will occur to individuals or populations of species of concern as a result of the development and operation of the Project. The "low" finding is supported by the current state of the science around population-level impacts (reviewed in Section 3.2), non-unique habitats in the project area (reviewed in Section 2), low rate of occurrence of species of concern in the project area (reviewed in Section 3.1), and reports from other wind energy facilities that turbine collision fatalities of species of concern are rarely found (Amorim et al. 2012; Arnett et al. 2008; Erickson et al. 2002).

Though potentially significant impacts have not been identified, Borderlands Wind has certainty regarding how to develop the site with appropriate risk-reducing design measures. Relevant mitigation measures (see Section 3.3.2), postconstruction fatality studies (see Section 4), and adaptive management procedures (see Section 5) continue to be identified and will be implemented for the Project.

There were no additional Tier 3 studies identified at this stage that would be continued in postconstruction. Construction clearance surveys for burrowing owl and MBTA species, and post-construction avian and bat fatality surveys have been identified in Sections 3.3.2 and 4.

4 TIER 4 – POST-CONSTRUCTION MONITORING

This section provides the post-construction avian and bat fatality monitoring plan to include 1) a 2-year consultant-led avian and bat fatality study and 2) life-of-project fatality monitoring conducted by project operations staff.

The objective of the consultant-led study will be to assess avian and bat mortality during the study period to effectively address WEG Tier 4a questions:

- What are the bird and bat fatality rates for the project?
- What are the fatality rates of species of concern?
- How do the estimated fatality rates compare to the predicted fatality rates?
- Do bird and bat fatalities vary within the project site in relation to site characteristics?
- How do the fatality rates compare to the fatality rates from existing projects in similar landscapes with similar species composition and use?
- What is the composition of fatalities in relation to migrating and resident birds and bats at the site?
- Do fatality data suggest the need for measures to reduce impacts?

As described in the WEG, carcass search methods should be adequate to answer these questions at an appropriate level of precision to make general conclusions about the project; they are not intended to provide highly precise measurements of fatality.

The objective of the life-of-project monitoring will be to continue to document species composition of fatalities, including species of concern, and potential red flags (e.g., episodic events) that may require additional investigation.

This section provides specificity regarding anticipated post-construction monitoring field and analysis techniques and reporting procedures. In this regard, as industry standards are continually developing, it is again noted that this is a living document; as such, industry standards will be reviewed in the context of project-specific conditions prior to implementation and coordinated with BLM, USFWS, and NMDGF.

4.1 Standardized Bird and Bat Fatality Monitoring

4.1.1 *Turbine Searches*

The surveys will involve systematic searches for dead or injured birds and bats under select turbines and under all permanent meteorological (MET) towers. The searches will be conducted in years 1 and 2 of operation. Eagle-specific fatality monitoring will occur simultaneous to the general bird and bat fatality monitoring and will involve searches at more turbines and within larger search plots. Eagle-specific fatality monitoring methods are described in the Project's EMP (SWCA 2020a). Imperfect detection by searchers (searcher efficiency) will be quantified in the field using surrogate carcasses. A second source of carcass detection bias, removal by scavengers or other means (carcass persistence) will be quantified (in the field and/or by using literature inputs).[14] Raw fatality counts will be adjusted using an industry-accepted statistical estimator or estimators which correct for carcass detection biases, search interval, the

[14] Literature inputs will be used depending on availability of surrogate carcasses that are representative of the fatality group being analyzed (see Section 4.1.4).

proportion of turbines searched to the total number of turbines at the site, and unsearchable/unsearched areas, as warranted. Specific survey strategy, including search method, season definition, number of turbines searched, survey interval, plot size, and transect spacing, is provided in Table 15.

If improved field or analysis techniques become available/acceptable, such as the use of dog searchers, or road and pad versus transect searches become necessary due to vegetation conditions, methods described herein may be altered for the Project in coordination with the BLM, USFWS, and NMDGF.

Table 15. Standardized General Avian and Bat Carcass Search Parameters

Parameter	Detail	Comment
Number of turbines searched	30% of turbines (10 of 34)	Percentage of searched turbines meets WEG recommendations.
Survey interval	Every two weeks	Survey intervals will be sufficient to evaluate species composition, temporal and spatial distribution, and adjusted fatality.
Plot size	1x maximum turbine height: • 2.5-MW turbines: 152 × 152-m square • 3.0-MW turbines: 192 × 192-m square Plots will be oriented with the diagonal of the square pointed in the direction of prevailing winds	General avian and bat search plot size meets current industry standards.
Transect spacing	6 m. Searchers will scan out to 3 m with occasional scans out to approximately 10 m.	6-m transects are widely accepted for effective discovery of small-bodied birds and bats; the WEG specifically recommends transects between 3 and 10 m depending on ground cover.
Rate of travel	~45−60 m/minute	Slow pace appropriate for vegetation cover and topography to allow for careful visual inspection of each side of transect.
Season definition	Summer: June 1–August 31 Fall: September 1–November 30 Winter: December 1–February 28/29 Spring: March 1–May 31	Definition appropriate for temporal comparison of fatalities associated with other sites in the region.

The specific turbines to be surveyed will be selected using a proportional stratified random sampling approach weighted by habitat type (e.g., grassland-shrub and juniper-dominated) area and perceived risk categorization. The design will ensure that an appropriate number of turbines situated in perceived higher risk conditions (e.g., end turbines within a turbine string, and turbines proximal to drainages, playa features, and prairie dog colonies) are selected.

4.1.2 *Meteorological Tower Searches*

Searches for dead or birds and bats under the two permanent MET towers will use the same methods and schedule as the turbine searches. If met towers are guyed, search plots will be out to guy wire termination (90 m; (i.e., 180 × 180-m square). If met towers are un-guyed search plots will be out to 50 m (i.e., 100 × 100-m square) (Kerns and Kerlinger 2004; Kerlinger et al. 2011).

4.1.3 *Carcass Search Method*

The carcass search method is generally outlined in Table 15. For each turbine and MET tower searched per period, searchers will populate a search log including date, turbine/MET tower number, search start and end time, observers conducting the search, and the number of fatalities found, if any. When a carcass

is detected, the searchers will mark the area with a pin flag, record the time, complete the search, and then return to the carcass to record incident-specific data. Incident-specific data fields will be consistent with those listed in the WEG. All fatalities will be appropriately photo documented.

Feather piles/spots comprising 10 or more total feathers, or two or more primaries or tail feathers, will be considered a fatality (Young et al. 2003). Fatalities found outside of search plots or while conducting other activities unrelated to searches will be considered incidentals. Incidentals will also include non-eagle species fatalities found during eagle-focused searches (see the Project's EMP [SWCA 2020a]) and fatalities found during WRRS surveys conducted by operations staff. The same incident-specific data fields will be recorded for incidentals; however, they will be excluded from adjusted fatality estimation analyses (they will be accounted for indirectly through estimation of the error estimate in the estimation model). Fatalities definitively not caused by turbine or MET tower collision (e.g., an avian carcass directly under a nest) will also be noted but will also be excluded from the adjusted fatality estimations.

4.1.4 *Searcher Efficiency Trials*

Searcher efficiency trial methods specific to the eagle-focused searches are presented in the Project's EMP (SWCA 2020a).

Searcher efficiency will be calculated as the proportion of trial carcasses found by searchers relative to the total number of trial surrogates placed for the trial. Searcher efficiency trials will be completed concurrent with standardized carcass searches. An appropriate number of surrogates,[15] representing varying size and type classes, will be placed in varying field conditions within a subset of turbine and MET tower search plots per season to allow for appropriate modeling of categorical covariates that may affect detection biases (e.g., substrates, season, carcass type, observer skill). The specific number of surrogates placed will be based on the site-specific conditions evaluated prior to conducting the surveys.

Searchers— "blind" to the specific trial dates and the number and location of placed surrogates—will search for and record surrogate large birds, small birds, and bats within the search plots. For each trial, a trial administrator will place thawed surrogates in random[16] locations the morning of the search day. To avoid "over-seeding," carcass density will not exceed one carcass per 1 acre (0.4 hectare) (i.e., four to five carcasses per turbine search plot). All carcasses will be handled with nitrile gloves to avoid leaving human scent and interfering with scavenging (Arnett et al. 2009). Surrogate carcasses will only be marked with a distinguishing marker (e.g., zip tie) if they may be confused with actual fatalities (i.e., if surrogate bats are used in the trials to represent bats). The locations of surrogates found by searchers will be directly compared with the randomly generated locations.

A second search trial per season, conducted on the same sample of placed carcasses, two weeks after the first trial, may be considered if a measure of bleed-through[17] is warranted[18] (see Section 4.1.4).

Carcasses that are not detectable because they are removed (by a scavenger or other means) prior to the search will be excluded from analyses. Carcasses will be deemed as such if they are not present immediately after the search (see Section 4.1.3), as determined by the trial administrator, and are confirmed to be absent on the following day.

[15] It is anticipated that extra-large chickens, 2-week-old quail, dark extra-large mice, and dark small rats will be used to represent large birds, small birds, small bats, and large bats, respectively, because they are readily available. Other species, particularly raptors and bats, to represent appropriate searcher efficiency (and carcass persistence) for those groups, will be added to the trial samples if they become available and as scientific collection permits allow.

[16] Randomization will be generated using a geographic information system (GIS) script or similar.

[17] Bleed-through refers to the probability of discovering a carcass in a subsequent search after not being found in an initial search.

[18] Whether this measure is warranted will depend on the fatality estimators being considered prior to beginning the surveys.

4.1.5 *Carcass Persistence Trials*

The length of time (in days) a trial carcass persists at the site will be calculated as the midpoint between the day the carcass is known to be present and the day it is no longer observable. Except for eagle surrogates (see SWCA 2020a), carcasses placed as part of the searcher efficiency trials (see Section 4.1.2) will be revisited on days 1 through 7, 14, 21, and 28, as necessary. Like the searcher efficiency trials, the carcass persistence trials will be conducted during each of the four seasons to account for different conditions that may affect carcass removal. During each visit, a biologist will record presence or absence of each carcass. When a carcass is recorded as absent and no obvious signs of scavenging are apparent (e.g., feathers), it will be revisited the next day to confirm absence.

4.1.6 *Adjusted Bird and Bat Fatality Estimates*

Adjusted fatality estimates will be calculated for each year of the study using an industry-accepted statistical estimator or estimators that correct for searcher efficiency, carcass persistence, search interval, the proportion of turbines searched to the total number of turbines at the site, and the proportion of discoverable carcasses within search areas (i.e., search area correction), as warranted.

At the time of this writing (February 2020), it is anticipated that the GenEst fatality estimator (Simonis et al. 2018; made available to practitioners in 2019) will be used to calculate adjusted fatality estimates for non-eagle avian species and bats. This estimator was developed to alleviate confusion regarding which estimators to use under variable study design, field conditions, and performance. A collaborative effort among authors of older fatality estimators, this newer estimator is being accepted on a national level as a more accurate, standardized approach. The GenEst estimator allows users to model a decrease in searcher efficiency with repeated searches for the same carcass. In other words, a second searcher efficiency trial per season may be implemented (see Section 4.1.4).

Whichever estimator (or estimators) is ultimately selected, model inputs will be tailored as needed to produce unbiased estimates of fatality. For example, when using the Huso estimator (Huso 2011; Huso et al. 2012), which assumes 0% bleed-through, fatalities with an estimated time since death greater than the average search interval will be excluded from the analyses. Fatality data exclusions would also include incidentals or fatalities for which there is clear evidence that the cause of death is not attributed to turbine collision (e.g., an avian carcass directly under a nest). Model inputs should also be representative of actual eagle/large raptors, bat, and other species groups' searcher efficiency and carcass persistence. For example, from the literature (Smallwood 2007), we know that large raptors and bats tend to persist substantially longer than chickens and mice. As such, to measure carcass persistence for such species groups, appropriate carcasses will be used as surrogates, if available, or appropriate model inputs based on available literature will be considered.

Adjusted bird and bat fatality estimates will be reported per MW per year and per turbine per year. Separate adjusted estimates will be calculated for the MET tower searches, if fatalities are discovered.

4.2 Wildlife Response and Reporting System

During Project operations, Borderlands Wind will follow NextEra's companywide WRRS for wind energy projects (see Appendix A). Beginning in operations year 1, at turbines that are not being searched as part of the consultant-led searches, operations personnel conducting routine quarterly turbine inspections will search for bird and bat carcasses by walking three concentric circles spaced 30, 90, and 150 feet (10, 30, and 45 m) from the turbine mast. Incident-specific WRRS data fields, consistent with those listed in the WEG, are provided in Appendix A. All fatalities will be appropriately photo

documented. Incident-specific data will be recorded by the person who discovered the carcass and reported to appropriate personnel including Borderlands Wind's consultant (if consultant-led, standardized fatality monitoring [see Section 4.1] is ongoing), and disposition protocols will be followed (see Section 4.3). Fatalities discovered by operations staff will be considered incidentals in the consultant-led survey reporting. During all years of operation any wildlife injury or fatality found within the wind plant boundaries (i.e., access roads, substations, O&M building, overhead transmission lines), regardless of cause of death, will be reported immediately to the operations leader who shall complete an incident report, take photographs, and incorporate that information into the WRRS database for the site.

4.3 Disposition of Fatalities

Handling and disposition procedures will follow relevant salvage permits and/or direction from USFWS Office of Law Enforcement (OLE) and BLM authorized officer. Federally listed species and eagle species carcasses and associated incident-specific data will be reported immediately (no later than 24 hours following discovery) to the USFWS OLE and BLM authorized officer. Federally listed species and eagle species carcasses will not be moved until such notification occurs, after which carcass disposition will be in accordance with permit conditions or USFWS Office of Law Enforcement direction.

4.4 Tier 4 Reporting

The results of the standardized consultant-led general avian and bat and eagle-focused surveys will be submitted to the USFWS, BLM, and NMDGF. A comprehensive report will be submitted for each year post-construction fatality monitoring is conducted. Each report will include data compilations of the trial results, species composition of fatalities, temporal and spatial distribution of fatalities, relevant adjusted fatality metrics (e.g., per MW/year, per turbine/year by fatality groups), and adaptive management recommendations. Specific fatality groups will include overall birds and bats; other groups (e.g., raptors, seasons) will be considered particularly if they include at least five fatalities. Email summaries containing a list of species being observed during the standardized fatality monitoring will be sent to the BLM, USFWS and NMDGF on a quarterly basis. The annual reporting results will be reviewed by USFWS, BLM, NMDGF, Borderlands Wind, and their consultant via an annual meeting if requested by these agencies.

Operations staff-led WRRS incidental fatality documentation and quarterly turbine search results will be provided to BLM annually.

5 TIER 5 – ADAPTIVE MANAGEMENT AND ADDITIONAL POST-CONSTRUCTION SURVEYS

5.1 Adaptive Management

The adaptive management process for the Project is intended to proactively adjust post-construction monitoring protocols and conservation measures when warranted. As described in the WEG, adaptive management is an iterative, flexible decision-making process meant to improve understanding and management over time. The WEG definition gives special emphasis to uncertainty around management effects, iterative learning to reduce uncertainty, and improved management as a result of learning.

Developing measurable adaptive management triggers is compromised by lack of basic information regarding population-level consequences of collision fatalities. Potential for cumulative impacts is assumed for threatened and endangered species, but for other taxa, evaluating the necessary level of minimization to maintain populations requires a better understanding of species' demographic attributes (Allison et al. 2019). For example, the demographic consequences of reducing migratory tree bat fatalities through turbine curtailment when these species are at risk (i.e., low-wind periods in late summer and early fall migration) is unknown because of lack of knowledge regarding population numbers for these species. Further, several authors caution against using aggregated fatality estimates from other projects as a decision benchmark due to validity concerns over widely disparate monitoring designs and analytical methods that introduce varying levels of bias and imprecision (Allison et al. 2019; Loss et al. 2013; Smallwood 2013; Warren-Hicks et al. 2013). As survey and analytical methods are becoming more standardized, and population-level consequences understood (via development of species-specific demographic models), such benchmarks may become valid.

To our knowledge, neither federal or state wildlife agencies have set potential impact threshold scenarios (e.g., species group per megawatt collision mortality thresholds) that would qualify as significant adverse impacts to birds and bats in this region of New Mexico. Therefore, Borderlands Wind has identified the following species-specific, temporal, and spatial adaptive management triggers that, if met, would initiate additional coordination with BLM, USFWS, and NMDGF around solutions development:

- Injury or mortality of any federal and state listed endangered or threatened species, including species proposed for listing, or bald or golden eagle. In the event that one or more listed species (or eagle) is found dead or injured, Borderlands Wind will notify BLM, USFWS and NMDGF within 24 hours of discovery. Borderlands will continue coordination with these agencies to evaluate potential cause of mortality and discuss actions that may be needed to minimize future injuries/fatalities.
- Episodic mass mortalities of multiple or individual species of birds/bats. Relatively speaking mass mortality events at operational wind energy facilities remain rare events (e.g., Arnett et al. 2008, Loss et al. 2013). The occurrence of abnormally large mortality events often have been associated with inclement weather conditions and deviations from facility lighting BMPs (Erickson et al. 2001; Johnson et al. 2002; Kerns and Kerlinger 2004). For the Project, a mass mortality event will be defined as the number of fatalities within a single day exceeding three times the daily average of birds/bats found during that season. In the unlikely event of a mass mortality event, Borderlands wind will notify BLM, USFWS and NMDGF within 24 hours of discovery. Borderlands will continue coordination with these agencies to evaluate potential cause of mortality and discuss actions that may be needed to minimize future injuries/mortalities.
- Localized injuries or mortalities at potentially problem turbines: Once operational, specific turbine locations may result in larger than expected injuries/mortalities to birds and bats (e.g., those closer

to certain habitats). If the observed number of fatalities at a single turbine exceeds three times the average number found at other turbines during that season or survey year, , Borderlands Wind will coordinate with BLM, USFWS and NMDGF to evaluate options and determine a path forward for the location.

In the event these triggers are met, Borderlands Wind will consider the following solutions in coordination with coordinating agencies:

- Assessing effectiveness of the BMPs presented in this BBCS and whether improvements can be implemented.
- Identification of common causes or risk factors (e.g., problem turbines/spatial clustering of fatalities, problem seasons, presence of prey).
- Identifying and implementing additional BMPs.
- Implementing additional consultant-led Tier 4 surveys.
- Consider evaluation of short-term and reversion triggers (as in Dalthrop et al. 2017), or similar methods to evaluate effectiveness of implemented measures.

In addition to the triggers presented herein, Borderlands Wind, in coordination with coordinating agencies, will continually evaluate whether additional triggers may be identified, informed by agency and industry knowledge and project-specific fatality data. Updates to this living document will be made as new industry standards or policies pertinent to adaptive management procedures are developed.

5.2 Additional Post-Construction Surveys

Eagle-specific post-construction survey techniques, analyses, and interpretation are described in the Project's EMP. No additional non-eagle species surveys beyond the consultant-led and WRRS surveys set forth above are planned for the Project at this time. Additional surveys may be identified through the adaptive management process if they are deemed necessary.

6 PERSONNEL TRAINING

Borderlands Wind will implement a training program covering the overall contents and requirements of the Project's BBCS. The training program will be designed to consistently communicate requirements to every individual working on-site so that both managers and workers understand expectations, the permit requirements, and how to incorporate them into their daily work activities. All construction, operation, and maintenance staff working on the Project will be required to attend a training presentation prior to working on-site. Borderlands Wind will maintain environmental training attendance records on-site.

Content of the presentation will include:

- BMPs
- Overview of WRRS and consultant-led post-construction surveys
- Procedures for handling and reporting avian and bat fatalities and injuries
- How to identify birds and bats, particularly sensitive species, that could occur at the site
- Points of contact at different agencies for reporting along with reporting protocols
- Record keeping procedures

7 IMPLEMENTATION OF THE BORDERLANDS BBCS

This BBCS was developed to fulfill important requirements for the Borderlands ROW Grant from BLM. As described through the WEG Tier analysis described herein, many aspects of this BBCS have been implemented or are in the process of being implemented. As such, this BBCS is subject to future revisions, as needed, and will be maintained by Borderlands environmental staff. This BBCS will be housed on-site within the Borderlands Wind O&M building. Revisions will include any updates needed to reflect the final construction plans and mitigate impacts to avian/bat species during the construction and operational phases of the project.

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APPENDIX A

NextEra Energy WRRS Manual for Wind Energy Centers

APPENDIX B

Contacts/Resources

APPENDIX C

Relevant Permits

EAGLE MANAGEMENT PLAN FOR THE BORDERLANDS WIND PROJECT

WORKING DRAFT

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SWCA Project No. 51742

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1 INTRODUCTION

This Eagle Management Plan (EMP) has been developed for the Borderlands Wind Project (Project) as a living document to guide eagle risk-reducing and offsetting measures over the life of the Project. Revisions to the EMP will be incorporated, as warranted, in coordination with the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and New Mexico Department of Game and Fish (NMDGF) as the Project design is finalized; postconstruction data for the Project are evaluated; and new postconstruction survey and analysis techniques, industry standards, or policies are developed.

The proposed 100-megawatt (MW) nameplate capacity facility will be built and operated by Borderlands Wind, LLC, a wholly owned subsidiary of NextEra Energy Resources, LLC (NextEra). The facility will be developed within a 16,650-acre Project area (also referred to as the "Project boundary") located primarily on BLM Socorro Field Office–administered lands, but also on state and private lands, in Catron County, New Mexico, approximately 19 miles west-southwest of Quemado, New Mexico, and 20 miles east of Springerville, Arizona (Figure 1Figure 1.; see the Project's Plan of Development [POD] [Borderlands Wind 2020]). The POD and final environmental impact statement (FEIS) (BLM 2020) describe three action alternatives; however, hereafter, unless specifically noted, this EMP focuses on the Project's preferred alternative, Alternative 2 (see Section 1.3.1 of the POD; Figure 1).

Wind energy developers seeking right-of-way (ROW) permits on BLM-administered lands are not legally required to seek or obtain a USFWS eagle incidental take permit (ETP). For projects that warrant an ETP,[1] BLM (2017) has provided guidance for two options: an applicant may choose to apply for an ETP (Option 1) or initially decline to apply for an ETP (Option 2). For both options, BLM requires implementation of risk-reducing (avoidance and minimization) and offsetting (compensatory mitigation) measures to protect eagles according to the level of risk identified for the project. Borderlands Wind has selected Option 2 and has identified appropriate risk-reducing and offsetting measures. If an ETP is sought later, Borderlands Wind will coordinate with BLM and USFWS at that time.

The specific objectives of this EMP are twofold: 1) to demonstrate that Borderlands Wind plans to implement all practicable best management practices (BMPs) that are reasonably likely to reduce mortality consistent with the USFWS's Eagle Rule (USFWS 2016a) preservation standard of "maintaining stable or increasing breeding populations in all eagle management units and the persistence of local populations throughout the geographic range of each species" and 2) to convey the specific information needed if an ETP for the Project is pursued in the future. A separate Bird and Bat Conservation Strategy (BBCS) for the Project (SWCA Environmental Consultants [SWCA] 2020) summarizes measures taken by Borderlands Wind to avoid, minimize, and compensate for potential adverse impacts to birds and bats from construction and operation of the Project.

1.1 Document Organization

Following the USFWS's *Eagle Conservation Plan Guidance* (ECPG) (USFWS 2013), this EMP has been developed in five stages. The iterative five-stage decision-making process informs whether a site will meet standards for issuance of an ETP. The process is used to identify avoidance and minimization measures to reduce eagle disturbance and ongoing mortality to a level at which it is practically unavoidable (USFWS 2016a).

[1] The USFWS has determined that the Project warrants an ETP because it meets Category 2 criteria as defined by the USFWS's *Eagle Conservation Plan Guidance* (USFWS 2013).

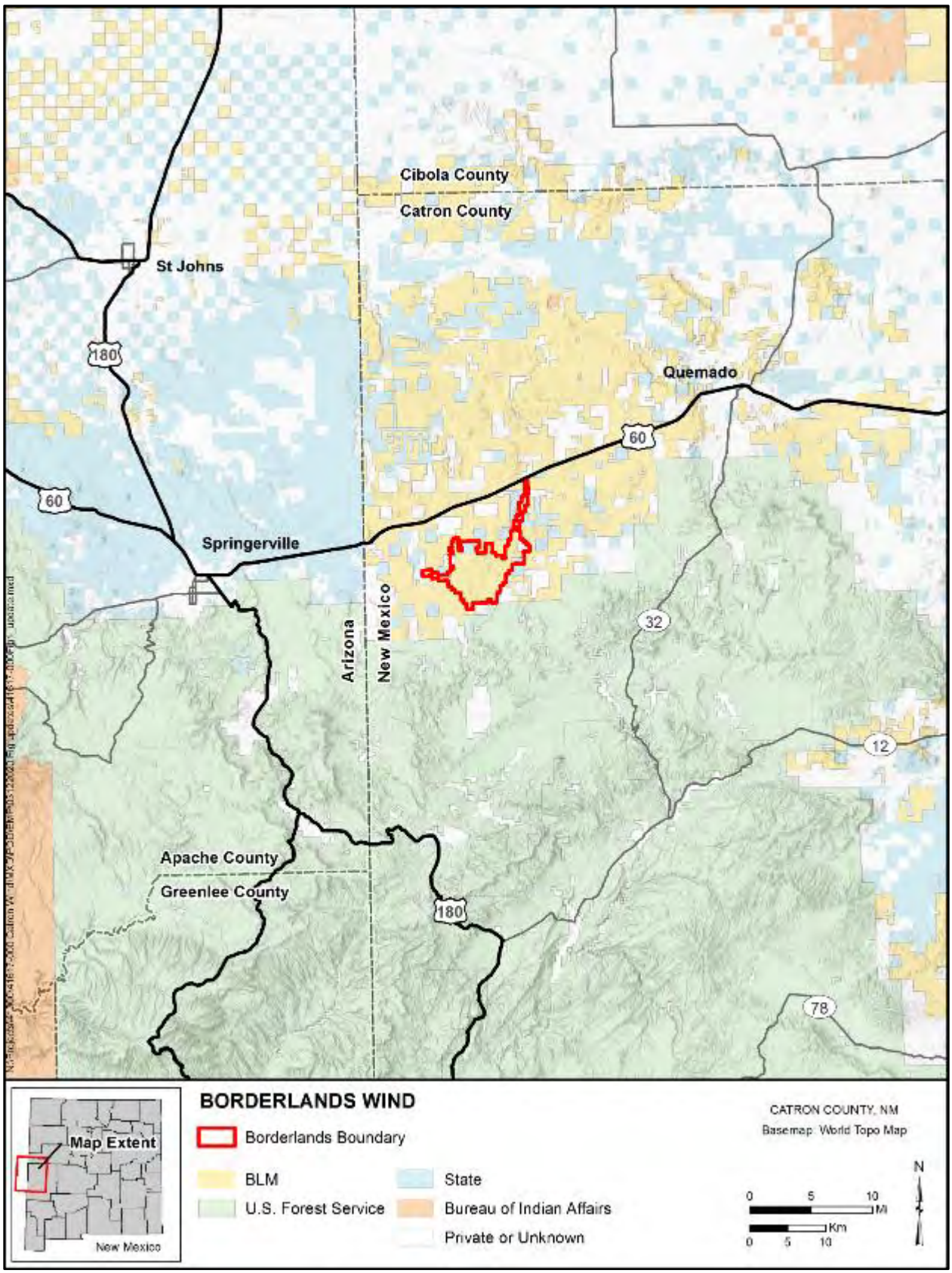

Figure 1. Borderlands Wind Project location.

According to ECPG criteria, risk categorization for the Project is evaluated with increasing clarity in Stages 1 through 4 as project-specific information is gathered.

The five-stage approach is described in the ECPG as follows:

- Stage 1 provides an initial site assessment at broad-landscape and project scales to determine the spatiotemporal extent and type of eagle use of the site and alternative sites considered. This stage combines USFWS's *Land-Based Wind Energy Guidelines* (WEG) (USFWS 2012) Tiers 1 and 2.
- Stage 2 site-specific surveys provide data used to generate Stage 3 predictions of the mean number of annual eagle fatalities, to identify important eagle use areas or migration concentration sites that could be affected by the project, and to inform the likelihood of disturbance risk. This stage is the first component of WEG Tier 3 surveys.
- Stage 2 data are used in Stage 3 to predict the mean number of annual eagle fatalities before implementation of risk-reducing measures. This EMP uses a Stage 3/4 combination approach, whereby, in the interest of providing simplicity to the reader, only one project design alternative, designed to achieve the unavoidable standard, is considered.
- In Stage 4, initial predictions of eagle mortality are compared with predictions that consider proposed and potential conservation measures to achieve the unavoidable standard (see Stage 3 description for the approach presented herein). An appropriate compensatory mitigation approach, if warranted, is identified at this stage.
- Stage 5 includes the postconstruction fatality and disturbance monitoring plan. This stage is equivalent to WEG Tier 4a.

Table 1 presents USFWS-recommended (2016a, 2016b) EMP contents covered in this EMP.

Table 1. Index of USFWS-Recommended Eagle Management Plan Contents by Document Section

Requirement	Section
From USFWS 2016a	
Coordinates of each eagle use count in decimal degrees.	3.1, Table 6.
The radius and height of each eagle use count plot.	3.1
Dates, times, and weather conditions for each use count survey, to include the time surveys at each sample point began and ended.	Appendix C
Information for each survey on the number of eagles by species observed (both in flight and perched), and the amount of flight time (minutes) that each was in the plot area.	3.2
The number of proposed turbines and their specifications, including brand/model, rotor diameter, hub height, and maximum blade reach (height).	1.2
Coordinates of the proposed turbine locations in decimal degrees.	1.2
From USFWS 2016b	
Name and contact information for any USFWS or state wildlife agency employee(s) who has provided technical assistance or worked with you on this project.	1.3
The species and number of eagles that are likely to be taken and the likely form of that take (e.g., disturbance, other take).	4.2, 5.4.1
The dates the activity will start and is projected to end.	1.2
A detailed description of the activity that will likely cause the disturbance or other take of eagles.	1.2, Borderlands Wind (2020)
An explanation of why the disturbance or mortality of eagles is necessary, including what interests will be protected by the project or activity.	1.2

Requirement	Section
Maps, digital photographs, county/city information, and latitude/longitude coordinates of the proposed activity	1
Maps, digital photographs, county/city information, and latitude/longitude coordinates of eagle-use areas in the vicinity of the activity, including nest site(s), roost areas, foraging areas, and known migration paths. Provide the specific distance and locations of nests and other eagle-use area from the project footprint.	2.2, 3.2, 5.2
If the projected take of eagles is in the form of disturbance, 1) will the activity be visible to eagles in the eagle-use areas? and 2) what is the extent and location of existing similar activities in the vicinity?	5.4
A detailed description of all avoidance and minimization measures that you have incorporated into your planning for the activity that you will implement to reduce the likelihood of eagle mortality.	5

1.2 Project Description and Current Progress

As of this writing (March 2020), the Project is projected to achieve commercial operation in September 2021, with construction beginning in September to October 2020. The Project life is considered to be 35 years, with decommissioning planned for 2055; however, a determination may be made to extend the ROW grant through the renewal process, which would extend the term of the ROW.

The Alternative 2 Project design (Figure 2) includes 44 permitted wind turbine generators (hereafter, turbines), 34 of which will be built. These 34 turbines will consist of thirty 3.0-MW turbines and four 2.5- W turbines. Table 2 presents hub height, top height, and rotor radius specifications of these turbines. Up to two permanent meteorological (MET) towers, no more than 361 feet (110 meters [m]) tall, will be installed; these will be either guyed—wires spanning 300 feet from the tower on four sides—or unguyed. Details regarding other Project infrastructure (e.g., roads, collection lines, substation, operations and maintenance [O&M] building), including extent of temporary and permanent surface disturbance, are provided in the POD and FEIS.

The BLM's purpose and need for the Project is detailed in Section 1.1 of the FEIS, and the proponent's Project objectives are detailed in Section 1.2 of the FEIS (BLM 2020).

The Alternative 2 design incorporates avoidance measures developed to meet the unavoidable standard.

In accordance with the Eagle Rule (USFWS 2016a), the number of proposed turbines per turbine type, their specifications, and proposed coordinates are provided in Table 2 and

Table 3.

Table 2. Turbine Specifications of the Alternative 2 Turbine Array Design

Specifications	Alternative 2 Turbine Array Design	
	2.5-MW Turbines	3.0-MW Turbines
Number of turbines	4	30
Hub height (m)	90	98–117
Top height (m)	152	up to 192
Rotor radius (m)	58	70
Rotor diameter (m)	116	140

Table 3. Turbine Locations, Alternative 2 Turbine Array Design

Turbine	Latitude	Longitude	Turbine	Latitude	Longitude
2.5-MW turbines					
4	34.134767	-108.916836	33	34.161906	-108.887853
10	34.167203	-108.916453	35	34.161336	-108.868225
3.0-MW turbines					
1	34.123869	-108.931797	23	34.103925	-108.897269
2	34.127636	-108.923033	24	34.110528	-108.897797
3	34.131236	-108.920175	Alt25	34.1151028	-108.895003
5	34.142286	-108.918572	26	34.1216778	-108.900669
6	34.145933	-108.915311	27	34.1341167	-108.894158
Alt7	34.150250	-108.914325	Alt28	34.1381306	-108.892069
8	34.157433	-108.920586	29	34.1421139	-108.890342
9	34.162872	-108.918583	30	34.1489333	-108.888272
11	34.164703	-108.901281	31	34.153347	-108.887614
12	34.161086	-108.898747	32	34.158142	-108.889775
Alt13	34.150397	-108.901167	34	34.165761	-108.885031
Alt14	34.146094	-108.900692	36	34.157589	-108.869253
Alt15	34.126900	-108.911625	37	34.131403	-108.878856
Alt16	34.117617	-108.915358	Alt38	34.101183	-108.876342
17	34.114078	-108.920311	39	34.096383	-108.877806
18	34.110306	-108.915414	40	34.095808	-108.861397
19	34.106806	-108.910461	41	34.100453	-108.865331
20	34.103078	-108.907775	42	34.109253	-108.857367
21	34.090472	-108.897536	Alt43	34.115756	-108.854522
22	34.094319	-108.896250	Alt44	34.119531	-108.850297

Note: The Eagle Rule recommends providing this table data. Decimal degree coordinates are in datum WGS84. Additionally, turbines beginning with "Alt" are the alternative locations that may be built if other locations are not selected.

1.3 Consultation History

Borderlands Wind has coordinated with state and federal agencies during Project development through conference calls, in-person meetings, and site visits. This voluntary consultation began in February 2017 and has continued through the development of this EMP with BLM, USFWS Region 2, and NMDGF representatives. The names and contact information for agency staff who have provided technical assistance for the Project are provided in Table 4.

Agency communication has included the following:

- Initial data sharing with NextEra by Bob Murphy, former USFWS Region 2 nongame migratory bird biologist, on February 21, 2017
- Ongoing conference calls conducted twice monthly, initiated on January 31, 2018; participants include BLM, NextEra, SWCA, and Logan Simpson personnel.
- August 25, 2017, meeting attended by Borderlands Wind, BLM, and USFWS personnel.

- January 25, 2018, site visit attended by BLM, Borderlands Wind, SWCA, and Logan Simpson personnel.
- March 7, 2018, conference call; participants included Borderlands Wind, BLM, USFWS, and Logan Simpson personnel.
- May 16, 2018, BLM requested Borderlands Wind to conduct Gunnison's prairie dog (*Cynomys gunnisoni*) occupancy and colony delineation surveys.
- May 29, 2018, Tiers 1 and 2 site characterization and evaluation report, wildlife survey plan, and 2018 raptor nest survey technical memorandum for the Project submitted to BLM, USFWS, and NMDGF by SWCA and Borderlands Wind for comment.
- May 30, 2018, WEG Tiers 1 through 3 and ECPG Stages 1 through 4 meeting held at USFWS's Region 2 New Mexico Ecological Services Field Office attended by USFWS, NMDGF, Borderlands Wind, and SWCA personnel.
- June 19, 2018, meeting held at BLM's Socorro Field Office attended by Borderlands Wind, BLM, and USFWS personnel.
- July 6, 2018, ECPG Stages 1 through 4 technical memorandum and prairie dog survey plan submitted to BLM, USFWS, and NMDGF by SWCA and Borderlands Wind for comment.
- July 17, 2018, site visit attended by Borderlands Wind, SWCA, and NMDGF personnel.
- July 18, 2018, ECPG Stages 1 through 4 meeting held at USFWS's Region 2 Migratory Birds main office attended by BLM, USFWS, NMDGF, Borderlands Wind, SWCA, and Logan Simpson personnel.

Table 4. Federal and State Agency Staff Who Have Provided Bird and Bat Technical Assistance for the Project

Agency, Employee	Contact Information
USFWS Region 2 Migratory Birds Kristin Madden, Corrie Borgman, Kammie Kruse, Kirsten McDonnell, Bob Murphy (former)	Migratory Birds Main Office, 500 Gold SW, Albuquerque, New Mexico 87102 (505) 248-7885
USFWS Region 2 New Mexico Ecological Services Field Office Jennifer Davis	2105 Osuna Road NE, Albuquerque, New Mexico 87113 (505) 346-2525
NMDGF Ecological and Environmental Planning Division and Wildlife Management Ron Kellermueller, Chuck Hayes, Jim Stuart	1 Wildlife Way, Santa Fe, New Mexico 87507 (505) 476-8159, (505) 476-8114, (505) 476-8107
BLM National Project Support Team Jason Sutter (former)	1387 S. Vinnell Way, Boise, Idaho 83709 (208) 373-3903
Christine Fletcher	176 East DL Sargent Drive, Cedar City, Utah 84721 (435) 865-3035
BLM New Mexico State Office Marikay Ramsey	301 Dinosaur Trail, Santa Fe, New Mexico 87508 (505) 954-2000
BLM Socorro Field Office Carlos Madril	901 South Highway 85, Socorro, New Mexico 97801 (575) 835-0412

1.4 Regulatory Context

The Project's BBCS (SWCA 2020) summarizes the regulatory framework protecting birds and bats. The Bald and Golden Eagle Protection Act (Eagle Act) of 1940, as amended, specifically protects bald

eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). The bald eagle is also designated as a New Mexico state threatened species, protected under the New Mexico Wildlife Conservation Act (1978).

1.4.1 Bald and Golden Eagle Protection Act

The Eagle Act prohibits anyone without a permit from "taking" eagles, their parts, eggs, or nests. *Take* is defined by the Eagle Act as "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." The Eagle Act's definition of "take" differs from the definition in the Endangered Species Act in that it does not include habitat destruction or alteration, unless such damage "disturbs" an eagle. *Disturb* is defined as "to agitate or bother to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In 2009, USFWS promulgated regulations that established two new permit types authorizing 1) purposeful take (removal, relocation, or destruction) of eagle nests under limited circumstances and 2) incidental take. In 2016, the USFWS revised the regulations for ETPs allowing developers to obtain a 30-year permit subject to mitigation and monitoring, among other requirements. The 2016 Eagle Rule also removed the distinction between standard (to address one-time effects from projects) and programmatic (to authorize recurring take from projects) permit types, and it modified the preservation standard definition, whereby any authorized take must be "consistent with the goals of maintaining stable or increasing breeding populations in all eagle management units and the persistence of local populations throughout the geographic range of each species."

1.4.2 New Mexico State Threatened and Endangered Species

The New Mexico Wildlife Conservation Act of 1978 (17-2-37 through 17-2-46 New Mexico Statutes Annotated 1978) prohibits take of state-listed species and provides the NMDGF the authority and responsibility to protect, manage, and conserve species of wildlife indigenous to the state. A state threatened species (e.g., bald eagle) is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the state. A state endangered species is one in jeopardy of extinction or extirpation from the state.

A summary of the distribution, current status, threats (existing, past, or future actions that can create uncertainty of species persistence if they are not carried out in a manner that considers wildlife and habitat needs), and recommendations regarding listing status and conservation actions are presented for each species or subspecies on the state's biennial review (NMDGF 2018).

1.5 Landscape-Scale Definitions

The ECPG five-stage approach considers potential eagle impacts at different landscape scales defined in this EMP as follows:

Project footprint (Figure 2): The area encompassing the turbines and any associated utility infrastructure. ECPG site-risk categorization is determined in part by evaluating presence of important eagle use areas in relation to the project footprint boundary.

Area in proximity to turbine hazards (Figure 2): To estimate eagle exposure (eagle-minutes flying in proximity to turbine hazards per hour per square kilometer), the ECPG recommends that at least 30% of the area within 1 kilometer (km) of proposed turbines be sampled by establishing an appropriate number

of 800-m-radius eagle use count plots. This sampling approach ensures close association between sampling sites and turbine arrays considered when evaluating siting options and predictions of annual eagle fatalities (USFWS 2013).

Project area (also referred to as "project boundary" or "site") (Figure 2): The area within the project boundary—the BLM ROW grant application area (delineated along section lines, quarter-quarter section lines, etc.). The ECPG defines the project area in the context of eagle impact considerations as the area that includes the project footprint and contiguous land that shares relevant characteristics. Therefore, to distinguish these terms in this EMP, the ECPG term *project area* is referred to as the "project-area nesting population area."

Project-area nesting population (Figure 8 and Figure 9): The number of pairs of eagles known to have a nesting attempt within a 10-mile radius of a project area.

Local-area population (LAP) (Figure 16 and Figure 17): The eagle population within the species median natal-dispersal distance (109 miles for golden eagle and 86 miles for bald eagle; USFWS 2016a) measured from the 10-mile radius of a project area. The ECPG and Eagle Rule recommend using this area to evaluate potential cumulative impacts to eagles.

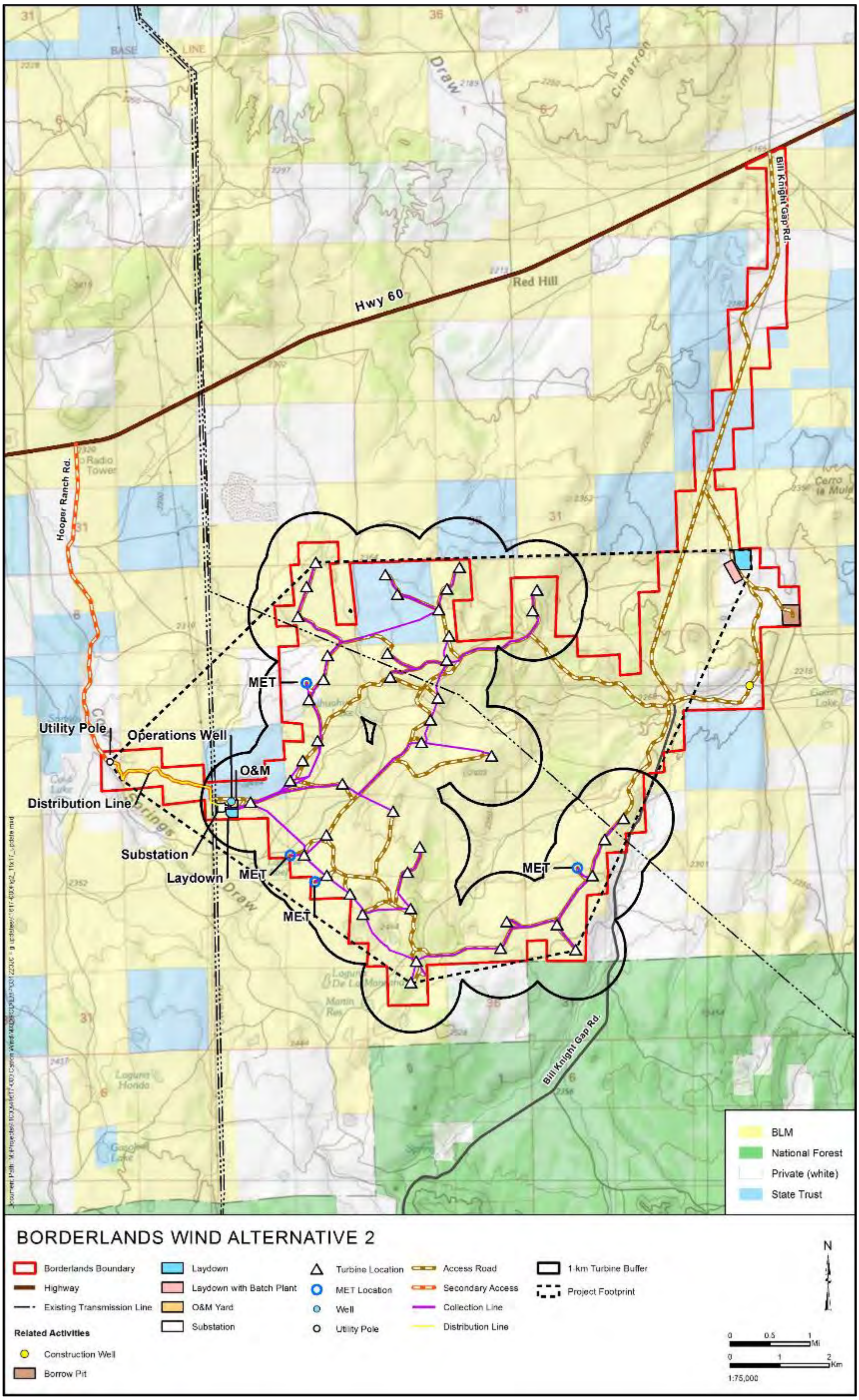

Figure 2. Alternative 2 Project design. This design was developed after eagle risk-reducing avoidance considerations (see Section 5). The figure shows landscape-scale terms—Project area, Project footprint, and turbine hazard area—used elsewhere in the EMP.

2 STAGE 1 – SITE ASSESSMENT

2.1 Stage 1 Methods

Informed by desktop evaluation and repeated site visits over a 1-year period, initiated in March 2017,[2] Borderlands Wind completed a Stage 1 site assessment for the Project in March 2018 (SWCA 2018a). The Stage 1 objective was to determine whether the Project site is known or is likely to be used by eagles and, if so, to begin to determine the spatiotemporal extent and type of eagle use the site receives or is likely to receive. In Stage 1, an initial site categorization based on mortality risk to eagles can be used to inform whether a project should proceed to Stage 2 site-specific surveys.

In accordance with the ECPG, the Stage 1 assessment evaluated the following:

- Are eagles or their habitats (including breeding, migration, dispersal, and wintering habitats) present within the geographic region of the Project?
- Are there areas of habitat known to be valuable or potentially valuable to eagles that would be destroyed or degraded due to the Project?
- Are there important eagle use areas or migration concentration sites documented or thought to occur in the Project-area nesting population area?
- Is habitat supporting abundant eagle prey present within the geographic region of the Project?

Multiple data sources were consulted:

- Ron Kellermueller, NMDGF mining and energy habitat specialist, provided known eagle and other raptor species (e.g., ferruginous hawk [*Buteo regalis*]) nest locations within 10 miles of the Project.
- Natural Heritage New Mexico (2017) provided historical species occurrence data, including Gunnison's prairie dog locations within 10 miles of the Project.
- Gunnison's prairie dog survey data recorded in the Project vicinity in 2004 and 2006 (Hawks Aloft, Inc., 2006).
- Spatial data for a tagged golden eagle, referred to as "Dutch 2," known to use areas within and proximal to the Project (Bob Murphy, former USFWS Nongame Migratory Bird Biologist, personal communication February 2017).
- National Wetlands Inventory (USFWS 2018a) and National Hydrology Dataset (U.S. Geological Survey [USGS] 2017).
- Southwest Regional Gap Analysis Project data (USGS 2016).

2.2 Stage 1 Findings

The following summarizes the SWCA (2018a) Stage 1 findings; updates are provided where relevant.

[2] The Stage 1 evaluation was conducted during the first of 2 years of Stage 2 and WEG Tier 3 surveys (see eagle site-specific survey schedule; Section 3).

2.2.1 Environmental Setting

The Project area is characterized by hills and rolling plains at elevations between 7,000 and 8,300 feet. Notable landforms/landmarks within the Project vicinity include the southeast-northwest-trending Cow Springs Draw to the west of the Project area (and extending into the western extreme of the Project area), Cerro la Mule to the east, and Cimarron Hill to the northeast. Vegetation cover within the Project area includes sparsely vegetated shortgrass grassland interspersed with rock outcrops and semidesert grassland/shrub steppe/juniper savanna with scattered and locally dense patches of pinyon-juniper woodland. Few low-canopy-cover ponderosa pine (*Pinus ponderosa*) trees are present in the southern extreme of the Project area. Dominant plant species include blue grama (*Bouteloua gracilis*), broom snakeweed (*Gutierrezia sarothrae*), one-seed juniper (*Juniperus monosperma*), and two-needle pinyon (*Pinus edulis*). Rubber rabbitbrush (*Ericameria nauseosa*) is also relatively common throughout the site.

Two intermittent drainages, including Cow Springs Draw, are in the western extreme and eastern portions of the Project area. Scattered playa wetlands, containing water seasonally, are in the general vicinity, including within the Project area (i.e., Chihuahua Lake situated in the west-central portion of the Project area). Livestock tanks are scattered within the site. Land uses include cattle ranching/grazing and recreation (primarily hunting).

For additional detail on the Project's environmental setting, see SWCA's site evaluation report (2018a).

2.2.2 Presence of Eagles or Their Habitats

2.2.2.1 GOLDEN EAGLE

The Project is within the golden eagle's year-round range and may be broadly characterized as golden eagle foraging habitat (i.e., open grassland and steppe-like vegetation communities; Kochert et al. 2002). Golden eagles breed throughout the region, including within the Project-area population area (see Section 3.2.3). Nests are placed in rugged terrain (e.g., cliffs) and, less often, in forested areas (e.g. ponderosa pine, Fremont cottonwood [*Populus fremontii*]) and on human-made structures (e.g., transmission towers). The Project area contains limited nesting habitats. As described in Section 3.2.3, one possible golden eagle nest (exhibiting characteristics of ferruginous hawk or golden eagle), referred to as "Luna Tank: CA048," was found 0.4 mile west of the Project area's northern panhandle, 3.7 miles north of the Project footprint, 0.6 mile west of Bill Knight Gap Road, and 4.7 miles northeast of the nearest proposed turbine (see Section 5, Figure 13 and Figure 14). All other golden eagle and possible golden eagle nests are farther than 4 miles from the Project area.

Golden eagles exhibit complex migration and nomadic movement patterns dependent on factors such as nesting status, age, and food availability (Kochert et al 2002). Because individuals from areas north of New Mexico "winter" in the state from September through March (reaching peak numbers December–February),[3] more golden eagles may be expected regionally during the fall through early spring seasons (migration/wintering timing reviewed in Kochert et al. 2002). This was confirmed by surveyors conducting Stage 2 site-specific surveys, who observed golden eagles on-site year-round, particularly in in the fall to early spring (September–March) (see Section 3.2.2).

At this stage, the following areas that may attract golden eagles were identified within the Project area/footprint and its vicinity:

[3] Median fall and spring migration passage dates recorded at long-term hawk watch sites in New Mexico: October 13 and March 9, respectively (Rossman 1999 and Smith 1999, as cited in Kochert et al. 2002).

- Gunnison's prairie dog colonies: prairie dogs—one of the primary foods taken by golden eagles (Kochert et al. 2002)—are typically active in the region from March through October (peak activity June–July).
  - Colonies may provide concentrated (spatially predictable) prey for golden eagles. Comprehensive occupancy and colony delineation surveys were conducted in Stage 2 (see Sections 3.2.4 and 5, Figure 13 and Figure 14).
- Seasonally wet playas containing waterfowl (wintering waterfowl period: October–February)
  - Playas may provide concentrated (spatially predictable) prey for eagles. Qualification around waterfowl use of these playas is further described in Section 2.2.4 and in Stage 2 (Section 3.2.1). As part of the Stage 1 assessment, the playas were delineated by evaluating National Hydrology Dataset and National Wetlands Inventory data and multiple years of aerial imagery. Two playas (Chihuahua Lake, 22 acres when full, and an unnamed playa, 6 acres when full) were delineated within the Project area. Other local playas, ranging in size from 1 to 220 acres when full, are situated southwest, northwest, and east of the Project area (Figure 3; see Section 5, Figure 13 and Figure 14).
- A local rancher's dead cow disposal location —which contained roughly four to five dead cows in varying decomposition condition—was discovered in the western panhandle of the Project area (Figure 3; see Section 5, Figure 13 and Figure 14).

These suitable golden eagle use areas, though not unique regarding the broader regional landscape, informed avoidance and minimization schemes implemented for the Project (see Section 5) to reduce mortality consistent with the USFWS's Eagle Rule.

2.2.2.2 BALD EAGLE

The Project is within bald eagle's nonbreeding and limited breeding ranges. The Project area and vicinity do not contain characteristic nesting, foraging (aquatic), or roosting (trees 15–60 m in height) habitats (Buehler 2000; Stalmaster 1987). Nests are generally placed in large trees or cliffs less than 2 km from water containing appropriate foraging conditions (e.g., rivers or reservoirs containing fish) (Buehler 2000). Wintering/nonbreeding individuals and juveniles are typically associated with breeding habitats; however, they may range widely in search of food. Like golden eagles, because the species' pattern of migration and nomadic movements are complex, specific seasonal use of the site by single individuals is difficult to predict. Generally, more individuals may be expected regionally from late August until February, when wintering northern birds and returning juveniles are present (Corman and Wise-Gervais 2005). Given the lack of nesting, roosting, and foraging habitats within and proximal to the site, use of the site by this species during the life of the Project is expected to be occasional, particularly from late summer through winter when appropriate food items (e.g., large mammal carrion; see Section 2.2.5.2) are present.

Three bald eagle observations were documented over the 2-year Stage 2 surveys; these occurred from December through February (see Section 3.2.2).

2.2.3 Habitats Known To Be Valuable or Potentially Valuable to Eagles That Would Be Destroyed or Degraded

No valuable eagle nesting habitats would be destroyed or degraded because of Project construction or operation. The Luna Tank possible eagle nest and other marginally suitable nesting substrate (i.e., narrow rock outcrops in the northeastern portion of the Project area and the transmission towers along the western edge of the Project area) will be avoided (see Section 5). Far more golden eagle nesting habitat is outside

the Project area within the Project-area nesting population area (e.g., cliffs adjacent to Agua Fria Creek and Cottonwood Canyon, approximately 8–10 miles to the north and northeast; cliffs adjacent to Spur Lake Basin, approximately 6–9 miles to the south; and expansive stands of ponderosa pine trees in the Gila National Forest, approximately 2–10 miles south, southeast, and southwest of the site).

Specific avoidance and minimization schemes developed for the Project pertaining to the Luna Tank nest, prairie dog colonies, and seasonally wet playas are described in Stage 4 (see Section 5).

2.2.4 Important Eagle Use Areas or Migration Concentration Sites

The Project area/footprint (and vicinity) does not contain important eagle migration concentration sites. Such sites are associated with negative barriers, such as large bodies of water, or mountain ridges that offer energy-efficient flight via updrafts. The nearest known raptor migration sites are in the Manzano and Sandia Mountains along the Rocky Mountain migratory flyway approximately 150 miles northeast of the Project area (Hawk Migration Association of America 2018).

An *important eagle use area* is defined by the USFWS (2009) as "an eagle nest, foraging area, or communal roost site that eagles rely on for breeding, sheltering, or feeding, and the landscape features surrounding such nest, foraging area, or roost site that are essential for the continued viability of the site for breeding, feeding, or sheltering eagles." The term refers to particular areas within a broader landscape where eagles are more likely to be disturbed by an activity because of the higher probability of interference with breeding, feeding, or sheltering behaviors. In practice, important eagle use areas may be defined by 1) buffering occupied eagle nests with an appropriate avoidance setback (half-mean inter-nest distance [½-MIND]; see Section 3.1.3) or 2) documenting concentrated eagle flight paths that overlap with concentrated prey resources. However, USFWS takes a conservative approach when evaluating risk to eagles and have indicated during Project coordination (USFWS 2019) that any prairie dog colony or golden eagle telemetry data would be considered "important." Telemetry data may generally be viewed as having limited application when assessing potential impacts of wind energy projects because such data only provide insight on site use by a limited number of individuals (USFWS 2013); however, when combined with other site-specific evidence, it can help to inform site-specific eagle risk. USFWS provided spatial data depicting 50% and 95% kernel density estimates (KDEs) for Dutch 2.[4] The data illustrate use by this telemetered individual within the northeastern portion of the Project area/footprint, ranging approximately 7 to 8 miles to the east, north, and southeast of the Project area, particularly focused around the Luna Tank possible nest and prairie dog colonies in proximity to the nest (see Figure 15). Avoidance and minimization schemes informed by Stage 2 documentation of potential golden eagle use areas within the project area/footprint and project-area nesting population area are further described in Stage 4.

With regard to important bald eagle use areas, there are no communal eagle roost sites—generally associated with bald eagles—nesting, or foraging habitats within the Project area/footprint.

2.2.5 Presence of Habitat Supporting Abundant Eagle Prey

2.2.5.1 GOLDEN EAGLE PREY ITEMS

Potential golden eagle main prey items within the Project area may include rabbits (e.g., desert cottontail [*Sylvilagus audubonii*], black-tailed jackrabbit [*Lepus californicus*]) and sciurids (e.g., rock squirrel [*Otospermophilus variegatus*], Gunnison's prairie dog). Secondary prey items may include waterfowl, quail (e.g., Montezuma quail [*Cyrtonyx montezumae*]), large mammal carrion (e.g., cattle, elk, pronghorn,

[4] The KDEs are not presented visually in this EMP due to the sensitive nature of the data.

mule deer), live ungulates (e.g., pronghorn), cattle, mesocarnivores (e.g., coyote [*Canis latrans*], American badger [*Taxidea taxus*], bobcat [*Lynx rufus*]), other large birds, and offal piles left by hunters (Kochert et al. 2002).

Among these prey items, potential concentrations identified in Stage 1 (and in Stage 2) included the prairie dog colonies, a dead cow disposal location, and seasonally wet playas containing waterfowl (see Sections 3 and 5). In qualifying these potential resources, it is unlikely that these small (in size and number of prey observed; see Sections 3.2.1 and 3.2.4) features would provide a reliable source of prey for eagles; however, it is likely that some individuals will be attracted to these areas when foraging.

Prairie dogs are active on-site from March through October. Comprehensive colony occupancy and delineation surveys were conducted in July 2018 (see Section 3.2.4). Incidental waterfowl use of the playa wetlands is further described in Section 3.2.1.

2.2.5.2 BALD EAGLE PREY ITEMS

Potential bald eagle prey items on-site may include large mammal carrion and waterfowl (Buehler 2000). Preferred bald eagle prey items—fish—are not present within or adjacent to the Project area. The nearest major fish-bearing bodies of water and their proximity to the site are described in SWCA's site evaluation report (2018a).

It is anticipated that winter use of the playas would be infrequent because the species tends to prefer traditional waterfowl concentration areas with heightened hunter-induced mortality (Griffin et al. 1982, as cited in Buehler 2000).

2.3 Stage 1 Risk Categorization

The ECPG defines eagle risk category criteria for a proposed project site as follows:

Category 1: High risk to eagles, potential to avoid or mitigate impacts is low

- has an important eagle-use area (e.g., ½-MIND from an occupied eagle nest) or migration concentration site within the project footprint; or
- has an annual eagle fatality estimate (mean estimate) >5% of the estimated LAP size; or
- causes the cumulative mortality for the LAP to exceed 5% of the estimate LAP size.

Category 2: High or moderate risk to eagle, opportunity to mitigate impacts

- has an important eagle-use area or migration concentration site within the project-area nesting population area but not in the project footprint; or
- has an annual eagle fatality estimate between 0.03 eagle per year and 5% of the estimated LAP size; or
- causes cumulative annual mortality of the LAP of less than 5% of the estimated LAP size.

Category 3: Minimal risk to eagles

- has no important eagle-use areas or migration concentration sites within the project-area nesting population area; and
- has an annual eagle fatality estimate <0.03; and

- causes cumulative annual mortality of the LAP of less than 5% of the estimated LAP size.

Category 1 sites should be avoided or project plans modified (whereby take predictions are reduced) to meet Category 2 criteria.

USFWS coordination for this Project included its determination that the site is a Category 2 site, meaning that there is high or moderate risk to eagles with opportunity to mitigate impacts. A summary of the Stages 1 through 3 evidence supporting this conclusion is provide in Section 5.4.

The Stage 1 assessment concluded that there were no migration concentration sites within the Project footprint and that potential golden eagle use areas (e.g., the possible eagle Luna Tank nest) could be avoided through Project siting; therefore, predicted take was anticipated to meet Category 2 criteria. The site was considered a minimal risk Category 3 site for bald eagle at this stage because there were no use areas or migration concentration sites identified for the species Project area/footprint or vicinity. Therefore, Borderlands Wind decided to move forward with Stage 2 site-specific surveys.

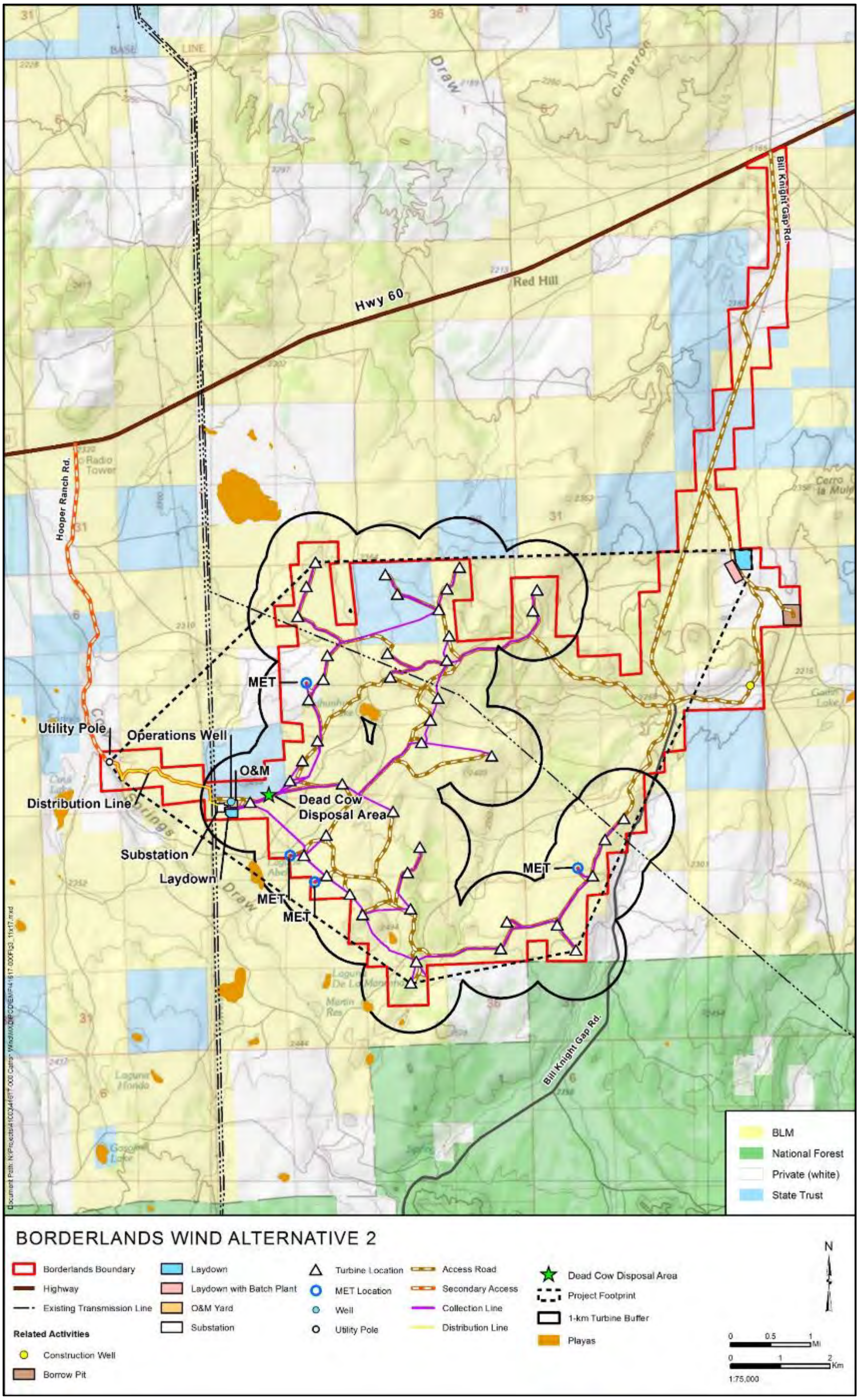

Figure 3. Potential eagle attractants identified in Stage 1 within and proximal to the Project area (see Section 5).

3 STAGE 2 – SITE-SPECIFIC SURVEYS AND ASSESSMENT

Stage 2 site-specific surveys were conducted from March 2017 to March 2019 (2 full years; Table 5). The objective was to collect quantitative data through scientifically rigorous surveys designed to assess the potential risk of the Project to eagles. Stage 2 data are used to generate predictions of mean annual number of eagle fatalities, to confirm or expand on the Stage 1 effort to identify important eagle use areas or migration concentration sites that could be affected by a project, and to inform the likelihood of disturbance risk. The surveys are designed to evaluate the following:

- What is the distribution, relative abundance, behavior, and site use of eagles and to what extent do these factors expose eagles to risk from the Project?
- What are the potential risks of adverse impacts of the Project to individual and local populations of eagles and their habitats?
- How can the developer avoid, minimize, and mitigate identified adverse impacts?
- Are there studies that should be initiated at this stage that would be continued in postconstruction?

Table 5. Eagle-Specific Survey Schedule for the Project

Survey Type	Time Frame
Use surveys	March 2017 through March 2019; surveys conducted twice per month
Nest surveys	March through April 2017, March through April 2018; two surveys each season
Prairie dog occupancy and colony delineation surveys	July 2018
Incidental eagle and eagle habitat observations	Conducted during all WEG Tier 3 and ECPG Stage 2 fieldwork

Note: Year 1 use surveys were conducted from March 28, 2017 to March 3, 2018; Year 2 use surveys were conducted from March 25, 2018 to March 5, 2019. Additional WEG Tier 3 (noneagle species focus) surveys included small and large bird use surveys, bat acoustic surveys, and noneagle raptor species nest surveys conducted concurrently with the eagle-specific surveys (SWCA 2020).

3.1 Stage 2 Methods

3.1.1 Incidental Eagle and Eagle Habitat Observations

In Stage 2, surveyors conducting activities unrelated to eagle use counts and prairie dog surveys (e.g., driving/hiking to use count locations, aerial nest surveys, maintaining bat acoustic detectors, micro-siting turbines [see Section 5.2]) recorded incidental data pertinent to eagle use of the Project area. These incidental data contributed to the Stage 1 assessment and general understanding of potential eagle use of the site. Eagle-specific incidental observations included the following:

- Eagle flight paths and perch locations[5]
- Active prairie dog locations (incidentals recorded before the July 2018 comprehensive prairie dog surveys [see Section 3.1.4])
- Large mammal carrion (e.g., dead cows, dead elk)
- Waterfowl using the seasonally wet playas

[5] Eagle flight paths were also mapped during the standardized use surveys Section 3.1.2); they are distinguished from those recorded incidentally to account for spatial bias (USFWS 2013).

3.1.2 Eagle Use Surveys

Use surveys were conducted from March 28, 2017 to March 5, 2019. The surveys were designed in accordance with the Eagle Rule (which codified specific minimum standards) and ECPG. Ten 800-m-radius plots were initially established (in March 2017) to cover 30% of the area within 1 km of Project turbines proposed at that time. Two additional plots were added in May 2017 and eight additional plots were added in March 2018 to ensure 30% coverage of all possible turbine array alternatives. Among these 20 plots, 13 were within or partially within the 1-km buffer of the Alternative 2 turbine array design (Figure 4), and these covered 36% of that area. Survey plots were distributed to represent the site spatially and accounted for varying habitat conditions (i.e., grassland–mixed grassland/pinyon-juniper–dense pinyon-juniper–mixed ponderosa/pinyon-juniper gradient; water features; prairie dog colonies; and topographic features). Within those parameters, survey plots were micro-sited in the field to maximize views of the surrounding airspace.

Each plot was surveyed for 1 hour twice per month (Table 6 presents the total number of sampling periods per plot by year).[6] Survey start times represented all daylight hours, with each plot assigned a morning (i.e., before 10:00 a.m.) and a late morning/afternoon time slot per month. Surveyors adhered to the schedule as logistics, weather, and safety issues (e.g., lightning, visibility[7]) allowed. Surveys were exclusive of those for small birds, to avoid overlooking eagles and other large birds (USFWS 2013). Surveyors scanned for eagles and other large birds by alternating use of binoculars and the unaided eye.

[6] The Eagle Rule calls for each plot to be surveyed at least 1 hour once per month. The ECPG recommends 1 or 2 hours per month, depending on site characterization (expected eagle use). For the Project, each plot was surveyed for 1 hour twice per month to ensure precision when calculating eagle fatality estimates.

[7] In accordance with the ECPG, surveys were not conducted when visibility was less than 800 m horizontally and less than 200 m vertically.

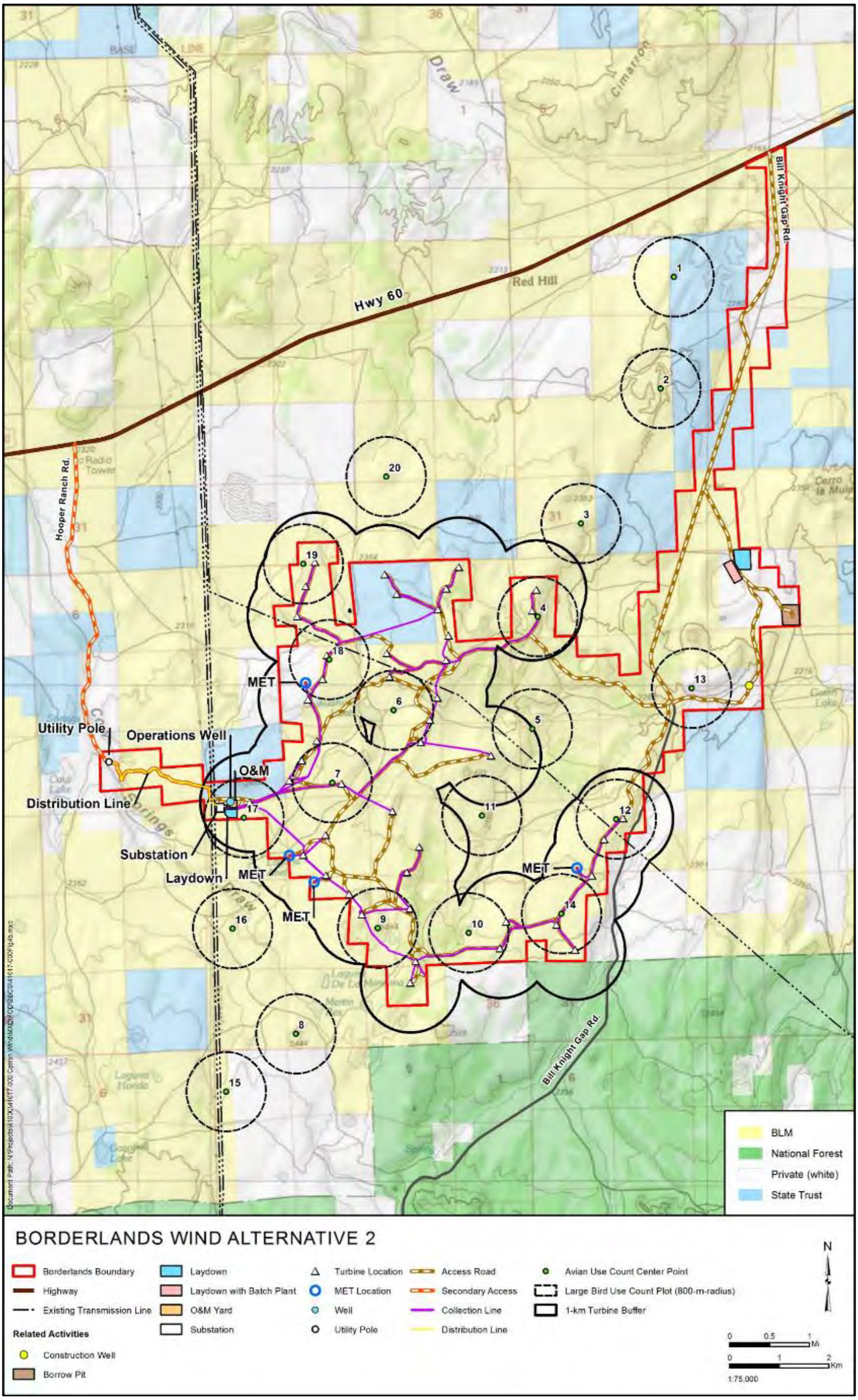

Figure 4. Stage 2 eagle use count locations. Figure illustrates the 1-km buffer associated with the Alternative 2 turbine array design. Survey plots were placed outside the turbine array design and Alternative 2 Project area boundary to account for all potential Project alternatives and perceived eagle risk.

Table 6. Coordinates, Month Surveys Began, and Number of Survey Periods Surveyed for Each Eagle Use Count Point

Point	Latitude	Longitude	Survey Initiated	Number of Survey Periods	
				Year 1*	Year 2†
1	34.217640	-108.836751	March 2017	24	24
2	34.197440	-108.840164	March 2017	24	24
3	34.173223	-108.858192	March 2017	24	24
4	34.156480	-108.868062	March 2017	24	24
5	34.136142	-108.869766	March 2017	24	24
6	34.140026	-108.899977	March 2017	24	24
7	34.126354	-108.912490	March 2017	24	24
8	34.081635	-108.922756	March 2017	24	24
9	34.100519	-108.904411	March 2017	24	24
10	34.099322	-108.884573	May 2017	20	24
11	34.120579	-108.881182	March 2017	24	24
12	34.119402	-108.851843	May 2017	20	24
13	34.142896	-108.834787	March 2018	0	24
14	34.102433	-108.864260	March 2018	0	24
15	34.071391	-108.938230	March 2018	0	24
16	34.100975	-108.936092	March 2018	0	24
17	34.121050	-108.933133	March 2018	0	24
18	34.149468	-108.913809	March 2018	0	24
19	34.166931	-108.919041	March 2018	0	24
20	34.182485	-108.900563	March 2018	0	24

Note: Table data provided in accordance with Eagle Rule recommendation. Decimal degree coordinates are in datum WGS84.

* March 28, 2017 to March 3, 2018.

† March 25, 2018 to March 5, 2019.

From the central point of each plot, surveyors recorded the following data corresponding to each bird/bird group seen or heard:

- Start and end time (in seconds; HH:MM:SS format) for each bird or group of birds entering/leaving the plot
- Species
- Number of birds per observation
- Distance from the observer to each bird/bird group, estimated to the nearest meter
- Flight height, estimated to the nearest meter
- Behavior

For any eagles observed flying below 200 m in height within the 800-m-radius plot, surveyors recorded distance, height, and behavior data by eagle-minute (i.e., eagle detection data are partitioned into

1-minute intervals[8]). Perched eagles and those observed outside the 800-m-radius × 200-m-height cylinder were also recorded but were distinguished from eagles flying within the cylinder (USFWS 2013).

Surveyors used a 7- to 1,200-m rangefinder; printed topographic maps zoomed to each plot depicting 100-, 200-, 400-, 600-, and 800-m concentric circles; and vertical landmarks (e.g., distribution and transmission towers and trees of known height) to estimate horizontal and vertical distances. Specific behavioral activities included soaring flight, unidirectional flapping-gliding, kiting-hovering, stooping/diving at prey, undulating/territorial flight, and perching (USFWS 2013). For each eagle detected, surveyors also recorded the bearing to the bird, its flight direction, and sex and age class (if known) (USFWS 2013). All eagle flight paths and perch locations, in and outside the cylinder, were mapped on the plot-specific topographic maps and, as needed, on larger-scale site overview maps. Flight paths recorded during the use surveys were distinguished from those recorded incidentally (e.g., those recorded while hiking or driving to use counts or while conducting other WEG Tier 3 or ECPG Stage 2 surveys; see Section 3.1.1) to account for spatial bias among sampling techniques (USFWS 2013).

Surveyors recorded temperature, wind direction and speed, cloud cover, and precipitation during each count (USFWS 2013).

3.1.3 Eagle Nest Surveys

In accordance with the ECPG, during both the 2017 and 2018 eagle nesting seasons, SWCA conducted two eagle-focused aerial nest surveys (Surveys 1 and 2) within and out to 10 miles of the Project area. The surveys were timed as follows to maximize detection of eagle nest occupancy data: [9]

- Survey 1 (inventory and early nest occupancy): early March, when early-nesting eagles were expected to have initiated courtship, nest maintenance/ornamentation, and incubation activities
- Survey 2 (continued inventory and late nest occupancy): April, when all nesting eagles were expected to have initiated nesting activities

Nests categorized as eagle or potential eagle structures in Survey 1 were revisited in Survey 2. During the second eagle nest survey in 2017, SWCA also conducted a Project-proximity-focused search of all raptor nests within 1 mile of the turbine array being considered at that time. The 1-mile and 10-mile nest inventory survey areas were then expanded in 2018 to cover all proposed Project design alternatives that were not surveyed in 2017.[10]

Before conducting the nest survey, possible nesting habitat for both eagle species (bald eagle: large trees, snags, and cliffs less than 2 km [1.2 miles] from fish-bearing waters; golden eagle: ruggedness, rock faces, large trees and snags, and transmission towers) was delineated within the survey buffers.

[8] Each eagle observed flying within a survey cylinder (risk zone) is summarized in number of minutes, rounded to the next highest integer (e.g., an eagle observed flying within the cylinder for a given minute equals 1 exposure-minute; two eagles in flight in the cylinder in a given minute [or the same eagle in flight continuing into a second 1-minute interval] equals 2 exposure-minutes).

[9] The term *nest occupancy* is defined as a nest in which one or more of the following occur: 1) young are raised; 2) eggs are laid; 3) an adult is observed sitting, presumably in incubation or brooding posture, in the nest; 4) two adults are observed perched on or near the nest; 5) an adult and a bird in immature plumage are observed on or near the nest, if mating behavior was observed (e.g., display flights, copulation); and/or 6) recent repairs (e.g., fresh greenery, sticks with fresh breaks), mute (i.e., whitewash), or feathers are visible at or near the nest (Driscoll 2010; Postupalsky 1974; Steenhof and Newton 2007).

[10] The survey buffers in 2017 were based on an initial turbine array design. The 10-mile and 1-mile survey buffers in 2018 were based on the project area boundary and an earlier proposed turbine array design (which was a larger area relative to the Alternative 2 design), respectively.

An SWCA biologist, qualified as an experienced helicopter eagle nest surveyor (Pagel et al. 2010),[11] delineated the possible nesting habitat and led the survey effort.

The habitat was manually digitized using a combination of aerial imagery (National Agriculture Imagery Program) and USGS topographic maps viewed at 1:12,000 and 1:24,000 scales using geographic information system (GIS) software.

A Bell 206L-series LongRanger helicopter was used for the survey effort, which allowed for close approach, relative to fixed-wing aircraft, to determine nest contents accurately (Phillips et al. 1984). To ensure full coverage of the survey area during the nest inventories, surveyors—guided by the desktop delineation layer—identified additional eagle nesting habitat while in the air and, conversely, limited surveys in areas that did not exhibit appropriate characteristics once observed. During all surveys, surveyors thoroughly investigated appropriate nesting substrates in proximity to known nests, as well as nest clusters, to identify any newly built nests or nests that may have been missed during previous surveys.

Surveyors focused on locating and recording eagle nests while completing the 10-mile-radius eagle nest inventory surveys; however, other species' nests were recorded incidentally. Within the 1-mile survey areas, surveyors generally followed north-south transects spaced at 200-m intervals (Figure 5), veering off the transects when certain habitat features (e.g., tall trees, rock outcrops) required further investigation.

For each nest found, surveyors recorded the date and time of observation; a nest identification number; nest substrate (i.e., cliff, tree, transmission tower); nest condition and contents; and species, if known. "Undetermined species" nests included any nests that were too deteriorated to confidently identify species or that exhibited qualities characteristic of several species. For these nests, surveyors recorded an informed opinion regarding which species or species group was most likely to use the nest according to nest structure and placement (e.g., "undetermined: resembles *Buteo* spp. or golden eagle," or "undetermined: resembles *Buteo* spp. or common raven"). A species determination for a given nest may change after surveyors observe nest structure, contents, and species activity during repeated visits under different conditions (e.g., lighting).

The following nest conditions/contents were recorded: 1) sticks-intact, 2) sticks-deteriorating, 3) greenery/ornamentation, 4) adult in incubation/brooding posture, and 5) number of eggs/nestlings. Surveyors photographed nests using a digital single-lens reflex camera with a 100- to 500-mm lens and noted specific nest structure characteristics and proximity of nearby nests. After the surveys, photographs of each nest were thoroughly examined to confirm species determinations and record evidence of occupancy and specific nest contents that may have been overlooked or were unclear during the surveys.

Eagle nest data, when paired with eagle use data, may be used to inform micro-siting options and assess potential collision mortality and disturbance risk associated with construction and operation of a project.

[11] Pagel et al. (2010) recommend that aerial golden eagle nest surveys be conducted by raptor specialists who have at least three field seasons' experience in helicopter-based raptor surveys around cliff ecosystems.

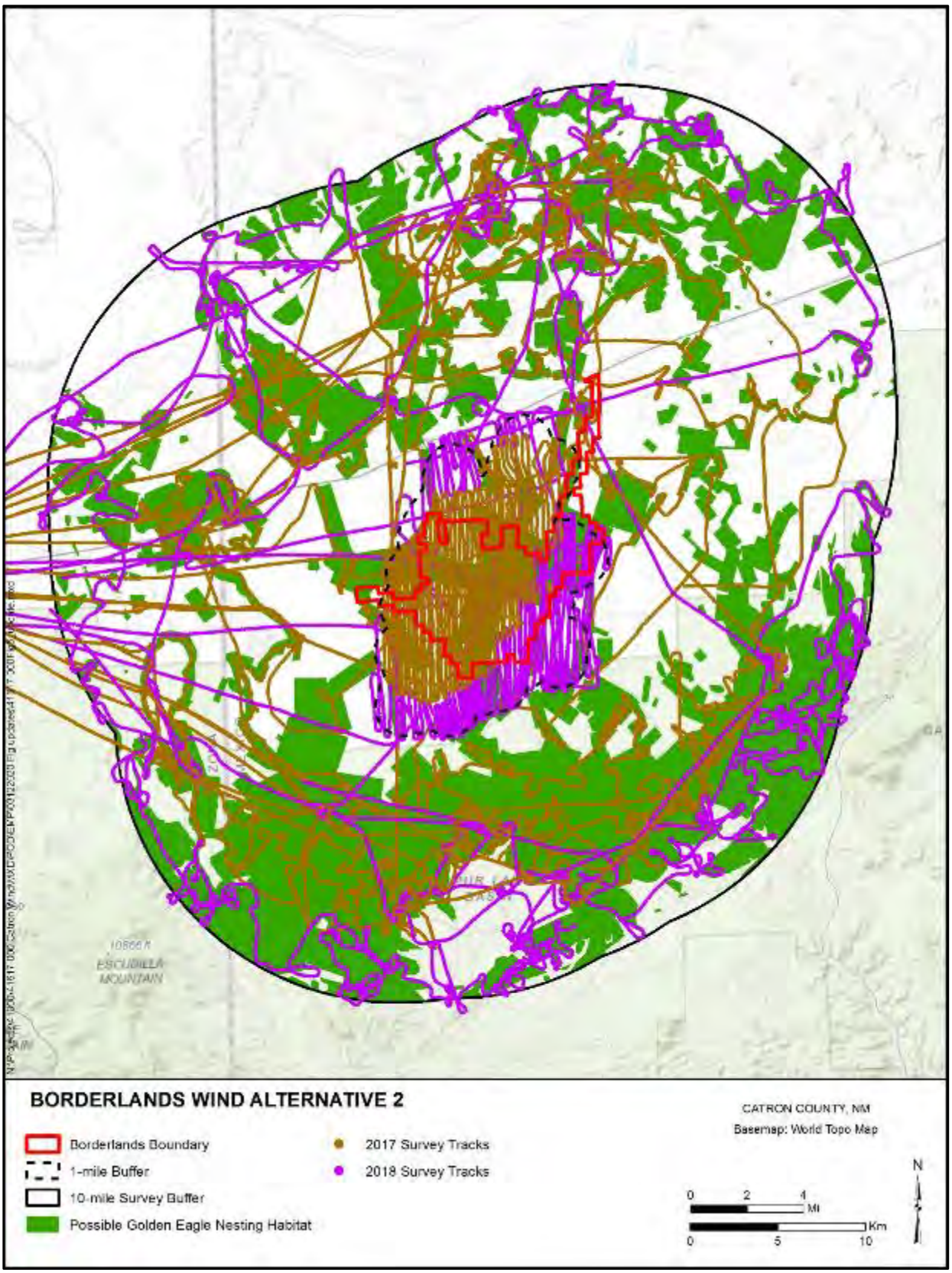

Figure 5. Possible golden eagle nesting habitat delineated within 10-mile-radius survey area and 2017/2018 survey tracks.

To inform project micro-siting (and project eagle risk categorization), USFWS (2013) specifically recommends calculating and mapping the ½-MIND for the project-area nesting population to delineate at-risk territories/breeding areas (hereafter, territories).[12] This metric, a coarse approximation for the radius of a territory based on the distance between neighboring territories containing occupied nests, was calculated and mapped for each nesting season (i.e., 2017 and 2018). To calculate the ½-MIND, for each occupied nesting territory, the distance from the occupied nest to the nearest neighbor's occupied nest was measured. The average of these distances was then divided by two. For this exercise, occupied golden eagle nesting territories were distinguished by first identifying simultaneously active nests.[13] The remaining nests were assigned to separate territories if they were separated by >1.9 miles (3.1 km).[14, 15]

Among territories containing active nests and other occupied supernumerary nests, the measurement used for calculating the ½-MIND was taken from the active nest. To ensure the calculation was conservative, only those nests definitively identified as golden eagle were included, with one exception: the Luna Tank, CA048 nest (see Section 3.2.3, Figure 10). This nest was included in the calculation because of its proximity to the Project footprint—and thus importance for informing Project siting—and because an eagle was observed proximal to the nest during the March 2017 survey. In the July 18, 2018, agency coordination meeting for the Project, USFWS also recommended that in instances when more than one supernumerary (alternate) nest was occupied in the same territory, and only occupied (not active) nests were recorded in the territory, the distance from the midpoint between the nests to the nearest neighbor's occupied nest be measured. This scenario did not occur.

3.1.4 Gunnison's Prairie Dog (*Cynomys gunnisoni*) Surveys

Following BLM (Socorro Field Office and National Project Support Team) and NMDGF Project-specific recommendation, SWCA conducted comprehensive prairie dog occupancy surveys and colony mapping within the Project area in July 2018. The objective of the surveys was to refine and expand on incidental and historical data previously recorded within the Project area to inform potential golden eagle use of the site.

These surveys included two steps:

- Step 1: revisiting all prairie dog locations previously recorded within the Project area
- Step 2: within 0.5 mile of proposed Project facilities, surveying for prairie dogs within a selected route containing survey stations spaced 0.25 mile apart

For both steps, surveyors delineated occupied colonies by walking the colony perimeters. A burrow was considered to be "occupied" if it contained an active prairie dog or sign (e.g., scat,[16] fresh digging attributed to prairie dog use, tracks/prints). For each detected colony, surveyors counted the number of prairie dogs observed by sight and sound by periodically scanning the colony with binoculars and listening for aboveground and subterranean vocalizations. For the Step 2 surveys, 33% (132 stations) of

[12] A *territory* or *breeding area* is an area that contains, or historically contained, one or more nests within the home range of a mated pair: a confined locality where nests are found, usually in successive years, and where no more than one pair is known to have bred at any one time (Steenhof and Newton 2007). Unique eagle territories may be distinguished by observation of simultaneously "active" nests/nest clusters and disparate nests or nest clusters spaced >1.9 miles (3.1 km) apart for golden eagle (Hodges and Robards 1982; Phillips et al. 1984); the number of unique territories in a given area can be refined over multiple years of survey and may vary from year to year.

[13] An *active nest* is one in which an egg or eggs were laid and/or young were raised (Driscoll 2010; Postupalsky 1974).

[14] Distance between adjacent occupied golden eagle nests average 1.9 to 5.1 miles (3.1–8.2 km) (Phillips et al. 1984).

[15] SWCA did not observe any bald eagle nests—which would have required use of a different nest-spacing method (e.g., minimum-distance buffers prescribed by USFWS [2007])—within the survey area.

[16] Surveyors did not distinguish fresh versus old scat; presence of scat (old or fresh) provided conservative evidence of "recent" use.

400 possible survey stations were selected using a random number script in GIS (see SWCA 2018b for additional detail). An additional 87 survey stations (for a total of 219) were then selected manually so that all stations would be connected (spaced 0.25 mile apart). At each of the 219 survey stations, surveyors visually and aurally surveyed the area around the survey station from the best vantage point for a 5-minute period, or less if prairie dogs were detected, while scanning with binoculars and listening for vocalizations. For any survey stations in which active prairie dogs were detected, all adjoining north, south, east, and west survey stations, if not already selected as part of the survey design, were also surveyed.

Combined with turbine micro-siting effort (see Section 5.2), and other Stage 2 and Tiers 1 through 3 Project activities, these surveys involved full ground coverage of the Project area.[17]

3.2 Stage 2 Results

3.2.1 Incidental Wildlife Observations

Incidental eagle flight paths and perch locations are presented in Section 3.2.2. Large mammal carrion observed on-site have included the dead cow disposal location, two dead cows, and one dead elk. Some of the incidental golden eagle flight paths recorded in the eastern portion of the Project area appeared to be associated with one of the dead cows (see Section 3.2.2, Table 7.).

Incidental active prairie dog locations informed the July 2018 occupancy and colony delineation survey design (see Section 3.2.4).

Waterfowl observations recorded at playa wetlands within and proximal to the Project area during preconstruction wildlife surveys included single individuals and small groups: American wigeon (*Mareca americana*; 6), bufflehead (*Bucephala albeola*; 1), common merganser (*Mergus merganser*; 1), greater white-fronted goose (*Anser albifrons*; 2), green winged-teal (*Anas crecca*; 7), mallard (*Anas platyrhynchos*; two separate groups of about 6 and 12), northern shoveler (*Spatula clypeata*; 1), ruddy duck (*Oxyura jamaicensis*; 2), and unidentified teal (about six). The majority of these observations were recorded from September 2018 through February 2019 (i.e., the last half of the Year 2 surveys) after these playas were noted to be at full capacity following heavy rainfall in August 2018. Water availability and overall size of the playa wetlands supporting these waterfowl are anticipated to be variable over the 35-year Project life, meaning that the relative value of these playas may vary temporally. Playas were at full capacity during the Year 2 fall and winter seasons, when waterfowl are expected in the region (i.e., October–February) (Rodewald 2015). Some of the playa features (e.g., Chihuahua Lake) contained at least some water year-round, and most were dry during a period of months (spring and winter seasons) in Year 1. Variable conditions observed over the 2-year Stage 2 surveys appeared to represent a full range of possible conditions.

Project-area playas may concentrate small groups of waterfowl/waterbirds that may provide hunting opportunities for eagles, but given their size, they are not expected to support large concentrations of migrating/wintering waterfowl. Avoidance of the playas built into the Project design is further described in Section 5.

[17] Incidental observations included full project area ground coverage via turbine micro-siting, prairie dog surveys (see Section 3.2.4), and other Tiers 1 through 3 activities.

3.2.2 Eagle Use Surveys

Use survey data are used mainly to generate predictions in Stage 3 (see Section 4) of the mean annual number of eagle fatalities for a project (USFWS 2013). In this section, use survey results focus on 1) summarizing the spatial and temporal distribution of eagle-minutes and 2) continuing the effort initiated in Stage 1 to identify important eagle use areas or migration concentration sites that could be affected by the Project.

In accordance with the Eagle Rule, survey dates, start and end times, weather conditions, and eagle-minutes per plot are provided in Appendix C.

Among all count plots (i.e., regardless of turbine array design being analyzed), surveyors recorded 29 golden eagle-minutes (12 in Year 1 and 17 in Year 2) (Table 7, Figure 6, and Figure 7). Two bald eagle-minutes were recorded in Year 2. Table 7 presents eagle-minutes recorded by plot and by survey year; Appendix C includes behavior and flight height data associated with these observations. Table 8 presents all golden eagle observations—including those recorded incidentally and during the standardized use counts—by month and by season.

Figure 6 and Figure 7 illustrate all eagle flight paths mapped by survey year.

Table 7. Eagle-Minute Observations, By Plot and Survey Year

Date	Plot Number	Number and Age of Individuals Observed	Eagle-Minutes
Year 1*			
Golden Eagle			
September 26, 2017	3	Single juvenile	3
October 10, 2017	12	Single adult	1
December 1, 2017	2	Single adult	1
December 2, 2017	8	Single juvenile	2
March 1, 2018	9	Adult and subadult	5
Year 1 Golden Eagle-Minute Total			**12**
Year 2†			
Golden Eagle			
June 27, 2018	8	Single adult	2
September 21, 2018	11	Single adult	1
December 12, 2018	19	Single unknown age individual	1
January 23, 2019	19	Single adult	4
February 26, 2019	20	Single juvenile	8
February 26, 2019	19	Single adult	1
Year 2 Golden Eagle-Minute Total			**17**
Bald Eagle			
February 27, 2019	13	Single adult	2
Year 2 Bald Eagle-Minute Total			**2**

* March 28, 2017 to March 3, 2018

† March 25, 2018 to March 5, 2019

Table 8. Golden Eagle Observations (recorded incidentally and during use surveys) by Season

Observation Type	Spring			Summer			Fall			Winter		
	Mar	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Year 1*												
Use survey	2	–	–	–	–	–	1	1, 1‡	–	2	4‡	5‡
Incidental	4	2	–	–	–	2	2	–	–	1	1	–
Year 1 Total	**6**	**2**	**0**	**0**	**0**	**2**	**3**	**2**	**0**	**3**	**5**	**5**
Year 2†												
Use survey	2‡	–	–	1	–	1‡	1	–	–	1, 7‡	1	2, 1‡
Incidental	–	–	–	1	–	–	–	6	–	2	–	–
Year 2 Total	**2**	**–**	**–**	**2**	**–**	1	1	**6**	**–**	**10**	**1**	**3**

Note: When two eagles were observed during the same observation, both were included in the table data. Seasons defined based on postconstruction methods (see Section 6). Dash (–) indicates no observations.

* March 28, 2017 to March 3, 2018.

† March 25, 2018 to March 5, 2019.

‡ Observation recorded during use count but outside the 800-m-radius × 200-m-height cylinder; did not contribute to eagle-minutes.

Table 9. Bald Eagle Observations (recorded incidentally and during use surveys) by Season

Observation Type	Spring			Summer			Fall			Winter		
	Mar	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Year 1*												
Use survey	–	–	–	–	–	–	–	–	–	–	1‡	–
Incidental	–	–	–	–	–	–	–	–	–	–	–	–
Year 1 Total	–	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**1**	–
Year 2†												
Use survey	–	–	–	–	–	–	–	–	–	1‡	–	1
Incidental	–	–	–	–	–	–	–	–	–	–	–	–
Year 2 Total	–	**–**	**–**	**–**	**–**	–	–	**–**	**–**	**1**	**–**	**1**

Note: Seasons defined based on postconstruction methods (see Section 6). Dash (–) indicates no observations.

* March 28, 2017 to March 3, 2018.

† March 25, 2018 to March 5, 2019.

‡ Observation recorded during use count but outside the 800-m-radius × 200-m-height cylinder; did not contribute to eagle-minutes.

Including incidental observations, golden eagles were observed on-site year-round, across seasons, except in the months of May, July, and November. More use was observed in the fall to early spring (September–March) than in other seasons. Bald eagles were observed from December through February.

Golden eagle flight paths recorded during the 2-year survey campaign (Figure 15; see Figure 6, Figure 7), indicate some relative spatial clustering in the eastern portion, northwestern extreme, and southwestern extreme of the Project area/footprint. Although speculative, the flight paths in the eastern portion of the Project area (near use count plot 13; see Figure 6) were thought to be associated with a dead cow but may also be associated with topographic relief (two steep hills) in that area. These observations were recorded in February and March 2018; the cow was later removed from the area in March 2018 (a bald eagle flight path was also recorded in this general area in February 2019). The flight paths along the northwestern edge of the Project area contour a steep ridge and overlap with a prairie dog colony situated outside the Project area/footprint. The flight paths in the southwestern extreme of the Project area overlapped with some topographic relief (small hills in the area) which may have been used for contour hunting flights.

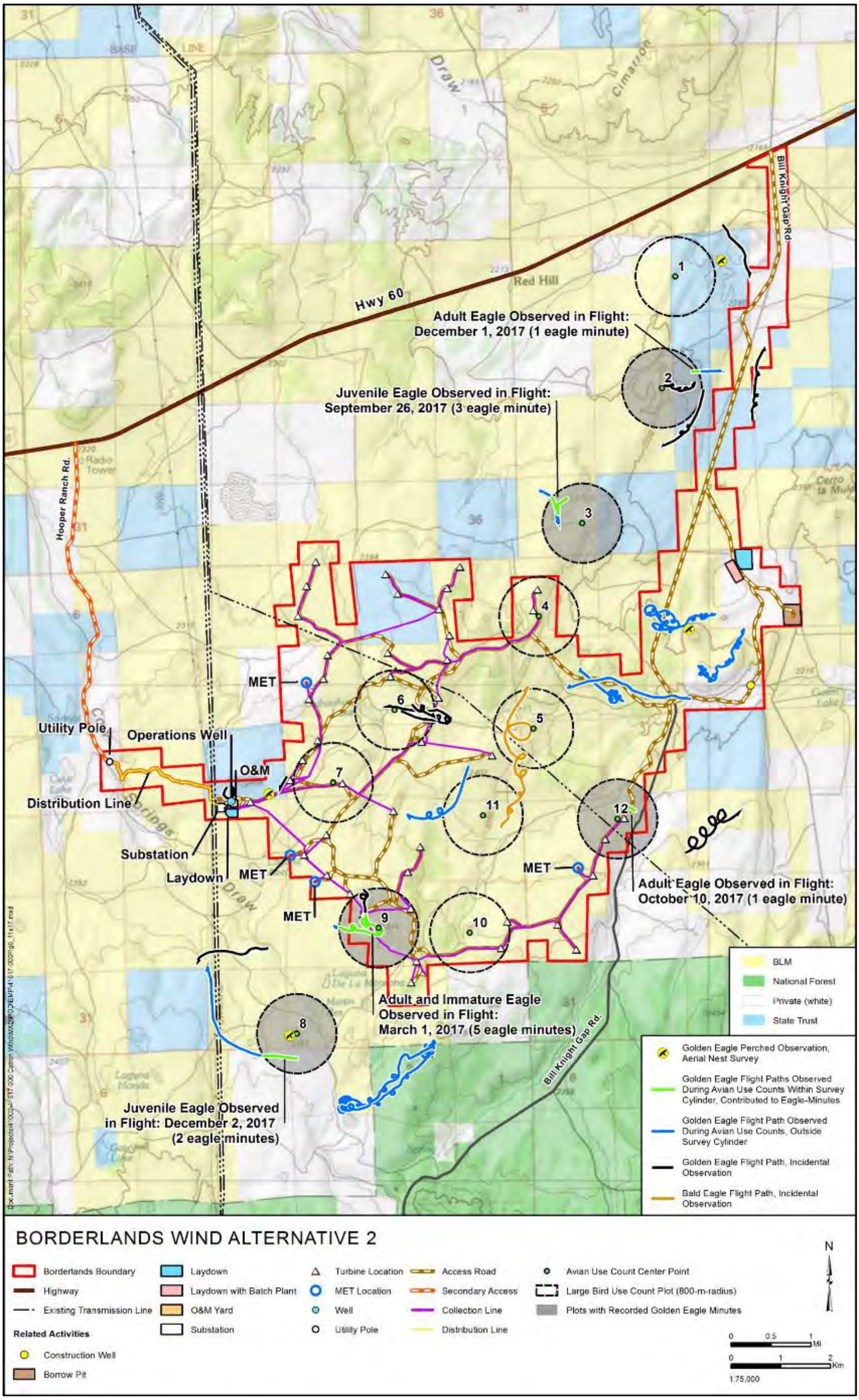

Figure 6. Eagle flight paths recorded during eagle use counts and incidentally, Year 1 surveys (March 28, 2017–March 3, 2018). Labeled attributes pertain to observations that contributed to eagle-minutes.

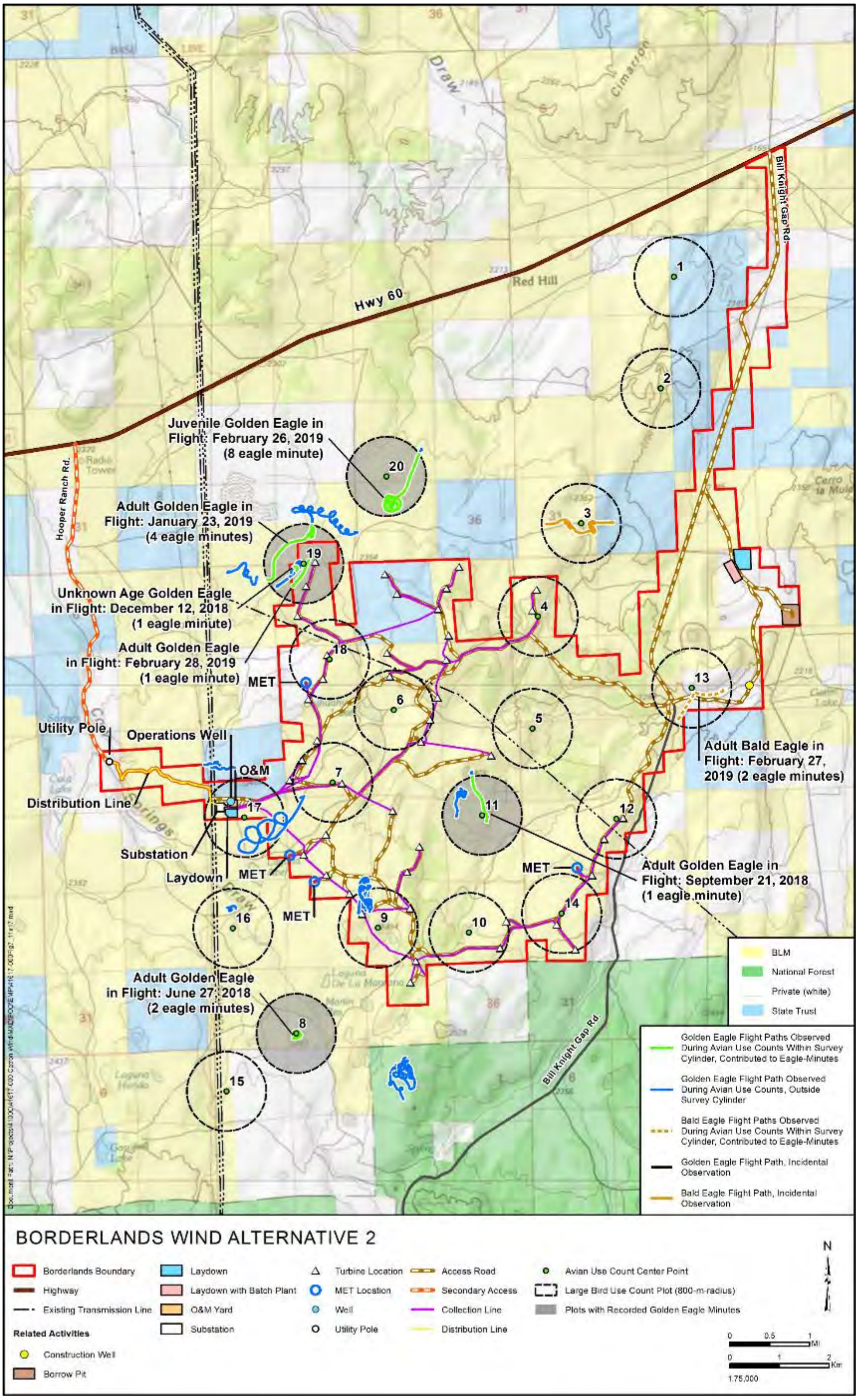

Figure 7. Eagle flight paths recorded during eagle use counts and incidentally, Year 2 surveys (March 25, 2018–March 5, 2019). Labeled attributes pertain to observations that contributed to eagle-minutes.

3.2.3 Eagle Nest Surveys

Within the 10-mile survey area, 47 nest structures were identified as golden eagle or possible golden eagle (27 golden eagle and 20 possible golden eagle). These nests were assigned to nine golden eagle and seven potential golden eagle territories. Table 10 presents the occupancy status for each of these nests, grouped by territory and by season; this is also illustrated in Figure 8 and Figure 9. Figure 10 is a photograph of the Luna Tank CA048 possible eagle nest taken in Year 1.

Table 10. Nesting Status of Golden Eagle and Possible Golden Eagle Nests within and out to 10 Miles of the Project, 2017 and 2018

SWCA Territory Name	Alternate Nest ID	Nest Occupancy/Activity Status 2017 Season	Nest Occupancy/Activity Status 2018 Season
Agua Fria Lake	CA011	Not occupied	Occupied (greenery observed)
	CA013	Occupied (greenery observed; adult flew from general location)	Not occupied
	CA015	Not occupied	Occupied-active (1-plus nestlings observed)
	CA016	Not occupied	Not occupied
	CA017	Not occupied	Occupied (new sticks added based on photo comparison)
	CA024	Occupied-active (2-plus nestlings observed)	Occupied (greenery observed)
	CA012*	Not occupied	Not occupied
Cerro Pomo	CA218	–	Not occupied
Cottonwood Canyon	CA019	Occupied-active (1-plus nestlings observed)	Occupied-active (1 nestling observed)
Fox Mountain	CA057	Occupied (greenery observed; 3- to 4-year-old bird observed in flight nearby)	Occupied (greenery observed)
Indian Tank	CA083	Occupied (greenery observed)	Occupied (greenery; adult in undulating [territorial] flight landed and then flew from nest)
Karruth Creek	CA040	Not occupied	Not occupied
	CA077*	Not occupied	Not occupied
	CA078*	Not occupied	Not occupied
Knight Gap			Not occupied
	CA073	Not occupied	Not occupied
	CA061*	Not occupied	Occupied (greenery observed)
	CA071*	Occupied (greenery observed; red-tailed hawk observed nearby)	Not occupied
	CA072*	Occupied (greenery observed)	Occupied (greenery observed; red-tailed hawk observed nesting nearby)
	CA074*	Occupied (fresh sticks and greenery observed)	Occupied-active by red-tailed hawk (in incubation posture)
	CA241*	–	
Luna Tank[†]	CA048*	Occupied (greenery; unknown age eagle observed on ledge proximal to nest, individual not linked to nest; prairie dogs [food resource] also observed in this area])	Occupied (material added to nest based on photo comparison)
Red Hill Draw	CA002	Occupied-active (1 nestling observed)	Not occupied
	CA003	Not occupied	Not occupied
	CA004	Not occupied	Not occupied
	CA005	Not occupied	Not occupied
	CA007	Not occupied	Not occupied
	CA239	–	Not occupied
	CA247	Not occupied	Occupied (faded greenery observed)
	CA006*	Not occupied	Not occupied

SWCA Territory Name	Alternate Nest ID	Nest Occupancy/Activity Status 2017 Season	Nest Occupancy/Activity Status 2018 Season
Water Canyon	CA062	Not occupied	Not occupied
	CA063	Not occupied	Occupied-active (greenery and possible golden eagle egg observed)
	CA064	Occupied-active (adult observed in incubation/brooding posture)	Occupied (greenery observed)
	CA065	Not occupied	Not occupied
	CA066	Not occupied	Not occupied
	CA067	Not occupied	Not occupied
	CA069	Occupied (greenery observed)	Occupied (greenery observed)
	CA131	Not occupied	Not occupied
	CA230*	–	Not occupied
Canouas Spring†	CA082*	Not occupied	Not occupied
Cottonwood Canyon North†	CA101*	Not occupied	Not occupied
	CA201*	–	Not occupied
Cow Springs†	CA030*	Not occupied	Not occupied
Loco Knoll†	CA085*	Not occupied	Not occupied
Nelson Reservoir NE†	CA091*	Not occupied	Not occupied
	CA092*	Not occupied	Not occupied
	CA093*	Occupied (greenery observed)	Occupied (recent nest repair and greenery observed)
The Rincon†	CA224*	–	Not occupied

Note: Six nest/nest areas were known by NMDGF before the 2017 surveys (CA002–005, CA007, CA011, CA015–016, CA019, and CA101). Dash (–) indicates that nest was not visited in 2017 (newly found in 2018).

* Nest identified as a potential eagle structure, meaning that the nest is not necessarily an alternate nest within an eagle territory.

† Territory does not contain a nest definitively identified as an eagle nest. The Luna Tank nest was included in the ½-MIND calculation because of its proximity to the Project footprint, and an eagle was observed nearby during helicopter surveys.

The 2017 and 2018 ½-MINDs were 3.90 and 3.82 miles, respectively (Table 11; see Figure 8 and Figure 9). The ½-MIND buffering indicated that the Luna Tank possible eagle nest would be "at risk" (USFWS 2013), given the buffer overlapped with the Project area. The 2017 ½-MIND, being the more conservative of the two, was used to assess Project siting options in Stage 4 (see Section 5).

Table 11. ½-MIND Calculations, 2017 and 2018

SWCA Territory Name	2017 Nesting Season		2018 Nesting Season	
	Nearest Neighbor (Nest ID → Nearest Occupied Nesting Territory (Nest ID)	Distance (miles)	Nearest Neighbor (Nest ID → Nearest Occupied Nesting Territory (Nest ID)	Distance (miles)
Agua Fria Lake	CA024→Cottonwood Canyon (CA019)	3.10	CA015→ Cottonwood Canyon (CA019)	2.23
Cottonwood Canyon	CA019→Agua Fria Lake (CA024)	3.10	CA019→Agua Fria Lake (CA015)	2.23
Fox Mountain	CA057→Water Canyon (CA064)	11.17	CA057→Water Canyon (CA063)	11.17
Indian Tank	CA083→Water Canyon (CA064)	16.75	CA083→Water Canyon (CA063)	16.75
Luna Tank†	CA048*→Agua Fria Lake (CA024)	5.62	CA048*→Agua Fria Lake (CA015)	6.06
Red Hill Draw	CA002→Agua Fri Lake (CA024)	3.63	CA247→Agua Fria Lake (CA015)	3.93
Water Canyon	CA064→Fox Mountain (CA057)	11.17	CA063→Fox Mountain (CA057)	11.17
Mean Inter-Nest Distance		7.79		7.65
½-MIND		3.90		3.82

Note: Table data include occupied nesting territories (and associated relevant nest structures used for the ½-MIND calculations) within the Project-area golden eagle nesting population; measurements illustrated in Figure 8 and Figure 9.

* Territory does not contain a nest definitively identified as an eagle nest. The Luna Tank nest was included in the ½-MIND calculation because of its proximity to the Project footprint, and an eagle was observed nearby during helicopter surveys.

† Nest identified as a potential eagle structure, meaning that the nest is not necessarily an alternate nest within an eagle territory.

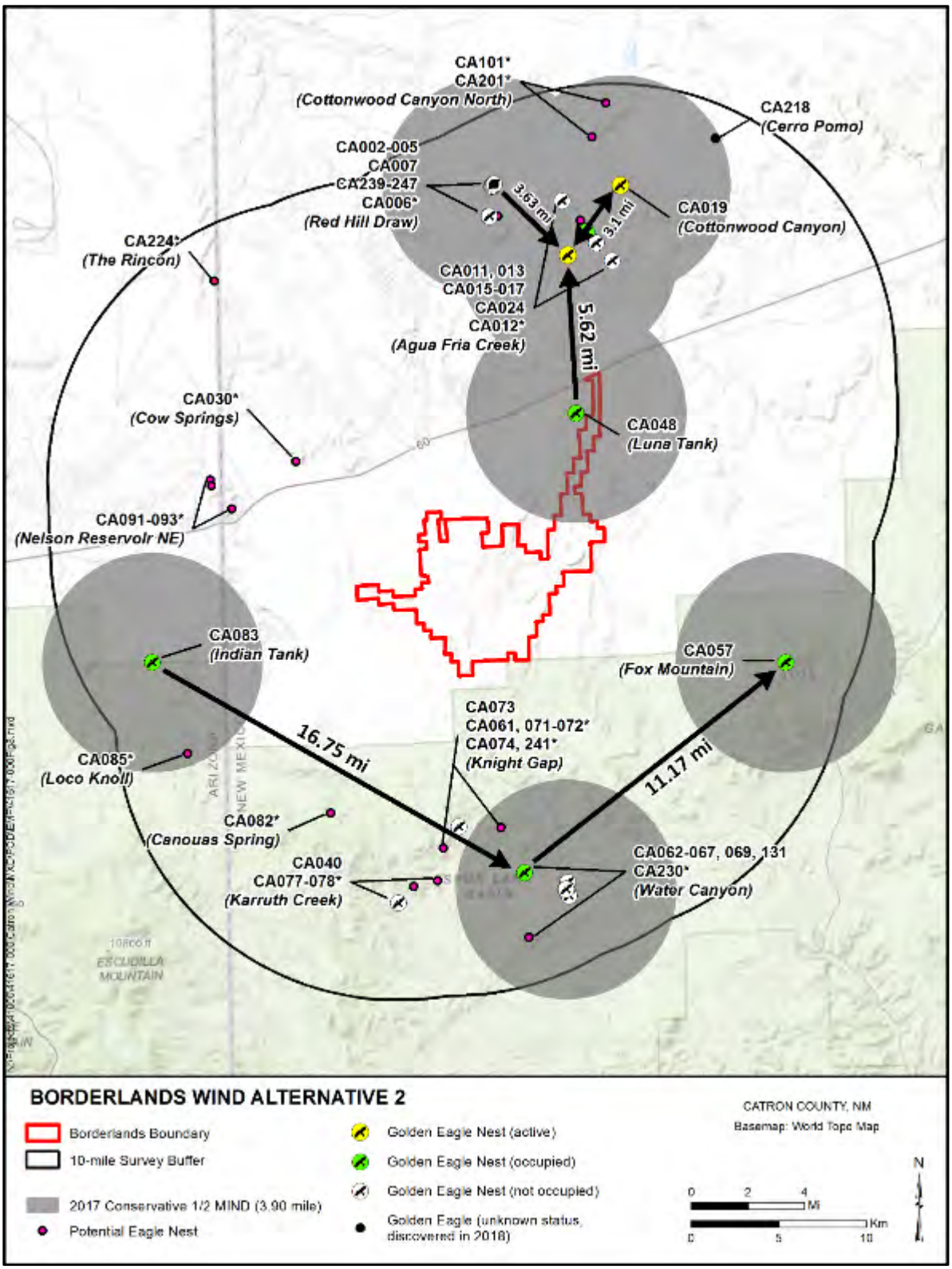

Figure 8. Occupancy status of eagle nests recorded during 2017 surveys. The figure illustrates the 2017 conservative ½-MIND calculated for the golden eagle Project-area nesting population. Arrows indicate measurements used for the calculation (see Table 11). Nest attributes correspond to Table 10.

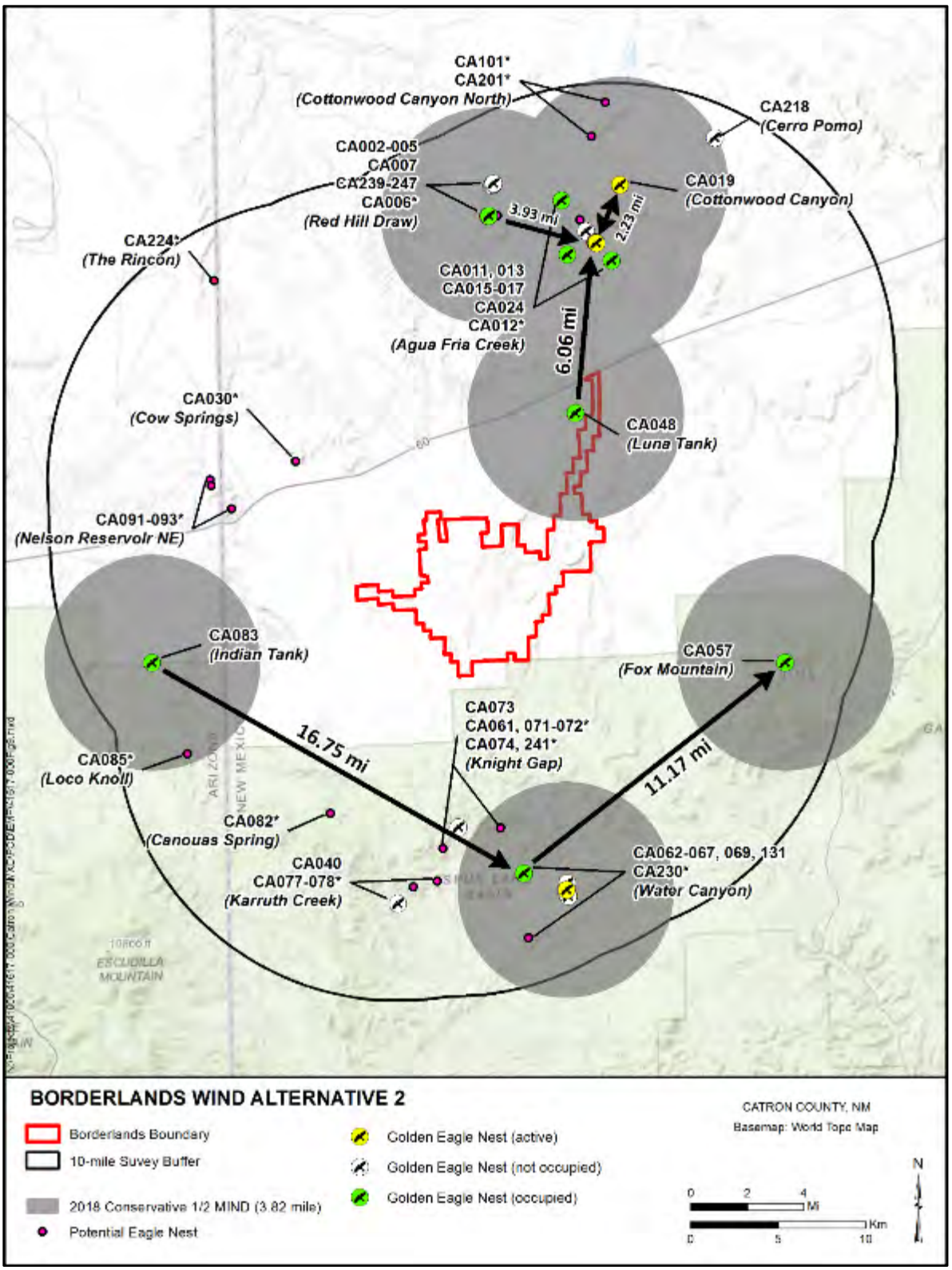

Figure 9. Occupancy status of eagle nests recorded during 2018 surveys. The figure illustrates the 2018 conservative ½-MIND calculated for the golden eagle Project-area nesting population. Arrows indicate measurements used for the calculation (see Table 11). Nest attributes correspond to Table 10.

Figure 10. Luna Tank, CA048 possible eagle nest, March 10, 2017.

3.2.4 Gunnison's Prairie Dog (Cynomys gunnisoni) Surveys

In total, 260 stations were surveyed (see SWCA 2018b for additional detail). Thirty-one distinct, occupied colonies, containing 0 to 192 observed individuals, were mapped in the field (Figure 11). Of these, 17 were entirely outside the Project area boundary, including the largest colonies—by size and number of detected individuals—which were situated northeast, west, and southeast of the Project area (Figure 11).

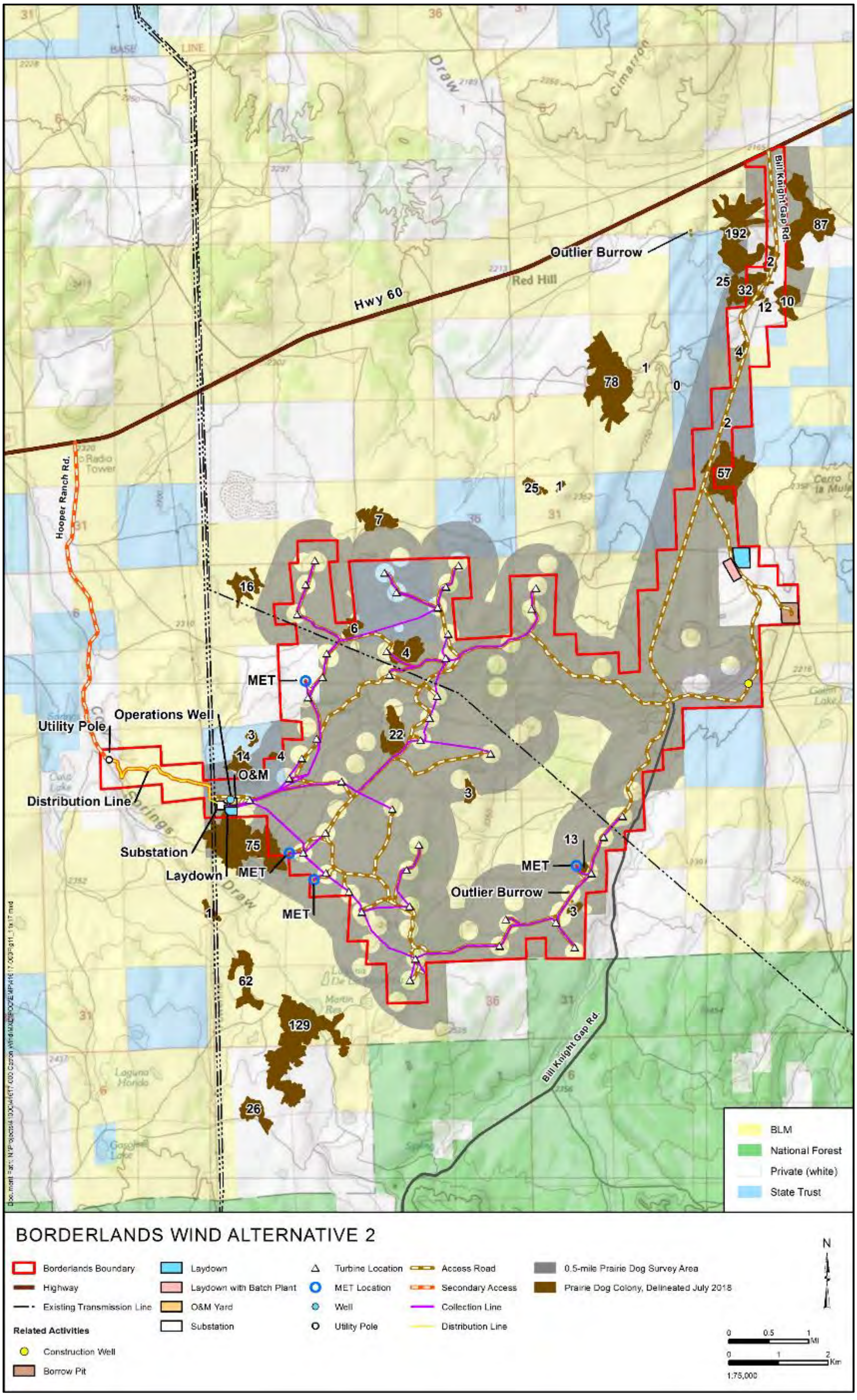

Figure 11. Occupied prairie dog colonies delineated within the Project area, July 2018. Numbers indicate prairie dogs observed during the July 2018 survey.

3.3 Stage 2 Risk Categorization

As described in Stage 1, USFWS has determined that the site is a Category 2 site (risk categorization pertaining to golden eagle; see Section 5.4).

The Luna Tank possible eagle nest and associated ½-MIND, golden eagle flight paths (including anecdotal evidence of relatively concentrated golden eagle use associated with presence of large mammal carrion and ridge edges), and prairie dog colony delineation completed in Stage 2, combined with the spatial data gathered in Stage 1 (i.e., the seasonally wet playas), provided the necessary information to evaluate Project siting options and develop avoidance and minimization schemes in Stage 4. The golden eagle-minute data collected in Stage 2 provide the primary input for generating predictions of the mean annual number of golden eagle collision fatalities and corresponding risk categorization in Stage 3. Likelihood of disturbance risk is presented in Stage 4 (see Section 5.4.1.2).

Given that the Project area/footprint and vicinity lack bald eagle roost, nesting, foraging, and migration concentration sites, and Stage 2 observations of the species were few (i.e., no bald eagle-minutes were recorded within the Alternative 2 turbine hazard area), the site was considered a minimal risk Category 3 site for the bald eagle.

4 STAGE 3 – PREDICTING EAGLE FATALITIES

The objective of the Stage 3 assessment is to calculate a prediction of the annual eagle collision fatality rate for the Project using data generated from the Stage 2 site-specific surveys. The results of this stage can form the basis to alter a project's size and configuration, thereby reducing the take prediction (Allison et al. 2017). Design changes, such as reducing the number of turbines proposed for a project or moving turbines to avoid disturbance to eagle nests, could convert a site from a Category 1 site to a Category 2 site, or a Category 2 site to a Category 3 site by reducing predicted take (Allison et al. 2017).

Though several earlier turbine arrays were considered during previous analysis iterations (e.g., SWCA 2018c) to evaluate possible take reduction, this section presents the take prediction for the Alternative 2 turbine array design only. The Alternative 2 design includes reduced number of turbines relative to earlier designs and implementation of avoidance and minimization to meet the unavoidable standard. Section 5 (Stage 4) further describes the specific avoidance measures incorporated into the Project's design, including avoidance of the Luna Tank possible golden eagle nest and possible eagle foraging areas to the extent practicable.

Because the site is considered a minimal risk site (Category 3) for bald eagle, the focus of the Stage 3 predicted fatality estimation is on golden eagle.

4.1 Stage 3 Methods

4.1.1 U.S. Fish and Wildlife Service Collision Risk Model

The USFWS uses a Bayesian-framework collision risk model (CRM) to predict the annual number of eagles that may be killed by a project. The model incorporates existing information on eagle exposure rate (λ) and collision probability (C) in the form of prior distributions (priors). The priors are updated with site-specific data on exposure and are used to estimate the expected number of annual eagle collision fatalities given the site-specific hazardous area and operational time (USFWS 2018b). In June 2018, the USFWS (2018b) issued a notice announcing the availability of updated priors; however, because the new priors are not yet publicly available, fatality estimates presented in this section are based on the priors provided in the ECPG (USFWS 2013). The updated priors are not expected to significantly change outcomes for project-site categorization assessments.

The Bayesian modeling approach results in probability statements conditioned on the observed data; it allows for the defined priors to be updated according to the data resulting in posterior probability distributions from which inferences are made. Inclusion of site-specific data results in a posterior distribution with reduced uncertainty; that is, the prior distributions have less influence on the model results as more site-specific survey data become available. To determine eagle exposure, the CRM combines existing national data with Stage 2 site-specific data. However, because project-specific fatality data are not available until after the project has operated for several years, conservative collision probability prior and default values are used in the initial collision probability estimate (USFWS 2016a). As site-specific fatality data become available, the collision prior can be updated and the bias in the initial collision-prior-based fatality rates corrected (see the adaptive management process in Section 6.6) (USFWS 2016a).

To generate an annual eagle fatality estimates (F), the CRM uses 1) a project-specific estimate of eagle exposure, 2) a project-specific estimate of the amount of hazardous area and time that will be created by the project, and 3) an estimate of the probability that an exposed eagle that enters the hazardous area will be struck and injured or killed by a turbine blade (USFWS 2016a). F is represented by the product of

eagle exposure rate (λ), collision probability (C), and an expansion factor (ε) for scaling the estimate to a given number of daylight hours within a defined hazardous area within the project footprint:

$$F\ (\text{preconstruction}^{18}) = \varepsilon \cdot \text{posterior}\ \lambda \cdot \text{prior C}$$

The eagle exposure (λ) posterior distribution is defined as:

$$\text{Posterior}\ \lambda \sim \text{Gamma}\ (\alpha + \sum_{i=1}^{n} k, \beta + n)$$

where a Γ(0.97, 2.76) prior is defined for λ (mean: 0.352 eagle-min hr^{-1} km^{-2}, SD: 0.357),[19] k is the number of eagle-minutes counted across all relevant (within the project footprint being analyzed) surveys, and n is the number of trials over a given time and area for which exposure minutes could have been observed.

A β(2.31, 396.69) prior is defined for C (mean: 0.0058 eagles eagle-min^{-1}, SD: 0.0038).

The expansion factor (ε) is calculated as follows:

$$\varepsilon = \tau \sum_{i=1}^{n} \delta$$

where τ is the number of daylight hours in a year (specific to the project location), n is the number of turbines at the facility, and δ is a circular area with a radius equal to the radius of the turbine rotor-swept area. This is calculated as $\delta = \pi r^2$. Separate inputs for both n and r were used in the analysis for the two turbine types proposed for the Alternative 2 turbine array design (i.e., four 2.5-MW: 58-m rotor radius; thirty 3.0-MW: 70-m rotor radius). For each turbine type, annual golden eagle fatality was calculated by running 100,000 simulations using R (version 3.2.3), which produced an 80th credible interval (CRI). The 80th CRI is used to determine the take limit for ETPs, which lowers the chance of underestimating eagle take to 20%.

Data collected at the subset of 800-m-radius plots situated within or that overlapped with the 1-km turbine buffer were included in the analysis. Inclusion was based on the idea that the sampling sites located within 1 km of proposed turbines are closely associated with turbine strings within the project footprint (USFWS 2013).

4.1.2 Other Fatality Predictions

Because USFWS (2013) encourages project developers to evaluate additional candidate models for direct comparison with the baseline USFWS CRM model, the WEST model (Bay et al. 2016) was also evaluated. The WEST model uses a collision probability prior with β(9.28, 3,224.51) parameters defined for C (mean: 0.0029 eagles eagle-min^{-1}, SD: 0.0009). The same number of simulations was run for this analysis. While the USFWS (2018b) considers the USFWS CRM to be more consistent with the USFWS's risk-averse policy with respect to estimating and managing eagle fatality, the WEST model results are provided here for comparison and to inform voluntary compensatory mitigation.

[18] Once postconstruction data are available, the posterior collision probability would be used to update the fatality distribution (USFWS 2013).

[19] The USFWS (2013) exposure prior is equivalent to the exposure prior provided by New et al. (2015): Γ(0.415, 0.0472) prior is defined for λ (mean: 8.79 eagle-min hr^{-1} km^{-3}, SD: 13.64); New et al. (2015) updated the prior to a volumetric prior for projects that did not collect standardized (i.e., 0–200 m) exposure data. Because the hazardous height of 0 to 200 m is assumed when calculating the hazardous space-time generated by operating wind turbines, and eagle exposure data collected for the Project used the standardized 0–200 m height range, height cancels out of the equation.

4.2 Stage 3 Results

4.2.1 USFWS Collision Risk Model

USFWS (2013) CRM model input variables associated with the Alternative 2 turbine array design are presented in Table 12. **Error! Reference source not found.** illustrates the number of golden eagle-minutes considered for the Alternative 2 array.

Table 12. USFWS CRM Model Inputs Associated with the Alternative 2 Turbine Array Designs

Model Input	Alternative 2 Turbine Array Design
Survey radius (m)	800
Survey height (m)	200
Survey length (hours)	1
Number of surveys	520
Golden eagle-minutes*	16
Number of turbines	30 / 4 (3.0-MW / 2.5-MW)
Hub height (m)	98–117 / 90
Rotor radius (m)	70 / 58

Note: Number of surveys and eagle-minutes depends on turbine layout being evaluated. When evaluating the Alternative 2 turbine array design, 72 surveys and 3 eagle-minutes (Year 1 data) and 168 surveys and 10 golden eagle minutes (Year 2 data) associated with counts outside the 1-km buffer of the turbine array were excluded from table data set; see Figure 12.

* Year 1 (March 28, 2017−March 3, 2018) and Year 2 (March 25, 2018−March 5, 2019) combined.

Table 13 presents the model results for the Alternative 2 turbine array design.

Table 13. Annual Golden Eagle Fatality Estimate (USFWS CRM model), Alternative 2 Turbine Design

Model Output	Alternative 2 Turbine Array Design
Mean annual collisions	0.208*
80th CRI annual collisions	0.313*
5-year predicted take	2

* Results per turbine type combined.

The results of this analysis indicate that 80% of the time annual golden eagle fatalities would be 0.31 eagle or fewer, suggesting that an eagle collision fatality would be predicted to occur every 3 to 4 years. Estimated eagle fatality over the 35-year life of the Project would be 11 eagles (0.31 eagle/year * 35 years). Relative to earlier turbine arrays analyzed, the Alternative 2 design resulted in a predicted reduction of 1 to 4 golden eagle fatalities per 5-year period (SWCA 2018c).

4.2.2 Other Fatality Predictions

Table 14 presents the WEST model results for the Alternative 2 turbine array design.

Table 14. Annual Golden Eagle Fatality Estimate (WEST model) Alternative 2 Turbine Design

Model Output	Alternative 2 Turbine Array Design
Mean annual collisions	0.105*
80th CRI annual collisions	0.141*,‡
5-year predicted take	1

* Results per turbine type combined.

‡ For comparison, the 80th CRI calculated for the CRM model was 0.313.

The WEST model indicates that 80% of the time annual golden eagle fatalities would be 0.14 eagles or fewer, suggesting that an eagle collision fatality would be predicted to occur every 7–8 years.

4.3 Results Stage 3 Risk Categorization

Evidence supporting the USFWS determination that the site is a Category 2 site is summarized in Section 5.4. The specific criteria on whether the annual eagle fatality estimate (0.31) is between 0.03 eagle per year and 5% of the estimated LAP size is evaluated in Section 5.4.1.1.

The annual golden eagle fatality estimate presented in this section is based on the Alternative 2 turbine array design that includes 44 permitted turbine locations, of which 34 will be built. Annual fatality predictions will again be calculated for the final 34-turbine design (once known), which may result in an additional decrease of the predicted annual fatality estimate.

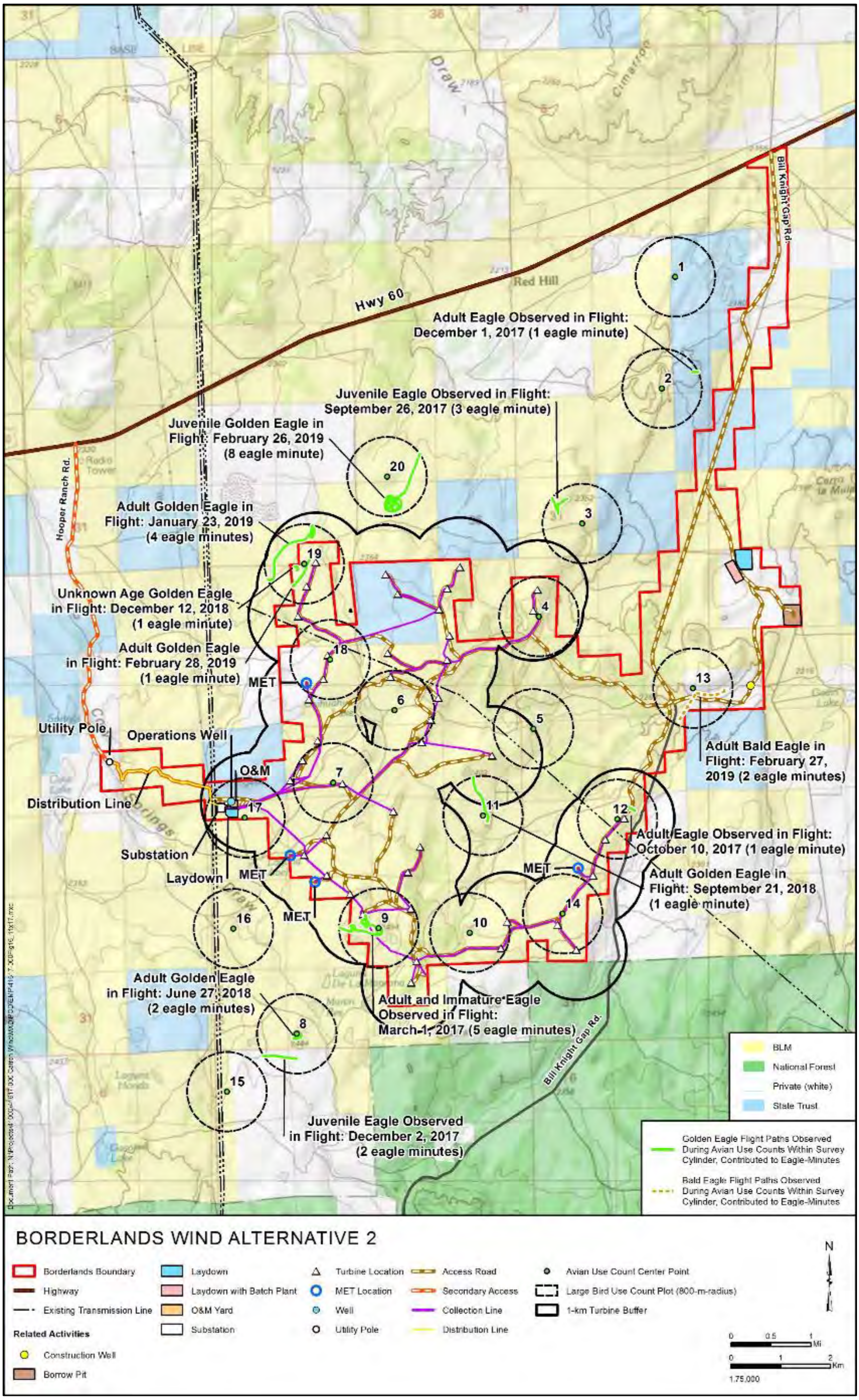

Figure 12. Eagle-minute flight paths recorded during eagle use counts, Years 1 and 2 surveys combined. Use count plots 13 through 20 were added in Year 2. Eagle-minutes (and number of surveys) associated with Plots 2, 8, and 20 were excluded from the Stage 3 annual eagle fatality estimate pertaining to the 1-km buffer of the Alternative 2 turbine array.

5 STAGE 4 – AVOIDANCE, MINIMIZATION, AND COMPENSATORY MITIGATION MEASURES

BLM (2017) and USFWS (2016a) encourage developers who select Option 2 in BLM (2017) Instruction Memorandum 2017-040 to identify appropriate risk-reducing (avoidance and minimization) and offsetting (compensatory mitigation) measures consistent with applicable USFWS permitting policies. Thus, information gathered in Stages 1 through 3 is used in Stage 4 to identify all practicable BMPs to avoid and minimize risk to the maximum degree achievable such that the remaining impacts are unavoidable (USFWS 2013, 2016a). In Stage 4, a cumulative effects analysis area is developed as a basis to determine whether the Project's impacts—in combination with other permitted take and known factors affecting the LAP and eagle management unit populations—are at a level that exceed established benchmarks. A final eagle risk categorization/assessment and plan for compensatory mitigation is completed at this stage. Adaptive management designed for the Project is presented in Section 6.6.

5.1 Project Macro-siting

As wind, environmental, and visual resources information were gathered for the Project, Borderlands Wind designed several turbine array iterations from December 2016 to May 2018. During the design process, a 1.7-MW/2.0-MW turbine combination design contemplated very early in the development of the Project has been refined to use a 2.5-MW/3.0-MW turbine combination design. This allows for fewer turbines (34 versus 51) with a greater generating capacity. The cumulative rotor-swept area was reduced by 4% in the final turbine array design.

Before micro-siting turbine locations, the Project turbine array was altered substantially to avoid all areas within 2 miles of the possible eagle nest (see Section 5.2). This 2-mile no-build buffer was considered conservative; for example, other state and federal agency buffer recommendations range from 0.5 to 1 mile (e.g., BLM 2010, Colorado Parks and Wildlife 2008, USFWS Region 6 recommendation for wind energy projects). Throughout development, the Project footprint and turbine locations continued to be refined and have ultimately resulted in turbines being located 4.7 miles from the nearest potential eagle nest (the 3.9-mile ½-MIND buffer associated with that nest is 0.8 mile from the nearest proposed turbine).

5.2 Turbine Micro-siting

5.2.1 Avoidance Prescriptions Identified in Stages 1 and 2

In addition to the 2-mile setback identified for the Luna Tank possible eagle nest, the following avoidance setbacks relevant to reducing potential Project impacts to eagles were identified before conducting the turbine micro-siting field effort; the prescriptions were informed by BLM (2010) and USFWS Region 2 precedent for other wind energy projects in the region. The approach was later vetted with the Project's coordinating agencies:

- 0.25-mile (400-m) setback from occupied Gunnison's prairie dog towns[20]

[20] Avoidance BMP for long-duration and short-duration land use activities recommended in BLM's resource management plan (2010). BLM (2010) specifically states that long-duration land use activities will not be allowed to occur within the species-specific spatial buffer zone (0.25 mile) of occupied prairie dogs towns. Short-duration activities will be limited to the spatial buffer zone outside the boundary of the occupied prairie dog town and will not occur within the occupied town. At the time of the field micro-siting effort, all active prairie dog locations, recorded incidentally over the course of 13-plus months, were buffered by 0.25 mile (400 m).

- 0.3-mile (500-m) setback from playa wetlands that may attract waterfowl (and bats)[21]

5.2.2 Micro-siting Field Effort Followed by Project Redesign

In May 2018, 107 possible turbine locations were evaluated in the field by a team of biologists, archaeologists, wind resource specialists, engineers, construction specialists, and land surveyors (Figure 13). Guided by the avoidance spatial data identified at that time, locations were moved as necessary and if practical (i.e., they were moved up to hundreds of meters if the alternative location met constructability parameters and avoided other environmental resources considerations). Final locations were then scored on a scale from 1 (best) to 6 (worst) to inform the final turbine array design. Specific to potential bird and bat risk considerations, a turbine location received a score of 4 if it overlapped with the playa wetland setback or was within a possible bat movement corridor (i.e., within a drainage corridor leading to a playa wetland), and a score of 5 if it overlapped with the prairie dog, Luna Tank ½-MIND, or ferruginous hawk nest setbacks.

Following the micro-siting effort, the Project was redesigned to permit 44 turbines—among the 107 evaluated locations—that received a score of 3 or less. Thus, at that time, all bird and bat risk-reducing setbacks were avoided. Relative to the initial 1.7-MW/2.0-MW, elongated northeast-southwest turbine array design, the final Project footprint was condensed to the center of the Project area, resulting in a 13% area reduction (reduced by approximately 2,000 acres).

Alternate turbines were incorporated in the design to provide for flexibility for unforeseen constraints during additional preconstruction assessments and construction.

The Stage 2 prairie dog occupancy and colony delineation surveys (see Section 3.1.4) (SWCA 2018b) were conducted in July 2018, after turbine locations were micro-sited in the field, scored, and incorporated in the project design. The results of these surveys indicated that, among the 44 permitted turbine locations, five conflicted with the updated prairie dog setback layer; none conflicted with the colonies themselves (Figure 14). Because Gunnison's prairie dog colonies may expand or contract before Project construction, appropriate turbines among the permitted locations (which includes 10 alternate turbines) will be selected before construction (see BMPs, Section 5.2.3). An updated predicted annual eagle fatality estimate will be calculated for this final design.

Figure 13 and Figure 14 illustrate the possible turbine locations evaluated as part of the turbine micro-siting field evaluation and the final turbine array design. The spatial avoidance layers depicted in the figures incorporate the July 2018 prairie dog survey data. A 0.5-mile setback associated with an active ferruginous nest is also depicted in the figures;[22] this area was evaluated during micro-siting and was avoided in the final proposed design.

[21] Recommended by USFWS for other Region 2 projects with the caveat that this prescription may or may not be adequate depending on the quality/connectivity of playas.

[22] Avoidance BMP for long-duration land use activities recommended by BLM (2010).

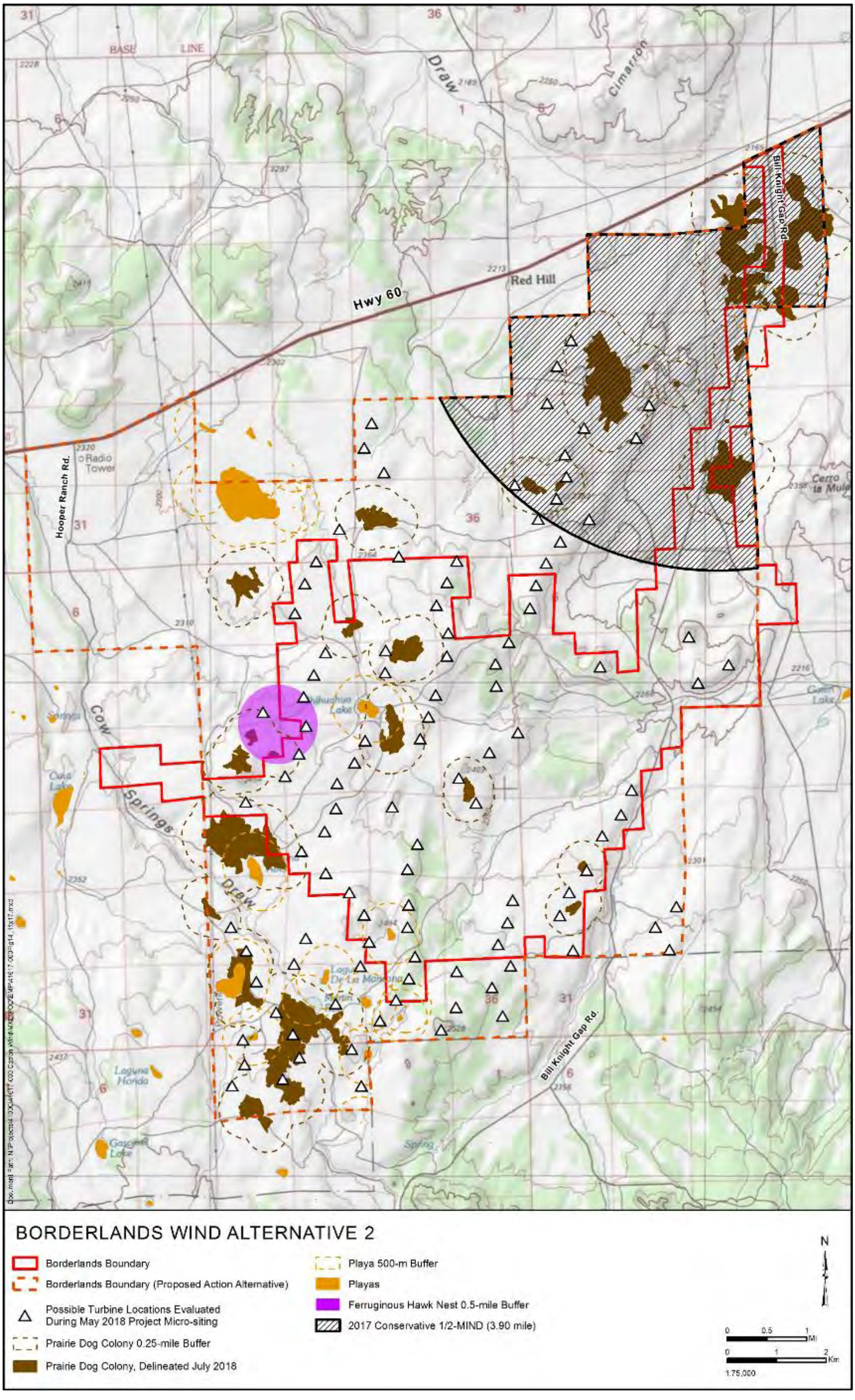

Figure 13. Possible turbine locations evaluated during the May 2018 field micro-siting effort in relation to bird and bat risk-reducing avoidance constraints identified for the Project.

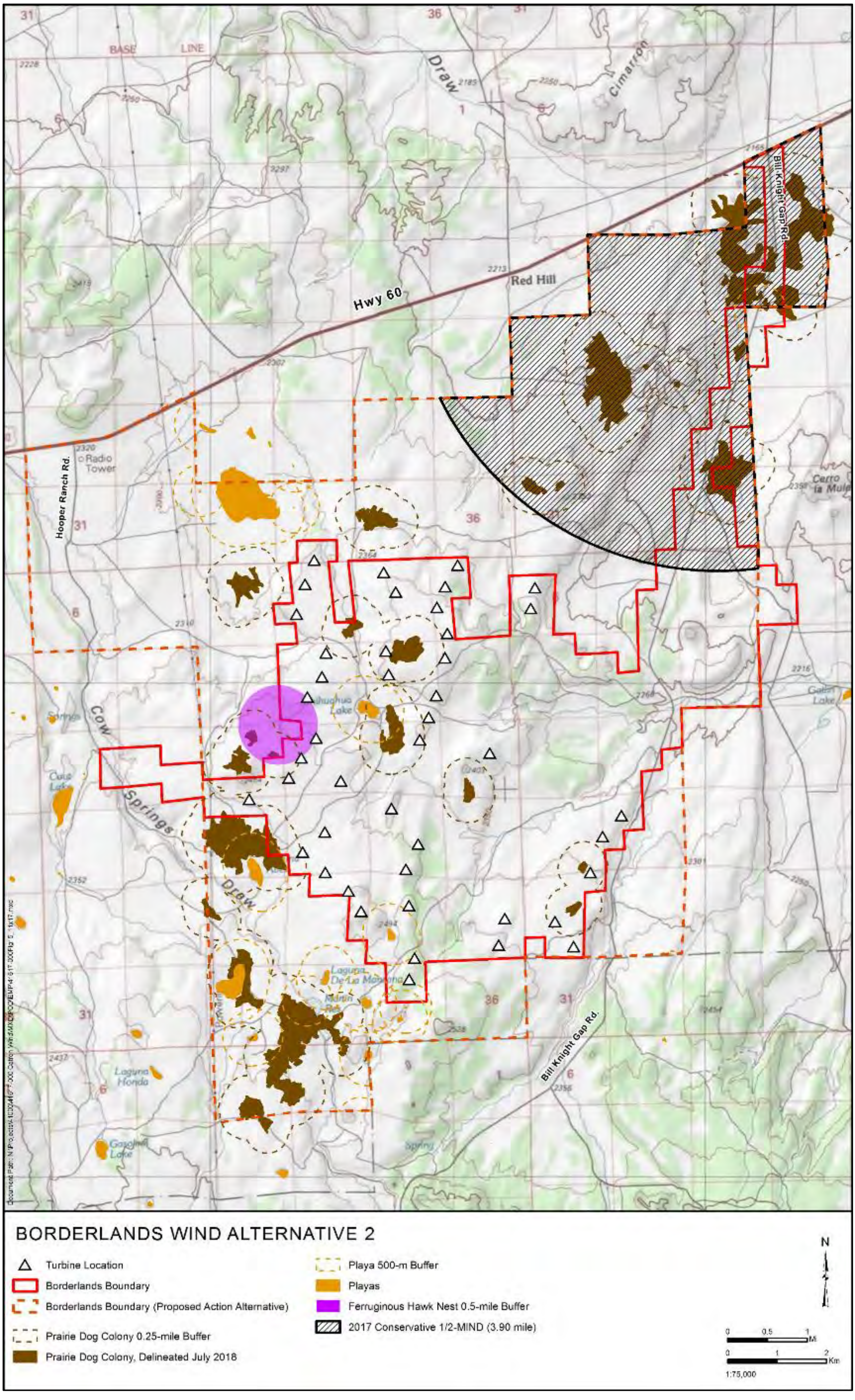

Figure 14. Final turbine array design in relation to bird and bat risk-reducing avoidance constraints identified for the Project.

5.2.3 Best Management Practices

In addition to the avoidance prescriptions described in Section 5.2.1, Borderlands Wind will incorporate the following eagle-impact-reducing BMPs during the Project (see the Project's FEIS for a complete listing of BMPs developed for the Project; BLM 2020). BMPs provided herein are from the Project's FEIS list of BMPs (BLM 2020) unless otherwise noted.

- Informed by eagle use of the site, site turbines back from ridge edges and drainages, as warranted; all proposed turbines have been sited at least 100 m from steep slopes and drainages.
- Minimize the area and intensity of disturbances:
  - Minimize roads, power lines, and other Project infrastructure to the maximum extent feasible, using existing transmission corridors and roads to the extent feasible.
  - Avoid or minimize the use of structures that are attractive to eagles for perching.
  - Use the minimum number of permanent MET towers.
- "Good housekeeping" procedures shall be developed to ensure that the site would be kept clean of debris, garbage, carrion, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards during operation.
- Avoid creating temporary or permanent habitats suitable for rodents, such as rock piles, eroded slopes with openings or overhangs, or stockpiling of construction debris
- Avoid creating wildlife enhancements (e.g., water features, guzzlers, brush piles, nest platforms, nest boxes, feeders) that could attract wildlife to the site.
- A Comprehensive Fire Safety Plan shall be prepared for construction and operation of the project. The objective of this plan is to eliminate the causes of fire, prevent loss of life and property by fire, and to comply with the Occupational Safety and Health Administration (OSHA) standard on fire prevention, 29 CFR 1926.24.
- Operators shall develop a plan for control of noxious weeds and invasive species, which could occur as a result of new surface disturbance activities at the site.
- Facilities shall be designed to discourage their use as perching or nesting substrates by birds. For example, power lines and poles shall be configured to minimize raptor electrocutions and discourage raptor and raven nesting and perching.
- Avoid impacts to wetlands by using appropriate erosion control measures to limit runoff to nearby water sources.
- Instruct Project personnel, including contractors, to drive at low speeds (<25 miles per hour) and be alert for wildlife, especially in low-visibility conditions.
- Project personnel would not be allowed to bring firearms or pets to any Project area to minimize harassment or killing of wildlife and to prevent the introduction of destructive animal diseases to native wildlife populations.
- All construction employees shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons.
- Avoid long-duration land use activities within 0.25 mile of occupied prairie dog colonies (BLM 2010) to the extent practicable.

- From February 15 to June 15, avoid short-duration surface-disturbing activities within 0.25 mile of occupied prairie dog colonies (BLM 2010) to the extent practicable.
- Avoid ground-disturbing, short-duration activities during the raptor (February 1–August 15) and non-raptor (March 1–August 31) nesting seasons to the extent practicable.
- Encourage landowners/lessees to reduce availability of carrion by practicing responsible animal husbandry (removing carcasses, fencing out cattle, etc.) to avoid attracting golden eagles and other raptors.
- Implement a carcass removal plan to promptly remove large mammal (e.g., cows, elk) carrion from the Project footprint and vicinity when observed (Allison et al. 2017):
    - Plan will include lessee/landownership agreement involving regular communication regarding known carcasses and relocation/removal of the known dead cow disposal location to an appropriate area outside of the Project footprint; siting of the new area will consider potential flight path connections between eagle use areas and eagle risk.
    - Instruct Project personnel to identify and investigate corvid (e.g., crow, raven) and turkey vulture (*Cathartes aura*) concentration areas to inform presence of relevant carcasses.
- Dismantle non-permanent/non-operational MET towers.
- Bury power lines to reduce avian collision and electrocution to the extent practicable.
- If overhead lines are necessary, follow the Avian Power Line Interaction Committee (APLIC) guidance (APLIC 2006, 2012) on power line construction and design to limit collision and electrocutions:
    - To reduce collision risk, avoid siting power lines within collision risk areas (i.e., between roosting and feeding areas or nesting sites). If power lines are placed within collision risk areas, install line marking devices (also known as diverters) and design lines without ground wires (APLIC 2018; Loss et al. 2014).
    - To reduce raptor electrocution risk, cap energized parts and ensure 60 inches of horizontal separation and 40 inches of vertical separation between phases and grounds (APLIC 2006, 2018).
- To avoid avian electrocution and collisions, place low and medium voltage electric power lines underground (see NMDGF Trenching Guideline) or on the surface as insulated, shielded wire where feasible unless greater adverse impacts to sensitive resources would result. To avoid and minimize bird electrocution or collisions associated with on- or off-site above-ground lines, transformers or conductors, refer to the NMDGF Powerline Guideline, and design and construct structures following the published recommendations of APLIC (2006, 2012).
- The use of self-supported MET towers is preferred if feasible. The structures should be painted so that they stand out from the surrounding environment to provide optimum visibility for birds. If guy wires are necessary, bird flight diverters will be used. Avoid placing lines within wetlands, over canyons, or within important avian movement corridors (i.e., between foraging and nesting sites) to the extent practicable.
- Employ only red, or dual red and white strobe, strobe-like, or flashing lights, not steady burning lights, to meet Federal Aviation Administration (FAA) requirements for visibility lighting of wind turbines, permanent met towers, and communication towers. Aircraft safety lighting should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. Only a portion of the turbines within the wind project should be lighted, and all pilot warning lights should fire synchronously.

- During construction and operation, measures would be taken to avoid/minimize the impact of light intrusion into adjacent native/undisturbed/sensitive habitats. Night lighting during construction would not occur to the maximum extent practicable. Any night lighting used during construction and operation would be the lowest illumination allowed for human safety, selectively placed, down shielded, and directed away from all areas of native habitat to the maximum extent practicable. All unnecessary lighting should be turned off at night to limit attracting migratory birds and bats in search of insects.
- Except as required to meet the minimum safety and security requirements (e.g., collision markers required by the FAA, or other emergency lighting triggered by alarms), all permanent lighting should use full cutoff luminaires, which are fully shielded (i.e., not emitting direct or indirect light above a horizontal plane passing through the light source), and must meet the Illuminating Engineering Society (IES) glare requirement limiting intensity of light from the luminaire in the region between 80° and 90° from the ground. All fixtures must be mounted properly, at the proper angle.
- Lighting for facilities should not exceed the minimum number, intensity, and coverage required for safety and basic security. All area lighting should be divided into separately controlled zones to focus lighting on smaller areas where tasks are being performed and to avoid illuminating unused space. Area lighting should be controlled by timers, sensors, or switches available to facility operators; dusk-to-dawn lighting controlled by photocell alone should not be allowed except where required for safety. The facility operators should identify those components/structures that do not require continuous lighting for safety reasons. Area lights should only be switched on when there is a specific need (e.g., cleaning mirrors and panels at a solar facility, pumping fuel, persons occupying an area, or alarm situation). When not needed, lights should be switched off. Exceptions to switched-off lighting for safety purposes should be articulated in the lighting plan (see BMP 6.5.1). Focused task lighting, portable light towers, or flashlights should be used instead of area lighting, and retro-reflective or luminescent markers should be used in lieu of permanent lighting where feasible.
- Keep lighting at both O&M facilities and substations located within half a mile of the turbines to the minimum required:
  - Use lights with motion or heat sensors and switches to keep lights off when not required.
  - Lights should be hooded downward and directed to minimize horizontal and skyward illumination.
  - Minimize use of high intensity lighting, steady-burning, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights.
  - All internal turbine nacelle and tower lighting should be extinguished when unoccupied.
- Operators shall determine the presence of active raptor nests (i.e., raptor nests used during the breeding season). Measures to reduce raptor use at a project site (e.g., minimize road cuts, limit tree growth around the turbines) should be implemented.
- Informed by eagle fatality monitoring results, Borderlands Wind will adaptively identify operations modifications if warranted, in coordination with BLM, USFWS, and NMDGF.
- Avoid guy wires on communication towers and permanent met towers. If guy wires are necessary, bird flight diverters or high visibility marking devices should be used at intervals specified and approved by the BLM and USFWS.
- All control and mitigation measures established for the project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the operational phase, as appropriate. These control and mitigation measures shall be

reviewed, revised, and approved by the BLM, as needed, to address changing conditions or requirements at the site, throughout the operational phase. This adaptive management approach would help ensure that impacts from operations are kept to a minimum.

- All management plans, BMPs, and stipulations developed for the construction phase shall be applied to similar activities during the decommissioning phase.

5.3 Voluntary Compensatory Mitigation

To date, for wind developers pursuing an ETP, the only USFWS-approved compensatory mitigation to offset unavoidable golden eagle disturbance and mortality is the retrofitting of power poles (USFWS 2013). However, the development of additional mitigation mechanisms—such as roadkill removal and lead abatement programs—is an area of active research and consideration (Allison et al. 2017; Londsdorf et al. 2018). The USFWS (2016a) also encourages use of certain compensatory mitigation strategies such as conservation banking; in-lieu fee programs; other third-party mitigation projects or arrangements; or, in some cases, research and education. However, a credible analysis should support the conclusion that the action or actions taken will achieve the desired beneficial offset in mortality or carrying capacity at a quantifiable and verifiable mitigation ratio of 1.2 to 1 (USFWS 2013, 2016a).

5.3.1 Resource Equivalency Analysis

To evaluate a voluntary compensatory mitigation commitment for the Project, the Resource Equivalency Analysis (REA) framework example (provided in the ECPG)—for quantifying the number of power pole retrofits needed to offset the Stage 3 predicted mortality—was used. This REA incorporates the current understanding of golden eagle life history, effectiveness of retrofitting high-risk electric power poles, the expected annual mortality, and the start year of both the ETP and implementation of compensatory mitigation (USFWS 2013). The model's output metric of bird-years can be applied to other compensatory mitigation options (see Sections 5.3.2 and 6.6). For this exercise, the permit, take, and mitigation start year was set to 2021, when the Project is projected to become operational. Table 15 and Table 16 present the REA input parameters and results. The estimated annual fatality from the WEST model was used in this REA analysis because the USFWS CRM is known to produce overestimates of eagle take and corresponding overestimates of compensatory mitigation (Allison et al. 2017).

Table 15. Golden Eagle Resource Equivalency Analysis Inputs

Parameter	REA Input
Debit Inputs	
Estimated Annual Fatality	0.141
Start Year of Permit	2021
Start Year of Take	2021
Credit Inputs	
Avoided Loss of Birds/Pole/Year	0.0036*
Start Year of Mitigation	2021
Debit and Credit Inputs (parameters common to both)	
Start Year for Reproduction	2022
1st Year Survival Rate	0.61*
2nd Year Survival Rate	0.79*
3rd Year Survival Rate	0.79*

Parameter	REA Input
4th Year Survival Rate	0.79*
5th Year Survival Rate	0.91*
On-going Annual Survival Rate	0.91*
Breeding Years	25*
Breeding Number (pair)	0.5*
Female Breeding Rates	80%*
Productivity (fledglings/pair)	0.61*
Base Year for Discounting	2021
Discount factor	1.03*

158 * USFWS (2017) default values; terms defined by USFWS (2013).

159 **Table 16. Mitigation Owed without Foregone Reproduction for 35-Year Permitted Take of Golden**
160 **Eagle, Assuming 35 Years of Avoided Loss from Retrofitted Power Poles**

Parameter	REA Result
Total Debit (present value bird-years)	18.84
Relative Productivity of Lethal Electric Pole Retrofitting (avoided loss of present value bird-years/pole)*	0.48
35-Year Credit Owed	39.26

161 *Assuming 35 years of avoided loss from retrofitted poles.

162 *5.3.2 Compensatory Mitigation Commitment*

163 The results of the REA indicate that 40 power pole retrofits will be needed to offset predicted mortality
164 for the 35-year life of the Project. Using an estimated cost of $2,500 per pole,[23] the 35-year compensatory
165 mitigation is estimated to be $120,000 (i.e., the product of $100,000 and 1.2 [1.2 to 1 mitigation ratio;
166 USFWS 2016a]). Borderlands Wind will commit to offsetting the unavoidable mortality by contributing
167 this amount (before initiating commercial operations) to the National Fish and Wildlife Foundation's
168 Eagle Mitigation Account or to a mitigation banking or in-lieu fee credit program if such programs are
169 available. Borderlands Wind's intention is that this financial commitment will be used to fund research
170 aimed at developing quantifiable and verifiable compensatory mitigation options pertinent to the relevant
171 eagle management unit so that future wind developers seeking an ETP may have additional mitigation
172 options to choose from. Such options include, but would not be limited to, the following:

173 - Removing roadkill to reduce eagle-vehicle strikes
174 - Managing prey populations to increase eagle productivity
175 - Relocating prey populations from wind energy sites to reduce eagle collision fatalities
176 - Enhancing or restoring habitat for eagle prey to increase eagle productivity
177 - Nest-site enhancement (e.g., providing shading to exposed nests or implementing nest platforms)
178 to increase eagle productivity
179 - Treating eaglets for trichomoniasis (*Trichomonas gallinae*) to increase eagle productivity

[23] Conservative estimate provided by utility in New Mexico.

- Treating eagle nests for Mexican chicken bugs (*Haematosiphon inodorus*) to increase eagle productivity
- Implementing lead abatement programs to reduce eagle fatalities
- Eagle rehabilitation

5.4 Stage 4 Risk Categorization

5.4.1 Assessing Predicted Mortality and Cumulative Effects Analysis

5.4.1.1 PREDICTED TURBINE COLLISION MORTALITY

On the basis of the 2-year Stage 2 eagle use data set and associated USFWS and WEST CRM analyses, 1 to 2 golden eagle collision fatalities are predicted to occur every 5 years, or 7 to 14 fatalities over the 35-year life of the Project (see Section 4.2).

5.4.1.2 PREDICTED DISTURBANCE TAKE

Disturbance risk related to interruption of normal breeding, feeding, or sheltering behavior is not anticipated because the potential golden eagle Luna Tank nest has been avoided in the Alternative 2 design, whereby the nearest design element (Bill Knight Gap Road, an existing road which will be improved and provide access to the site) will be 0.64 mile to the east[24] and the nearest project turbine will be 4.7 miles to the southwest (Figure 15). The nest, which is positioned inside a crater, is shielded from view of the surrounding landscape, including the Project design elements. Active prairie dog colonies within the ½-MIND of this nest, as well as other prairie dog colonies in the Project area/footprint, will be avoided to the extent practicable (see Sections 5.2.2 and 5.2.3).

5.4.1.3 CUMULATIVE EFFECTS

At this stage, in revisiting the Stages 1 through 3 risk categorization and cumulative effects associated with the Project (see Section 2.3), the ECPG recommends incorporating benchmarks that can be used to assess the predicted levels of mortality (see Section 4.2) at the LAP scale. The local-area for golden eagles is calculated using the Project-area nesting population area (i.e., a 10-mile radius from the Project area) plus the median golden eagle natal dispersal distance (i.e., 109 miles).[25] USFWS (2016b) identified take rates between 1% and 5% of the LAP per year as a concern, with 5% being the upper threshold of what would be appropriate to authorize, or permit annually. Background anthropogenic mortality (ongoing, unpermitted, human-caused mortality) that exceeds 10% of the LAP is also a concern; additional take beyond the 5% and 10% thresholds is considered to be incompatible with the Eagle Rule's preservation standard. The ECPG and Eagle Rule use an annual 5% LAP take limit to facilitate individual ETP decisions. The 5% benchmark is determined by multiplying 5% by the product of the Project's local area and the relevant golden eagle management unit density provided in the ECPG.[26]

[24] For reference, BLM (2010) recommends no long-duration activities, as well as a seasonal restriction (February 1–July 15) for short-duration activities, within 0.5 mile of active nests. Similarly, Colorado Parks and Wildlife (2008) recommends no surface occupancy with 0.25 mile of active nests and a seasonal restriction to human encroachment within 0.5 mile of active nests from December 15 through July 15.

[25] 140-mile natal dispersal distance reported by USFWS (2013) was updated to 109 miles (USFWS 2016a).

[26] USFWS (2013) recognizes that this method assumes eagle densities are uniform within a given region; as more reliable methods for predicting eagle distributions at finer scales are developed, these approaches will present an opportunity to reevaluate this analysis in future drafts of this EMP.

Because the Project's local area includes four eagle management units (Bird Conservation Regions [BCRs] 16 and 33–35; Table 17, Figure 16), the golden eagle density for the local area was calculated using a weighted average based on the percentage of area of each BCR within the local area (Table 17).[27]

Table 17. Golden Eagle Density (golden eagles per square mile) within the Project's Local Area

BCR	BCR Eagle Density†	Proportion (%) within Local Area	BCR Eagle Density*Proportion
16 (Southern Rockies and Colorado Plateau)	0.0189	44.6	0.00844
33 (Sonoran and Mojave Desert)	0.0063	0.2	0.00009
34 (Sierra Madre Occidental)	0.0075	46.5	0.00349
35 (Chihuahuan Desert)	0.0099	7.9	0.00079
Golden eagle density weighted average			**0.01281**

Note: The Project's local area = 48,942 square miles.

† USFWS (2013).

The 5% take benchmark for the Project's LAP is 20 to 31 golden eagles per year.[28] The 10% benchmark is 40 to 62 golden eagles per year. Thus, the predicted annual golden eagle fatality estimate of 0.31 eagles per year is well below the 5% and 10% thresholds.

In addressing possible cumulative impacts, the ECPG recommends evaluating projects whose local areas overlap (Figure 17) so that the cumulative take on the LAP scale can be considered against population benchmarks. USFWS (2019) indicated that (as of March 2019) it has not issued permits for authorized take of golden eagles for projects whose local areas overlap with the Project's LAP. The predicted annual fatality estimate for the Project (0.31) is considered to be well within allowable 5% and 10% thresholds under Eagle Rule compensatory mitigation standards and ETP authorization. Sources of unauthorized local take of golden eagles in the project's LAP include electrocution, poaching, disease, lead and pesticide poisoning, and wind turbine collision.

5.4.2 Stage 4 Risk Categorization

The following evidence supports USFWS's (2019) determination that the Project is a Category 2 site.

- There are no migration concentration sites within the Project footprint or within the Project-area nesting population area.
- The Luna Tank possible eagle nest ½-MIND and adjacent prairie dog colonies (within the ½-MIND) that golden eagles would presumably rely on if the nest were to become active were avoided in the final Project design (i.e., those potentially important eagle use areas are not within the Project footprint).
- All practicable BMPs (see Section 5.2.3) that are reasonably likely to reduce eagle mortality (e.g., removal of the dead cow disposal location; Figure 15) have been identified and will be implemented in the Project final design, construction, operations, and decommissioning.

[27] Method recommended by USFWS in the July 18, 2018, Project coordination meeting.

[28] The LAP 5% benchmark of 20 golden eagles was provided by USFWS as part of the Project coordination. SWCA calculated the LAP 5% benchmark as follows: 48,942 square miles (local area)*0.01281 (weighted average of golden eagle densities for four management units within the Project's local area; golden eagles per square miles*5% = 31 golden eagles.

241 • All playa wetlands that could support waterfowl have been avoided. Other potential eagle use
242 areas (potential prey concentration areas; Figure 15) will be avoided to the maximum extent
243 practicable.

244 • With an annual predicted take estimate of 0.31 eagle per year, the Project has an eagle fatality
245 estimate between 0.03 eagle per year and 5% of the estimated LAP size (20–31 eagles) per year.

246 • Cumulative annual mortality of the LAP is expected to be <5% of the estimated LAP size.

247

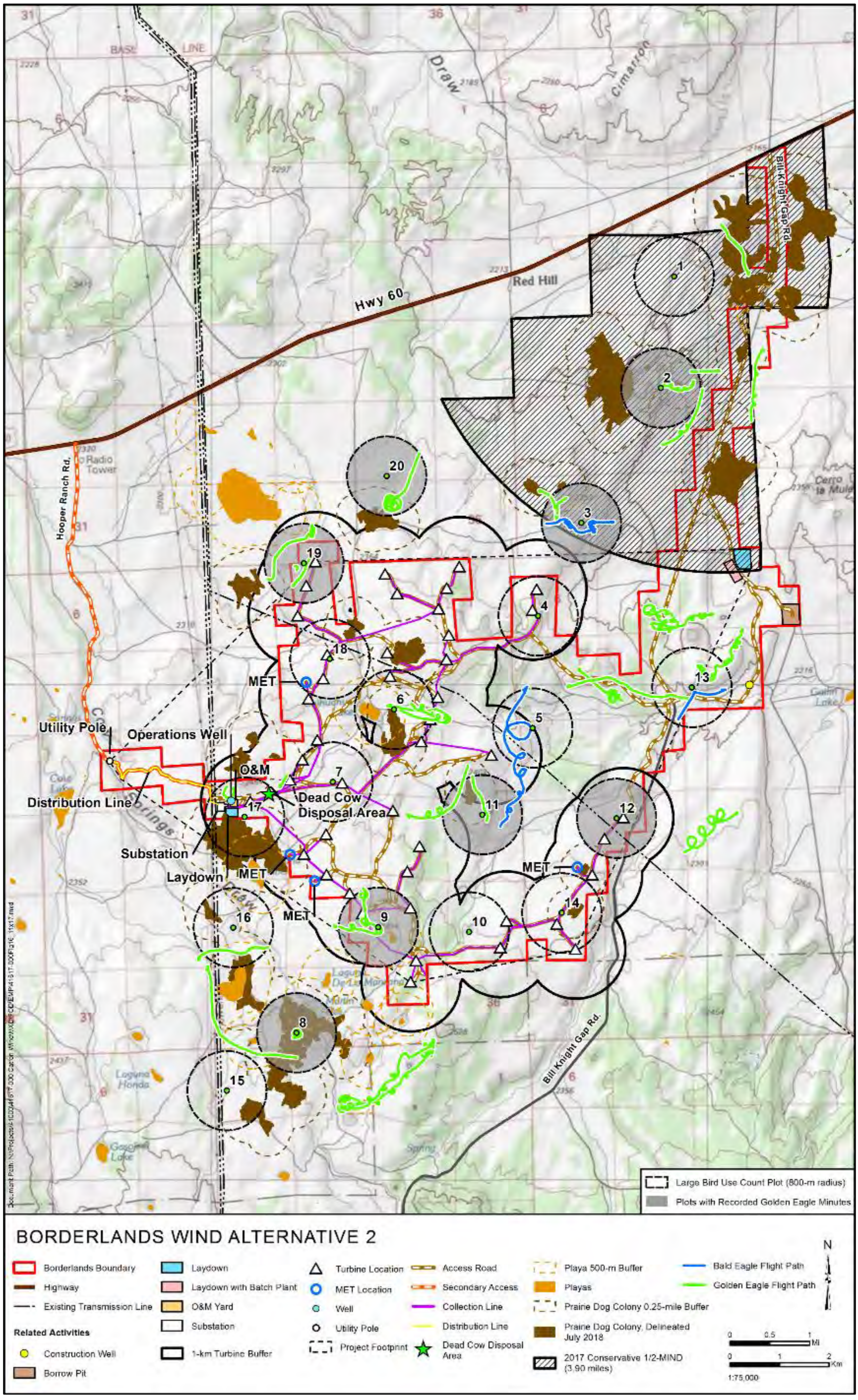

Figure 15. Eagle use areas identified for the Project in relation to the final proposed Project footprint and turbine hazard area.

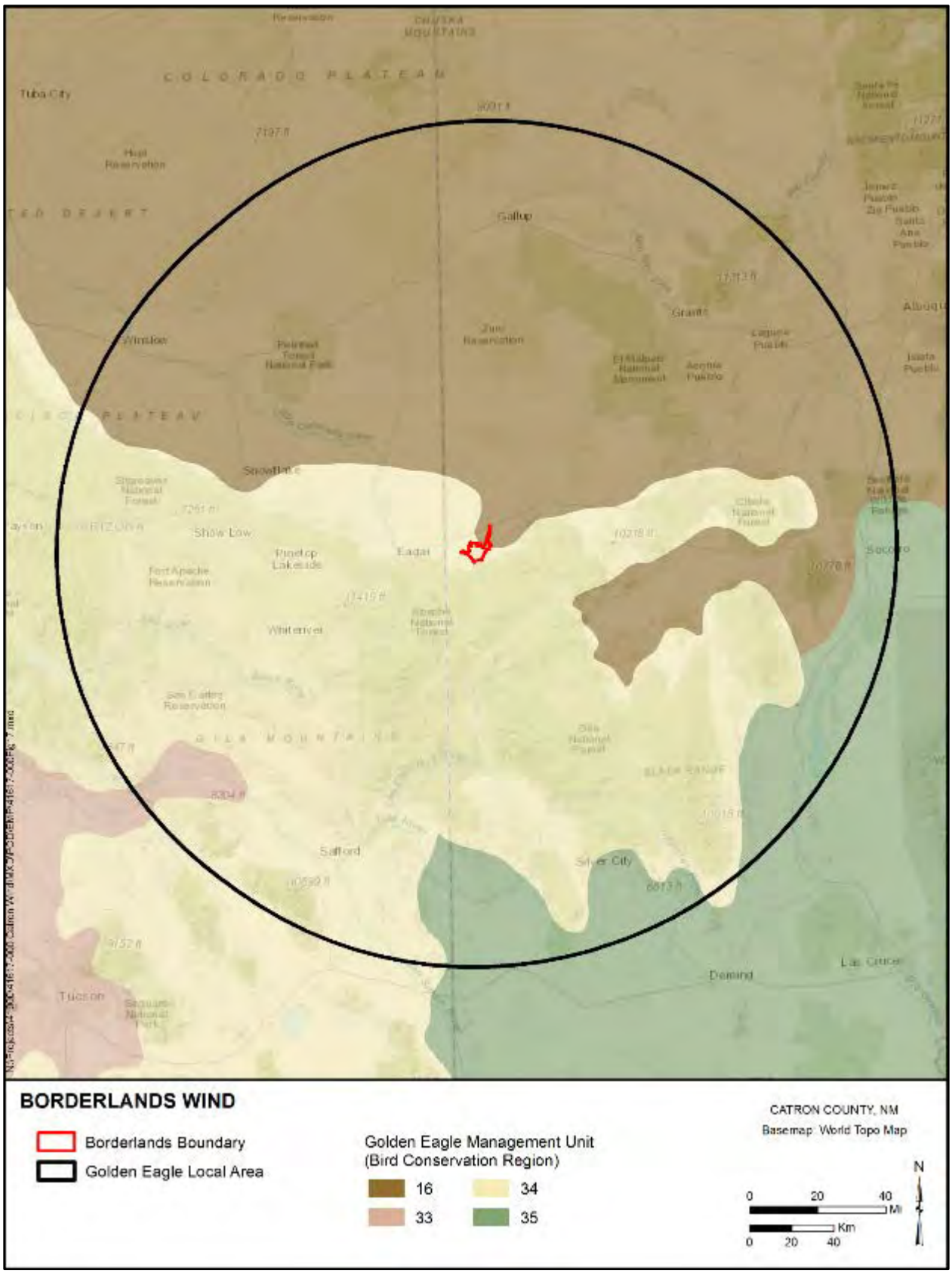

Figure 16. LAP analysis area used for determining final risk categorization for the Project.

Figure 17. Golden eagle local areas of proximate wind energy projects (Hoen et al. 2018; USGS data set) that overlap with the Borderlands Wind Project golden eagle local area.

6 STAGE 5 – POSTCONSTRUCTION MONITORING AND ADAPTIVE MANAGEMENT

Consistent with the WEG, ECPG, Eagle Rule, and USFWS (2019) Region 2 recommendation, Borderlands Wind's consultant will complete standardized general bird and bat fatality monitoring simultaneously with eagle-specific fatality monitoring during the first 2 years of Project operation. The eagle fatality monitoring will then continue for an additional year during every subsequent 5-year period. In accordance with the ECPG (USFWS 2013), eagle-specific objectives associated with these surveys will be to 1) estimate eagle fatality rates for comparison with the model-based predictions developed before construction (see Section 4), 2) assess possible disturbance effects on neighboring nests and communal roosts, and 3) implement adaptive management (see Section 6.6) that will reduce mortality if take rates are higher than expected.

6.1 Standardized Eagle Fatality Monitoring

6.1.1 Turbine Searches

The surveys, also described in the Project's BBCS (SWCA 2020), will involve systematic searches for dead or injured birds and bats under turbines and under all permanent MET towers. The eagle-specific monitoring will include searches at more turbines (100% versus 30%) and longer search intervals (monthly versus every other week) relative to the general avian and bat searches. Imperfect detection by searchers (searcher efficiency) will be quantified in the field using surrogate carcasses. A second source of carcass detection bias, removal by scavengers or other means (carcass persistence), will be quantified in the field (for general avian and bat searches) or by using literature inputs (eagle-focused searches). Raw fatality counts will be adjusted using an industry-accepted statistical estimator or estimators that correct for carcass detection biases, search interval, the proportion of turbines searched to the total number of turbines at the site, and unsearchable/unsearched areas, as warranted. Specific survey strategy, including search method, season definition, number of turbines searched, survey interval, plot size, and transect spacing, is provided in Table 18.

If improved field or analysis techniques become available/acceptable, such as the use of dog searchers, or additional road and pad versus transect searches become necessary due to vegetation conditions, methods described herein may be altered for the Project in coordination with the BLM, USFWS, and NMDGF.

Table 18. Standardized Carcass Search Parameters

Parameter	Detail	Comment
Number of Turbines Searched		Percentage of searched turbines meets WEG recommendations and, for eagles, increases likelihood of detecting rare events.
General avian and bat search plots	30% of turbines (10 of 34). The same turbines will be searched in Year 1 and in Year 2.	
Eagle-focused search plots	50% of turbines (17) searched using transect method; remaining 50% searched using road and pad method. Method employed per turbine will switch each survey year.	
Survey Interval		Survey intervals will be sufficient to evaluate species composition, temporal and spatial distribution, and adjusted fatality. Eagle-specific survey interval based on the finding that large raptors, such as eagles, tend to persist for more than 50 days.*
General avian and bat search plots	Every 2 weeks.	
Eagle-focused search plots	Those plots in which only eagle-specific surveys are planned will be searched monthly.	

Parameter	Detail	Comment
Plot Size	Plots will be oriented with the diagonal of the square pointed in the direction of prevailing winds. 1x maximum turbine height: • 2.5-MW turbines: 152 × 152-m square • 3.0-MW turbines: 192 × 192-m square • Plots will be oriented with the diagonal of the square pointed in the direction of prevailing winds	General avian and bat search plot size meets current industry standards. Because there is some evidence suggesting that eagles can be discovered farther from turbines than other smaller-bodied birds and bats,† the study design has incorporated additional turbine searches (road and pad searches) such that 100% of turbines will be covered, and area corrections may be built into the adjusted fatality estimate analysis as warranted.
Transect Spacing		6-m transects are widely accepted for effective discovery of small-bodied birds and bats; the WEG specifically recommends transects between 3 and 10 m depending on ground cover. Where eagle-focused search and general avian and bat surveys overlap, 6-m transects will be used. Where eagle-focused searches are independent of the general avian and bat searches, transects will be spaced 10 m apart.
General avian and bat search plots	6 m. Searchers will scan out to 3 m, with occasional scans out to approximately 10 m.	
Eagle-focused search plots	6 or 10 m. Searchers will scan out to 3 to 5 m depending on the transect width.	
Rate of Travel	Approximately 45 to 60 m per minute	Slow pace appropriate for vegetation cover and topography to allow for careful visual inspection.
Season Definition	Summer: June 1 to August 31 Fall: September 1to November 30 Winter: December 1to February 28/29 Spring: March 1 to May 31	Definition appropriate for temporal comparison of fatalities associated with other sites in the region.

* Orloff and Flannery (1992); Smallwood (2007)

† WEG (USFWS 2012); Joel Pagel, USFWS raptor ecologist, personal communication December 2013

The specific turbines to be surveyed using the transect method in Year 1 will be selected using a proportional stratified random sampling approach weighted by habitat type (e.g., grassland-shrub and juniper-dominated) area and perceived risk categorization. The design will ensure that an appropriate number of turbines situated in perceived higher-risk conditions (e.g., end turbines within a turbine string; turbines proximal to drainages, playa features, and prairie dog colonies) are selected.

6.1.2 Meteorological Tower Searches

Searches for dead or injured birds and bats under the two permanent MET towers will use the same methods and schedule as the general avian and bat turbine searches. If MET towers are guyed, search plots will be out to guy wire termination (90 m; i.e., 180 × 180-m square). If MET towers are unguyed, search plots will be out to 50 m (i.e., 100 × 100-m square) (Kerns and Kerlinger 2004; Kerlinger et al. 2011).

6.1.3 Carcass Search Method

The carcass search method is generally outlined in Table 18. For the 10 selected turbines in which the general search and eagle-focused search efforts overlap, surveyors will follow 6-m transects. Otherwise, surveyors will follow 10-m transects, which have been repeatedly shown to result in eagle surrogate searcher efficiency rates between 98% and 100% (SWCA unpublished data).

For the turbines selected for road and pad searches, searchers will scan for carcasses along the edges of the gravel pads and both sides of the spur and access roads, within the 152/192-m-wide plots, and scan the terrain from the edges out to the maximum search radius (see Hallingstad et al. 2018).

Data will be recorded in the same manner as described in the Project's BBCS (SWCA 2020). Incidental, complete eagle fatalities, found within search plots, will be conservatively included in the adjusted fatality analyses because they are generally known to persist on the landscape and are associated with high searcher efficiency rates.

6.1.4 Searcher Efficiency Trials

Searcher efficiency trial methods specific to the general avian and bat searches are presented in the Project's BBCS (SWCA 2020).

Searcher efficiency will be calculated as the proportion of trial carcasses found by searchers relative to the total number of trial surrogates placed for the trial. Searcher efficiency trials will be completed concurrent with standardized carcass searches. An appropriate number of eagle surrogates will be placed in varying field conditions within a subset of turbine search plots per search method and per season to allow for appropriate modeling of categorical covariates that may affect detection biases (e.g., substrates, season, observer skill).[29] The specific number of surrogates placed will be based on the site-specific conditions evaluated before conducting the surveys.

Searchers—"blind" to the specific trial dates and the number and location of placed surrogates—will search for and record surrogates randomly placed by a trial administrator.[30] The locations of surrogates found by searchers will be directly compared with the randomly generated locations.

6.1.5 Carcass Persistence Trials

General avian and bat plot carcass persistence trial methods involving documentation of presence/absence of the same carcasses placed for the searcher efficiency trials over repeated visits are presented in the Project's BBCS (SWCA 2020). Literature inputs relevant to eagle carcass persistence (e.g., Smallwood 2007) will be used to adjust raw counts because carcasses representative of eagle carcass persistence are generally not available. If an appropriate number of raptor carcasses become available, they will be considered for use in the field for both trial types.

6.1.6 Adjusted Eagle Fatality Estimates

If an eagle or eagles are discovered during the standardized searches, an appropriate statistical estimator will be considered to adjust the raw counts. Statistical estimators correct for searcher efficiency, carcass persistence, search interval, the proportion of turbines searched to the total number of turbines at the site, and the proportion of discoverable carcasses within search areas (i.e., search area correction), as warranted. Adjusted fatality estimates will be presented in the annual postconstruction reporting but will not be used to inform adaptive management (see Section 6.6).

[29] Burlap sacks painted and filled with straw, or other similarly fabricated surrogate, will be used to emulate golden eagle characteristics (e.g., length ranging from 70 to 84 centimeters [22 to 33 inches], dark brown coloration).
[30] Randomization will be generated using a GIS script or similar.

6.2 Wildlife Response and Reporting System

During Project operations, Borderlands Wind will follow NextEra's companywide Wildlife Response and Reporting System (WRRS) for wind energy projects (see Appendix D). Beginning in operations Year 1, at turbines that are not being searched as part of the consultant-led searches, operations personnel conducting routine quarterly turbine inspections will search for eagle carcasses by walking three concentric circles spaced 30, 90, and 150 feet (10, 30, 45 m) from the turbine mast. Incident-specific WRRS data fields, consistent with those listed in the WEG and ECPG, are provided in Appendix D. All fatalities will be appropriately photodocumented. Incident-specific data will be recorded by the person who discovered the carcass and reported to appropriate personnel, including Borderlands Wind's consultant (if consultant-led standardized fatality monitoring [see Section 6.1] is ongoing), and disposition protocols will be followed (see Section 6.3). Fatalities discovered by operations staff will be considered incidentals in the consultant-led survey reporting. During all years of operation, any eagle injury or fatality found within the wind plant boundaries (i.e., access roads, substations, O&M building, overhead transmission lines), regardless of cause of death, will be reported immediately to the operations leader who shall complete an incident report, take photographs, and incorporate that information into the WRRS database for the site.

6.3 Disposition of Eagle Carcasses and Injured Eagles

Handling and disposition procedures will follow relevant salvage permits and/or direction from USFWS Office of Law Enforcement (OLE) and the BLM authorized officer. Federally listed species and eagle species carcasses and associated incident-specific data will be reported immediately (no later than 24 hours after discovery) to the USFWS OLE and BLM authorized officer. Federally listed species and eagle species carcasses will not be moved until such notification occurs, after which carcass disposition will be in accordance with permit conditions or USFWS OLE direction.

6.4 Disturbance Monitoring

Because the final proposed turbine array design and associated Project footprint is well outside the Luna Tank nest 2-mile and ½-MIND buffers (see Section 5.2.1), eagle disturbance is not anticipated for the Project. If an eagle nest is newly constructed or other important eagle use area is identified in the project area, disturbance monitoring and additional conservation measures would be implemented through adaptive management considerations (see Section 6.6).

6.5 Stage 5 Reporting

The results of the standardized consultant-led general avian and bat and eagle-focused surveys will be submitted to the USFWS, BLM, and NMDGF. A comprehensive report will be submitted for each year postconstruction fatality monitoring is conducted. Each report will include data compilations of the trial results, species composition of fatalities, temporal and spatial distribution of fatalities, relevant adjusted fatality metrics (e.g., per MW/year, per turbine/year by fatality groups), and adaptive management recommendations. Specific fatality groups will include overall birds and bats; other groups (e.g., raptors, seasons) will be considered particularly if they include at least five fatalities. Email summaries containing a list of species being observed during the standardized fatality monitoring will be sent to the BLM, USFWS and NMDGF on a quarterly basis. The annual reporting results will be reviewed by USFWS, BLM, NMDGF, Borderlands Wind, and their consultant via an annual meeting if requested by these agencies.

Operations staff-led WRRS incidental fatality documentation and quarterly turbine search results will be provided to BLM annually.

6.6 Adaptive Management

As part of this EMP, Borderlands Wind is committing 1.2 to 1 compensatory mitigation dollars ($120,000) to compensate for five golden eagle fatalities (or 18.84 bird-years) over the 35-year life of the Project. The postconstruction monitoring data will be used to identify whether additional adaptive management strategies will be needed. Such efforts would be in coordination with the BLM, USFWS, and NMDGF.

Establishing project-specific adaptive management benchmarks is challenging because of uncertainty in confirming the accuracy of predicted fatality and providing evidence that fatality thresholds have not been exceeded. Current postconstruction monitoring methods and statistical approaches can provide adequate fatality rate estimates when observed (raw) counts are large (>10 fatalities) but are generally inaccurate or imprecise when fatalities are rare (Watson et al. 2018). While emerging analytical tools (e.g., Dalthrop and Huso 2015; Dalthrop et al. 2014; Huso 2018) and meta-analyses of data (i.e., American Wind Wildlife Information Center) show promise in improving our ability to estimate and appropriately mitigate for eagle fatalities at wind energy projects, the development and application of these tools (and relevant guidance) is ongoing. Therefore, Borderlands Wind will initially implement adaptive management during Project operations using raw fatality counts. As new analytical tools are evaluated and approved, Borderlands Wind may reevaluate the eagle risks through the life of the Project using these new tools and continual coordination with BLM and USFWS.

6.6.1 Discovery of an Eagle Fatality Attributable to Turbine Collision

For any eagle fatality attributable to turbine collision discovered on-site during Project operations, Borderlands Wind will immediately (within 24 hours) notify the BLM and USFWS and, after consultation, will implement reasonable specific actions to avoid further impacts to eagles. Such actions would be informed by an assessment of cause or risk factor if one can be determined; suggested actions are described below.

For any eagle fatality discovered, specific actions taken to avoid further impacts to eagles may include the following:

- Assessing effectiveness of the BMPs presented in this EMP and whether improvements can be implemented. For example, if a cause of an eagle fatality can be attributed to proximal presence of a large mammal carcass, evaluate the effectiveness of and identify improvements to the carcass removal plan. If it is determined that an eagle fatality occurred at a turbine where active prairie dogs have moved and are now within the 0.25-mile (400-m) setback, consider updating the prairie dog colony delineation surveys, and removing/relocating prairie dogs as warranted.
- Identifying and implementing additional BMPs if relevant.

During the life of the Project, if Borderlands Wind starts seeing eagle mortalities greater than the number predicted by the estimate, it will coordinate with the USFWS and BLM to develop a more detailed adaptive management plan designed to reduce eagle mortality to a level where the risk of additional mortality would be discountable. Examples of risk-reducing and offsetting actions to be identified in the adaptive management plan may include the following:

- Implementing another year of standardized consultant fatality monitoring surveys to further document eagle fatalities. If an additional year of surveys is warranted, revisions to the survey methods specific to the Year 2 survey objectives, including limiting the surveys to specific seasons, will be considered and vetted with the USFWS and BLM.
- Identifying common causes or risk factors (e.g., problem turbines/spatial clustering, problem seasons, presence of prey) followed by risk-reducing measures such as the following:
    - Prey management: consider eagle attractant removal (e.g., relocating prairie dogs) as warranted to adhere to avoidance prescriptions (Allison et al. 2017).
    - Assessment of BMPs: assess effectiveness of the BMPs presented in this EMP and whether improvements can be implemented. Identify and implement additional BMPs if relevant.

Borderlands Wind will continue to evaluate the cost-benefit of effectiveness evaluation and implementation of surveys, improvements to BMPs, or implementation of newly identified BMPs in consultation with USFWS and BLM to continue to minimize impacts to eagles over the life of the Project.

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APPENDIX A

APPENDIX B

Contacts/Resources

APPENDIX C

Eagle Use Count Survey Raw Data

Table C-1. Eagle Use Survey Metadata, Plot 1 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/29/2017	A.Graber	7:40:00 AM	8:40:00 AM	98	16	W	33.9	None	Spring	No
4/15/2017	A.Graber	12:03:00 PM	1:03:00 PM	0	9	WNW	72.1	None	Spring	No
4/26/2017	J.Franks	4:00:00 PM	5:00:00 PM	30	20	NE	61	None	Spring	No
5/12/2017	C.Anderson	11:00:00 AM	12:00:00 PM	30	11	SE	69.9	None	Spring	No
6/3/2017	A.Graber	8:09:00 AM	9:09:00 AM	0	0	–	6–	None	Summer	No
6/19/2017	J.Franks	11:30:00 AM	12:30:00 PM	0	10	NE	88	None	Summer	No
6/28/2017	J.Franks	8:14:00 AM	9:14:00 AM	2	17	NE	65	None	Summer	No
7/13/2017	C.Anderson	7:06:00 AM	8:06:00 AM	30	3	W	62	None	Summer	No
7/26/2017	T.Hinckley	12:42:00 PM	1:42:00 PM	30	2	NW	79	None	Summer	No
8/8/2017	C.Anderson	5:38:00 PM	6:38:00 PM	30	6	SW	85	None	Summer	No
8/29/2017	A.Graber	7:19:00 AM	8:19:00 AM	3	2	SE	55.1	None	Summer	No
9/15/2017	C.Anderson	8:23:00 AM	9:23:00 AM	20	6	SW	62	None	Fall	No
9/26/2017	T.Hinckley	4:50:00 PM	5:50:00 PM	70	10	SSE	68.8	None	Fall	No
10/9/2017	C.Anderson	1:05:00 PM	2:05:00 PM	5	9	NW	55	None	Fall	No
10/30/2017	C.Wilhite	8:17:00 AM	9:17:00 AM	60	4	S	45.9	None	Fall	No
11/9/2017	A.Graber	3:37:00 PM	4:37:00 PM	1	7	WNW	71.4	None	Fall	No
11/22/2017	A.Gillett	7:39:00 AM	8:39:00 AM	5	2	W	43	None	Fall	No
12/3/2017	A.Graber	9:20:00 AM	10:20:00 AM	10	2	SW	53.1	None	Winter	No
12/30/2017	C.Wilhite	12:52:00 PM	1:52:00 PM	85	13	S	52	None	Winter	No
1/10/2018	C.Anderson	8:59:00 AM	9:59:00 AM	100	4	W	32	Snow	Winter	No
1/30/2018	C.Wilhite	3:13:00 PM	4:13:00 PM	60	9	NW	60.7	None	Winter	No
2/8/2018	C.Anderson	7:44:00 AM	8:44:00 AM	0	2	WSW	33	None	Winter	No
2/22/2018	C.Anderson	10:17:00 AM	11:17:00 AM	20	17	SW	33	None	Winter	No
3/3/2018	C.Wilhite	9:20:00 AM	10:20:00 AM	0	15	S	48.5	None	Spring	No

Total Survey Periods Completed: 24.

Plot 1 Coordinates: 34.217640, -108.836751.

Note: Dash (–) indicates that information not available.

Table C-2. Eagle Use Survey Metadata, Plot 1 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/4/2019	R.Winton	12:31:00 PM	1:31:00 PM	10	6	NW	55	None	Spring	No
3/28/2018	C.Anderson	1:07:00 PM	2:07:00 PM	0	12	WNW	51	None	Spring	No
4/13/2018	C.Wilhite	7:06:00 AM	8:06:00 AM	35	17	W	27.5	None	Spring	No
4/23/2018	A.Graber	6:30:00 PM	7:30:00 PM	35	11	W	74.5	None	Spring	No
5/7/2018	T.Loomis	7:25:00 AM	8:25:00 AM	15	4	SW	65.1	None	Spring	No
5/24/2018	T.Loomis	6:41:00 AM	7:41:00 AM	0	0	–	39.6	None	Spring	No
6/15/2018	C.Wilhite	10:51:00 AM	11:51:00 AM	100	7	WNW	78.1	None	Summer	No
6/28/2018	C.Anderson	6:09:00 AM	7:09:00 AM	1	–	–	62	None	Summer	No
7/8/2018	T.Hinckley	6:00:00 PM	7:00:00 PM	20	2	NE	83.7	None	Summer	No
7/25/2018	C.Wilhite	6:39:00 AM	7:39:00 AM	30	9	SE	65.6	None	Summer	No
8/13/2018	R.Winton	2:59:00 PM	3:59:00 PM	20	6	W	92.4	None	Summer	No
8/27/2018	R.Winton	2:34:00 PM	3:34:00 PM	20	10	SW	78	None	Summer	No
9/10/2018	R.Winton	1:43:00 PM	2:43:00 PM	30	3	W	83	None	Fall	No
9/30/2018	A.Graber	5:44:00 PM	6:44:00 PM	90	5	SE	78.5	None	Fall	No
10/4/2018	R.Winton	7:30:00 AM	8:30:00 AM	5	2	SW	59	None	Fall	No
10/22/2018	C.Anderson	12:07:00 PM	1:07:00 PM	100	8	SSW	61	None	Fall	No
11/13/2018	C.Anderson	7:20:00 AM	8:20:00 AM	0	1	E	27	None	Fall	No
11/27/2018	R.Winton	2:47:00 PM	3:47:00 PM	10	4	ENE	55	None	Fall	No
12/7/2018	T.Hinckley	9:33:00 AM	10:33:00 AM	85	1	ESE	39.7	None	Winter	No
12/11/2018	C.Anderson	3:43:00 PM	4:43:00 PM	80	7	NNW	51	None	Winter	No
1/14/2019	R.Winton	11:12:00 AM	12:12:00 PM	70	4	S	41	None	Winter	No
1/31/2019	C.Anderson	7:17:00 AM	8:17:00 AM	25	3	SSW	34	None	Winter	No
2/10/2019	J.Tolchin	12:43:00 PM	1:43:00 PM	85	16	SW	48.1	None	Winter	No
2/26/2019	R.Winton	3:03:00 PM	4:03:00 PM	0	1	SW	49	None	Winter	No

Total Survey Periods Completed: 24.

Plot 1 Coordinates: 34.217640, -108.836751.

Note: Dash (–) indicates that information not available.

Table C-3. Eagle Use Survey Metadata, Plot 2 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/30/2017	A.Graber	1:31:00 PM	2:31:00 PM	10	24	WSW	68.3	None	Spring	No
4/15/2017	A.Graber	7:15:00 AM	8:15:00 AM	0	6	S	39.8	None	Spring	No
4/26/2017	J.Franks	2:20:00 PM	3:20:00 PM	10	20	NE	61	None	Spring	No
5/12/2017	C.Anderson	8:58:00 AM	9:58:00 AM	3	7	SSW	65.8	None	Spring	No
6/3/2017	A.Graber	10:17:00 AM	11:17:00 AM	25	2	N	72.7	None	Summer	No
6/20/2017	A.Graber	8:35:00 AM	9:35:00 AM	75	1	S	78.3	None	Summer	No
6/28/2017	J.Franks	10:02:00 AM	11:02:00 AM	0	25	NE	69	None	Summer	No
7/13/2017	A.Graber	7:05:00 AM	8:05:00 AM	25	4	WSW	61.2	None	Summer	No
7/26/2017	T.Hinckley	10:10:00 AM	11:10:00 AM	40	4	N	71.5	None	Summer	No
8/10/2017	C.Anderson	12:06:00 PM	1:06:00 PM	75	3	ESE	80	None	Summer	No
8/29/2017	A.Graber	9:35:00 AM	10:35:00 AM	1	2	E	71.3	None	Summer	No
9/15/2017	T.Hinckley	8:53:00 AM	9:53:00 AM	20	14	SW	61.3	None	Fall	No
9/26/2017	C.Anderson	4:31:00 PM	5:31:00 PM	90	10	SSW	59	None	Fall	No
10/9/2017	T.Hinckley	12:58:00 PM	1:58:00 PM	0	6	W	48.2	None	Fall	No
10/30/2017	C.Wilhite	10:01:00 AM	11:01:00 AM	55	2	SSE	61.4	None	Fall	No
11/10/2017	A.Graber	9:59:00 AM	10:59:00 AM	40	4	SE	64.9	None	Fall	No
11/22/2017	T.Hinckley	7:02:00 AM	8:02:00 AM	10	1	WSW	43.5	None	Fall	No
12/1/2017	A.Graber	2:48:00 PM	3:48:00 PM	98	15	WSW	53.5	None	Winter	Yes; see Table C-33
12/31/2017	C.Anderson	1:51:00 PM	2:51:00 PM	15	9	WNW	54	None	Winter	No
1/10/2018	C.Wilhite	9:05:00 AM	10:25:00 AM	99	2	W	31.3	Snow	Winter	No
1/30/2018	C.Wilhite	1:30:00 PM	2:30:00 PM	75	8	NNW	62.6	None	Winter	No
2/8/2018	C.Anderson	9:47:00 AM	10:47:00 AM	5	1	SW	49	None	Winter	No
2/22/2018	C.Anderson	12:26:00 PM	1:26:00 PM	–	–	–	–	None	Winter	No
3/3/2018	C.Wilhite	7:15:00 AM	8:15:00 AM	0	6	S	36.7	None	Spring	No

Total Survey Periods Completed: 24.

Plot 2 Coordinates: 34.197440, -108.840164.

Note: Dash (–) indicates that information not available.

Table C-4. Eagle Use Survey Metadata, Plot 2 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/28/2018	C.Anderson	8:56:00 AM	9:56:00 AM	0	8	W	36	None	Spring	No
4/13/2018	C.Wilhite	10:37:00 AM	11:37:00 AM	25	30	W	35.2	None	Spring	No
4/25/2018	A.Graber	3:00:00 PM	4:00:00 PM	10	10	WSW	84.1	None	Spring	No
5/7/2018	T.Loomis	9:26:00 AM	10:26:00 AM	45	5	SW	74.1	None	Spring	No
5/24/2018	T.Loomis	10:52:00 AM	11:52:00 AM	10	4	SSE	68.1	None	Spring	No
6/15/2018	C.Wilhite	8:53:00 AM	9:53:00 AM	100	3	WSW	76.1	None	Summer	No
6/25/2018	C.Anderson	5:56:00 PM	6:56:00 PM	10	11	NW	89	None	Summer	No
7/11/2018	T.Hinckley	6:55:00 AM	7:55:00 AM	85	1	SSE	60.9	None	Summer	No
7/26/2018	C.Anderson	9:16:00 AM	10:16:00 AM	25	3	NW	81	None	Summer	No
8/13/2018	C.Anderson	3:06:00 PM	4:06:00 PM	30	7	N	85	None	Summer	No
8/27/2018	R.Winton	4:10:00 PM	5:10:00 PM	15	5	SW	86	None	Summer	No
9/10/2018	R.Winton	3:25:00 PM	4:25:00 PM	30	1	NW	84	None	Fall	No
9/26/2018	T.Hinckley	7:29:00 AM	8:29:00 AM	30	2	WSW	55.7	None	Fall	No
10/11/2018	C.Anderson	1:32:00 PM	2:32:00 PM	95	9	SW	64	None	Fall	No
10/23/2018	C.Anderson	2:19:00 PM	3:19:00 PM	100	–	–	–	Light drizzle	Fall	No
11/15/2018	T.Hinckley	7:07:00 AM	8:07:00 AM	0	4	S	29.9	None	Fall	No
11/27/2018	R.Winton	1:01:00 PM	2:01:00 PM	0	4	N	57	None	Fall	No
12/7/2018	J.Tolchin	10:48:00 AM	11:48:00 AM	75	2	SSW	51.2	None	Winter	No
12/12/2018	J.Tolchin	7:34:00 AM	8:34:00 AM	10	2	SE	26	None	Winter	No
1/14/2019	R.Winton	12:55:00 PM	1:55:00 PM	80	5	S	43	None	Winter	No
1/31/2019	C.Anderson	9:27:00 AM	10:27:00 AM	3	5	W	45	None	Winter	No
2/11/2019	J.Tolchin	2:31:00 PM	3:31:00 PM	100	2	S	37	Light drizzle	Winter	No
2/26/2019	R.Winton	7:00:00 AM	8:00:00 AM	0	1	SW	24	None	Winter	No
2/28/2019	C.Anderson	3:06:00 PM	4:06:00 PM	30	16	W	56	None	Winter	No

Total Survey Periods Completed: 24.

Plot 2 Coordinates: 34.197440, -108.840164.

Note: Dash (–) indicates that information not available.

Table C-5. Eagle Use Survey Metadata, Plot 3 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/28/2017	A.Graber	8:26:00 AM	9:26:00 AM	80	3	NE	37.4	None	Spring	No
4/12/2017	A.Graber	4:50:00 PM	5:50:00 PM	10	8	NW	75.6	None	Spring	No
4/26/2017	J.Franks	9:07:00 AM	10:07:00 AM	5	10	NW	44	None	Spring	No
5/10/2017	C.Anderson	1:05:00 PM	2:05:00 PM	90	8	WNW	55.3	None	Spring	No
6/2/2017	A.Graber	5:18:00 PM	6:18:00 PM	85	4	SE	82.5	None	Summer	No
6/20/2017	A.Graber	6:40:00 AM	7:40:00 AM	60	3	WSW	63.5	None	Summer	No
6/28/2017	J.Franks	11:20:00 AM	12:20:00 PM	0	20	NE	84	None	Summer	No
7/13/2017	A.Graber	9:04:00 AM	10:04:00 AM	15	2	WNW	69.2	None	Summer	No
7/26/2017	C.Anderson	1:01:00 PM	2:01:00 PM	40	0	–	81	None	Summer	No
8/9/2017	C.Anderson	4:41:00 PM	5:41:00 PM	90	7	NW	81	None	Summer	No
8/29/2017	A.Graber	11:56:00 AM	12:56:00 PM	10	4	N	83	None	Summer	No
9/14/2017	C.Anderson	10:26:00 AM	11:26:00 AM	50	12	SSW	66	None	Fall	No
9/26/2017	T.Hinckley	2:30:00 PM	3:30:00 PM	60	10	S	66.2	None	Fall	Yes; see Table C-33
10/9/2017	C.Anderson	4:48:00 PM	5:48:00 PM	0	8	NW	55	None	Fall	No
10/30/2017	C.Wilhite	1:59:00 PM	2:59:00 PM	95	6	SW	66.6	None	Fall	No
11/10/2017	A.Graber	8:12:00 AM	9:12:00 AM	15	3	SE	48	None	Fall	No
11/22/2017	A.Gillett	9:49:00 AM	10:49:00 AM	5	2	NW	55	None	Fall	No
12/3/2017	A.Graber	7:29:00 AM	8:29:00 AM	3	4	S	39.8	None	Winter	No
12/30/2017	C.Wilhite	3:03:00 PM	4:03:00 PM	90	4	S	51.3	None	Winter	No
1/9/2018	C.Wilhite	2:31:00 PM	3:31:00 PM	75	10	S	58.2	None	Winter	No
1/31/2018	C.Wilhite	7:29:00 AM	8:29:00 AM	15	4	NW	21.3	None	Winter	No
2/6/2018	C.Anderson	2:51:00 PM	3:51:00 PM	30	18	WNW	55	None	Winter	No
2/22/2018	C.Anderson	8:14:00 AM	9:14:00 AM	40	11	SW	30	None	Winter	No
3/2/2018	C.Wilhite	1:38:00 PM	2:38:00 PM	0	14	WSW	58.9	None	Spring	No

Total Survey Periods Completed: 24.

Plot 3 Coordinates: 34.173223, -108.858192.

Note: Dash (–) indicates that information not available.

Table C-6. Eagle Use Survey Metadata, Plot 3 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	C.Anderson	3:51:00 PM	4:51:00 PM	75	12	W	45	Snow	Spring	No
4/13/2018	C.Wilhite	8:47:00 AM	9:47:00 AM	10	20	W	29	None	Spring	No
4/22/2018	A.Graber	5:18:00 PM	6:18:00 PM	90	4	N	73.5	None	Spring	No
5/7/2018	T.Loomis	11:23:00 AM	12:23:00 PM	70	2	SW	78.1	None	Spring	No
5/21/2018	T.Loomis	7:31:00 AM	8:31:00 AM	15	2	E	56.9	None	Spring	No
6/11/2018	T.Hinckley	11:46:00 AM	12:36:00 PM	0	2	NW	84.8	None	Summer	No
6/26/2018	C.Anderson	6:24:00 AM	7:24:00 AM	0	3	WNW	63	None	Summer	No
7/10/2018	T.Hinckley	4:36:00 PM	5:36:00 PM	80	8	SE	78.5	None	Summer	No
7/25/2018	C.Wilhite	10:33:00 AM	11:33:00 AM	20	8	NNW	80.7	None	Summer	No
8/14/2018	C.Anderson	7:28:00 AM	8:28:00 AM	5	4	N	65	None	Summer	No
8/28/2018	R.Winton	4:41:00 PM	5:41:00 PM	5	5	W	78	None	Summer	No
9/13/2018	R.Winton	11:49:00 AM	12:49:00 PM	10	4	SW	79	None	Fall	No
9/26/2018	T.Hinckley	9:32:00 AM	10:32:00 AM	35	2	NNW	67.2	None	Fall	No
10/10/2018	C.Anderson	3:52:00 PM	4:52:00 PM	50	5	W	58	None	Fall	No
10/16/2018	C.Anderson	10:18:00 AM	11:18:00 AM	100	7	S	37	Light drizzle	Fall	No
11/14/2018	T.Hinckley	7:06:00 AM	8:06:00 AM	30	1	SW	29.5	None	Fall	No
11/27/2018	R.Winton	11:27:00 AM	12:27:00 PM	0	2	ENE	57	None	Fall	No
12/5/2018	T.Hinckley	2:59:00 PM	3:59:00 PM	20	10	WSW	53.3	None	Winter	No
12/12/2018	J.Tolchin	9:21:00 AM	10:21:00 AM	5	3	WSW	40.4	None	Winter	Yes; see Table C-34
1/8/2019	T.Hinckley	2:06:00 PM	3:06:00 PM	10	1	E	46.6	None	Winter	No
1/22/2019	J.Tolchin	10:33:00 AM	11:33:00 AM	95	14	W	24.8	None	Winter	No
2/14/2019	C.Anderson	7:24:00 AM	8:24:00 AM	100	2	S	37	Light drizzle	Winter	No
2/25/2019	R.Winton	4:09:00 PM	5:09:00 PM	40	3	NW	48	None	Winter	No
3/1/2019	C.Anderson	7:51:00 AM	8:51:00 AM	50	2	W	42	None	Spring	No

Total Survey Periods Completed: 24.

Plot 3 Coordinates: 34.173223, -108.858192.

Table C-7. Eagle Use Survey Metadata, Plot 4 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/28/2017	A.Graber	11:05:00 AM	12:05:00 PM	90	8	SW	44.1	None	Spring	No
4/15/2017	A.Graber	9:45:00 AM	10:45:00 AM	0	2	SSW	57.2	None	Spring	No
4/26/2017	J.Franks	10:43:00 AM	11:43:00 AM	15	10	NW	51	None	Spring	No
5/10/2017	C.Anderson	2:46:00 PM	3:46:00 PM	100	11	W	46.8	Light drizzle	Spring	No
5/31/2017	A.Graber	7:47:00 AM	8:47:00 AM	99	1	SE	58.4	None	Spring	No
6/19/2017	A.Graber	12:45:00 PM	1:45:00 PM	10	8	NE	100.4	None	Summer	No
6/28/2017	C.Anderson	7:30:00 AM	8:30:00 AM	0	6	WSW	68	None	Summer	No
7/13/2017	C.Anderson	9:11:00 AM	10:11:00 AM	25	0	–	72	None	Summer	No
7/26/2017	C.Anderson	11:34:00 AM	12:34:00 PM	40	2	–	77	None	Summer	No
8/8/2017	C.Anderson	3:31:00 PM	4:31:00 PM	40	4	W	84	None	Summer	No
8/29/2017	A.Graber	2:02:00 PM	3:02:00 PM	40	3	NE	91.3	None	Summer	No
9/15/2017	C.Anderson	12:06:00 PM	1:06:00 PM	40	9	SW	69	None	Fall	No
9/26/2017	T.Hinckley	12:38:00 PM	1:38:00 PM	40	4	SW	69.4	None	Fall	No
10/9/2017	C.Anderson	3:11:00 PM	4:11:00 PM	1	9	W	56	None	Fall	No
10/30/2017	C.Wilhite	12:14:00 PM	1:14:00 PM	85	1	W	68.7	None	Fall	No
11/8/2017	A.Graber	8:16:00 AM	9:16:00 AM	45	2	SSW	43.3	None	Fall	No
11/22/2017	T.Hinckley	10:17:00 AM	11:17:00 AM	15	2	ENE	56	None	Fall	No
12/1/2017	A.Graber	12:29:00 PM	1:29:00 PM	99	0	–	55.4	Light drizzle	Winter	No
12/31/2017	C.Anderson	11:43:00 AM	12:43:00 PM	90	10	W	52	None	Winter	No
1/9/2018	C.Wilhite	7:49:00 AM	8:49:00 AM	98	4	SSE	43	None	Winter	No
1/30/2018	C.Wilhite	11:13:00 AM	12:13:00 PM	55	1	SE	66.1	None	Winter	No
2/6/2018	C.Anderson	7:54:00 AM	8:54:00 AM	1	4	WSW	39	None	Winter	No
2/20/2018	C.Anderson	11:22:00 AM	12:22:00 PM	100	3	–	29	Snow	Winter	No
3/1/2018	C.Wilhite	7:15:00 AM	8:15:00 AM	2	3	SE	27.9	None	Spring	No

Total Survey Periods Completed: 24.

Plot 4 Coordinates: 34.156480, -108.868062.

Note: Dash (–) indicates that information not available.

Table C-8. Eagle Use Survey Metadata, Plot 4 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/28/2018	C.Anderson	11:03:00 AM	12:03:00 PM	0	–	–	–	None	Spring	No
4/14/2018	C.Wilhite	7:46:00 AM	8:46:00 AM	0	7	W	32.3	None	Spring	No
4/22/2018	A.Graber	3:08:00 PM	4:08:00 PM	65	5	WNW	87.5	None	Spring	No
5/7/2018	T.Loomis	1:16:00 PM	2:16:00 PM	80	3	SW	80.7	None	Spring	No
5/21/2018	T.Loomis	9:36:00 AM	10:36:00 AM	25	7	WSW	66.9	None	Spring	No
6/14/2018	C.Wilhite	10:04:00 AM	11:04:00 AM	60	2	WSW	81.1	None	Summer	No
6/27/2018	C.Anderson	6:05:00 PM	7:05:00 PM	30	5	NW	91	None	Summer	No
7/11/2018	T.Hinckley	9:23:00 AM	10:23:00 AM	75	2	E	69.8	None	Summer	No
7/27/2018	C.Wilhite	8:37:00 AM	9:37:00 AM	20	2	ESE	69.8	None	Summer	No
8/14/2018	R.Winton	11:17:00 AM	12:17:00 PM	0	1	W	80.2	None	Summer	No
8/29/2018	A.Pellegrini	9:45:00 AM	10:45:00 AM	5	0	–	84.2	None	Summer	No
9/13/2018	R.Winton	6:56:00 AM	7:56:00 AM	0	1	SW	66	None	Fall	No
9/26/2018	T.Hinckley	11:25:00 AM	12:25:00 PM	25	5	W	69.9	None	Fall	No
10/10/2018	C.Anderson	2:17:00 PM	3:17:00 PM	40	3	W	64	None	Fall	No
10/18/2018	C.Anderson	9:18:00 AM	10:18:00 AM	50	7	ESE	48	None	Fall	No
11/12/2018	T.Hinckley	2:03:00 PM	3:03:00 PM	40	3	NW	37.3	None	Fall	No
11/28/2018	R.Winton	10:47:00 AM	11:47:00 AM	0	2	NNW	59	None	Fall	No
12/6/2018	J.Tolchin	8:00:00 AM	9:00:00 AM	75	2	SE	40.3	None	Winter	No
12/11/2018	C.Anderson	11:18:00 AM	12:18:00 PM	90	2	SE	52	None	Winter	No
1/14/2019	R.Winton	2:32:00 PM	3:32:00 PM	80	5	S	41	None	Winter	No
1/23/2019	J.Tolchin	9:14:00 AM	10:14:00 AM	0	4	W	24	None	Winter	No
2/12/2019	C.Anderson	11:24:00 AM	12:24:00 PM	5	6	SSE	47	None	Winter	No
2/26/2019	R.Winton	8:30:00 AM	9:30:00 AM	0	2	W	34	None	Winter	No
2/28/2019	C.Anderson	12:46:00 PM	1:46:00 PM	5	8	WNW	58	None	Winter	No

Total Survey Periods Completed: 24.

Plot 4 Coordinates: 34.156480, -108.868062.

Note: Note: Dash (–) indicates that information not available.

Table C-9. Eagle Use Survey Metadata, Plot 5 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/30/2017	A.Graber	11:14:00 AM	12:14:00 PM	2	13	W	59.9	None	Spring	No
4/14/2017	A.Graber	7:51:00 AM	8:51:00 AM	60	5	SE	47.5	None	Spring	No
4/26/2017	J.Franks	12:26:00 PM	1:26:00 PM	3	10	NW	61	None	Spring	No
5/10/2017	C.Anderson	4:14:00 PM	5:14:00 PM	95	14	W	50.5	None	Spring	No
6/2/2017	A.Graber	8:23:00 AM	9:23:00 AM	75	0	–	60.5	None	Summer	No
6/19/2017	A.Graber	10:35:00 AM	11:35:00 AM	3	9	NW	89	None	Summer	No
6/28/2017	C.Anderson	8:58:00 AM	9:58:00 AM	0	9	WSW	75	None	Summer	No
7/12/2017	C.Anderson	12:55:00 PM	1:55:00 PM	80	8	N	79	None	Summer	No
7/25/2017	T.Hinckley	7:58:00 AM	8:58:00 AM	40	1	SE	64	None	Summer	No
8/8/2017	C.Anderson	1:48:00 PM	2:48:00 PM	40	0	–	80	None	Summer	No
8/30/2017	A.Graber	3:18:00 PM	4:18:00 PM	40	8	SE	90.1	None	Summer	No
9/14/2017	T.Hinckley	1:19:00 PM	2:19:00 PM	70	5	SE	76.6	None	Fall	No
9/27/2017	C.Anderson	9:47:00 AM	10:22:00 AM	100	2	SSE	52	Rain	Fall	No
10/9/2017	T.Hinckley	3:18:00 PM	4:18:00 PM	0	5	NW	50.1	None	Fall	No
10/29/2017	C.Wilhite	8:49:00 AM	9:49:00 AM	0	0	–	47.4	None	Fall	No
11/9/2017	A.Graber	7:54:00 AM	8:54:00 AM	85	3	SSW	53.2	None	Fall	No
11/21/2017	A.Gillett	4:23:00 PM	5:23:00 PM	5	5	W	55	None	Fall	No
12/1/2017	A.Graber	10:31:00 AM	11:31:00 AM	99	1	S	59	None	Winter	No
12/31/2017	C.Anderson	10:01:00 AM	11:01:00 AM	75	5	W	48	None	Winter	No
1/9/2018	C.Wilhite	12:41:00 PM	1:41:00 PM	50	9	S	57.2	None	Winter	No
1/29/2018	C.Wilhite	7:26:00 AM	8:26:00 AM	0	2	S	16.3	None	Winter	No
2/6/2018	C.Anderson	1:11:00 PM	2:11:00 PM	3	10	W	55	None	Winter	Yes; see Table C-33
2/20/2018	C.Anderson	3:51:00 PM	4:51:00 PM	70	7	N	33	None	Winter	Yes; see Table C-33
3/2/2018	C.Wilhite	7:13:00 AM	8:13:00 AM	0	9	SSW	31.3	None	Spring	No

Total Survey Periods Completed: 24

Plot 5 Coordinates: 34.136142, -108.869766

Table C-10. Eagle Use Survey Metadata, Plot 5 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	C.Anderson	1:36:00 PM	2:36:00 PM	60	5	W	46	None	Spring	No
4/14/2018	C.Wilhite	3:05:00 PM	4:05:00 PM	0	10	WNW	53.1	None	Spring	No
4/22/2018	A.Graber	9:48:00 AM	10:48:00 AM	45	5	N	60.2	None	Spring	No
5/8/2018	T.Loomis	7:10:00 AM	8:10:00 AM	10	3	SW	53	None	Spring	No
5/21/2018	T.Loomis	4:22:00 PM	5:22:00 PM	60	10	S	73	None	Spring	No
6/14/2018	C.Wilhite	8:16:00 AM	9:16:00 AM	50	4	E	70.2	None	Summer	No
6/26/2018	C.Anderson	4:33:00 PM	5:33:00 PM	30	5	SE	90	None	Summer	No
7/9/2018	T.Hinckley	6:30:00 AM	7:30:00 AM	50	5	SSE	57.5	None	Summer	No
7/25/2018	C.Wilhite	1:34:00 PM	2:34:00 PM	35	14	W	82.4	None	Summer	No
8/14/2018	R.Winton	7:30:00 AM	8:30:00 AM	0	2	W	65	None	Summer	No
8/30/2018	A.Pellegrini	2:47:00 PM	3:47:00 PM	40	1	W	80	None	Summer	No
9/12/2018	R.Winton	7:48:00 AM	8:48:00 AM	0	2	SW	67	None	Fall	No
9/26/2018	T.Hinckley	1:39:00 PM	2:39:00 PM	50	8	NW	76.4	None	Fall	No
10/10/2018	C.Anderson	12:38:00 PM	1:38:00 PM	50	5	NW	63	None	Fall	No
10/18/2018	C.Anderson	7:27:00 AM	8:27:00 AM	95	4	SE	43	None	Fall	No
11/12/2018	T.Hinckley	4:08:00 PM	5:08:00 PM	25	7	N	32.5	None	Fall	No
11/28/2018	R.Winton	8:10:00 AM	9:10:00 AM	30	2	SW	42	None	Fall	No
12/6/2018	J.Tolchin	3:28:00 PM	4:28:00 PM	95	8	SW	44.4	None	Winter	No
12/12/2018	C.Anderson	7:55:00 AM	8:55:00 AM	3	3	W	33	None	Winter	No
1/14/2019	R.Winton	4:00:00 PM	5:00:00 PM	30	6	S	39	None	Winter	No
1/31/2019	C.Anderson	11:46:00 AM	12:46:00 PM	20	8	WNW	47	None	Winter	No
2/12/2019	J.Tolchin	9:40:00 AM	10:40:00 AM	10	3	WSW	36.7	None	Winter	No
2/26/2019	C.Anderson	2:59:00 PM	3:59:00 PM	10	0	–	50	None	Winter	No
3/5/2019	R.Winton	1:38:00 PM	2:38:00 PM	0	3	SW	65	None	Spring	No

Total Survey Periods Completed: 24

Plot 5 Coordinates: 34.136142, -108.869766

Table C-11. Eagle Use Survey Metadata, Plot 6 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/28/2017	A.Graber	1:13:00 PM	2:13:00 PM	60	10	WSW	50	None	Spring	No
4/14/2017	A.Graber	9:22:00 AM	10:22:00 AM	20	7	SE	60.1	None	Spring	No
4/26/2017	C.Anderson	9:43:00 AM	10:43:00 AM	25	6	WNW	50.2	None	Spring	No
5/11/2017	C.Anderson	3:40:00 PM	4:40:00 PM	25	0	N	66.4	None	Spring	No
6/2/2017	A.Graber	10:48:00 AM	11:48:00 AM	35	1	–	72.5	None	Summer	No
6/19/2017	A.Graber	6:07:00 AM	7:07:00 AM	4	11	SSW	61.9	None	Summer	No
6/27/2017	C.Anderson	5:33:00 PM	6:33:00 PM	30	–	SW	85	None	Summer	No
7/12/2017	A.Graber	12:20:00 PM	1:20:00 PM	75	4	WNW	82.7	None	Summer	No
7/25/2017	T.Hinckley	9:47:00 AM	10:47:00 AM	20	2	W	70	None	Summer	No
8/10/2017	C.Anderson	10:01:00 AM	11:01:00 AM	100	4	SE	69	None	Summer	No
8/29/2017	A.Graber	5:48:00 PM	6:48:00 PM	90	8	SSE	63.6	None	Summer	No
9/14/2017	T.Hinckley	5:07:00 PM	6:07:00 PM	40	13	SSW	70.8	None	Fall	No
9/27/2017	C.Anderson	8:20:00 AM	9:20:00 AM	100	9	ESE	52	Rain	Fall	No
10/9/2017	T.Hinckley	4:53:00 PM	5:53:00 PM	0	5	NNW	49.1	None	Fall	No
10/29/2017	C.Wilhite	10:23:00 AM	11:23:00 AM	0	3	W	59.2	None	Fall	No
11/8/2017	A.Graber	9:50:00 AM	10:50:00 AM	25	5	NW	51.3	None	Fall	No
11/21/2017	A.Gillett	2:48:00 PM	3:48:00 PM	5	4	W	60	None	Fall	No
12/1/2017	A.Graber	9:02:00 AM	10:02:00 AM	99	0	–	49.5	None	Winter	No
12/30/2017	C.Anderson	12:50:00 PM	1:50:00 PM	80	8	S	54	None	Winter	No
1/9/2018	C.Wilhite	9:19:00 AM	10:19:00 AM	90	6	S	50.4	None	Winter	No
1/29/2018	C.Wilhite	10:31:00 AM	11:31:00 AM	0	4	SW	45.6	None	Winter	No
2/6/2018	C.Anderson	9:30:00 AM	10:30:00 AM	0	19	W	48	None	Winter	No
2/20/2018	C.Anderson	12:49:00 PM	1:49:00 PM	100	5	N	30	Snow	Winter	No
3/1/2018	C.Wilhite	8:53:00 AM	9:53:00 AM	0	8	SE	31.3	None	Spring	No

Total Survey Periods Completed: 24

Plot 6 Coordinates: 34.140026, -108.899977

Table C-12. Eagle Use Survey Metadata, Plot 6 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	C.Anderson	10:03:00 AM	11:03:00 AM	100	6	WSW	34	None	Spring	No
4/12/2018	C.Wilhite	11:55:00 AM	12:55:00 PM	80	33	WSW	64.4	None	Spring	No
4/22/2018	A.Graber	1:25:00 PM	2:25:00 PM	70	6	WSW	82.5	None	Spring	No
5/6/2018	A.Graber	8:58:00 AM	9:58:00 AM	25	9	S	64.7	None	Spring	No
5/21/2018	T.Loomis	2:46:00 PM	3:46:00 PM	45	14	SW	75.7	None	Spring	No
6/12/2018	T.Hinckley	6:09:00 AM	7:09:00 AM	0	0	–	49.4	None	Summer	No
6/26/2018	C.Anderson	11:12:00 AM	12:12:00 PM	1	5	W	84	None	Summer	No
7/9/2018	T.Hinckley	8:00:00 AM	9:00:00 AM	10	6	SSW	68	None	Summer	No
7/24/2018	C.Wilhite	12:39:00 PM	1:39:00 PM	40	5	WSW	81.8	None	Summer	No
8/14/2018	R.Winton	8:42:00 AM	9:42:00 AM	0	6	W	71	None	Summer	No
8/29/2018	A.Pellegrini	11:40:00 AM	12:40:00 PM	8	4	NW	71.8	None	Summer	No
9/12/2018	R.Winton	9:16:00 AM	10:16:00 AM	0	2	SW	71	None	Fall	No
9/26/2018	T.Hinckley	3:34:00 PM	4:34:00 PM	25	12	N	72.5	None	Fall	No
10/10/2018	C.Anderson	11:08:00 AM	12:08:00 PM	40	6	WSW	53	None	Fall	No
10/24/2018	C.Anderson	7:53:00 AM	8:53:00 AM	100	7	WSW	52	Fog	Fall	No
11/15/2018	T.Hinckley	11:26:00 AM	12:26:00 PM	0	1	ENE	54.4	None	Fall	No
11/28/2018	R.Winton	9:26:00 AM	10:26:00 AM	40	0	–	55	None	Fall	No
12/6/2018	J.Tolchin	1:45:00 PM	2:45:00 PM	90	11	S	51.4	None	Winter	No
12/12/2018	C.Anderson	9:23:00 AM	10:23:00 AM	2	4	W	45	None	Winter	No
1/9/2019	T.Hinckley	10:09:00 AM	11:09:00 AM	95	1	SSW	37.8	None	Winter	No
1/22/2019	J.Tolchin	12:04:00 PM	1:04:00 PM	100	10	NNW	26.4	Snow	Winter	No
2/12/2019	C.Anderson	12:55:00 PM	1:55:00 PM	10	9	S	55	None	Winter	No
2/27/2019	C.Anderson	7:21:00 AM	8:21:00 AM	100	0	–	40	None	Winter	No
3/5/2019	R.Winton	9:42:00 AM	10:42:00 AM	0	1	SW	46	None	Spring	No

Total Survey Periods Completed: 24

Plot 6 Coordinates: 34.140026, -108.899977

Table C-13. Eagle Use Survey Metadata, Plot 7 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/28/2017	A.Graber	3:29:00 PM	4:29:00 PM	60	11	WSW	49.4	None	Spring	No
4/14/2017	A.Graber	10:53:00 AM	11:53:00 AM	15	10	SE	68.8	None	Spring	No
4/26/2017	C.Anderson	11:09:00 AM	12:09:00 PM	60	8	WNW	60	None	Spring	No
5/11/2017	C.Anderson	2:17:00 PM	3:17:00 PM	50	6	NW	66.6	None	Spring	No
5/31/2017	A.Graber	10:50:00 AM	11:50:00 AM	100	9	SSE	69.6	None	Spring	No
6/19/2017	A.Graber	8:45:00 AM	9:45:00 AM	4	4	NNW	78	None	Summer	No
6/27/2017	J.Franks	1:55:00 PM	2:55:00 PM	40	17	SE	89	None	Summer	No
7/12/2017	A.Graber	10:50:00 AM	11:50:00 AM	85	3	NW	79.3	None	Summer	No
7/25/2017	C.Anderson	7:51:00 AM	8:51:00 AM	80	0	–	60	None	Summer	No
8/10/2017	C.Anderson	8:33:00 AM	9:33:00 AM	99	4	SE	64	None	Summer	No
8/30/2017	A.Graber	1:31:00 PM	2:31:00 PM	25	5	SSE	84.2	None	Summer	No
9/14/2017	T.Hinckley	3:28:00 PM	4:28:00 PM	90	6	S	64.9	Light drizzle	Fall	No
9/28/2017	T.Hinckley	2:12:00 PM	3:12:00 PM	35	8	S	68.6	None	Fall	No
10/10/2017	C.Anderson	12:23:00 PM	1:23:00 PM	5	10	SSE	58	None	Fall	No
10/29/2017	C.Wilhite	11:47:00 AM	12:47:00 PM	0	4	WNW	62.9	None	Fall	No
11/8/2017	A.Graber	11:12:00 AM	12:12:00 PM	8	4	NW	57	None	Fall	No
11/21/2017	T.Hinckley	2:48:00 PM	3:48:00 PM	10	4	NNW	60.7	None	Fall	No
12/1/2017	A.Graber	7:35:00 AM	8:35:00 AM	99	0	–	42.1	None	Winter	No
12/30/2017	C.Anderson	2:24:00 PM	3:24:00 PM	90	14	S	50	None	Winter	No
1/9/2018	C.Wilhite	11:02:00 AM	12:02:00 PM	80	17	SE	53.8	None	Winter	No
1/29/2018	C.Wilhite	8:58:00 AM	9:58:00 AM	0	10	S	30.5	None	Winter	No
2/6/2018	C.Anderson	11:09:00 AM	12:09:00 PM	1	14	W	50	None	Winter	No
2/20/2018	C.Anderson	2:16:00 PM	3:16:00 PM	100	7	N	30	Snow	Winter	No
3/1/2018	C.Wilhite	10:58:00 AM	11:58:00 AM	0	15	S	40.6	None	Spring	No

Total Survey Periods Completed: 24

Plot 7 Coordinates: 34.126354, -108.912490

Table C-14. Eagle Use Survey Metadata, Plot 7 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	C.Anderson	11:43:00 AM	12:43:00 PM	98	5	W	36	None	Spring	No
4/11/2018	C.Wilhite	12:18:00 PM	1:18:00 PM	40	11	W	74.6	None	Spring	No
4/22/2018	A.Graber	11:40:00 AM	12:40:00 PM	55	6	SW	75.5	None	Spring	No
5/6/2018	A.Graber	7:35:00 AM	8:35:00 AM	25	7	S	51.2	None	Spring	No
5/21/2018	T.Loomis	1:18:00 PM	2:18:00 PM	60	19	SW	71.1	None	Spring	No
6/12/2018	T.Hinckley	9:29:00 AM	10:29:00 AM	0	5	N	78	None	Summer	No
6/26/2018	C.Anderson	2:37:00 PM	3:37:00 PM	25	7	WSW	89	None	Summer	No
7/9/2018	T.Hinckley	9:34:00 AM	10:34:00 AM	15	6	SE	70.1	None	Summer	No
7/24/2018	C.Wilhite	2:31:00 PM	3:31:00 PM	75	6	NW	86.2	None	Summer	No
8/15/2018	R.Winton	8:55:00 AM	9:55:00 AM	10	0	–	71.2	None	Summer	No
8/29/2018	A.Pellegrini	1:30:00 PM	2:30:00 PM	10	2	SSE	82.5	None	Summer	No
9/12/2018	R.Winton	12:00:00 PM	1:00:00 PM	5	10	SW	74	None	Fall	No
9/27/2018	T.Hinckley	7:58:00 AM	8:58:00 AM	2	3	W	49.5	None	Fall	No
10/3/2018	R.Winton	4:05:00 PM	5:05:00 PM	50	1	SW	77	None	Fall	No
10/23/2018	C.Anderson	10:41:00 AM	11:41:00 AM	100	7	S	54	None	Fall	No
11/15/2018	T.Hinckley	9:36:00 AM	10:36:00 AM	0	6	SSE	47.3	None	Fall	No
11/28/2018	T.Hinckley	11:25:00 AM	12:25:00 PM	15	4	WNW	58.4	None	Fall	No
12/7/2018	J.Tolchin	7:45:00 AM	8:45:00 AM	75	0	E	40	None	Winter	No
12/12/2018	C.Anderson	10:52:00 AM	11:52:00 AM	5	6	W	48	None	Winter	No
1/16/2019	R.Winton	8:56:00 AM	9:56:00 AM	0	1	SW	39	None	Winter	No
1/22/2019	J.Tolchin	3:10:00 PM	4:10:00 PM	90	10	N	26	Snow	Winter	No
2/13/2019	C.Anderson	11:29:00 AM	12:29:00 PM	100	4	SW	48	None	Winter	No
2/26/2019	C.Anderson	1:12:00 PM	2:12:00 PM	5	3	NE	49	None	Winter	No
3/5/2019	R.Winton	12:14:00 PM	1:14:00 PM	0	3	S	60	None	Spring	No

Total Survey Periods Completed: 24

Plot 7 Coordinates: 34.126354, -108.912490

Table C-15. Eagle Use Survey Metadata, Plot 8 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (°F)	Precipitation	Season	Eagle Observation
3/29/2017	A.Graber	4:21:00 PM	5:21:00 PM	45	8	WNW	51.6	None	Spring	No
4/14/2017	A.Graber	12:55:00 PM	1:55:00 PM	5	14	SSW	77.7	None	Spring	No
4/26/2017	C.Anderson	12:51:00 PM	1:51:00 PM	20	10	WNW	60.8	None	Spring	No
5/11/2017	C.Anderson	12:36:00 PM	1:36:00 PM	60	7	NW	58.5	None	Spring	No
6/1/2017	A.Graber	10:53:00 AM	11:53:00 AM	35	15	S	73.2	None	Summer	No
6/20/2017	J.Franks	7:15:00 AM	8:15:00 AM	15	10	SW	70	None	Summer	No
6/27/2017	J.Franks	3:40:00 PM	4:40:00 PM	40	20	SE	89	None	Summer	No
7/12/2017	C.Anderson	10:46:00 AM	11:46:00 AM	70	4	N	73	None	Summer	No
7/25/2017	C.Anderson	9:38:00 AM	10:38:00 AM	50	3	E	69	None	Summer	No
8/9/2017	C.Anderson	11:37:00 AM	12:37:00 PM	50	7	SW	77	None	Summer	No
8/30/2017	A.Graber	11:05:00 AM	12:05:00 PM	0	10	SE	78.2	None	Summer	No
9/14/2017	C.Anderson	2:40:00 PM	3:40:00 PM	95	18	S	64	Rain	Fall	No
9/28/2017	T.Hinckley	11:23:00 AM	12:23:00 PM	25	4	SE	59.7	None	Fall	No
10/10/2017	C.Anderson	10:34:00 AM	11:34:00 AM	0	7	S	48	None	Fall	No
10/28/2017	C.Wilhite	11:56:00 AM	12:56:00 PM	10	9	NNW	59.1	None	Fall	No
11/8/2017	A.Graber	1:55:00 PM	2:55:00 PM	2	6	NW	60.6	None	Fall	No
11/21/2017	T.Hinckley	7:39:00 AM	8:39:00 AM	10	7	WNW	38.8	None	Fall	No
12/2/2017	A.Graber	9:09:00 AM	10:09:00 AM	95	8	SSE	44.9	None	Winter	Yes; see Table C-33
12/31/2017	C.Wilhite	12:18:00 PM	1:18:00 PM	75	12	W	56.6	None	Winter	No
1/9/2018	C.Anderson	9:18:00 AM	10:18:00 AM	75	11	SE	45	None	Winter	Yes; see Table C-33
1/29/2018	C.Wilhite	1:11:00 PM	2:11:00 PM	30	12	S	61.2	None	Winter	No
2/7/2018	C.Anderson	9:23:00 AM	10:23:00 AM	0	2	SSE	34	None	Winter	No
2/21/2018	C.Anderson	1:05:00 PM	2:05:00 PM	50	17	S	39	None	Winter	No
3/1/2018	C.Wilhite	12:59:00 PM	1:59:00 PM	0	14	SSW	45.7	None	Spring	No

Total Survey Periods Completed: 24

Plot 8 Coordinates: 34.081635, -108.922756

Table C-16. Eagle Use Survey Metadata, Plot 8 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (°F)	Precipitation	Season	Eagle Observation
3/25/2018	A.Graber	10:20:00 AM	11:20:00 AM	45	14	SSW	51.5	None	Spring	No
4/11/2018	C.Wilhite	4:29:00 PM	5:29:00 PM	90	15	W	65.3	None	Spring	No
4/25/2018	A.Graber	10:00:00 AM	11:00:00 AM	1	2	NE	62.6	None	Spring	No
5/9/2018	T.Loomis	9:24:00 AM	10:24:00 AM	25	4	W	70.6	None	Spring	No
5/22/2018	T.Loomis	1:52:00 PM	2:52:00 PM	35	19	S	75.5	None	Spring	No
6/13/2018	C.Wilhite	9:45:00 AM	10:45:00 AM	35	0	–	75.3	None	Summer	No
6/27/2018	C.Anderson	12:11:00 PM	1:11:00 PM	0	8	NW	86	None	Summer	Yes; see Table C-34
7/10/2018	T.Hinckley	9:52:00 AM	10:52:00 AM	95	8	S	62.9	None	Summer	No
7/24/2018	C.Anderson	11:39:00 AM	12:39:00 PM	50	5	SSE	84	None	Summer	No
8/15/2018	R.Winton	7:16:00 AM	8:16:00 AM	20	0	–	64	None	Summer	No
8/28/2018	R.Winton	10:25:00 AM	11:25:00 AM	5	1	S	75	None	Summer	No
9/11/2018	R.Winton	1:45:00 PM	2:45:00 PM	30	4	W	82	None	Fall	No
9/22/2018	C.Anderson	9:24:00 AM	10:24:00 AM	0	7	SSE	62	None	Fall	No
10/3/2018	R.Winton	10:23:00 AM	11:23:00 AM	90	7	E	59	Light drizzle	Fall	No
10/17/2018	C.Anderson	10:35:00 AM	11:35:00 AM	100	10	SE	40	None	Fall	No
11/13/2018	T.Hinckley	9:17:00 AM	10:17:00 AM	0	6	NE	31.8	None	Fall	No
11/27/2018	T.Hinckley	11:03:00 AM	12:03:00 PM	0	3	NW	51.2	None	Fall	No
12/6/2018	T.Hinckley	9:10:00 AM	10:10:00 AM	90	6	SSW	44.4	None	Winter	No
12/11/2018	J.Tolchin	2:46:00 PM	3:46:00 PM	80	5	SE	51.8	None	Winter	No
1/15/2019	R.Winton	8:12:00 AM	9:12:00 AM	60	3	SW	32	None	Winter	No
2/1/2019	R.Winton	8:18:00 AM	9:18:00 AM	70	1	S	30	None	Winter	No
2/10/2019	J.Tolchin	4:24:00 PM	5:24:00 PM	60	13	SSW	39.5	None	Winter	No
2/28/2019	C.Anderson	9:10:00 AM	10:10:00 AM	10	2	W	42	None	Winter	No
3/4/2019	C.Anderson	12:21:00 PM	1:21:00 PM	5	8	W	48	None	Spring	No

Total Survey Periods Completed: 24

Plot 8 Coordinates: 34.081635, -108.922756

Table C-17. Eagle Use Survey Metadata, Plot 9 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/29/2017	A.Graber	12:35:00 PM	1:35:00 PM	35	8	W	51.9	None	Spring	No
4/14/2017	A.Graber	3:15:00 PM	4:15:00 PM	1	14	SW	77.7	None	Spring	No
4/26/2017	C.Anderson	2:32:00 PM	3:32:00 PM	50	11	WNW	61.3	None	Spring	No
5/11/2017	C.Anderson	11:05:00 AM	12:05:00 PM	50	7	NNW	56.6	None	Spring	No
6/1/2017	A.Graber	10:07:00 AM	11:07:00 AM	20	–	–	61.6	None	Summer	No
6/20/2017	J.Franks	8:30:00 AM	9:30:00 AM	15	10	SW	70	None	Summer	No
6/27/2017	J.Franks	5:00:00 PM	6:00:00 PM	20	20	SE	88	None	Summer	No
7/12/2017	A.Graber	8:42:00 AM	9:42:00 AM	50	2	SW	68.4	None	Summer	No
7/25/2017	C.Anderson	12:49:00 PM	1:49:00 PM	90	3	NNW	72	Light drizzle	Summer	No
8/9/2017	C.Anderson	10:01:00 AM	11:01:00 AM	15	5	SW	73	None	Summer	No
8/28/2017	A.Graber	3:35:00 PM	4:35:00 PM	70	4	W	88.9	None	Summer	No
9/14/2017	C.Anderson	1:18:00 PM	2:18:00 PM	60	12	S		None	Fall	No
9/28/2017	T.Hinckley	9:28:00 AM	10:28:00 AM	20	8	SSE	52.9	None	Fall	No
10/10/2017	C.Anderson	8:35:00 AM	9:35:00 AM	0	9	S	39	None	Fall	No
10/28/2017	C.Wilhite	1:46:00 PM	2:46:00 PM	30	4	N	60.6	None	Fall	No
11/8/2017	A.Graber	3:51:00 PM	4:51:00 PM	3	3	NW	59.4	None	Fall	No
11/21/2017	A.Gillett	7:35:00 AM	8:35:00 AM	5	10	W	37.5	None	Fall	No
12/2/2017	A.Graber	11:52:00 AM	12:52:00 PM	96	2	SW	56.5	None	Winter	No
12/31/2017	C.Wilhite	10:31:00 AM	11:31:00 AM	95	7	NNW	52.8	None	Winter	No
1/9/2018	C.Anderson	7:37:00 AM	8:37:00 AM	90	12	SSE	42	None	Winter	No
1/29/2018	C.Wilhite	3:12:00 PM	4:12:00 PM	30	5	S	56.2	None	Winter	No
2/7/2018	C.Anderson	7:54:00 AM	8:54:00 AM	0	0	–	33	None	Winter	No
2/21/2018	C.Anderson	10:59:00 AM	11:59:00 AM	50	14	S	35	Snow	Winter	No
3/1/2018	C.Wilhite	3:02:00 PM	4:02:00 PM	15	18	SSW	45.4	None	Spring	Yes; see Table C-33

Total Survey Periods Completed: 24

Plot 9 Coordinates: 34.100519, -108.904411

Table C-18. Eagle Use Survey Metadata, Plot 9 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	A.Graber	10:06:00 AM	11:06:00 AM	100	6	SW	40.2	None	Spring	No
4/12/2018	C.Wilhite	2:37:00 PM	3:37:00 PM	25	45	WSW	61.7	None	Spring	No
4/23/2018	A.Graber	9:35:00 AM	10:35:00 AM	0	6	SW	57.4	None	Spring	No
5/9/2018	T.Loomis	10:56:00 AM	11:56:00 AM	25	9	W	74.9	None	Spring	No
5/22/2018	T.Loomis	3:43:00 PM	4:43:00 PM	20	10	SSW	75.7	None	Spring	No
6/13/2018	C.Wilhite	6:48:00 AM	7:48:00 AM	40	0	–	48	None	Summer	No
6/27/2018	C.Anderson	2:24:00 PM	3:24:00 PM	5	3	SE	92	None	Summer	No
7/10/2018	T.Hinckley	8:16:00 AM	9:16:00 AM	95	12	SSE	58.8	None	Summer	No
7/24/2018	C.Anderson	1:46:00 PM	2:46:00 PM	60	6	W	90	None	Summer	No
8/15/2018	C.Anderson	9:06:00 AM	10:06:00 AM	40	3	ENE	74	None	Summer	No
8/28/2018	R.Winton	11:50:00 AM	12:50:00 PM	5	1	W	78	None	Summer	No
9/11/2018	R.Winton	11:53:00 AM	12:53:00 PM	5	1	W	77	None	Fall	No
9/22/2018	C.Anderson	7:57:00 AM	8:58:00 AM	0	9	S	53	None	Fall	No
10/3/2018	R.Winton	11:43:00 AM	12:43:00 PM	80	8	S	67	None	Fall	No
10/17/2018	C.Anderson	9:07:00 AM	10:07:00 AM	100	8	SSE	36	None	Fall	No
11/13/2018	T.Hinckley	1:22:00 PM	2:22:00 PM	0	9	NE	46.1	None	Fall	No
11/27/2018	T.Hinckley	1:34:00 PM	2:34:00 PM	10	4	NW	52.8	None	Fall	No
12/6/2018	T.Hinckley	7:36:00 AM	8:36:00 AM	75	8	SW	34.6	None	Winter	No
12/11/2018	J.Tolchin	1:09:00 PM	2:09:00 PM	90	4	W	53.3	None	Winter	No
1/15/2019	R.Winton	1:29:00 PM	2:29:00 PM	90	18	SW	30	None	Winter	No
2/1/2019	R.Winton	7:01:00 AM	8:01:00 AM	75	1	SW	30	None	Winter	No
2/11/2019	J.Tolchin	10:47:00 AM	11:47:00 AM	10	18	SW	25.6	None	Winter	No
2/28/2019	C.Anderson	10:36:00 AM	11:36:00 AM	3	2	W	52	None	Winter	No
3/4/2019	C.Anderson	3:18:00 PM	4:08:00 PM	50	10	W	52	None	Spring	No

Total Survey Periods Completed: 24

Plot 9 Coordinates: 34.100519, -108.904411

Table C-19. Eagle Use Survey Metadata, Plot 10 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
6/1/2017	A.Graber	2:03:00 PM	3:03:00 PM	50	7	SW	88.7	None	Summer	No
6/19/2017	J.Franks	8:17:00 AM	9:17:00 AM	0	2	NW	75	None	Summer	No
6/27/2017	J.Franks	6:22:00 PM	7:22:00 PM	20	15	SE	84	None	Summer	No
7/12/2017	C.Anderson	8:46:00 AM	9:46:00 AM	60	3	NNW	68	None	Summer	No
7/26/2017	C.Anderson	9:51:00 AM	10:51:00 AM	70	3	N	73	None	Summer	No
8/9/2017	C.Anderson	8:30:00 AM	9:30:00 AM	5	5	SSE	70	None	Summer	No
8/28/2017	A.Graber	12:19:00 PM	1:19:00 PM	40	2	W	88.7	None	Summer	No
9/14/2017	C.Anderson	4:26:00 PM	5:26:00 PM	40	6	WSW	76	None	Fall	No
9/27/2017	T.Hinckley	8:37:00 AM	9:37:00 AM	98	5	SE	48.1	Light drizzle	Fall	No
10/10/2017	T.Hinckley	12:30:00 PM	1:30:00 PM	2	5	SSE	62	None	Fall	No
10/29/2017	C.Wilhite	1:57:00 PM	2:57:00 PM	1	5	NW	64.3	None	Fall	No
11/9/2017	A.Graber	11:23:00 AM	12:23:00 PM	2	6	SE	71.7	None	Fall	No
11/21/2017	A.Gillett	10:26:00 AM	11:26:00 AM	10	6	W	52	None	Fall	No
12/2/2017	A.Graber	7:15:00 AM	8:15:00 AM	97	7	SSW	42.6	None	Winter	No
12/31/2017	C.Wilhite	2:07:00 PM	3:07:00 PM	15	10	NW	51.2	None	Winter	No
1/8/2018	C.Anderson	11:20:00 AM	12:20:00 PM	70	12	SSE	51	None	Winter	Yes; see Table C-33
1/30/2018	C.Wilhite	7:37:00 AM	8:37:00 AM	60	10	S	33.2	None	Winter	No
2/7/2018	C.Anderson	11:57:00 AM	12:57:00 PM	0	2	SSW	44	None	Winter	No
2/21/2018	C.Anderson	2:52:00 PM	3:52:00 PM	40	15	S	36	None	Winter	No
3/2/2018	C.Wilhite	8:57:00 AM	9:57:00 AM	0	11	SSW	34.6	None	Spring	No

Total Survey Periods Completed: 20

Plot 10 Coordinates: 34.099322, -108.884573

Table C-20. Eagle Use Survey Metadata, Plot 10 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	A.Graber	11:54:00 AM	12:54:00 PM	70	4	SW	41.3	None	Spring	No
4/12/2018	C.Wilhite	4:11:00 PM	5:11:00 PM	10	33	WSW	59.8	None	Spring	No
4/23/2018	A.Graber	7:43:00 AM	8:43:00 AM	25	2	S	50.8	None	Spring	No
5/8/2018	T.Loomis	12:37:00 PM	1:37:00 PM	0	1	W	79.7	None	Spring	No
5/22/2018	T.Loomis	5:23:00 PM	6:23:00 PM	15	10	SSW	73.4	None	Spring	No
6/13/2018	T.Hinckley	8:20:00 AM	9:20:00 AM	35	1	ENE	74.5	None	Summer	No
6/27/2018	C.Anderson	4:06:00 PM	5:06:00 PM	20	5	NW	90	None	Summer	No
7/10/2018	T.Hinckley	6:37:00 AM	7:37:00 AM	90	1	ESE	58	None	Summer	No
7/25/2018	C.Anderson	12:18:00 PM	1:18:00 PM	30	5	W	84	None	Summer	No
8/15/2018	C.Anderson	7:28:00 AM	8:28:00 AM	50	3	NW	62	None	Summer	No
8/28/2018	R.Winton	1:24:00 PM	2:24:00 PM	5	3	W	78	None	Summer	No
9/11/2018	R.Winton	10:14:00 AM	11:14:00 AM	0	2	NW	72	None	Fall	No
9/22/2018	C.Anderson	11:57:00 AM	12:57:00 PM	5	3	E	68	None	Fall	No
10/11/2018	C.Anderson	8:54:00 AM	9:54:00 AM	90	5	S	50	None	Fall	No
10/17/2018	C.Anderson	12:24:00 PM	1:24:00 PM	100	13	E	41	None	Fall	No
11/13/2018	T.Hinckley	3:19:00 PM	4:19:00 PM	0	6	NE	41.8	None	Fall	No
11/29/2018	T.Hinckley	7:49:00 AM	8:49:00 AM	75	6	SSE	38.3	None	Fall	No
12/5/2018	J.Tolchin	11:24:00 AM	12:24:00 PM	90	12	SSE	49	None	Winter	No
12/13/2018	C.Anderson	7:28:00 AM	8:28:00 AM	0	10	W	20	None	Winter	No
1/16/2019	R.Winton	11:19:00 AM	12:19:00 PM	0	3	SW	43	None	Winter	No
1/31/2019	R.Winton	5:11:00 PM	6:11:00 PM	90	1	NW	46	None	Winter	No
2/11/2019	J.Tolchin	9:19:00 AM	10:19:00 AM	95	20	SW	26.3	Snow	Winter	No
2/27/2019	C.Anderson	12:40:00 PM	1:40:00 PM	100	4	W	49	None	Winter	No
3/5/2019	R.Winton	8:00:00 AM	9:00:00 AM	0	0	SW	25	None	Spring	No

Total Survey Periods Completed: 24

Plot 10 Coordinates: 34.099322, -108.884573

Table C-21. Eagle Use Survey Metadata, Plot 11 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/29/2017	A.Graber	10:18:00 AM	11:18:00 AM	25	11	W	59.3	None	Spring	No
4/14/2017	A.Graber	5:10:00 PM	6:10:00 PM	2	6	SW	71.4	None	Spring	No
4/26/2017	C.Anderson	4:07:00 PM	5:07:00 PM	70	13	W	62.5	None	Spring	No
5/11/2017	C.Anderson	9:29:00 AM	10:29:00 AM	70	4	NNW	53.4	None	Spring	No
6/1/2017	A.Graber	8:13:00 AM	9:13:00 AM	75	9	S	57.1	None	Summer	No
6/19/2017	J.Franks	9:35:00 AM	10:35:00 AM	5	10	NE	75	None	Summer	No
6/27/2017	C.Anderson	2:01:00 PM	3:01:00 PM	60	9	SSW	87	None	Summer	No
7/12/2017	A.Graber	7:06:00 AM	8:06:00 AM	92	0	–	60.2	None	Summer	No
7/25/2017	C.Anderson	11:13:00 AM	12:13:00 PM	80	7	NW	70	None	Summer	No
8/9/2017	C.Anderson	1:30:00 PM	2:30:00 PM	70	5	W	85	None	Summer	No
8/30/2017	A.Graber	9:06:00 AM	10:06:00 AM	1	4	ESE	66.9	None	Summer	No
9/15/2017	T.Hinckley	1:18:00 PM	2:18:00 PM	40	11	SSW	72.1	None	Fall	No
9/26/2017	C.Anderson	2:15:00 PM	3:15:00 PM	70	14	SSE	70	None	Fall	No
10/10/2017	T.Hinckley	10:15:00 AM	11:15:00 AM	0	4	SSE	54.5	None	Fall	No
10/28/2017	C.Wilhite	10:07:00 AM	11:07:00 AM	25	8	W	54.6	None	Fall	No
11/9/2017	A.Graber	1:20:00 PM	2:20:00 PM	2	2	S	70.7	None	Fall	No
11/21/2017	T.Hinckley	10:05:00 AM	11:05:00 AM	10	4	NNW	51.7	None	Fall	No
12/2/2017	A.Graber	1:50:00 PM	2:50:00 PM	99	3	SW	55.8	None	Winter	No
12/31/2017	C.Wilhite	8:47:00 AM	9:47:00 AM	100	2	WSW	48	None	Winter	No
1/9/2018	C.Anderson	1:22:00 PM	2:22:00 PM	50	11	S	58	None	Winter	No
1/30/2018	C.Wilhite	9:00:00 AM	10:00:00 AM	55	2	SSE	51.7	None	Winter	No
2/7/2018	C.Anderson	3:16:00 PM	4:16:00 PM	0	6	W	54	None	Winter	No
2/21/2018	C.Anderson	9:22:00 AM	10:22:00 AM	20	8	S	34	None	Winter	No
3/2/2018	C.Wilhite	10:39:00 AM	11:39:00 AM	0	7	S	51.8	None	Spring	No

Total Survey Periods Completed: 24

Plot 11 Coordinates: 34.120579, -108.881182

Table C-22. Eagle Use Survey Metadata, Plot 11 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	A.Graber	1:35:00 PM	2:35:00 PM	85	4	W	48.7	None	Spring	No
4/12/2018	C.Wilhite	9:44:00 AM	10:44:00 AM	95	9	WSW	62.1	None	Spring	No
4/23/2018	A.Graber	2:23:00 PM	3:23:00 PM	45	6	WNW	84.1	None	Spring	No
5/8/2018	T.Loomis	10:40:00 AM	11:40:00 AM	0	5	W	69	None	Spring	No
5/22/2018	T.Loomis	7:34:00 AM	8:34:00 AM	0	6	SSW	54.8	None	Spring	No
6/13/2018	T.Hinckley	10:13:00 AM	11:13:00 AM	30	1	NW	85	None	Summer	No
6/28/2018	C.Anderson	9:28:00 AM	10:28:00 AM	25	3	WNW	79	None	Summer	No
7/8/2018	T.Hinckley	1:52:00 PM	2:52:00 PM	60	8	SSE	84.3	None	Summer	No
7/25/2018	C.Anderson	10:02:00 AM	11:02:00 AM	10	4	SW	80	None	Summer	No
8/13/2018	R.Winton	6:24:00 AM	7:24:00 AM	60	11	NW	80.2	None	Summer	No
8/29/2018	R.Winton	8:25:00 AM	9:25:00 AM	5	0	SW	70	None	Summer	No
9/11/2018	R.Winton	8:43:00 AM	9:43:00 AM	0	0	–	76	None	Fall	No
9/21/2018	C.Anderson	2:51:00 PM	3:51:00 PM	5	3	NW	77	None	Fall	Yes; see Table C-34
10/11/2018	C.Anderson	7:18:00 AM	8:18:00 AM	80	1	SW	48	None	Fall	No
10/16/2018	C.Anderson	1:11:00 PM	2:11:00 PM	100	8	SE	38	Snow	Fall	No
11/14/2018	T.Hinckley	1:50:00 PM	2:50:00 PM	40	2	NNE	55.4	None	Fall	No
11/27/2018	T.Hinckley	7:16:00 AM	8:16:00 AM	0	3	NNW	25.6	None	Fall	No
12/5/2018	J.Tolchin	1:19:00 PM	2:19:00 PM	10	6	S	56.5	None	Winter	Yes; see Table C-34
12/13/2018	C.Anderson	9:18:00 AM	10:18:00 AM	1	13	W	26	None	Winter	Yes; see Table C-34
1/16/2019	R.Winton	12:48:00 PM	1:48:00 PM	0	2	SW	45	None	Winter	No
1/31/2019	C.Anderson	2:37:00 PM	3:37:00 PM	40	7	NW	53	None	Winter	No
2/11/2019	J.Tolchin	7:39:00 AM	8:39:00 AM	85	14	SW	27.8	Snow	Winter	No
2/27/2019	C.Anderson	2:26:00 PM	3:26:00 PM	75	7	W	51	None	Winter	Yes; see Table C-34
3/5/2019	R.Winton	6:30:00 AM	7:30:00 AM	0	1	SW	22	None	Spring	No

Total Survey Periods Completed: 24

Plot 11 Coordinates: 34.120579, -108.881182

Table C-23. Eagle Use Survey Metadata, Plot 12 – Year 1

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
5/30/2017	A.Graber	11:11:00 AM	12:11:00 PM	30	10	SW	79.3	None	Spring	No
6/19/2017	J.Franks	6:40:00 AM	7:40:00 AM	20	5	NE	65	None	Summer	No
6/27/2017	C.Anderson	3:45:00 PM	4:45:00 PM	40	12	W	87	None	Summer	No
7/12/2017	C.Anderson	7:01:00 AM	8:01:00 AM	99	2	SSW	61	None	Summer	No
7/25/2017	T.Hinckley	12:12:00 PM	1:12:00 PM	75	2	SW	79.5	None	Summer	No
8/9/2017	C.Anderson	3:11:00 PM	4:11:00 PM	80	5	W	83	None	Summer	No
8/30/2017	A.Graber	7:27:00 AM	8:27:00 AM	1	3	S	51.1	None	Summer	No
9/15/2017	T.Hinckley	11:21:00 AM	12:21:00 PM	30	12	SW	61.4	None	Fall	No
9/26/2017	C.Anderson	12:26:00 PM	1:26:00 PM	50	15	S	71	None	Fall	No
10/10/2017	T.Hinckley	8:28:00 AM	9:28:00 AM	0	4	S	39.6	None	Fall	Yes; see Table C-33
10/29/2017	C.Wilhite	3:40:00 PM	4:40:00 PM	0	5	W	68.9	None	Fall	Yes; see Table C-33
11/9/2017	A.Graber	9:31:00 AM	10:31:00 AM	35	4	SSE	57.4	None	Fall	No
11/21/2017	T.Hinckley	12:36:00 PM	1:36:00 PM	5	2	NNW	57.1	None	Fall	No
12/2/2017	A.Graber	3:46:00 PM	4:46:00 PM	96	4	SSE	54.5	None	Winter	No
12/31/2017	C.Anderson	8:16:00 AM	9:16:00 AM	100	0	–	50	None	Winter	No
1/9/2018	C.Anderson	2:59:00 PM	3:59:00 PM	70	15	S	55	None	Winter	Yes; see Table C-33
1/31/2018	C.Wilhite	9:06:00 AM	10:06:00 AM	10	2	NW	43.8	None	Winter	No
2/7/2018	C.Anderson	1:43:00 PM	2:43:00 PM	0	0	–	54	None	Winter	Yes; see Table C-33
2/21/2018	C.Anderson	7:46:00 AM	8:46:00 AM	30	0	–	35	Snow	Winter	No
3/2/2018	C.Wilhite	12:09:00 PM	1:09:00 PM	0	13	S	58.1	None	Spring	No

Total Survey Periods Completed: 20

Plot 12 Coordinates: 34.119402, -108.851843

Table C-24. Eagle Use Survey Metadata, Plot 12 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	A.Graber	8:21:00 AM	9:21:00 AM	99	1	SSW	39.4	None	Spring	No
4/12/2018	C.Wilhite	5:36:00 PM	6:36:00 PM	3	28	SW	61.7	None	Spring	No
4/25/2018	A.Graber	1:00:00 PM	2:00:00 PM	–	–	–	77.6	None	Spring	No
5/8/2018	T.Loomis	8:58:00 AM	9:58:00 AM	10	7	W	68.2	None	Spring	No
5/23/2018	T.Loomis	4:09:00 PM	5:09:00 PM	10	15	S	76.7	None	Spring	No
6/13/2018	T.Hinckley	6:23:00 AM	7:23:00 AM	15	4	SW	53.6	None	Summer	No
6/26/2018	C.Anderson	12:36:00 PM	1:36:00 PM	40	4	NW	84	None	Summer	No
7/8/2018	T.Hinckley	12:11:00 PM	1:11:00 PM	30	4	SSE	76.8	None	Summer	No
7/25/2018	C.Anderson	6:56:00 AM	7:56:00 AM	30	7	S	65	None	Summer	No
8/13/2018	C.Anderson	6:09:00 PM	7:09:00 PM	70	5	NW	82	None	Summer	No
8/29/2018	R.Winton	7:10:00 AM	8:10:00 AM	5	1	SW	60	None	Summer	No
9/12/2018	R.Winton	4:45:00 PM	5:45:00 PM	10	4	SW	86	None	Fall	No
9/26/2018	T.Hinckley	5:45:00 PM	6:45:00 PM	15	6	WNW	73.9	None	Fall	No
10/3/2018	R.Winton	7:21:00 AM	8:21:00 AM	100	1	S	58	Fog	Fall	No
10/16/2018	C.Anderson	11:47:00 AM	12:47:00 PM	100	10	SE	37	Snow	Fall	No
11/13/2018	T.Hinckley	7:03:00 AM	8:03:00 AM	0	2	WSW	13.1	None	Fall	No
11/28/2018	T.Hinckley	1:33:00 PM	2:33:00 PM	5	3	WSW	62.1	None	Fall	No
12/7/2018	T.Hinckley	7:20:00 AM	8:20:00 AM	90	1	SW	34.9	None	Winter	No
12/11/2018	J.Tolchin	11:11:00 AM	12:11:00 PM	60	2	SSE	53	None	Winter	No
1/8/2019	R.Winton	1:39:00 PM	2:39:00 PM	0	1	N	56	None	Winter	No
1/24/2019	J.Tolchin	8:01:00 AM	9:01:00 AM	0	5	W	28.5	None	Winter	No
2/11/2019	J.Tolchin	12:34:00 PM	1:34:00 PM	5	14	SW	34.5	None	Winter	No
2/27/2019	R.Winton	8:03:00 AM	9:03:00 AM	90	1	SW	35	None	Winter	No
3/4/2019	R.Winton	3:28:00 PM	4:28:00 PM	10	7	NW	52	None	Spring	No

Total Survey Periods Completed: 24

Plot 12 Coordinates: 34.119402, -108.851843

Table C-25. Eagle Use Survey Metadata, Plot 13 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/26/2018	A.Graber	3:50:00 PM	4:50:00 PM	50	27	S	56.8	None	Spring	No
4/11/2018	C.Wilhite	7:25:00 AM	8:25:00 AM	0	4	SE	58.7	None	Spring	No
4/23/2018	A.Graber	4:13:00 PM	5:13:00 PM	–	–	–		None	Spring	No
5/7/2018	T.Loomis	3:03:00 PM	4:03:00 PM	75	5	SW	83.6	None	Spring	No
5/24/2018	T.Loomis	8:33:00 AM	9:33:00 AM	5	4	SE	63.1	None	Spring	No
6/14/2018	C.Wilhite	11:41:00 AM	12:41:00 PM	95	5	WNW	78.9	None	Summer	No
6/28/2018	C.Anderson	7:54:00 AM	8:54:00 AM	0	1	SE	67	None	Summer	No
7/8/2018	T.Hinckley	3:43:00 PM	4:43:00 PM	65	16	N	83.4	None	Summer	No
7/25/2018	C.Wilhite	8:31:00 AM	9:31:00 AM	10	9	SSE	74.4	None	Summer	No
8/13/2018	C.Anderson	4:42:00 PM	5:42:00 PM	50	8	NNW	86	None	Summer	No
8/29/2018	A.Pellegrini	6:23:00 AM	7:23:00 AM	8	1	E	55	None	Summer	No
9/10/2018	R.Winton	5:05:00 PM	6:05:00 PM	20	1	W	83	None	Fall	No
9/30/2018	A.Graber	3:54:00 PM	4:54:00 PM	70	7	SW	84.5	None	Fall	No
10/4/2018	R.Winton	8:58:00 AM	9:58:00 AM	10	5	SW	61	None	Fall	No
10/23/2018	C.Anderson	12:32:00 PM	1:32:00 PM	100	12	WNW	50	Light drizzle	Fall	No
11/15/2018	T.Hinckley	1:17:00 PM	2:17:00 PM	0	1	NNE	54.5	None	Fall	No
11/28/2018	R.Winton	6:41:00 AM	7:41:00 AM	20	1	SW	35	None	Fall	No
12/5/2018	T.Hinckley	10:26:00 AM	11:26:00 AM	80	22	SSW	44.1	None	Winter	No
12/13/2018	J.Tolchin	9:12:00 AM	10:12:00 AM	5	8	W	21.5	None	Winter	No
1/8/2019	R.Winton	3:14:00 PM	4:14:00 PM	0	1	NW	55	None	Winter	No
1/23/2019	J.Tolchin	7:34:00 AM	8:34:00 AM	0	3	WNW	14.4	None	Winter	No
2/12/2019	C.Anderson	2:30:00 PM	3:30:00 PM	15	22	S	53	None	Winter	No
2/27/2019	R.Winton	6:45:00 AM	7:45:00 AM	100	0	–	33	None	Winter	Yes; see Table C-34
3/4/2019	R.Winton	4:41:00 PM	5:41:00 PM	30	8	NW	50	None	Spring	No

Total Survey Periods Completed: 24.

Plot 13 Coordinates: 34.142896, -108.834787.

Note: Plot 13 was not surveyed during Year 1.

Table C-26. Eagle Use Survey Metadata, Plot 14 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/26/2018	A.Graber	5:42:00 PM	6:42:00 PM	80	7	SW	50.3	Snow	Spring	No
4/12/2018	C.Wilhite	7:28:00 AM	8:28:00 AM	98	10	SW	51.2	None	Spring	No
4/23/2018	A.Graber	11:47:00 AM	12:47:00 PM	25	6	W	89.2	None	Spring	No
5/9/2018	T.Loomis	7:07:00 AM	8:07:00 AM	30	5	WSW	69.9	None	Spring	No
5/23/2018	T.Loomis	2:36:00 PM	3:36:00 PM	5	5	SW	79.1	None	Spring	No
6/14/2018	C.Wilhite	6:32:00 AM	7:32:00 AM	30	3	E	64.7	None	Summer	No
6/28/2018	C.Anderson	11:08:00 AM	12:08:00 PM	25	7	WNW	82	None	Summer	No
7/10/2018	T.Hinckley	2:29:00 PM	3:29:00 PM	65	14	SSE	76.1	None	Summer	No
7/25/2018	C.Anderson	8:25:00 AM	9:25:00 AM	20	8	S	73	None	Summer	No
8/13/2018	R.Winton	4:58:00 PM	5:58:00 PM	30	3	NW	89	None	Summer	No
8/28/2018	R.Winton	2:57:00 PM	3:57:00 PM	5	7	W	76	None	Summer	No
9/11/2018	R.Winton	7:25:00 AM	8:25:00 AM	0	1	SW	60	None	Fall	No
9/21/2018	C.Anderson	4:32:00 PM	5:32:00 PM	40	5	ESE	74	None	Fall	No
10/11/2018	C.Anderson	11:38:00 AM	12:38:00 PM	70	10	S	58	None	Fall	No
10/17/2018	C.Anderson	7:24:00 AM	8:24:00 AM	100	8	SE	38	None	Fall	No
11/14/2018	T.Hinckley	3:39:00 PM	4:39:00 PM	25	2	ENE	49.9	None	Fall	No
11/29/2018	T.Hinckley	9:47:00 AM	10:47:00 AM	90	7	SSW	41.7	None	Fall	No
12/5/2018	J.Tolchin	3:17:00 PM	4:17:00 PM	10	9	SSW	51.2	None	Winter	No
12/13/2018	J.Tolchin	7:28:00 AM	8:28:00 AM	0	12	W	14.2	None	Winter	No
1/15/2019	R.Winton	3:21:00 PM	4:21:00 PM	80	10	SW	39	None	Winter	No
1/31/2019	R.Winton	3:45:00 PM	4:45:00 PM	80	2	NW	50	None	Winter	No
2/12/2019	J.Tolchin	7:51:00 AM	8:51:00 AM	10	4	SSW	16.2	None	Winter	No
2/25/2019	R.Winton	2:35:00 PM	3:35:00 PM	30	3	NW	46	None	Winter	No
3/4/2019	R.Winton	2:10:00 PM	3:10:00 PM	10	9	NW	59	None	Spring	No

Total Survey Periods Completed: 24.

Plot 14 Coordinates: 34.102433, -108.864260.

Note: Plot 14 was not surveyed during Year 1.

Table C-27. Eagle Use Survey Metadata, Plot 15 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/25/2018	A.Graber	8:45:00 AM	9:45:00 AM	3	10	SSW	42	None	Spring	No
4/11/2018	C.Wilhite	3:02:00 PM	4:02:00 PM	95	13	W	71.7	None	Spring	No
4/25/2018	A.Graber	8:33:00 AM	9:33:00 AM	2	4	NE	55.3	None	Spring	No
5/9/2018	T.Loomis	1:02:00 PM	2:02:00 PM	30	0	W	82	None	Spring	No
5/22/2018	T.Loomis	12:24:00 PM	1:24:00 PM	20	12	SSW	72.5	None	Spring	No
6/13/2018	C.Wilhite	8:25:00 AM	9:25:00 AM	40	0	–	68.9	None	Summer	No
6/27/2018	C.Anderson	10:29:00 AM	11:29:00 AM	0	4	NW	81	None	Summer	No
7/10/2018	T.Hinckley	11:43:00 AM	12:43:00 PM	95	9	SSE	64.4	None	Summer	No
7/24/2018	C.Anderson	10:03:00 AM	11:03:00 AM	30	11	S	79	None	Summer	No
8/14/2018	C.Anderson	2:15:00 PM	3:15:00 PM	40	2	SW	86	None	Summer	No
8/28/2018	R.Winton	9:10:00 AM	10:10:00 AM	5	4	S	75	None	Summer	No
9/11/2018	R.Winton	3:10:00 PM	4:10:00 PM	30	2	SW	83	None	Fall	No
9/30/2018	A.Graber	10:38:00 AM	11:38:00 AM	85	7	SSE	74.6	None	Fall	No
10/3/2018	R.Winton	9:07:00 AM	10:07:00 AM	100	2	E	57	Fog	Fall	No
10/24/2018	C.Anderson	11:11:00 AM	12:11:00 PM	70	7	NW	53	None	Fall	No
11/13/2018	T.Hinckley	11:00:00 AM	12:00:00 PM	0	4	NE	42.4	None	Fall	No
11/27/2018	T.Hinckley	9:20:00 AM	10:20:00 AM	0	1	NNW	48	None	Fall	No
12/6/2018	T.Hinckley	11:23:00 AM	12:23:00 PM	85	7	SSW	47.8	None	Winter	No
12/12/2018	C.Anderson	2:23:00 PM	3:23:00 PM	60	11	W	51	None	Winter	Yes; see Table C-34
1/15/2019	R.Winton	9:46:00 AM	10:46:00 AM	90	3	SW	36	None	Winter	No
1/24/2019	J.Tolchin	11:45:00 AM	12:45:00 PM	0	6	WNW	34.4	None	Winter	No
2/10/2019	J.Tolchin	3:01:00 PM	4:01:00 PM	70	8	SW	45.2	None	Winter	No
2/28/2019	C.Anderson	7:41:00 AM	8:41:00 AM	5	4	SSE	26	None	Winter	No
3/4/2019	C.Anderson	1:47:00 PM	2:47:00 PM	20	10	W	53	None	Spring	No

Total Survey Periods Completed: 24.

Plot 15 Coordinates: 34.071391, -108.938230.

Note: Plot 15 was not surveyed during Year 1.

Table C-28. Eagle Use Survey Metadata, Plot 16 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/26/2018	C.Anderson	5:00:00 PM	6:00:00 PM	90	10	SSW	52	None	Spring	No
4/11/2018	C.Wilhite	9:07:00 AM	10:07:00 AM	0	12	SW	67.7	None	Spring	No
4/24/2018	A.Graber	5:22:00 PM	6:22:00 PM	40	12	W	81.8	None	Spring	No
5/9/2018	T.Loomis	2:45:00 PM	3:45:00 PM	35	6	SW	82.7	None	Spring	No
5/22/2018	T.Loomis	10:35:00 AM	11:35:00 AM	10	13	SSW	70.1	None	Spring	No
6/13/2018	C.Wilhite	11:31:00 AM	12:31:00 PM	70	1	W	77.1	None	Summer	No
6/27/2018	C.Anderson	8:57:00 AM	9:57:00 AM	0	7	W	75	None	Summer	No
7/9/2018	T.Hinckley	1:18:00 PM	2:18:00 PM	85	16	ENE	70.3	Light drizzle	Summer	No
7/24/2018	C.Anderson	8:33:00 AM	9:33:00 AM	25	6	ESE	73	None	Summer	No
8/14/2018	C.Anderson	12:35:00 PM	1:35:00 PM	10	7	NW	82	None	Summer	No
8/29/2018	A.Pellegrini	5:22:00 PM	6:22:00 PM	15	3	NNE	77.5	None	Summer	No
9/12/2018	R.Winton	2:56:00 PM	3:56:00 PM	10	8	SW	83	None	Fall	No
9/30/2018	A.Graber	9:00:00 AM	10:00:00 AM	50	3	SSE	61.2	None	Fall	No
10/3/2018	R.Winton	1:15:00 PM	2:15:00 PM	70	3	S	68	None	Fall	No
10/24/2018	C.Anderson	9:31:00 AM	10:31:00 AM	100	4	W	50	None	Fall	No
11/12/2018	C.Anderson	2:14:00 PM	3:14:00 PM	30	11	N	35	None	Fall	No
11/28/2018	T.Hinckley	9:26:00 AM	10:26:00 AM	65	2	W	49.4	None	Fall	No
12/6/2018	T.Hinckley	1:26:00 PM	2:26:00 PM	95	11	SSW	46.9	None	Winter	Yes; see Table C-34
12/12/2018	C.Anderson	12:46:00 PM	1:46:00 PM	70	6	WSW	52	None	Winter	Yes; see Table C-34
1/15/2019	R.Winton	11:30:00 AM	12:30:00 PM	90	6	SW	39	None	Winter	No
1/24/2019	J.Tolchin	10:06:00 AM	11:06:00 AM	0	8	NW	31.7	None	Winter	No
2/13/2019	C.Anderson	2:32:00 PM	3:32:00 PM	100	12	WSW	51	None	Winter	No
2/27/2019	C.Anderson	9:01:00 AM	10:01:00 AM	95	1	ESE	44	None	Winter	No
3/5/2019	C.Anderson	7:56:00 AM	8:56:00 AM	0	2	SSW	37	None	Spring	No

Total Survey Periods Completed: 24.

Plot 16 Coordinates: 34.100975, -108.936092.

Note: Plot 16 was not surveyed during Year 1.

Table C-29. Eagle Use Survey Metadata, Plot 17 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/26/2018	C.Anderson	3:24:00 PM	4:24:00 PM	60	16	SSW	54	None	Spring	No
4/11/2018	C.Wilhite	10:51:00 AM	11:51:00 AM	0	12	SW	74.6	None	Spring	No
4/24/2018	A.Graber	8:29:00 AM	9:29:00 AM	65	4	SW	53.8	None	Spring	No
5/9/2018	T.Loomis	4:35:00 PM	5:35:00 PM	40	9	SW	84.4	None	Spring	No
5/21/2018	T.Loomis	12:00:00 PM	1:00:00 PM	50	17	SW	72.9	None	Spring	No
6/12/2018	T.Hinckley	7:47:00 AM	8:47:00 AM	0	5	NNW	69.9	None	Summer	No
6/26/2018	C.Anderson	12:53:00 PM	1:53:00 PM	10	5	W	90	None	Summer	No
7/9/2018	T.Hinckley	11:12:00 AM	12:12:00 PM	60	4	SE	79.9	None	Summer	No
7/24/2018	C.Anderson	6:52:00 AM	7:52:00 AM	60	3	E	64	None	Summer	No
8/14/2018	C.Anderson	10:55:00 AM	11:55:00 AM	0	7	WNW	75	None	Summer	No
8/29/2018	A.Pellegrini	3:23:00 PM	4:23:00 PM	10	3	N	77.1	None	Summer	No
9/12/2018	R.Winton	1:32:00 PM	2:32:00 PM	10	13	SW	80	None	Fall	No
9/30/2018	A.Graber	7:18:00 AM	8:18:00 AM	25	0	–	47.5	None	Fall	No
10/3/2018	R.Winton	2:47:00 PM	3:47:00 PM	70	5	SW	70	None	Fall	No
10/23/2018	C.Anderson	9:19:00 AM	10:19:00 AM	99	–	–	–	None	Fall	No
11/12/2018	C.Anderson	12:45:00 PM	1:45:00 PM	50	4	N	32	None	Fall	No
11/28/2018	T.Hinckley	7:37:00 AM	8:37:00 AM	70	0	–	37.6	None	Fall	No
12/6/2018	T.Hinckley	3:39:00 PM	4:39:00 PM	95	8	SW	42.4	None	Winter	No
12/12/2018	J.Tolchin	3:36:00 PM	4:36:00 PM	10	18	W	46.6	None	Winter	No
1/16/2019	R.Winton	7:36:00 AM	8:36:00 AM	0	0	–	28	Fog	Winter	No
1/22/2019	J.Tolchin	1:46:00 PM	2:46:00 PM	80	10	NW	25	Snow	Winter	No
2/13/2019	C.Anderson	1:04:00 PM	2:04:00 PM	100	11	SW	51	None	Winter	No
2/27/2019	C.Anderson	10:31:00 AM	11:31:00 AM	100	0	–	50	None	Winter	No
3/5/2019	C.Anderson	9:23:00 AM	10:23:00 AM	0	2	SE	50	None	Spring	No

Total Survey Periods Completed: 24.

Plot 17 Coordinates: 34.121050, -108.933133.

Note: Plot 17 was not surveyed during Year 1.

Table C-30. Eagle Use Survey Metadata, Plot 18 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/27/2018	C.Anderson	8:36:00 AM	9:36:00 AM	100	4	WSW	32	None	Spring	No
4/14/2018	C.Wilhite	1:20:00 PM	2:20:00 PM	0	10	NW	51.4	None	Spring	No
4/24/2018	A.Graber	2:59:00 PM	3:59:00 PM	70	8	SW	94.4	None	Spring	No
5/10/2018	T.Loomis	11:10:00 AM	12:10:00 PM	0	6	WSW	75.2	None	Spring	No
5/22/2018	T.Loomis	8:14:00 AM	9:14:00 AM	0	5	E	58.8	None	Spring	No
6/11/2018	T.Hinckley	3:58:00 PM	4:58:00 PM	0	5	N	84.2	None	Summer	No
6/26/2018	C.Anderson	9:42:00 AM	10:42:00 AM	0	4	W	76	None	Summer	No
7/9/2018	T.Hinckley	3:34:00 PM	4:34:00 PM	75	20	SSE	59.4	Rain	Summer	No
7/24/2018	C.Wilhite	11:10:00 AM	12:10:00 PM	40	3	SSE	80.2	None	Summer	No
8/14/2018	C.Anderson	9:12:00 AM	10:12:00 AM	0	5	WNW	69	None	Summer	No
8/30/2018	A.Pellegrini	12:40:00 PM	1:40:00 PM	50	1	NNE	80.2	None	Summer	No
9/12/2018	R.Winton	10:29:00 AM	11:29:00 AM	0	13	SW	76	None	Fall	No
9/27/2018	T.Hinckley	9:44:00 AM	10:44:00 AM	0	3	SW	68.2	None	Fall	No
10/3/2018	R.Winton	5:21:00 PM	6:21:00 PM	60	4	SW	67	Light drizzle	Fall	No
10/23/2018	C.Anderson	7:47:00 AM	8:47:00 AM	95	4	SE	48	None	Fall	No
11/12/2018	C.Anderson	11:20:00 AM	12:20:00 PM	25	9	N	32	None	Fall	No
11/27/2018	R.Winton	7:02:00 AM	8:02:00 AM	0	4	S	25	None	Fall	No
12/6/2018	J.Tolchin	12:18:00 PM	1:18:00 PM	90	8	SW	49.9	None	Winter	No
12/12/2018	J.Tolchin	1:31:00 PM	2:31:00 PM	50	13	NW	50.2	None	Winter	No
1/9/2019	R.Winton	9:48:00 AM	10:48:00 AM	100	10	S	36	None	Winter	No
1/23/2019	J.Tolchin	10:50:00 AM	11:50:00 AM	5	4	SW	26.5	None	Winter	No
2/13/2019	C.Anderson	9:45:00 AM	10:45:00 AM	100	5	S	44	None	Winter	No
2/26/2019	R.Winton	10:14:00 AM	11:14:00 AM	0	1	SW	48	None	Winter	No
3/5/2019	R.Winton	10:56:00 AM	11:56:00 AM	0	1	SW	50	None	Spring	No

Total Survey Periods Completed: 24.

Plot 18 Coordinates: 34.149468, -108.913809.

Note: Plot 18 was not surveyed during Year 1.

Table C-31. Eagle Use Survey Metadata, Plot 19 – Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/25/2018	A.Graber	5:02:00 PM	6:02:00 PM	80	8	SW	63.4	None	Spring	No
4/14/2018	C.Wilhite	11:40:00 AM	12:40:00 PM	0	10	NW	46.7	None	Spring	No
4/24/2018	A.Graber	10:16:00 AM	11:16:00 AM	70	1	SW	67.8	None	Spring	No
5/10/2018	T.Loomis	9:14:00 AM	10:14:00 AM	5	5	SW	68.7	None	Spring	No
5/23/2018	T.Loomis	9:56:00 AM	10:56:00 AM	0	0	E	65.8	None	Spring	No
6/11/2018	T.Hinckley	1:46:00 PM	2:56:00 PM	0	6	NW	88.6	None	Summer	No
6/27/2018	C.Anderson	6:53:00 AM	7:53:00 AM	0	3	E	62	None	Summer	No
7/9/2018	T.Hinckley	5:18:00 PM	6:18:00 PM	60	10	S	72.9	None	Summer	No
7/24/2018	C.Wilhite	9:21:00 AM	10:21:00 AM	20	4	SW	74.6	None	Summer	No
8/14/2018	R.Winton	3:01:00 PM	4:01:00 PM	80	1	W	88	None	Summer	No
8/30/2018	A.Pellegrini	10:27:00 AM	11:27:00 AM	50	3	NW	68.5	None	Summer	Yes; see Table C-34
9/13/2018	R.Winton	8:38:00 AM	9:38:00 AM	0	2	SW	67	None	Fall	No
9/27/2018	T.Hinckley	11:51:00 AM	12:51:00 PM	0	8	WNW	69.7	None	Fall	No
10/10/2018	C.Anderson	9:24:00 AM	10:24:00 AM	15	3	SW	47	None	Fall	No
10/22/2018	C.Anderson	2:19:00 PM	3:19:00 PM	95	2	SW	60	None	Fall	No
11/14/2018	T.Hinckley	11:04:00 AM	12:04:00 PM	65	5	SE	48.8	None	Fall	No
11/27/2018	R.Winton	8:30:00 AM	9:30:00 AM	0	4	S	41	None	Fall	No
12/6/2018	J.Tolchin	10:39:00 AM	11:09:00 AM	90	5	WSW	47.5	None	Winter	No
12/12/2018	J.Tolchin	11:39:00 AM	12:39:00 PM	25	7	W	51.6	None	Winter	Yes; see Table C-34
1/9/2019	T.Hinckley	8:03:00 AM	9:03:00 AM	80	5	SE	34.4	None	Winter	No
1/23/2019	J.Tolchin	12:25:00 PM	1:25:00 PM	10	6	W	35.6	None	Winter	Yes; see Table C-34
2/13/2019	C.Anderson	7:58:00 AM	8:58:00 AM	100	5	WSW	38	None	Winter	No
2/26/2019	R.Winton	11:40:00 AM	12:40:00 PM	0	3	W	49	None	Winter	Yes; see Table C-34
3/1/2019	C.Anderson	9:31:00 AM	10:31:00 AM	25	9	W	46	None	Spring	Yes; see Table C-34

Total Survey Periods Completed: 24.

Plot 19 Coordinates: 34.166931, -108.919041.

Note: Plot 19 was not surveyed during Year 1.

Table C-32. Eagle Use Survey Metadata, Plot 20, Year 2

Survey Date	Observer	Start Time	End Time	Cloud Cover (%)	Wind Speed (mph)	Wind Direction	Temperature (ºF)	Precipitation	Season	Eagle Observation
3/26/2018	C.Anderson	1:17:00 PM	2:17:00 PM	60	12	SSW	53	None	Spring	No
4/14/2018	C.Wilhite	9:31:00 AM	10:31:00 AM	0	10	NW	36.1	None	Spring	No
4/24/2018	A.Graber	12:28:00 PM	1:28:00 PM	70	3	WNW	79.3	None	Spring	No
5/10/2018	T.Loomis	7:42:00 AM	8:42:00 AM	10	6	SW	66.7	None	Spring	No
5/23/2018	T.Loomis	11:38:00 AM	12:38:00 PM	5	8	S	69.8	None	Spring	No
6/12/2018	T.Hinckley	11:24:00 AM	12:24:00 PM	0	4	NNW	87.6	None	Summer	No
6/26/2018	C.Anderson	7:57:00 AM	8:57:00 AM	0	4	W	69	None	Summer	No
7/11/2018	T.Hinckley	11:59:00 AM	12:38:00 PM	98	5	N	73.2	Light drizzle	Summer	No
7/24/2018	C.Wilhite	7:13:00 AM	8:33:00 AM	60	4	ENE	67.6	None	Summer	No
8/14/2018	R.Winton	1:32:00 PM	2:32:00 PM	30	5	W	95	None	Summer	No
8/30/2018	A.Pellegrini	8:24:00 AM	9:24:00 AM	60	0	–	65.9	None	Summer	No
9/13/2018	R.Winton	10:10:00 AM	11:10:00 AM	0	3	SW	72	None	Fall	No
9/27/2018	T.Hinckley	2:00:00 PM	3:00:00 PM	0	6	NW	78.6	None	Fall	No
10/10/2018	C.Anderson	7:35:00 AM	8:35:00 AM	0	7	WSW	36	None	Fall	No
10/22/2018	C.Anderson	4:11:00 PM	5:11:00 PM	90	7	S	60	None	Fall	No
11/14/2018	T.Hinckley	9:03:00 AM	10:03:00 AM	60	3	SE	38.7	None	Fall	No
11/27/2018	R.Winton	9:57:00 AM	10:57:00 AM	0	2	S	54	None	Fall	No
12/5/2018	T.Hinckley	1:05:00 PM	2:05:00 PM	30	10	WSW	51.4	None	Winter	No
12/11/2018	C.Anderson	1:20:00 PM	2:20:00 PM	95	3	NNE	54	None	Winter	No
1/9/2019	R.Winton	7:58:00 AM	8:58:00 AM	40	9	SW	37	None	Winter	No
1/23/2019	J.Tolchin	2:11:00 PM	3:11:00 PM	15	4	NNW	39.6	None	Winter	No
2/14/2019	C.Anderson	8:53:00 AM	9:53:00 AM	100	4	SSW	42	Light drizzle	Winter	No
2/26/2019	R.Winton	1:03:00 PM	2:03:00 PM	0	3	N	49	None	Winter	Yes; see Table C-34
3/1/2019	C.Anderson	11:18:00 AM	12:18:00 PM	40	9	W	56	None	Spring	No

Total Survey Periods Completed: 24.

Plot 20 Coordinates: 34.182485, -108.900563.

Note: Plot 20 was not surveyed during Year 1.

Table C-33. Eagle Use Count Information Raw Data, Year 1

Plot (see Table C-1)	Observation Type	Observation Date	Observation Time (Military)	Observation Duration (seconds)	Flight Height (m)	Species Observed	Number and Age of Individuals	Eagle Minutes*	Species Behavior
2	Eagle Minute	12/1/2017	15:31	12	45	Golden Eagle	Adult	1	unidirectional flight
2	Use Count Outside Cylinder	12/1/2017	15:31	39	80‡	Golden Eagle	Adult	N/A	unidirectional flight
3†	Eagle Minute	9/26/2017	14:45, 14:48	180	80-150	Golden Eagle	Single juvenile	3	unidirectional flight, soaring
3	Use Count Outside Cylinder	9/26/2017	14:47, 14:49	107	240-350	Golden Eagle	Single juvenile	N/A	unidirectional flight, soaring
5	Use Count Outside Cylinder	2/6/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Unknown	N/A	soaring
5	Use Count Outside Cylinder	2/20/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	2 Unknown Age	N/A	unidirectional flight
8	Eagle Minute	12/2/2017	9:13, 9:14	69	90-95	Golden Eagle	Juvenile	2	unidirectional flight
8	Use Count Outside Cylinder	12/2/2017	9:14	112	120†	Golden Eagle	Juvenile	N/A	unidirectional flight
8	Use Count Outside Cylinder	1/9/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Adult	N/A	soaring, perching
8	Use Count Outside Cylinder	1/9/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Adult	N/A	soaring, perching
9†	Eagle Minute	3/1/2018	15:02	Adult (91), Sub-Adult (132)	30-45	Golden Eagle	Adult and sub-adult	5	unidirectional flight, soaring
10	Use Count Outside Cylinder	1/8/2018	Not recorded	Not recorded	Not recorded‡†	Bald Eagle	Adult	N/A	unidirectional flight
12†	Eagle Minute	10/10/2017	8:35	31	45	Golden Eagle	Single adult	1	unidirectional flight, kiting-hovering
12	Use Count Outside Cylinder	10/29/2017	15:45	147	500	Golden Eagle	Adult	N/A	soaring
12	Use Count Outside Cylinder	1/9/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Unknown	N/A	unidirectional flight
12	Use Count Outside Cylinder	1/9/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Unknown	N/A	unidirectional flight
12	Use Count Outside Cylinder	2/7/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	2 Adults	N/A	unidirectional flight, soaring

* N/A = not applicable

† Indicates that this eagle observation was within the 1-km buffer associated with the Alternative 2 turbine array design

‡ Outside of cylinder; eagle observed beyond 800-m horizontal distance

1 **Table C-34. Eagle Use Count Information Raw Data, Year 2**

Plot (see Table C-3)	Observation Type	Observation Date	Observation Time (Military)	Observation Duration (seconds)	Flight Height (m)	Species Observed	Number and Age of Individuals	Eagle Minutes*	Species Behavior
3	Use Count Outside Cylinder	12/12/2018	10:06	603	300-600	Bald Eagle	Subadult	N/A	unidirectional flight, soaring
8	Eagle Minute	6/27/2018	12:52	83	150	Golden Eagle	Adult	2	soaring
11†	Eagle Minute	9/21/2018	14:53	50	60	Golden Eagle	Adult	1	unidirectional flight
11	Use Count Outside Cylinder	9/21/2018	14:53	5	60‡	Golden Eagle	Adult	N/A	unidirectional flight
11	Use Count Outside Cylinder	12/5/2018	13:35	403	300-600	Golden Eagle	Subadult	N/A	soaring
11	Use Count Outside Cylinder	12/13/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Adult	N/A	unidirectional flight
11	Use Count Outside Cylinder	12/13/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Adult	N/A	unidirectional flight
11	Use Count Outside Cylinder	2/27/2019	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Unknown	N/A	soaring
13	Eagle Minute	2/27/2019	7:35	56 (flight), 544 (perch)	0-18	Bald Eagle	Unknown	2	perching, unidirectional flight
15	Use Count Outside Cylinder	12/12/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Adult	N/A	unidirectional flight
15	Use Count Outside Cylinder	12/12/2018	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Adult	N/A	unidirectional flight
16	Use Count Outside Cylinder	12/6/2018	14:41	223	150-450‡	Golden Eagle	Adult	N/A	unidirectional flight, soaring
16	Use Count Outside Cylinder	12/12/2018	13:45	58	400	Golden Eagle	Adult	N/A	soaring

Plot (see Table C-3)	Observation Type	Observation Date	Observation Time (Military)	Observation Duration (seconds)	Flight Height (m)	Species Observed	Number and Age of Individuals	Eagle Minutes*	Species Behavior
19	Use Count Outside Cylinder	8/30/2018	11:07	91	100‡	Golden Eagle	Adult	N/A	soaring
19†	Eagle Minute	12/12/2018	12:11	51	200	Golden Eagle	Single unknown age eagle	1	soaring
19	Use Count Outside Cylinder	12/12/2018	12:09, 12:14	271	300-500	Golden Eagle	Unknown	N/A	soaring
19†	Eagle Minute	1/23/2019	12:26	203	1-50	Golden Eagle	Single adult	4	unidirectional flight, soaring
19	Use Count Outside Cylinder	1/23/2019	12:29	270	200‡	Golden Eagle	Single adult	N/A	soaring
19†	Eagle Minute	2/26/2019	11:49	13	6	Golden Eagle	Single adult	1	unidirectional flight
19	Use Count Outside Cylinder	3/1/2019	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Unknown	N/A	soaring
19	Use Count Outside Cylinder	3/1/2019	Not recorded	Not recorded	Not recorded‡	Golden Eagle	Unknown	N/A	soaring
20	Eagle Minute	2/26/2019	13:50	450	74-100	Golden Eagle	Juvenile	8	unidirectional flight, soaring
20	Use Count Outside Cylinder	2/26/2019	13:57	5	100‡	Golden Eagle	Juvenile	N/A	unidirectional flight

* N/A = not applicable

† Indicates that this eagle observation was within the 1-km buffer associated with the Alternative 2 turbine array design

‡ Outside of cylinder; eagle observed beyond 800-m horizontal distance

APPENDIX D

NextEra Energy Wildlife Response and Reporting System Manual for Wind Energy Centers

APPENDIX N

Cultural Properties Treatment Plan

Placeholder for Cultural Properties Treatment Plan

To be included once executed

APPENDIX O

Dust and Emissions Control Plan

BORDERLANDS WIND PROJECT
APPENDIX O
DUST AND EMISSIONS CONTROL PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

CONTENTS

1 INTRODUCTION

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. This Dust and Emissions Control Plan (herein called the Plan) is a required component of the POD accompanying the commercial ROW grant. Terms and conditions specified in the Plan shall be binding upon the wind farm owner and any of its successors, assignees, or heirs.

1.1 Purpose

Operators of a construction site must take reasonable precautions to prevent dust from becoming airborne and from being tracked onto paved public roads. The purpose of this Plan is to outline the dust and emissions control activities that will be implemented as part of the project.

1.2 Sources of Dust

Construction sites generate dust from a variety of sources, including the following:

- Vehicle and equipment traffic on paved and unpaved roads
- Earthmoving vehicles and equipment during construction
- Brush clearing
- Movement and transportation of soil
- Site construction
- Blasting (if required)
- Concrete batch plants and storage piles
- Wind erosion from disturbed and exposed soils, including stockpiles
- Materials handling, conveyance, and transport within site boundaries, including the materials source and main access roads outside the project area.

Detailed information on these sources can be found in the Final Programmatic Environmental Impact Statement on Wind Energy Development (PEIS), Section 5.4 (BLM 2005). Please refer to the Mitigation Measures in Appendix H of the project POD for mitigation measures for each of these sources.

2 DUST MONITORING GUIDELINES

Dust abatement procedures are a significant concern on construction projects. Dust-generating operations shall not allow visible fugitive dust emissions to exceed 40% opacity for greater than 10 seconds for all construction vehicles. Visible dust crossing any property line will be considered excessive when it is observed for longer than 30 seconds over a cumulative 6-minute period.

Trained environmental monitors will be on-site daily to monitor dust levels and make recommendations as needed to ensure air quality standards and compliance requirements are met. Should air quality fail to meet compliance requirements and air quality standards, Borderlands Wind will halt construction. All of the environmental monitors' findings will be reported to the on-site compliance monitor to ensure that the site is in compliance with all of our environmental requirements. If dust control problems are found to be reoccurring throughout construction, trained dust control monitors will be brought on-site to monitor dust levels and make additional recommendations when appropriate.

3 RECOMMENDED BEST MANAGEMENT PRACTICES

Borderlands Wind will incorporate a variety of abatement procedures as conditions dictate. Abatement techniques include preventing the creation of fugitive dust, binding dust particles together, and reducing wind speed at ground level. Trucks transporting mineral materials for road construction will be covered with tarps. Dust abatement efforts shall be monitored and recorded by the environmental monitors.

Additional details on dust abatement and mitigation measures are provided in Chapter 5 of the PEIS, and in the Mitigation Measures in Appendix H of the project POD.

3.1 Water

During the duration of the project, Borderlands Wind anticipates employing at water trucks for dust suppression and control as needed. This will be one of the primary methods of dust control. Additional water trucks as needed will be employed during peak construction activities when evaporation rates are highest. Water trucks will operate the full length of the shift(s) so that fugitive dust emissions do not interfere or significantly impact the surrounding environment, project construction activities, or adjacent public and private properties. Borderlands Wind will apply water so that the surface is visibly moist on trafficked roads and in the areas where work is taking place. Water use for dust control would be temporary. The expected use of water for dust control would be a part of the required 26 million gallons needed for the construction period, assuming standard dust control mitigation measures.

3.2 Chemical Dust Suppressant Methods

Borderlands Wind recognizes that the extreme conditions of the project area could require additional dust control methods. These would only be used in coordination with the BLM. Borderlands Wind will employ the use of a BLM or State of New Mexico–approved dust palliative applied using the admix method and/or to the surface of gravel access roads at the application rate and frequency specified by the manufacturer along constructed roads, where required, particularly on high-traffic and controlled areas. Typically, dust palliative is be applied 100 feet in each direction of a public road intersection and 0.25 mile in each direction of a private driveway and public road, as necessary and in coordination with landowners.

3.3 Stabilization

Borderlands Wind will take preventative measures to limit dust from disturbed soils. Disturbed surface areas will be controlled via construction sequencing and clearing will be kept to a minimum width within the ROWs. Topsoil and spoils will be stockpiled, with low height profiles where possible, according to the various finalized environmental plans, including the Stormwater Pollution Prevention Plan and the Integrated Reclamation Plan. These plans are appendices to the POD. These plans will remain in effect for the duration of the project. In addition to this, construction entrances will be installed to minimize track-out.

3.4 Additional Dust Control Measures

Borderlands Wind will implement a project Road Design, Traffic and Transportation Plan, which will enforce speed limits designed to keep dust creation at as low a level as possible. Typically those project site speed limits will be 25 miles per hour (mph) or less on all project access roads. Construction vehicle speed limits are also enforced throughout graveled county and or public roads that run through the project job site, limiting their speed to 25 mph. Controlling the vehicle speed limits throughout the project will reduce dust emissions from loads and dust from the road. Construction activities would be monitored and if dust levels exceed acceptable standards, adaptive management would be employed, which could include watering travel surfaces and/or lowering these speed limits incrementally until dust is reduced. Additionally, earthmoving activity would be minimized and vehicle speeds reduced if sustained winds exceed 22 mph or if gusts exceed 30 mph. Dust monitoring and any adaptive measures to reduce dust levels will be in accordance with the Road Design, Traffic and Transportation Plan and this Plan.

4 LITERATURE CITED

Bureau of Land Management (BLM). 2005. *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States.* FES-05-11. Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management. Available at: http://www.windeis.anl.gov/documents/fpeis/index.cfm. Accessed May 2018.

APPENDIX P

Environmental Construction and Compliance Monitoring Plan

BORDERLANDS WIND PROJECT
APPENDIX P
ENVIRONMENTAL CONSTRUCTION AND COMPLIANCE MONITORING PLAN

Submitted to

Bureau of Land Management
Socorro Field Office
901 South Old U.S. Highway 85
Socorro, New Mexico 87801
Project Case File: NMNM136976

Submitted by

Borderlands Wind, LLC
700 Universe Boulevard (E5E/JB)
Juno Beach, Florida 33408

March 2020

CONTENTS

Attachments

1 INTRODUCTION

Borderlands Wind, LLC (Borderlands Wind), is proposing to develop the Borderlands Wind Project (project or proposed project), a commercial wind energy project in Catron County, New Mexico, on lands managed by the Bureau of Land Management (BLM), the New Mexico State Land Office (NMSLO), and private landowners. The project as initially proposed consisted of 2.5-megawatt (MW) General Electric (GE) wind turbine generators (WTGs) and/or 3.0-MW GE WTGs, depending on the alternative. The project is scheduled to come online in 2021 and as a result, the primary WTG technology available is the 3.0-MW GE WTGs with four 2.5-MW WTGs. The project will deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. The Point of Interconnect would be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kilovolt (kV) transmission line that currently traverses the project area.

Borderlands Wind submitted an SF-299 and Plan of Development (POD) for a project of up to 100 MW in May 2017. The BLM assigned the project case file number NMNM136976. This Environmental Construction and Compliance Monitoring (ECCM) Plan is a required component of the POD accompanying the commercial ROW grant. Terms and conditions specified in the ECCM Plan shall be binding upon the wind farm owner and any of its successors, assignees, or heirs.

2 PURPOSE AND OBJECTIVE

The BLM requires holders of ROW grants to prepare and fund an environmental construction and compliance monitoring program as described in this ECCM Plan. The purpose of the program and associated ECCM Plan is to ensure compliance with the terms, conditions, and stipulations specified in National Environmental Policy Act (NEPA) documentation for the proposed project, e.g., the Final Environmental Impact Statement (FEIS), Record of Decision (ROD), ROW grants, POD, and Notice to Proceed (NTP). TEP's interests in this ECCM Plan stem from the terms, conditions, and stipulations in the interconnection agreement and ROD.

The intent of this ECCM Plan is to address inspection/monitoring requirements found in the FEIS, ROD, ROW, NTP, and authorizations and their inclusions. The ECCM Plan includes:

- description of the responsibilities of the agency compliance team including the authorized agency officer, agency compliance manager, and agency environmental monitors;
- communication protocol between the agency compliance team, Borderlands Wind project manager, construction site manager, compliance manager, and environmental monitors; and
- the project Wildlife Trenching Plan (Attachment 9). A list of design criteria (proponent constraints and mitigation measures) can be found in Appendix H.

This ECCM Plan also addresses monitoring implementation requirements pertaining to construction that will be appended to the POD or FEIS, which will include:

- Health and Safety Plan (including Emergency Action Plan, Waste and Hazardous Materials Management Plan, and Fire Protection and Prevention Plan)
- Road Design, Traffic and Transportation Plan
- Dust Control and Air Quality Plan
- Blasting Plan
- Bird and Bat Conservation Strategy (including Eagle Management Plan)

- Stormwater Pollution Prevention Plan (SWPPP)
- Spill Prevention Control and Countermeasure (SPCC) Plan
- Integrated Reclamation Plan (including Noxious Weed Management)
- Decommissioning Plan

The overall objective of the ECCM Plan is to provide direction for the agency (BLM) and Borderlands Wind construction compliance monitoring teams on conducting inspections, and evaluating and documenting compliance with the project environmental measures and conditions during construction as they relate to the previous list of plans. After project construction and prior to operation, environmental compliance will be addressed in an amendment to this ECCM Plan to focus on the roles and responsibilities of the operations team.

Other objectives of the ECCM Plan are to

- facilitate the timely resolution of compliance-related issues in the field;
- provide information to the agency regarding noncompliance issues and their resolution while informing the Borderlands Wind compliance manager; and
- review, process, and track construction-related changes to the project.

3 COMPLIANCE TEAMS ROLES AND RESPONSIBILITIES

3.1 Agency Authority

The construction, maintenance, and long-term operation of the project would be authorized under ROW grants from the BLM and NMSLO. If approved, Borderlands Wind would be granted a BLM ROW for the project pursuant to the Federal Land Policy and Management Act (FLPMA); therefore, the BLM would be the lead agency regarding compliance with NEPA. Under FLPMA Title V (Rights-of-Way), the U.S. Secretary of the Interior is authorized to grant ROWs for the purpose of allowing systems for generation, transmission, and distribution of electric energy.

3.2 Agency Compliance Team

The agencies listed above (BLM and NMSLO) may be involved in the construction compliance process depending on the land ownership. To streamline interagency coordination, BLM will assume the lead role as the authorized agency officer (AAO) and agency compliance manager (ACM) similar to the lead agency role BLM will fulfill for the NEPA process. As the lead agency BLM will coordinate with other agencies as appropriate.

Key agency compliance contacts by role will be completed as the project nears construction. Agencies will be responsible for providing the following personnel for the project: Authorized Agency Officer, Agency Compliance Manager, and Agency Environmental Monitor (AEM).

3.2.1 *Authorized Agency Officer*

The BLM AAO will be lead for the project. The BLM AAO lead role includes providing oversight of the agency compliance team through the BLM ACM lead. The lead AAO and lead ACM will coordinate with other compliance team members including the AEMs as needed. Coordination will also take place in

resolving uncertainty regarding the appropriate level of variance for a particular request if the ACM lead is unsure. Each land-managing agency will be responsible for decisions under their own jurisdictions.

The AAO lead(s) may elect to designate some or all of their duties to their respective ACM. Additional responsibilities will include providing input on project materials including the Worker Environmental Awareness Program (WEAP) training, leading the preconstruction meeting, and attending a WEAP training before coming on-site.

3.2.2 *Agency Compliance Manager*

The ACM lead for the project (BLM) will oversee management of the AEMs (irrespective of other agency land or facilities), aide in the preparation of project materials, participate in any agency preconstruction meetings, and provide input into the applicant's WEAP. Specific compliance monitor responsibilities include:

- Report directly to the AAO(s), ACMs, or designated agency compliance contacts, as needed
- Share information with the Borderlands Wind compliance manager
- Participate in the preconstruction meeting
- Participate in the WEAP kick-off meeting at NTP
- Verify the applicant's compliance with the project environmental requirements and relay information to Borderlands Wind compliance manager
- Supervise the AEMs
- Ensure that all reported noncompliance is tracked for resolution by Borderlands Wind
- Review, approve, and distribute monitoring reports, and correspondence
- Review work progress, schedules, and budgets related to agency compliance monitoring activities
- Confer with the AAO(s) and compliance contacts on a regular basis
- Serve as the contact-point between the Agencies and Borderlands Wind
- Compliance team ACM will meet with Borderlands Wind Compliance Manager about level of monitoring effort, and if more monitors are needed
- The ACM will coordinate a week or more in advance
- Serve as the agencies' representative to permitting agencies, private landowners, and special interest groups regarding the environmental mitigation efforts on the project
- Coordinate with the agencies and other agencies as necessary, on reviewing and approving variance requests
- Review, and approve (or deny) Level 1 and 2 variance requests for BLM for implementing limited variations from mitigation measures previously agreed to by Borderlands Wind and the agencies through the variance process as detailed in Section 7

3.2.3 *Agency Environmental Monitors*

The AEM may either be staff with their respective agency or contract personnel. During the procurement process for the third-party contractors in particular, resource availability to adjust to increasing demand will specifically be part of the scope required for any responding firms once we have common

qualification expectations. The AEMs will monitor construction activities to provide compliance guidance and to monitor environmental compliance, often focused on particular resources (e.g., biological, cultural, or paleontological). The number of AEMs will be determined through consultation between the ACM and the Borderlands Wind Compliance Monitor. Specifically, the need for full-time environmental monitors may be reevaluated throughout the construction phase and a schedule adjusted, as necessary, and as conditions demand. Other AEMs may be required to respond to specific elements of variance requests, due to workload issues, multiple locations of disturbance, act in emergency situations, or other factors that may impede construction if additional personnel are not available. One or more AEMs will be used for general compliance monitoring that is not specifically related to monitoring cultural, biological, or paleontological resources.

The need for AEMs in specific disciplines would be determined after key resource studies are completed and potential resource impacts are established. Project-specific AEMs with responsibilities for key resources (either staff or contact) could include:[1]

- **Cultural Resource Monitors:** The cultural resource monitors will provide resource monitoring where required, respond to unanticipated discoveries of cultural resources or human remains, and conduct or request additional surveys as required for variance requests.
- **Biological Resource Monitors:** The biological resource monitors will provide resource monitoring where required, respond to detections of sensitive species, and conduct or request additional surveys as required for variance requests.

The primary responsibility of the lead AEM (general monitoring) will be to monitor and document Borderlands Wind's construction compliance, and/or noncompliance with project environmental requirements. The lead AEM (general monitoring) will also review and, with input and/or clearances from other AEMs as necessary, approve (or deny) Level 1 variance requests (in the field where practical) for implementation of limited variations from mitigation measures previously agreed to by the variance process in Section 7. In addition, the AEMs may assist the AAO and/or ACM with completion of their duties as requested. In the event a stop work order is necessary, the involved AEM will work through the AAO lead or ACM lead if delegated by the AAO, to issue that order following the documentation and process outlined in further detail in Section 7.

3.3 Borderlands Wind Construction Compliance Team

Borderlands Wind will be responsible for managing its employees, contractors, and subcontractors during the construction of the facility so that the project is in compliance with the ROD, grants and inclusions, POD, and all other applicable permits and laws. Borderlands Wind will employ the following personnel for the project:

- **Project Manager (PM):** The PM will be responsible for managing the entire construction project for Borderlands Wind and will be coordinating with the construction contractor's management. The PM will aide in coordinating with the AAO on an as-needed basis, particularly for Level 3 variances.
- **Construction Site Manager (CSM):** The CSM will be responsible for managing the daily operations during the construction of the wind farm, updating the PM on daily construction activities, and ensuring the compliance team has the resources required to inspect the project as required.

[1] Draft Plan note: this is a preliminary list that will be updated as more data are collected over the course of the project.

- **Compliance Manager (CM):** The CM will coordinate with the CSM and will be responsible for implementing compliance with the ROD, grants and inclusions, POD, and all other applicable permits (including mitigating plans and measures) and managing the environmental monitors (EMs). The CM will order requests for additional monitors, when appropriate.
- **Environmental Monitor (EM):** The EMs will report their daily findings of construction compliance to the CM and will be responsible for conducting environmental inspections alone or in combination with environmental inspections with the AEM.

4 SITE FAMILIARIZATION AND WORKER ENVIRONMENTAL AWARENESS PROGRAM

The agency compliance monitoring team will require site familiarization in order to review drawings, understand site requirements, and help develop comprehensive training program(s) for construction staff. It is anticipated that monitoring staff will be hired 2 to 3 weeks in advance of contractor mobilization to give them reasonable time to familiarize themselves with the site, and to meet agency and Borderlands Wind contacts and staff.

The WEAP will consist of three main components including the preconstruction kick-off meeting, daily Plan of Day meetings, and safety meetings. Prior to the start of construction, a preconstruction kick-off meeting will be held that is led by the agency compliance team including the lead (AAO) and designated ACMs. The purpose will be to provide the agency and Borderlands Wind compliance teams with an overview of agency expectations as described in this ECCM Plan, the FEIS, ROD, POD, ROW grant, and other associated permits and conditions. The agenda will describe the communications protocol, the variance process and reporting and documentation requirements as described in this ECCM Plan. During each subsequent day of construction, the Plan of Day meeting in the morning conducted by the Borderlands Wind CSM will provide another opportunity for any new construction workers, agency or Borderlands Wind compliance team members to complete the WEAP required prior to construction. For each WEAP training completed, the sample log in Attachment 1 of this ECCM Plan will be used to document attendance and be included in the daily summary reports by the AEMs and Borderlands Wind EMs. Finally, additional safety meetings will be conducted prior to the start of construction to go over safety procedures as further described in the project's Health, Safety, Security, and Environment Plan.

4.1 Equipment

Personnel responsible for monitoring and documenting compliance with the measures in the ECCM Plan may require field support equipment such as GPS units, digital cameras, radios, and cellular phones (smart phone). Borderlands Wind will include these specifications in the bidding process, subject to qualification approval by the agency, to ensure contractors have the necessary equipment to complete their job descriptions. Compliance contractors are responsible for providing company vehicles for the monitors.

4.2 Communication

Although the agency compliance teams ultimately report to their respective agencies, two-way communication at the EM level between the agency and Borderlands Wind compliance team will optimize opportunities to address potential compliance issues before they become noncompliant.

An appropriate agency compliance team member will share all findings with the Borderlands Wind compliance manager for review to ensure that all noncompliance items are documented in the site compliance log and that an appropriate attempt at resolution has been initiated. The ACM will provide the agencies with weekly status updates, monthly monitoring reports, and a final report on the construction and monitoring efforts. These will become part of the agency project file.

4.3 Electronic Collaborative Workspace

Borderlands Wind and their construction compliance team including the third-party contractor hired for construction oversight, will establish a non-public, secure, electronic collaborative website for the environmental compliance effort that is available to the appropriate BLM personnel. The website would be login and password protected. Options are:

- Microsoft SharePoint; or
- Other electronic collaborative websites for sharing data that are accessible by involved agencies.

Access to all or selected portions of the website will be established. This website augments traditional methods of communications by providing an electronic collaborative workspace that would include:

- Inventory survey documents (access limited to need to know);
- NTPs;
- Meeting minutes (to include calls, email discussions, and/or in-person guidance or direction);
- Daily, weekly, and monthly summary reports;
- Variance Requests and approvals; and
- Others as needed, such as a collaborative workspace for draft documents.

5 REPORTING AND DOCUMENTATION

Reporting and documentation will focus on documenting compliance and potential noncompliance issues through meeting minutes and weekly and monthly summary reports. Potential noncompliance issues will be identified when a compliance team member observes an activity that violates project terms, conditions, and requirements, as described in the FEIS, ROD, POD, ROW grant, and associated permits. Examples include activities that may damage resources without application of proper workspace or other impact reduction, avoidance, or mitigation; or activities that are potentially not in compliance with permit conditions such as failure to install erosion control devices or constraints impacts to the areas to control or reduce impacts to areas identified prior to construction. Section 7 provides further detail on the stop work authority and procedure.

5.1 Meeting Minutes

Written minutes will be prepared by the agency compliance team when applicable to document and track meetings or discussions between the agency and Borderlands Wind compliance teams. All meeting minutes will be uploaded to the electronic collaborative workspace and become part of the agency project file.

5.2 Weekly Summary Report

The lead ACM will compile his/her daily monitoring logs into a weekly update using the monitoring report cover and monitoring report provided in Attachments 2 and 3, respectively. The ACM weekly summary report (Attachment 5) will document the current status and location of construction during the covered time period (i.e., that week), the presence of sensitive species or resource in that area, and include photo documentation of any potential noncompliance issues observed by the compliance team during the week. The agencies and Borderlands Wind CM will receive a copy of all weekly summary reports submitted by the ACM. All summary reports will be uploaded to the electronic collaborative workspace. Monitoring reports will become a part of the agency project records.

5.3 Monthly Summary Report

Monthly summary reports will use the same form as the ACM weekly report (see Attachment 5), and will briefly describe construction activities during the reporting period and highlight key findings contained with the associated weekly summary reports during the reporting period and cumulatively for the construction period for that project phase. The monthly summary report will also include a table indicating noncompliance issues observed by the compliance team during the reporting period and the Level 1, 2, and 3 variance requests approved by the agency compliance team using the examples provided in Attachments 2 (Monitoring Report Cover Page Form) and 3 (Monitoring Report Form), respectively. All summary reports will be uploaded to the electronic collaborative workspace and become part of the agency project file.

6 VARIANCES

During construction, unforeseen or unavoidable site conditions could result in the need for changes from the approved mitigation measures and construction procedures. Additionally, the need for extra workspace, or changes to previously approved construction work areas, may arise to avoid and minimize impacts or resolve environmental constraint conflicts. If the ACM/AEM acknowledges that a field-fitting change within corridors and preconstruction survey areas does not rise to the level of a variance, the change will be noted on the daily monitoring documentation, and construction may proceed. However, changes to previously approved mitigation measures, construction procedures, and construction work areas will be handled in the form of variance requests to be submitted by Borderlands Wind and reviewed and approved or denied by the agencies with authority for that particular request based on land ownership or project element. The variance process is intended to bracket the extent of decision-making authority (Figure 1 in Attachment 8) and as guided by the Variance Determination Matrix and Variance Examples (Attachment 8) to facilitate rapid resolution at the appropriate level. A system of three variance levels (Levels 1, 2, and 3) will be used to categorize and process variance requests. The three variance levels, the review and distribution process, and the decision-making authority proposed for each level are discussed in the following sections. A Variance Determination Matrix and Variance Examples are located in Attachment 8; a Variance Request Form is provided in Attachment 4. It will be modified if necessary. All variance request forms will be uploaded to the electronic collaborative workspace for review and processing through the agency compliance team. The outcome of the review will also be uploaded to the same location. All variance requests and decisions will become part of the agency project file.

6.1 Level 1 Variances

Level 1 variances are minor changes to project specifications, construction methods, or mitigation measures that provide equal or better protection to environmental resources or constructability. These minor variance requests can be reviewed (including for survey coverage for specific resources) and either approved or denied by the AEM in the field during a typical construction day. Due to the minor nature of changes for Level 1 variances it is expected that most variances can be processed in a few hours. It is recognized that some circumstances may require more time to process. Level 1 variances must be within the approved FEIS analysis (defined corridors, disturbance levels, etc.), must be within the approved preconstruction survey areas, and must be within the limits of the NTP drawings.

Examples of Level 1 variance requests are guided by the Variance Determination Matrix and Variance Examples (see Attachment 8) and include:

- A change pursuant to any of the below that do not result in unaccounted-for impacts to archaeological sites, biological resources, paleontological resources, jurisdictional habitat or washes, or exceed other previously described environmental impacts or changes to cultural, biological, and paleontological resources.
- Shifts in permanent infrastructure alignments (and associated disturbance area corridors) within the FEIS study corridors and preconstruction surveyed areas and NTP drawings.
- Shifts in turbine locations (and associated temporary work areas), prior to surface disturbance, within turbine corridors, preconstruction survey areas, and NTP drawings.
- Relocation of temporary work areas that are already accounted for within the conditions and stipulations in the FEIS, ROD, POD, ROW grant, or other pertinent documents, or that makes no change to ROW or NTP drawings and may not exceed impacts covered in the FEIS.

Level 1 variances may also be used to document and disseminate agency-directed changes (of variance Level 1 type) to mitigation measures or to other project elements as described within the FEIS and supporting documentation.

To initiate a Level 1 variance request, a Borderlands Wind EM, CM, or other representative will fill out a Variance Request Form using the example in Attachment 4 and submit a completed form with adequate information to the AEM to obtain the appropriate signatures. The Variance Request may include maps, drawings, resource clearance report information, etc. The Borderlands Wind representative will then contact the AEMs to review the proposed change. The Borderlands Wind representative and the AEMs will work together to evaluate the site-specific situation and determine if the variance request is appropriate. The AEM may approve a Level 1 variance request if the results of implementing the change will provide equal or better protection for the resource than the original mitigation measure or if the original mitigation measure is not applicable to that specific site. A Level 1 variance request can be implemented in the field if it is in compliance with the Variance Determination Matrix and Variance Examples (see Attachment 8). It can be implemented in the field as soon as it is approved (in writing) by the ACM lead/AEM, unless additional stipulations would otherwise delay or prohibit.

The AEM will document the variance approval (or denial) in his/her log and will include the variance in the weekly status update and will upload the approved variance request form to the collaborative workspace (refer to Section 5.2, Weekly Summary Report). The variance requests will become part of the agency project files.

If the requested variance exceeds the AEM authority level or the appropriate variance level is uncertain, the AEM will work with the ACM lead and/or lead AAO as necessary to determine the appropriate variance level and inform the Borderlands Wind representative.

6.2 Level 2 Variances

A Level 2 variance request exceeds the field decision authority of the AEM and requires review or approval by the ACM. Generally, the actions linked to Level 2 variances are connected to permits, mitigation measures, habitat mitigation thresholds, and require oversight for conformance monitoring. Level 2 variance requests generally involve project changes that would affect an area outside the NTP drawings, but within the areas previously surveyed for cultural resources, sensitive species, and biological resources. Level 2 variance requests typically require the review of supplemental documents, correspondence, and records and typically take a day to process, but could require more time to process, based on the complexity of the variance. Level 2 variances will be approved (or denied) in writing by the ACM lead with coordination with WAPA as required. If the requested variance exceeds the lead ACM authority level or the appropriate variance level is uncertain, the ACM will work with the lead AAO as necessary to determine the appropriate variance level and inform the Borderlands Wind representative. Variance Level 2 requests must be within the approved FEIS analysis (defined corridors, disturbance levels, etc.), and must be within the approved preconstruction survey areas, but can be outside of the NTP drawings.

Examples of Level 2 variances, as guided by the Variance Determination Matrix and Variance Examples (see Attachment 8), include:

- Proposed new temporary roads or work areas or use of existing roads within the FEIS analysis and preconstruction surveyed areas, but not previously defined in NTP drawings. Alteration shall not exceed the maximum documented acreage in the ROD, FEIS, or approved NTP drawings.
- A modification to a temporary or permanent disturbance area that results in more local acreage, as long as the total project ground disturbance limits as set forth in the ROD, FEIS, or approved NTP drawings are not exceeded.
- Shifts in turbine locations after surface disturbance, but within the FEIS turbine corridor, preconstruction survey areas, and total acreage documented in the ROD, FEIS, or approved NTP drawings.
- Changes above that may result in a location-specific increase in impact to sensitive species habitat. Modification of NTP drawings or processes approved by the agencies to meet specific mitigation measures.
- Moderate changes to work areas, work processes, and site features as defined by the ACM, or NTP drawing changes that require biological, cultural, agency monitoring based on adopted mitigation measures.

6.3 Level 3 Variances

Level 3 variance requests generally involve project changes that would affect an area outside the FEIS corridors and that are outside the areas previously surveyed for cultural or paleontological resources, jurisdictional waters, or sensitive biological resources, or that differ from key elements of the project description as described in the FEIS, ROD, POD, and ROW grants. If a Level 3 variance requires additional NEPA work, one or more ROW amendments may be necessary.

Examples of Level 3 variances, as guided by the Variance Determination Matrix and Variance Examples (see Attachment 8) include:

- Proposed activities that were not previously described or analyzed that affect agency permits and/or approved mitigation plans. If this is the case then supplemental NEPA documentation (additional ROW, a supplemental environment impact statement, or a new environmental assessment) may be required as directed by the agency.
- Proposed activities that were previously described and analyzed in the FEIS, but whose quantity of project elements and their associated total impacts are increasing (such as poles per mile for transmission line).
- Changes or modifications to specific mitigation measures in the agency authorizations; or impacts to jurisdictional waters or sensitive vegetation areas that exceed permitting thresholds or habitat mitigation plan thresholds, or what is described in the FEIS or NTP; or
- Major changes to work areas, work processes, and site features as defined by the agency compliance team (an example of this is the transmission line location being adjusted due to unforeseen circumstances).

To initiate a Level 3 variance request, the Borderlands Wind representative will fill out a complete Variance Request Form using the example provided in Attachment 4, prepare the appropriate supporting documentation, including coordinating with the appropriate additional agencies, and submit (by email) to the appropriate AAO(s) for review and coordination and for the required signatures. The ACM will follow-up with the AAO to ensure the request was received and track progress of the request. Once the appropriate agency approvals are obtained, including coordinating with the appropriate additional agencies, the AAO through the lead ACM, will send the approved request form (electronically) to the AEMs, CM, and CSM. In the event an amended ROW is needed, the appropriate agencies involved with the original ROD will need to review for granting approval. The outcome of the Level 3 variance request will be documented by the lead AAO using the Variance Request Form included in Attachment 4. The variance may be implemented in the field as soon as the approved variance is received, unless additional stipulations would otherwise cause a delay or prohibit approval. The lead ACM or designee will document the variance approval in the log and weekly status update (refer to Section 5.2) and post the approved Variance Request Form on the electronic collaborative workspace.

7 STOP WORK AUTHORITY

The lead AAO has the authority to stop construction of an activity on land under their jurisdiction if the activity is determined to be noncompliant with the project environmental and cultural resource protection requirements. Authority for BLM personnel to issue a “stop work” (temporary suspension) is 43 Code of Federal Regulations (CFR) 2807.16. Authority for suspension or termination of the ROW is 43 CFR 2807.17. This ECCM Plan section is based on these regulations. This authority may be delegated to the lead ACM as determined appropriate by the BLM. The lead AAO or lead ACM will make immediate contact with the Borderlands Wind CM and describe the stop work request.

A written order providing reasons for the suspension will be provided following a verbal suspension of work. The lead AAO or designated representative involved in issuing the “stop work” needs to release the “stop work” order by issuing a written notice to proceed. Continuous noncompliance that would demonstrate a disregard for stipulations or components that the stipulations were designed to protect may result in suspension or termination of the ROW grant pursuant to 43 CFR 2807.17. This will include the opportunity for a hearing before an Administrative Law Judge pursuant to 43 CFR 4.

ATTACHMENT 1. CERTIFICATE OF COMPLETION WORKER ENVIRONMENTAL AWARENESS PROGRAM

This is to certify these individuals have completed a mandatory Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on-site or at related facilities. By signing below, the participant indicates that he/she understands and will abide by the guidelines set forth in the program materials. Include this completed form in the monthly summary report.

No.	Employee Name	Title/Company	Signature
1.			
2.			
3.			
4.			
5.			
6.			
7.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			

No.	Employee Name	Title/Company	Signature
19.			
20.			
21.			

ATTACHMENT 2. MONITORING REPORT COVER PAGE

PROJECT: BORDERLANDS WIND COMPLIANCE MONITORING PROGRAM

Sample Monitoring Report (Cover Page)

The following report is a compilation of the monitoring reports issued by the Environmental Monitors and/or Compliance Manager for activities conducted on **[Month] [Day], 20[XX]**. Should you have any questions regarding the information contained in this report, please contact MONITOR at **(XXX) XXX-XXXX** (office) or **(XXX) XXX-XXXX** (cell phone).

Approved Level 1 Variance

Approved Level 2 Variance

Approved Level 3 Variance

ATTACHMENT 3. MONITORING REPORT FORM

ENVIRONMENTAL INSPECTION AND MONITORING PROGRAM

Project: Borderlands Wind

Report Number: _____ Date of Report: _____

Location(s): _____

Environmental Monitor: _____

Compliance Monitor: _____

Site Inspection Checklist

Air Quality	Yes	No
Is dust control being implemented (i.e., access roads watered, haul trucks covered, streets cleaned on a regular basis)?		
Do vehicles or equipment appear to be idling unnecessarily?		
Biology	Yes	No
Are appropriate measures in place to protect sensitive habitat (i.e., flagging, signage, exclusion fencing, biological monitor)?		
Are all activities being conducted within the approved work limits?		
Have impacts occurred to adjacent habitat (sensitive or non-sensitive)?		
Cultural Resources	Yes	No
Are known cultural resources clearly marked for exclusion?		
Is a cultural monitor on-site if grading is occurring near known cultural sites?		
Hazardous Materials	Yes	No
Have all spills been cleaned-up in accordance with the project's SPCC?		
Are fuels, oils, lubricants, and other hazardous materials on-site labeled and stored in appropriate containers?		
Water Quality	Yes	No
Have temporary erosion and sediment control measures been installed?		
Are best management practices (BMPs) in good condition and functional?		
Is mud tracked onto roadways cleaned-up in accordance with the project's SWPPP?		

Description of Observed Activity:

Issues Requiring Corrective Action:

Issue Requiring Corrective Action	Applicant Notification	Corrective Actions Implemented by Applicant

Photos:

Completed by :_____ Distribution: _____

Name: _____

Firm: _____

Date:_____

ATTACHMENT 4. VARIANCE REQUEST FORM

Variance Request Form

Variance Request No.: _____

Date Submitted: _____

Date Approval Required: _____

BLM Approval Reference No.: _____

Location: _____

Alignment Sheet _____

Construction Drawing/Station Number: _____ Approval Agency: _____

Current Land Use/Vegetative Cover: _____

Nearby Features (Washes, Wetland, Noxious Weed Area, Residence (distance): _____

Variance Level → [ ] Level 1 [ ] Level 2 [ ] Level 3

Variance From → [ ] Permit [ ] Plan/Procedure [ ] Specification [ ] Drawing

[ ] Mitigation Measure [ ] Other

Detailed Description of Variance: Attachments? [ ] Yes [ ] No Photos? [ ] Yes [ ] No

Variance Justification:				
Action Covered in EIS [ ] Y [ ] N		Additional NEPA Needed [ ] Y [ ] N		
Additional Surveys Required	Surveyed Corridor Description		Additional Surveys Completed	
Cultural Survey [ ] Y [ ] N			[ ] Y [ ] N	
T & E [ ] Y [ ] N			[ ] Y [ ] N	
Request prepared by:				
Sign-off (as appropriate)	Name (Print)	Approval Signature	Date	Conditions Attached
Environmental Monitor				[ ] Y [ ] N
Compliance Manager				[ ] Y [ ] N
Agency Authorized Officer				[ ] Y [ ] N
For use in approval only.				
Variance Approval:_____Variance Denied: _____Beyond Authority: _____ Approval Number: _____ Date: _____ Signature: _____ Stipulations: _____				

ATTACHMENT 5. AGENCY COMPLIANCE MONITOR WEEKLY/ MONTHLY REPORT

AGENCY COMPLIANCE MONITOR WEEKLY/MONTHLY REPORT

Address: Phone: Website:

City, State Zip: Fax:

Project: Borderlands Wind

Prepared By:

Reporting Period:

Summary:

Site Inspections/Mitigation Monitoring:

Compliance Issues with Applicable Conditions of Certifications (e.g., areas out of compliance, interpretational disagreements, etc.)

Issues of Concern with or by the Applicant

Construction Activities:

Compliance:

Construction Progress:

Week	% Complete (projected)	% Complete (updated)

Note: The percentage complete is an estimate only and is not derived directly from the project schedule.

Construction Schedule:

Scheduled Activities for Next Week

Potential Delays to the Online Date of the Project

Plan Review Submittal Items

Submittal Type	Description

Notice to Proceed

NTP No.	Date Issued	Project Component	Conditions Included (Y/N)

Variance Requests

Variance Request No.	Submitted	Description	Status	Approval Date

Project Photographs from Week_____:

ATTACHMENT 6. KEY COMPLIANCE CONTACTS

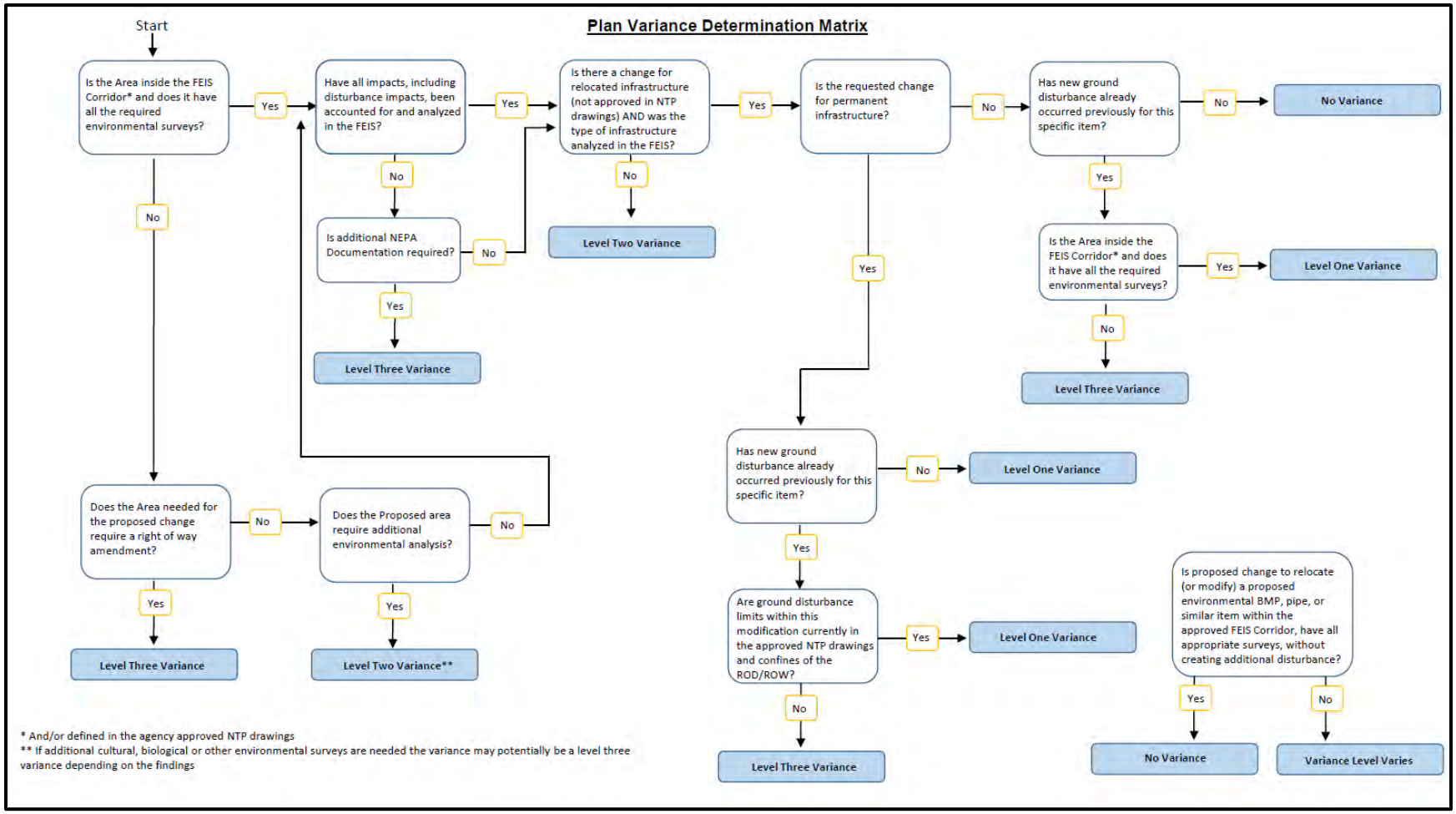
Role	Contact	Phone	Email Address
BLM			
AAO	TBD		
ACM	TBD		
Contracted Designee	TBD		
Socorro Field Office Point of Contact	TBD		
Contracted Designee	TBD		
AEM (Biology)	TBD		
Biology Contracted Designee	TBD		
AEM (Cultural)	TBD		
Cultural Contracted Designee	TBD		
Socorro Field Office Point of Contact	TBD		
Contracted designee	TBD		
AEM (Paleo)	TBD		
AEM (Other)	TBD		
Contracted Designee	TBD		
Borderlands Wind			
PM	TBD		
CSM	TBD		
CM	TBD		
EM	TBD		

ATTACHMENT 7. VARIANCE ACREAGE TABLE

Variance ID	Approval Date	Description	Variance Level	Old Disturbance Area (acres)	New Disturbance Area (acres)	Net Difference in Disturbance (acres)	Total Area Included in FEIS (Y/N)

Total Area Remaining (acres): _____

ATTACHMENT 8. BORDERLANDS WIND COMPLIANCE PLAN VARIANCE DETERMINATION MATRIX AND VARIANCE EXAMPLES



EXAMPLES OF VARIANCE AND LEVELS

1) No variance*

- Relocation of erosion and sediment control measures
    - Relocation of, or change to, concrete washes
- Realignment, or field fitting, of culvert pipes and associated riprap aprons based on field conditions
- Field fitting of similar infrastructure (slopes, roads, pads, etc.)
- Reconfiguration of temporary workspace (crane paths, laydowns, stockpiles, turnarounds, etc.) prior to surface disturbance. An example of this is changing a 100 × 100–foot stockpile area to a 200 × 50–foot area.

2) Level 1*

- Reconfiguration of temporary work areas before surface disturbance has occurred for the area (such as a turbine pad moving before the pad has been cleared).
- Moving a stockpile or turnaround (temporary construction) to a different location.
- Move a road, turbine, or permanent infrastructure prior to earth disturbance.* No new unmitigated impacts are accounted for.

3) Level 2

- A new permanent road, or turbine location, not shown on the preapproved site plans.*
- A temporary road* for site access. An example of this is needing a temporary road to access a hard-to-access location prior to a road being created.
- Larger temporary workspace areas,* as long the total project acreage in the ROD and FEIS is not exceeded. An example of this is larger stockpile areas or crane pads.
- Larger permanent gravel areas,* such as wider turn radii in steep areas.
- Change of measures in approved plans, such as a seed specification.
- Reconfiguration of temporary work areas after surface disturbance has occurred for the area (such as a turbine pad moving after the pad has been cleared,* as long as additional disturbance does not exceed FEIS analysis and ROD).
- A temporary or permanent road that is within the FEIS corridor, granted ROW but requires additional oversight by agency EMs.

4) Level 3

- New roads or turbines outside the FEIS corridor.
- Exceeding the total project acreage as described within the ROD for new temporary or permanent infrastructure.
- Exceeding permitted impacts, such as from a road alteration crossing a wash where the area was not accounted for in the impacts.

* This is the case as long as all of the area is within the FEIS corridors, granted ROW, NTP drawings, all surveys have been completed, and there are no new impacts (such as a no variance or Level 1 variance).

ATTACHMENT 9. WILDLIFE TRENCHING PLAN

Borderlands Wind will implement the following wildlife trenching and excavation best management practices during project construction activities:

- The contractor will fill any trenches or holes immediately or cover them at night or provide escape ramps every 147 feet (45 meters) when not in use.
- Escape ramps can be short lateral trenches or wooden planks sloping to the surface at an angle of 45 degrees or less to prevent entrapment of wildlife.
- Trenches that have been left open overnight will be inspected and wildlife removed prior to backfilling.
- Trenches that have been left open after rain events will be inspected and wildlife removed prior to backfilling.

APPENDIX D: FEDERALLY LISTED SPECIES WITH THE POTENTIAL TO OCCUR AND CRITICAL HABITATS OCCURRING IN THE BLWP AREA (TABLE D-1)

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Table D-1. Federally Listed Species with the Potential to Occur and Critical Habitats Occurring in the BLWP Area

Common Name (*Scientific Name*)	Status‡		Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
	Federal	State			
Amphibians					
Chiricahua leopard frog (*Rana chiricahuensis*)	T w/CH	SGCN	Permanent or semi-permanent springs, livestock tanks, and streams in the upper portions of watersheds at elevations between 3,000 and 9,000 feet. Often do not coexist with nonnative species (e.g., bullfrogs, nonnative fishes, crayfish). In New Mexico, may occur in west-central and southwestern portions of the State. Known or believed to occur in six New Mexico counties, including Catron County.	Unlikely to be present. The project is within the geographic range of the species; however, the water features in the BLWP area are either small, man-made, heavily-managed aboveground cattle tanks or are not permanent or semi-permanent (playas). There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Critical habitat for the species is located approximately 18 miles southeast of the BLWP area (Apache Creek: Kerr Canyon, New Mexico).	Year-round, may disperse
Birds					
Least tern (*Sternula antillarum*)	E	E, SGCN	Nests in colonies on bare or sparsely vegetated sandy beaches, sandbars, islands, and a variety of deposited materials along coasts, bays, major inland rivers, large lakes and reservoirs, alkali wetlands, and gravel and sand pits; also breeds on flat gravel rooftops in certain coastal areas. Known to breed in the vicinity of Roswell, New Mexico, including regularly at Bitter Lake National Wildlife Refuge. Migrates along major river drainages and may occur as rare vagrant at appropriate wetlands throughout New Mexico. Known or believed to occur in 10 New Mexico counties, including Catron County.	Unlikely to be present. The BLWP area is outside (west) of the species' breeding range and there are no large, permanent aquatic habitats in the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. eBird (2018) indicates the nearest known records of the species are from Nelson Reservoir, Arizona, approximately 15 miles west-southwest of the BLWP area.	Breeding, Migration
Mexican spotted owl (*Strix occidentalis lucida*)	T w/CH	SGCN	Nests and roosts primarily in high-elevation (4,000-10,000 feet) old growth forests: mixed conifer dominated by Douglas-fir, pine, or true fir and pine-oak forests dominated by ponderosa pine and Gambel oak. Secondarily, in steep, narrow canyons with cliffs and perennial water. Breeding and roosting habitats typically include steep slopes with high canopy closure, high basal area, many snags, and many downed logs. Foraging, juvenile dispersal, and wintering habitats are more diverse and include a wide variety of forest conditions (including pinyon-juniper), canyon bottoms, cliff faces, tops of canyon rims, and riparian areas. Wintering owls will also use mountain-shrub habitat. Known or believed to occur in 21 New Mexico counties, including Catron County.	May be present. While the BLWP area does not contain typical nesting and roosting habitat, sparse (low to moderate canopy closure) ponderosa pine and pinyon-juniper habitats may be used by foraging, juvenile, and wintering birds. The nearest known records (NHNM data) of the species are approximately 4 miles south and 6 miles southwest of the BLWP area. Critical habitat for the species is located approximately 5 miles southwest of the BLWP area (Canovas Spring, Canovas Creek; New Mexico).	Year-round, may disperse/migrate
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E w/CH, BCC (BCR 16)	E, SGCN	Breeds from sea level to over 8,500 feet in dense, mesic riparian habitats at scattered, isolated sites. Breeds near surface water or saturated soil along rivers and streams, reservoirs, cienegas, and other wetlands. Nesting habitat is typically dense vegetation in the 2- to 5-meter range, with or without a high overstory layer, where surface water or soil moisture is high enough to maintain appropriate vegetation characteristics. During migration, the subspecies uses a wider array of forest and shrub habitats, although riparian vegetation may still be a preferred migration habitat type. Known or believed to occur in 22 New Mexico counties, including Catron County.	Unlikely to be present. The BLWP area does not contain dense, mesic, riparian habitats. There are no known records of the subspecies in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Critical habitat for the subspecies is located approximately 18 miles south of the BLWP area (San Francisco River: Luna Valley, New Mexico).	Breeding, Migration
Yellow-billed cuckoo (*Coccyzus americanus*)	T w/PCH, BCC (BCR 16, 34)	SGCN	Nests in low- to moderate-elevation (usually below 6,600 feet) riparian woodlands with native broadleaf trees and shrubs that are 50 acres or more in extent. Most commonly associated with cottonwood/willow-dominated vegetation cover, but composition of dominant riparian vegetation can vary across range. Has not been found nesting in isolated patches (1-2 acres) or narrow, linear riparian habitats less than 10 to 20 meters wide; migrant cuckoos have been detected in these habitats. During migration uses a wider array of forest and shrub habitats but is rarely observed away from riparian habitats. Known or believed to occur in 25 New Mexico counties, including Catron County.	Unlikely to be present. The BLWP area does not contain riparian habitats. There are no known records of the subspecies in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. eBird (2018) indicates a record of the species at Becker Lake Wildlife Area, Springerville, Arizona (approximately 21 miles west of the BLWP area). Proposed critical habitat for the species is located approximately 41 miles south of the BLWP area (San Francisco River: Pueblo Creek confluence, New Mexico).	Breeding, Migration

Common Name (*Scientific Name*)	Status‡		Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
	Federal	State			
Fishes					
Gila chub* (*Gila intermedia*)	E w/CH	E, SGCN	Deep waters, especially pools, or near cover in headwater streams, cienegas, and artificial impoundments within the Gila River Basin at elevations from 2,000 to 5,500 feet. In New Mexico, known or believed to occur in Grant County.	Unlikely to be present. The BLWP area is outside (north) of the species geographic range, is above the species' elevational range, and does not contain perennial waters. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Critical habitat for the species is located approximately 42 miles southwest of the BLWP area (East Eagle Creek, Arizona).	Year-round
Gila topminnow* (*Poeciliopsis occidentalis*)	E	T	Small streams, springs, and cienegas below 5,000 feet within the Gila River drainage. Use primarily shallow, warm, quiet waters with aquatic vegetation and debris cover. According to USFWS (2017c), known or believed to occur in two New Mexico counties: Grant and Hidalgo; however, extant populations are not known in the State.	Unlikely to be present. The BLWP area is outside (north) of the species geographic range, is above the species elevational range, and does not contain perennial waters. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round
Gila trout (*Oncorhynchus gilae*)	T	T, SGCN	Small mountain headwater streams, which are generally narrow and shallow, at elevations between 5,000 and 10,000 feet. Typically congregate in deeper pools or in shallow water with sufficient protective debris or plant beds. Known of believed to occur in three New Mexico counties, including Catron County.	Unlikely to be present. The BLWP area is within the species general geographic and elevational range; however, there are no headwater streams in the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round
Loach minnow (*Rhinichthys cobitis*)	E w/CH	E, SGCN	Perennial creeks and rivers below 8,000 feet. Typically in shallow turbulent riffles with cobble substrate, swift currents, and filamentous algae. In New Mexico, may be found in the Gila, San Francisco, and Blue Rivers and their tributaries. Known or believed to occur in three New Mexico counties, including Catron County.	Unlikely to be present. The BLWP area is within the species general geographic and elevational range; however, there are no perennial waters in the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Critical habitat for the species is located approximately 19 miles south-southeast of the BLWP area (San Francisco River: The Box).	Year-round
Spikedace (*Meda fulgida*)	E w/CH	E, SGCN	Moderate to large perennial streams typically under 6,000 feet. Occurs in moderate to fast velocity waters over gravel and rubble substrates. In New Mexico, found in the mainstem and lower end of the West, Middle, and East forks of the Gila River. Known or believed to occur in three New Mexico counties, including Catron County.	Unlikely to be present. The BLWP area is within the species' general geographic range; however, there are no streams in the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Critical habitat for the species is located approximately 22 miles south-southwest of the BLWP area (Dry Blue Creek, New Mexico).	Year-round
Flowering Plants					
Zuni fleabane† (*Erigeron rhizomatus*)	T	E, NMRP (E)	Associated with open pinyon-juniper woodlands at 7,300 to 8,000 feet on nearly barren gray detrital clay or selenium-rich red hillsides with soils derived from shales of the Chinle or Baca formations. Most often on north- or east-facing slopes. Suitable soils occur most extensively in the Sawtooth Mountains and in the northwestern portion of the Datil Mountains in Catron County, New Mexico, where approximately 30 occurrence sites are known. Fewer occurrence sites are known in McKinley County, New Mexico, and Apache County, Arizona. Known or believed to occur in four New Mexico counties, including Catron County.	Unlikely to be present. The Sawtooth and Datil Mountains are located approximately 45 and 55 miles east-northeast of the BLWP area, respectively. The BLWP area contains pinyon-juniper woodlands, soils derived from shale, and is within the appropriate elevational range for the species. During initial site reconnaissance surveys, no nearly barren gray clay or red slopes were identified; characteristic gray clay slopes were observed during helicopter nest surveys approximately 5 miles south of the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. The species was not detected during a survey of the project footprint in July/August 2018.	Flowers in May and June

Common Name (*Scientific Name*)	Status‡		Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
	Federal	State			
Mammals					
Mexican wolf (*Canis lupus* ssp. *baileyi*)	EP, NE	E, SGCN	Areas with sufficient prey populations, such as deer and elk, and where human-induced mortality is controlled. Current populations typically associated with evergreen pine-oak woodlands, pinyon juniper woodlands, and mixed-conifer montane forests. The Mexican Wolf Recovery (or non-essential Experimental Population) Area encompasses Arizona and New Mexico from Interstate 40 south to Mexico.	Known to be present. The BLWP area contains appropriate elk and cattle-occupied pinyon-juniper habitats. The BLWP area is within the Non-essential Experimental Population Area and borders the secondary recovery zone of the Blue Range Wolf Recovery Area, which is south of the site (Gila National Forest). USFWS (2015b) indicates a record of an un-collared wolf (or wolves) within or directly adjacent to the southern portion of the BLWP area. This portion of the BLWP area is within the 2015 core use area of the Fox Mountain/Mangas packs (only the Mangas Pack still occurs in this area). There have also been recent observations of the species by an SWCA biologist, a local rancher, and hunters. The species can clearly be present on-site; observations appear to indicate the species occurs occasionally/rarely. No critical habitat has been designated for this species.	Year-round, den April through May
New Mexico meadow jumping mouse (*Zapas hudsonius luteus*)	E w/CH	E	Tall, dense riparian herbaceous vegetation, especially sedges and forbs, associated with seasonally available or perennial flowing water. Also require adjacent intact upland areas for nesting and hibernation. In New Mexico, they have been found in the San Juan, Sangre de Cristo, Jemez, and Sacramento Mountains, and Rio Grande and lower Rio Chama Valleys. Known or believed to occur in 10 New Mexico counties; not known or believed to occur in Catron County.	Unlikely to be present, There are no riparian wetlands in the BLWP area and the BLWP area is outside (east and west) of the species' geographic range. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Critical habitat for the species is located approximately 15 miles west-southwest of the BLWP area (Nutrioso Creek, Arizona).	Year-round, generally nocturnal and generally active only during grass and forb growing season
Reptiles					
Narrow-headed gartersnake (*Thamnophis rufipunctatus*)	T w/PCH	T, SGCN	Clear, rocky streams and lake shorelines at elevations from 2,300 to 8,000 feet. Typically use pool and riffle habitat that includes sand, cobble, and boulder substrates. Use adjacent terrestrial habitats for foraging, thermoregulation, gestation, shelter, immigration, emigration, and brumation. Found in areas of high native fish concentration. Geographic range in New Mexico includes west-central and southwestern portions of the State in the upper Gila River and San Francisco River sub-basins. Known or believed to occur in four New Mexico counties, including Catron County.	Unlikely to be present. There are no streams or lakes within the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Proposed critical habitat for the species is located approximately 17 miles south of the BLWP area (San Francisco River, New Mexico).	Year-round, generally surface active between March and November
Northern Mexican gartersnake (*Thamnophis eques megalops*)	T w/PCH	--	Riparian obligate. Lotic and lentic habitats that include cienegas and stock tanks (earthen impoundments), and rivers containing pools and backwaters. Most frequently found between 3,000 and 5,000 feet, but may occur up to approximately 8,500 feet. Use adjacent terrestrial habitats for foraging, thermoregulation, gestation, shelter, immigration, emigration, and brumation. Found in areas of high native prey (fish and leopard frogs) concentration. Prey include leopard frogs and native fish, and secondarily, nonnative larval and juvenile bullfrogs and soft-rayed fish. In New Mexico, found in low population densities in the Gila River and perhaps Mule Creek. Known or believed to occur in three New Mexico counties, including Catron County.	Unlikely to be present. The BLWP area is outside of the extant population (known in the Gila River in southwestern New Mexico). Earthen impoundment stock tanks within the BLWP area contain water seasonally, but are far from riparian habitats; thus, movements associated with foraging, thermoregulation, gestation, shelter, immigration, emigration, and brumation would be unlikely. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Proposed critical habitat for the species is located approximately 34 miles southwest of the BLWP area (Black River, Arizona).	Year-round, generally surface active between June and September
Critical Habitats					
			There are no critical habitats within the BLWP area.		

Notes: Range or habitat requirement information and potential occurrence justification from AGFD (2013), BISON-M (2018), eBird (2018), NatureServe (2017), New Mexico Rare Plant Technical Council (2005a-e), NHNM (2017), USFWS (2011, 2013b, 2014, 2015b, 2015c, 2016d, 2016e, 2017b, 2017c). Cited references are listed in Chapter 5. References of the Borderlands Wind Project FEIS.
* Species is not included in project-specific list of threatened and endangered species that may occur (USFWS 2020), but is included here because it is listed in the BISON-M-generated TES table for Catron County (BISON-M 2018).
† NRCS (2018)-recognized common name is rhizome fleabane.

‡ **Federal Status Definitions**
BCC = Bird of Conservation Concern
BCR = Bird Conservation Region
BLM S = BLM sensitive species for Socorro Field Office
CH = Designated critical habitat
E = Endangered. Endangered species are those in danger of extinction throughout all or a significant portion of their range
EP = Experimental Population
NE = Non-Essential
NHNM = Natural Heritage New Mexico
PCH = Proposed critical habitat
PT = Proposed threatened
T = Threatened. Threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of their range
State Status Definitions
E = Endangered. Endangered species are those in jeopardy of extinction or extirpation from the State
T = Threatened. Threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of their range in the State
NMRP = New Mexico rare plant
SGCN = Species of Greatest Conservation Need; species that are indicative of the diversity and health of the State's wildlife

APPENDIX E: SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR IN THE BLWP AREA (TABLE E-1)

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Table E-1. Special Status Species with the Potential to Occur in the BLWP Area

Common Name (*Scientific Name*)	Status*	Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
Amphibians				
Arizona toad (*Ananxyrus microscaphus*)	BLM S, SGCN	Shallow, flowing, permanent water over sandy or rocky substrates, typically in river canyons or foothill streams below 8,000 feet. Range includes west-central New Mexico.	Unlikely to be present: there are no river canyons or foothill streams in the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round; Breed February through July
Arizona tree frog (*Hyla wrightorum*)	SGCN	Associated with coniferous forest from 3,000 to 9,500 feet where they are found on the ground or in shrubs and trees near ponds, pools, and streams. Known to frequent meadows in oak-pine or pine-fir forests. In New Mexico, occurs in west-central portion of the state.	May be present: the BLWP area is within the species range and includes seasonally wet playas. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round; Breed June through August
Boreal chorus frog (*Pseudacris maculata*)	SGCN	High grasslands and forests; frequents meadows, lake margins, and generally marshy areas from 6,300 to 8,300 feet. In New Mexico, range includes northwestern portion of state; hypothetical range includes west-central portion of the state.	Unlikely to be present. The BLWP area does not contain meadows/marshy areas or lake margins. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round; Breed November through July
Northern leopard frog (*Lithobates pipiens*)	BLM S, SGCN	Variety of habitats usually in permanent waters with rooted aquatic vegetation from sea level to 11,000 feet. In New Mexico, range includes northwestern, west-central, and south-central portions of the state.	Unlikely to be present: the BLWP area does not contain permanent waters. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round; Breeds mid-March to early June.
Yavapai (lowland) leopard frog (*Lithobates yavapaiensis*)	NM-E, SGCN	Rivers, streams, cienegas, cattle tanks, agricultural canals and ditches, mine adits and other aquatic systems from desert grasslands to pinyon-juniper below 6,200 feet. Limited range in southwest New Mexico.	Unlikely to be present: the BLWP area contains cattle tanks; however, it is outside (north and east; >6,200 feet) of the species' general geographic and elevational range. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round
Arthropod (insect)				
Monarch butterfly (*Danaus plexippus plexippus*)	BLM S	The monarch butterfly is a migratory species found throughout the United States, Canada, and Mexico. Its migration movements in the southwestern US are not well known. Suitable breeding habitat has host plants (milkweeds) where eggs are laid and larvae feed upon the leaves and stems.	May be present: the BLWP area is within the species range and milkweed species are known to occur.	Migration
Birds				
American bittern (*Botaurus lentiginosus*)	BCC (BCR 16), SGCN	Freshwater wetlands with emergent vegetation, brackish marshes, dry grasslands. Wintering range includes central and southern portions of New Mexico.	Unlikely to be present: BLWP area is situated in northern extreme border of wintering range for the species, and BLWP area wetlands do not contain emergent vegetation. eBird (2018) indicates nearest species records from Bosque del Apache National Wildlife Refuge approximately 117 miles east-southeast of the BLWP area.	Wintering
Baird's sparrow (*Ammodramus bairdii*)	BLM S, BCC (BCR 34), NM-T, SGCN	Dense, expansive grasslands with minor shrub component. Non-breeding range includes southwestern extreme of New Mexico.	Unlikely to be present: BLWP area is outside (north) of the species non-breeding range. eBird (2018) indicates species records approximately 118 miles east of the BLWP area.	Non-breeding
Bald eagle (*Haliaeetus leucocephalus*)	BGEPA, BCC (BCR 16, 34), USFS SS, NM-T, SGCN	Aquatic habitats with open water or Southwest arid regions with available food and roost sites. Non-breeding eagles range throughout New Mexico; breeding eagles occur in limited, fragmented locations of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within non-breeding range and may provide foraging resources in the form of waterfowl and carrion.	Non-breeding

Common Name (*Scientific Name*)	Status*	Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
Bell's vireo (*Vireo bellii*)	BLM S, BCC (BCR 34), NM-T, SGCN	Low, shrubby vegetation in riparian areas, brushy fields, second-growth forest, scrub oak, and mesquite brushlands. Breeding range includes south-central and southwestern portions of New Mexico.	Unlikely to be present: BLWP area is situated in northern extreme border of breeding range for the species and contains marginally suitable habitats. eBird (2018) indicates species recorded approximately 50 miles south of the BLWP area.	Breeding
Bendire's thrasher (*Toxostoma bendirei*)	BLM S, BCC (BCR 16, 34), SGCN	Desert habitats: grassland, shrubland, or woodland from sea level to approximately 6,000 feet. Breeding range includes west-central and northwestern portions of New Mexico; year-round range includes southwestern New Mexico.	May be present: BLWP area is above typical elevational range for the species; however, eBird (2018) indicates species records in general vicinity.	Breeding
Black swift (*Cypseloides niger*)	SGCN	Steep rock faces and canyons; range widely to forage over montane forests and open areas. In New Mexico, isolated breeding locations have been documented in north-central portion of the state.	Unlikely to be present: the BLWP area is outside of the species known breeding and migration range; known breeding in New Mexico is rare/isolated and includes north-central portion of the state. eBird (2018) indicates records 80 miles south and 140 miles northeast of the BLWP area.	Breeding, Migration
Black-chinned sparrow (*Spizella atrogularis*)	BCC (BCR 34), SGCN	Arid brushlands on slopes of chapparal, sagebrush, and pinyon-juniper from sea level to 9,000 feet. Breeding range includes central, west-central, and southern portions of New Mexico.	May be present: project is within the species breeding range and contains sloped-pinyon-juniper and shrub habitats. eBird (2018) indicates species records in general vicinity of BLWP area.	Breeding
Black-throated gray warbler (*Setophaga nigrescens*)	BCC (BCR 34), SGCN	Open coniferous or mixed coniferous-deciduous woodland with brushy undergrowth, pinyon-juniper and pine-oak associations, and oak scrub. Breeding range includes central, west-central, north-central, and northwestern portions of New Mexico.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species breeding range and contains pinyon-juniper and open coniferous woodland.	Breeding
Blue-throated hummingbird (*Lampornis clemenciae*)	BCC (BCR 34)	Moist pine-fir and highland deciduous forests, pine-oak woodland, forest edges, second growth, and shrubby areas. Breeding range includes extreme southwestern New Mexico and fragmented location in southeastern portion of the state.	Unlikely to be present: BLWP area is outside (north) of species breeding range. eBird (2018) indicates species records 50 miles south and 70 miles northeast of the BLWP area.	Breeding
Brewer's sparrow (*Spizella breweri*)	BCC (BCR 16)	Shrublands dominated by big sagebrush. May occur in desert scrub, large openings in pinyon-juniper, or large parklands with coniferous forests. Migration range includes west-central, central, eastern, and northeastern portions of New Mexico. Non-breeding range includes southern New Mexico. Breeds in northwestern portion of state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area contains pinyon-juniper woodland.	Migration
Brown pelican (*Pelecanus occidentalis*)	NM-E	Generally rare inland, but regular post-breeding visitor to inland waters in the Southwest.	Unlikely to be present: BLWP area is outside of the species typical range; however, may occur in vicinity of BLWP area as wanderer. eBird (2018) indicates species record from Quemado Lake approximately 21 miles east of BLWP area.	Vagrant/Accidental
Burrowing owl (*Athene cunicularia*)	BLM S, BCC (BCR 16), USFS SS, SGCN	Open, gently-sloping, treeless areas within sparsely vegetated grassland, steppe, and desert biomes. Often associated with high densities of burrowing mammals such as prairie dogs. Year-round range includes southern half of New Mexico; breeding range includes northern half of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species breeding range and is in northern extreme border of species year-round range.	Year-round
Canyon towhee (*Melozone fusca*)	BCC (BCR 34)	Desert grasslands with scattered, dense shrubs; riparian mesquite bosques; pinyon-juniper-oak; and pine-oak. Year-round range includes most of New Mexico except for eastern border and extreme northeastern portions of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species year-round range.	Year-round
Cassin's finch (*Haemorhous cassinii*)	BCC (BCR 16), SGCN	Open coniferous forest over broad elevational range including ponderosa pine and pinyon pine associations. Non-breeding range includes most of New Mexico except for eastern border; year-round range includes northern extreme of state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' non-breeding range and contains open ponderosa pine and pinyon-juniper woodlands.	Non-breeding

Common Name (*Scientific Name*)	Status*	Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
Cassin's sparrow (*Peucaea cassinii*)	SGCN	Arid and shrubby grasslands from seas level to 7,000 feet. In New Mexico, the species year-round range includes southern and central portions of the state. Breeding-only range includes northeastern portion of the state; breeding (scarce) includes west-central and north-central portions of the state.	May be present: the BLWP area is within the species' breeding (scarce) range and contains shrubby desert grassland. eBird (2018) indicates species record in vicinity (21 miles northeast) of BLWP area.	Breeding
Chestnut-collared longspur (*Calcarius ornatus*)	BLM S, BCC (BCR 16, 34), SGCN	Low-grass desert grasslands and isolated water sources. Associated with prairie dog colonies. Non-breeding range includes most of New Mexico except for north-central portion of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' non-breeding range and contains desert grassland, isolated playas, and Gunnison's prairie dog colonies.	Non-breeding
Clark's nutcracker (*Nucifraga columbiana*)	SGCN	Generally open pinyon-juniper and pine/pine-fir woodlands from approximately 3,000 to 13,000 feet. In New Mexico, species' year-round range includes central (including west-central and north-central) and northwestern portions of the state.	May be present: the BLWP area is within the species' year-round range and contains open pinyon-juniper and ponderosa pine woodlands. eBird (2018) indicates species' records approximately 21 miles east, 22 miles west, and 34 miles north-northeast of the BLWP area.	Year-round
Common black hawk (*Buteogallus anthracinus*)	BCC (BCR 34), NM-T, SGCN	Mature gallery riparian forest. Breeding range includes west-central and southwestern portions of New Mexico.	Unlikely to be present: BLWP area does not contain appropriate habitat for the species. eBird (2018) indicates species' records approximately 20 miles south and 41 miles east-northeast of the BLWP area.	Vagrant/Accidental
Common nighthawk (*Chordeiles minor*)	SGCN	Variety of open habitats including sagebrush and desert grassland, prairies and plains, open forests, croplands, rock outcrops, and gravel rooftops. Breeds throughout New Mexico.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' breeding range and contains appropriate habitats.	Breeding
Eared grebe (*Podiceps nigricollis*)	SGCN	Use shallow lakes and ponds with emergent vegetation for breeding. Occur in highly saline staging areas and wide variety of ponds and lakes during spring migration. Winter in small numbers in interior lakes and reservoirs. In New Mexico, breeds in northwestern portion of state, migration in northeastern portion of the state, and non-breeding elsewhere.	May be present: The project is within the species' non-breeding range; seasonally wet playas may provide marginally suitable non-breeding habitat. Nearest species' records approximately 21 miles east (Quemado Lake, New Mexico) and 16 miles west-southwest (Nelson Reservoir, Arizona) of the BLWP area.	Non-breeding
Elegant trogon (*Trogon elegans*)	BCC (BCR 34), NM-E, SGCN	Sycamore, pinyon pine, pine, oak, and juniper riparian habitats and riparian edge vegetation. Breeding range includes southwestern extreme of New Mexico.	Unlikely to be present: BLWP area is well outside (north) of species' breeding range. eBird (2018) records approximately 170 miles from BLWP area.	Vagrant/Accidental
Elf owl (*Micrathene whitneyi*)	BCC (BCR 34), SGCN	Desert wash woodland, riparian forest, upland desert, and canyon riparian forest, and evergreen woodland. Breeding range includes west-central and southwestern portions of New Mexico.	May be present: BLWP area is situated in northern extreme border of breeding range for the species and contains evergreen woodlands. eBird (2018) indicates nearest species' records approximately 55 miles south of the BLWP area.	Breeding
Evening grosbeak (*Coccothraustes vespertinus*)	SGCN	Mixed-conifer and spruce-fir forests; less common in pine-oak, pinyon-juniper, ponderosa pine, and aspen forests. In winter, flocks typically observed in pinyon-juniper and ponderosa pine ecotone. In New Mexico, year-round (scarce) range includes west-central, central, north-central, and northwestern portions of the state; non-breeding (scarce) range elsewhere in the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the year-round (scarce) range and contains pinyon-juniper and ponderosa woodlands.	Year-round
Ferruginous hawk (*Buteo regalis*)	BCC (BCR 16)	Grasslands, shrub-steppe, pinyon-juniper, sparse riparian forests, and canyon areas with cliffs and rock outcrops. Year-round range includes northern half of New Mexico; wintering range includes southern half of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts and nest surveys.	Year-round

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Flammulated owl (*Psiloscops flammeolus*)	BCC (BCR 16, 34), SGCN	Open, mature ponderosa pine or other forest (e.g., dry montane conifer, aspen) with similar features often with oak, dense saplings, or other brushy understory. Breed in fragmented locations in western half of New Mexico; migration range includes southwestern portion of the state.	May be present: BLWP area is within the species scattered breeding range and contains open, ponderosa pine woodland. eBird (2018) indicates records for the species in general vicinity of BLWP area.	Breeding
Gila woodpecker (*Malanerpes uropygialis*)	NM-T, SGCN	Saguaro desert, riparian woodland, and residential areas. Year-round range includes southwestern extreme of New Mexico.	Unlikely to be present: BLWP area is outside (north and east) of species' year-round range and does not contain appropriate habitats. eBird (2018) indicates species' records approximately 70 miles south of the BLWP area.	Vagrant/Accidental
Golden eagle (*Aquila chrysaetos*)	BGEPA, BCC (BCR 16)	Mountainous canyon land, rimrock terrain of open desert, grassland, and forested areas. Year-round range includes most of New Mexico; non-breeding range includes southeastern extreme of state.	Known to occur: the species has been documented using the site during pre-construction avian use counts and nest surveys. The BLWP area contains foraging resources in the form of Gunnison's prairie dog colonies, rabbits, and carrion.	Year-round
Grace's warbler (*Setophaga graciae*)	BCC (BCR 16, 34), SGCN	Pine, pine-oak, and spruce-fir forest. Breeds throughout New Mexico except for southwestern portion of state.	May be present: the BLWP area is within the species' breeding range and contains ponderosa woodland. eBird (2018) indicates nearest species' record approximately 15 miles southeast of the BLWP area.	Breeding
Grasshopper sparrow (*Ammodramus savannarum*)	BCC (BCR 16, 34)	Moderately open grasslands with patchy bare ground; grasslands may contain shrub cover. Non-breeding range includes southwestern extreme of New Mexico; breeding range includes northeastern extreme of the state.	Unlikely to be present: BLWP area is not within the species' range. eBird (2018) indicates a record of the species approximately 25 miles west-southwest of the BLWP area.	Vagrant/Accidental
Gray vireo (*Vireo vicinior*)	BCC (BCR 16, 34), USFS SS, NM-T, SGCN	Mixed pinyon-juniper and oak scrub associations and/or chaparral. Breeding range includes central and western New Mexico and a fragmented location in southeastern portion of state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' breeding range and contains pinyon-juniper woodlands.	Breeding
Juniper titmouse (*Baeolophus ridgwayi*)	BCC (BCR 16), SGCN	Pinyon-juniper woodlands; may be mixed with deciduous or evergreen oaks. May occur year-round throughout New Mexico except for the eastern border of the state; scarce in central and southern portions of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' year-round range and contains pinyon-juniper woodlands.	Year-round
Lark bunting (*Calamospiza melanocorys*)	BCC (BCR 34)	Grasslands and shrub-steppe, including agricultural areas. Migration range includes central and western New Mexico. Non-breeding range includes southern extreme of state. Year-round and breeding range includes northern and east-central portions of the state.	May be present: BLWP area is within the species' migration range and contains grassland and shrub-steppe habitats. eBird (2018) indicates nearest species' record approximately 14 miles north-northeast of the BLWP area.	Migration
Lewis's woodpecker (*Melanerpes lewis*)	BCC (BCR 16, 34), SGCN	Ponderosa pine and open riparian forests with brushy understory and dead or downed woody material; may also use oak, pinyon-juniper, and pine-fir woodlands, and nut and fruit orchards. Year-round range includes northern, west-central and south-central New Mexico. Non-breeding range includes central and southwestern portions of the state.	May be present: BLWP area is within the species' year-round range and contains ponderosa pine and pinyon-juniper habitats. eBird (2018) indicates records in general vicinity of BLWP area.	Year-round
Loggerhead shrike (*Lanius ludovicianus*)	SGCN	Pastureland and other open country including open woodlands and riparian areas with short vegetation and many perches (e.g., fence rows). Year-round resident throughout New Mexico.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' year-round range and contains appropriate habitats.	Year-round
Long-billed curlew (*Numenius americanus*)	BCC (BCR 16), SGCN	Short-grass prairie and wetlands associated with alkali lakes, playas, tidal flats, salt marshes, and agricultural fields. Migrates throughout New Mexico; breeding range includes north-central and northeastern portions of the state.	May be present: the BLWP area is within the species' migration range and contains playa wetlands. eBird (2018) indicates nearest species' records approximately 22 miles west of the BLWP area.	Migration

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Lucy's warbler (*Oreothlypis luciae*)	SGCN	Riparian mesquite bosques and other riparian associations. Breeding range includes southwestern New Mexico.	Unlikely to be present: the BLWP area is outside (north) of the species' breeding range and does not contain appropriate habitats. eBird (2018) indicates nearest species' records approximately 21 miles east (Quemado Lake, New Mexico) and 22 miles west (Little Colorado River) of the BLWP area.	Vagrant/Accidental
McCown's longspur (*Calcarius mccownii*)	BLM S, SGCN	Sparse short grass plains, plowed and stubble fields, and bare or nearly bare ground. Nests in short grass prairies from Wyoming to Montana and winters in the desert southwest.	Known to occur, the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' migration range and contains appropriate habitats.	Migration
Mexican whip-poor-will (*Antrostomus arizonae*)	BLM S, SGCN	Pine-oak, pine-juniper-oak, and ponderosa pine woodlands. Breeding range in New Mexico includes west-central and southwestern portions of the state and isolated, narrow location in southeastern portion of the state.	May be present: the BLWP area is within the species' breeding range and contains marginally suitable habitats (i.e., fragment of ponderosa pine woodland and pinyon-juniper woodland). eBird (2018) indicates nearest species' record approximately 22 miles southwest of the BLWP area.	Breeding
Mountain bluebird (*Sialia currucoides*)	SGCN	Prairie-forest ecotone with tree groves, short grasses, and few shrubs; savannas; recently burned areas; regenerating forests; sagebrush flats. Wintering birds primarily found in flat grasslands with scattered shrubs and trees, pinyon-juniper woodlands, and open-oak-juniper woodlands. In New Mexico, year-round range includes west-central, central, north-central, and northwestern portions of the state; non-breeding range elsewhere in the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' year-round range and contains appropriate habitats.	Year-round
Mountain plover (*Charadrius montanus*)	BCC (BCR 16, 34), SGCN	Short-grass prairie dominated by blue grama; also, fallow or recently tilled agricultural fields. Often associated with prairie dog colonies. Breeding range includes northeastern, east-central, and a portion of northwestern New Mexico. Wintering range includes extreme southwestern portion of the state.	May be present: BLWP area is outside of the species' breeding and wintering range; however, the species may occur widely in New Mexico during migration. The BLWP area contains Gunnison's prairie dog colonies and grasslands dominated by blue grama. NHNM (2017) indicates a species' record in general vicinity (approximately 2 miles northwest of the BLWP area).	Migration
Neotropic cormorant (*Phalacrocorax brasilianus*)	NM-T, SGCN	Wide variety of wetlands in fresh, brackish, or salt water. Breeding range includes fragmented location of central New Mexico (Rio Grande River).	Unlikely to be present: BLWP area is outside of the species' fragmented breeding range. eBird (2018) indicates nearest species record from Becker Lake, Arizona (approximately 21 miles west of the BLWP area).	Vagrant/Accidental
Olive warbler (*Peucedramus taeniatus*)	BCC (BCR 34)	Open ponderosa pine, sugar pine, Douglas fir, and pine-oak forests. Transient/migrant birds associated with mountain habitats and riparian forests. Breeding range includes southwestern extreme of New Mexico.	Unlikely to be present: the BLWP area is outside (north and east) of the species' breeding range. eBird (2018) indicates nearest species' record approximately 25 miles east of BLWP area.	Vagrant/Accidental
Olive-sided flycatcher (*Contopus cooperi*)	SGCN	Mid- to high-elevation open coniferous forest; typically 3,000 to 7,000 feet. Often associated with burned forest. In New Mexico, breeding range includes northwestern half of the state.	May be present: the BLWP area is within the species' breeding range and contains scattered ponderosa pine which may provide marginally suitable habitat. eBird (2018) indicates nearest species' records 18 miles east and 22 miles west of the BLWP area.	Breeding
Painted redstart (*Myioborus pictus*)	SGCN	Oak and oak-pine riparian woodlands with permanent or semi-permanent water; may also occur in oak and oak-pine woodlands. In New Mexico, breeding range includes west-central and southwestern portions of the state.	Unlikely to be present: the BLWP area is within the species' breeding range but does not contain appropriate habitats. eBird (2018) indicates nearest species' records 13 miles southeast and 17 miles west-southwest of the BLWP area.	Vagrant/Accidental
Peregrine falcon (*Falco peregrinus*)	BCC (BCR 16, 34), USFS SS, NM-T, SGCN	Variety of biomes; generally associated with cliffs and open landscapes. Migration range includes most of New Mexico; year-round range includes northwestern and southwestern portions of the state.	May be present: the species uses a broad array of habitats during migration and the BLWP area is within the species' migration range. eBird (2018) indicates records in general vicinity.	Migration

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Phainopepla (*Phainopepla nitens*)	BCC (BCR 34)	Desert riparian, desert washes, and adjacent mesquite belts; closely associated with desert mistletoe. Breeding range includes southwestern New Mexico; considered to be transient or occasional along the Rio Grande River.	Unlikely to be present: BLWP area is outside (north) of the species' general breeding range. eBird (2018) indicates species records 20 miles west-southwest of the BLWP area.	Vagrant/Accidental
Pinyon jay (*Gymnorhinus cyanocephalus*)	BLM S, BCC (BCR 16, 34), SGCN	Pinyon-juniper woodland; also found in sagebrush, scrub oak, and chaparral. Year-round range includes central west-central, and northern New Mexico.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' year-round range and contains appropriate habitat associations.	Year-round
Prairie falcon (*Falco mexicanus*)	BCC (BCR 16)	Open shrub-steppe desert, grasslands, mixed shrub and grasslands, and alpine tundra containing cliffs or bluffs for nesting. Year-round resident throughout New Mexico.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species' year-round range and contains appropriate shrub-steppe, grassland, and cliff habitat.	Year-round
Pygmy nuthatch (*Sitta pygmaea*)	SGCN	Long-needled pine forests. In New Mexico, patchy year-round distribution in central and western portions of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area is within the species year-round range and contains patchy ponderosa pine forest.	Year-round
Red-faced warbler (*Cardellina rubrifrons*)	BCC (BCR 34), SGCN	Montane fir, pine, and open pine-oak forests between 6,500 and 9,100 feet; may contain other deciduous trees (e.g., maple, aspen) in stream and snow-melt drainages. Breeding range includes west-central and southwestern New Mexico.	May be present: the BLWP area is within the species' breeding range and contains ponderosa pine forest. eBird (2018) indicates nearest species' record approximately 21 miles east of the BLWP area.	Breeding
Sagebrush sparrow (*Artemisiospiza nevadensis*)	SGCN	Breeds in semi-open habitats; closely associated with big sagebrush. In winter, associated with desert washes and arid grasslands with big sagebrush, creosote, cactus scrub, yucca, and honey mesquite. In New Mexico, non-breeding range includes southwestern half of state. Breeds in northwestern and north-central extremes of the state.	Unlikely to be present: the BLWP area does not contain appropriate habitat conditions. eBird (2018) indicates nearest species' record approximately 21 miles west of the BLWP area.	Wintering and/or Vagrant/Accidental
Sprague's pipit (*Anthus spragueii*)	BLM S	Plains, shortgrass prairies. Breeds in relatively dry grassland, especially native prairie, avoiding brushy areas and cultivated fields. Winters in similar shortgrass habitats in the southwest and Mexico including pastures and prairies, and grassy patches within fields of crops such as alfalfa.	Unlikely to be present the BLWP area is outside of the species known winter, and breeding range but contains suitable habitat. The species could incidentally occur during migration. eBird (2019) indicates the nearest species' record is approximately 60 miles north of the BLWP area.	Migration
Thick-billed kingbird (*Tyrannus crassirostris*)	NM-E, SGCN	Tropical deciduous gallery forest and brushy edges below 6,100 feet. Breeding range includes extreme southwestern New Mexico.	Unlikely to be present: the BLWP area is outside (north; >6,100 feet) of the species' geographic and elevational range and does not contain deciduous gallery forest. eBird (2018) indicates nearest species' record approximately 21 miles west of the BLWP area.	Vagrant/Accidental
Varied bunting (*Passerina versicolor*)	BCC (BCR 34), NM-T, SGCN	Desert thorn brush in canyons, desert washes, and riparian edges. Breeding range includes extreme southwestern New Mexico and fragmented location in southeastern portion of state.	Unlikely to be present: the BLWP area is outside (north) of the species' breeding range and does not contain appropriate habitats. eBird (2018) indicates nearest species' record approximately 21 miles west of the BLWP area.	Vagrant/Accidental
Veery (*Catharus fuscescens*)	BCC (BCR 16)	Damp, deciduous forests, strong association with riparian and disturbed forest with dense understory. Breeding range includes outlier population on west-central border of New Mexico.	Unlikely to be present: there are no riparian or disturbed deciduous forests in the BLWP area. eBird (2018) indicates nearest species' record approximately 115 miles southeast of the BLWP area.	Vagrant/Accidental
Vesper sparrow (*Pooecetes gramineus*)	SGCN	Breeds in a broad range of grassland types, shrubs, and woodlands bordering fields. Migrates and winters in grasslands, pastures, weedy fields, and brush edges of grasslands. In New Mexico, winters in southern half of the state, migration range includes central and northeastern portions of the state; breeds in north-central and northwestern portions of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area contains grasslands and shrublands appropriate for migrating and wintering individuals.	Non-breeding, Migration

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Virginia's warbler (*Oreothlypis virginiae*)	BLM S, SGCN	Pinyon-juniper and oak woodlands. Migration habitat includes pine and riparian forests. Breeds through much of New Mexico; migration range includes eastern portion of the state.	May be present: the BLWP area is within the species breeding range and contains pinyon-juniper woodlands. eBird (2018) indicates species' records 16 miles west-southwest and 21 miles east of the BLWP area.	Breeding, Migration
Western bluebird (*Sialia mexicana*)	SGCN	Open coniferous and deciduous woodlands, riparian woodlands, forest edges, grasslands, and farmlands. Primarily found in ponderosa pine and pinyon-juniper woodlands in the Southwest. Year-round range through much of New Mexico; non-breeding in southern portions of the state; breeds in north-central portion of the state.	Known to occur: the species has been documented on-site during pre-construction avian use counts. The BLWP area contains appropriate pinyon-juniper and ponderosa pine woodlands.	Year-round
White-eared hummingbird (*Hylocharis leucotis*)	NM-T	Montane pine-oak, oak, and pine-evergreen forests. Breeding range includes southeastern Arizona; infrequent in New Mexico.	Unlikely to be present: the BLWP area is outside (north) of the species' general geographic range. eBird (2018) indicates nearest species record approximately 27 miles west of the BLWP area.	Vagrant/Accidental
Williamson's sapsucker (*Sphyrapicus thyroideus*)	SGCN	Breeds in mid- to high-elevation conifer and mixed conifer-deciduous forests, including ponderosa pine and pine-fir forests. Winters in low- to mid-elevation oak-juniper, pine-oak, deciduous riparian, and oak forests. Migration habitats include oak scrub, pinyon-juniper, and deciduous riparian forests. In New Mexico, non-breeding range includes central, west-central, and southwestern portions of the state; year-round range extends from north-central to west-central portions of the state; breeds in northwestern New Mexico.	May be present: the BLWP area is on the edge between the species' year-round and non-breeding ranges. The BLWP area contain ponderosa pine forest; pinyon juniper forests may be used during migration. eBird (2018) indicates nearest species' record approximately 15 miles east of the BLWP area.	Year-round, Non-breeding
Yellow warbler (*Sonoran; sonorana* ssp.; *Setophaga petechia* ssp. *sonora*)	BCC (BCR 34)	Wet, deciduous thickets, especially those dominated by willows, and in disturbed and early successional habitats. Migration habitat includes scrub/shrub and semi-open, second-growth forest, often associated with wetlands. Migrate through most of New Mexico; breeding range includes west-central, extreme southwestern, and northern portions of the state.	Unlikely to be present: there are no deciduous thickets, scrub-shrub, or disturbed/early-successional habitats associated with wetlands in the BLWP area. eBird (2018) indicates species' records 16 miles west-southwest and 21 miles east of the BLWP area.	Vagrant/Accidental
Crustaceans				
Clam shrimp (*Eulimnadia follisimilis*)	BLM S, SGCN	Stock tanks and ponds. In New Mexico, collected in stock tanks in Socorro and San Juan counties.	May be present; the species' range is not well defined.	Year-round
San Francisco brine shrimp (*Artemia franciscana*)	SGCN	Hypersaline pools, lakes, and salt evaporation ponds. In New Mexico, found in natural salt lakes.	Unlikely to be present: the BLWP area does not contain appropriate habitats.	Year-round
Fishes				
Desert sucker (*Catostomus clarkii*)	BLM S, USFS SS, SGCN	Rapids and flowing pools of streams and rivers primarily over gravel-rubble with sandy silt below 8,800 feet. Range includes extreme headwaters of Gila basin and San Francisco River drainages.	Unlikely to be present: there are no streams or rivers in the BLWP area.	Year-round
Rio Grande chub (*Gila pandora*)	BLM S	Versatile species capable of surviving riverine and lacustrine habitats at elevations up to 11,370 feet. The species is typically found in pools with overhanging banks and brush. Currently known from tributaries of the Rio Grande river within the Rio Grande basin.	Unlikely to be present: there are no riverine or lacustrine habitats (i.e. streams, rivers, lakes) in the BLWP area.	Year-round
Roundtail chub (*Gila robusta*)	BLM S	Cool to warm waters of rivers and streams from 1,000 to 7,500 feet, often occupying the deepest pools and eddies. The species is currently found throughout the Colorado River, basin and its tributaries, the Little Colorado River, Bill Williams River and in the main stem and tributaries of the Gila, Salt, and Verde Rivers in Arizona and New Mexico.	Unlikely to be present: there are no streams or rivers in the BLWP area.	Year-round

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Rio Grande sucker (*Catostomus plebeius*)	BLM S, SGCN	Low-gradient, low-velocity stream reaches. In New Mexico, known from the Rio Grande and its tributaries in northern portion of the state, and the Mimbres River in southwestern portion of the state. Introduced populations are established in the Rio Hondo, Gila River basin, and San Francisco drainage.	Unlikely to be present: there are no streams or rivers in the BLWP area.	Year-round
Sonora sucker (*Catostomus insignis*)	BLM S, SGCN	Gravelly or rocky pools in a variety of habitats from warm water rivers to trout streams between 1,000 and 8,700 feet. Range includes Gila and San Francisco drainages.	Unlikely to be present: there are no streams or rivers in the BLWP area.	Year-round
Flowering Plants				
Apache milkvetch (*Astragalus nutriosensis*)	NMRP SS	Volcanic silty clay soils in gently sloping grama grassland; occasionally in pinyon-juniper woodland. Elevation between 7,000 and 8,000 feet. Range includes northwestern Catron County, New Mexico.	Known to occur. According to NHNM (2017; data provided to SWCA), the species has been documented within and out to 10 miles from the BLWP area. Specific proximal occurrences have been recorded in the eastern portion of the BLWP area and northern boundary (just outside of the BLWP area). The species may occur in other areas of the BLWP area where appropriate habitat conditions are present.	Flowers in May
Arizona sunflower (*Helianthus arizonensis*)	NMRP SS	Dry, sandy soil of open pine woodlands at elevations between 4,000 and 7,000 feet. Range in New Mexico: Catron County, west of Quemado.	Unlikely to be present: the BLWP area is just above the elevational range known for the species. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers June through August
Bittercress ragwort (*Packera cardamine*)	NMRP SS	Steep slopes and forest understory in upper montane coniferous (spruce-fir) forest at elevations between 8,000 and 10,000 feet. Range includes Mogollon Mountains in Catron County.	Unlikely to be present: known only from the Mogollon Mountains of New Mexico (approximately 50 miles south of the BLWP area) and the White Mountains of Arizona. There are no spruce-fir forests in the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers late April through August
Bog alkaligrass (*Puccinellia parishii*)	BLM S, NM-E, NMRP E	Alkaline springs, seeps, and seasonally wet areas that occur at the heads of drainages or on gentle slopes between 2,600 and 7,200 feet. Often associated with salt grass, alkali sacaton, sedges, bulrushes, rushes, spike rushes, and yerba mansa. Range includes seven New Mexico counties including, Catron County.	May be present: the BLWP area contains seasonally wet areas (playas); however, plant associations (e.g., sedges, rushes) have not been observed during initial site reconnaissance surveys. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Late winter to spring growing period
Davidson's wavewing (*Cymopterus davidsonii*)	NMRP SS	Cool, rocky area in pinyon-juniper woodland and lower montane coniferous forest between 6,500 and 8,000 feet. Range includes two New Mexico counties including Catron, where it occurs in the Mogollon Mountains.	Unlikely to be present: known range is approximately 50 miles south of the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers in August
Fugate's amsonia (*Amsonia fugatei*)	BLM S	Limy conglomerate ridges and associated outwash slopes in Chihuahuan desert scrub; 1,500-1,800 m (5,000-5,900 ft). Known distribution includes Socorro County (NMRP 2005b).	Unlikely to be present: BLWP area is outside of the known geographic range of the species.	Flowers April through May
Gila thistle (*Cirsium gilense*)	NMRP SS	Moist areas or mountain meadows in montane coniferous forest between 7,000 and 8,000 feet. Known distribution includes southern Catron County.	Unlikely to be present: BLWP area is outside (north) of the known geographic range of the species. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers July to September
Goodding's bladderpod (*Lesquerella gooddingii*)	NMRP SS	Open pinyon-juniper and ponderosa pine forest between 6,000 and 7,500 feet. Range includes two New Mexico counties including Catron.	May be present: the BLWP area is within the species' general geographic and elevation range and contains open pinyon-juniper and ponderosa pine forest. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers June through September

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Goodding's onion (*Allium gooddingii*)	NM-E, NMRP E	Spruce-fir, mixed conifer, and aspen forest between 6,500 and 9,400 feet. Occurs at the base of steep slopes and moist drainage bottoms. Range includes four New Mexico counties, including Catron County.	Unlikely to be present: nearest known occurrences are within the Gila National Forest, south of the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers late June through early September
Groundcover milkvetch (*Astragalus humistratus* var. *crispulus*)	USFS SS, NMRP SS	Sandy soils of volcanic origin on slopes, benches, and ledges in xeric pine forest between 7,250 and 8,150 feet. Forms local colonies. Known only from Catron County, New Mexico, and southeastern Apache County, Arizona.	May be present: the BLWP area is within the species' general geographic range and contains pine forest and soils of volcanic origin. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flower timing unknown
Hess' fleabane (*Erigeron hessii*)	NM-E, NMRP E	Andesitic dikes in otherwise rhyotitic rock in upper montane to subalpine conifer forest between 9,500 and 10,200 feet. Occurs in bedrock cracks in open areas. Known only from the Mogollon Mountains in Catron County.	Unlikely to be present: nearest known occurrences are in extreme southern Catron County, approximately 60 miles south of the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers August to early September
Mogoll deathcamas (*Zigadenus mogollonensis*; syn: *Anticlea mogollonensis*)	NMRP SS	Organic soils in understory of upper montane and subalpine mixed coniferous and spruce-fir forests, often with aspen, between 8,700 and 10,500 feet. Known only from the Mogollon Mountains in Catron County.	Unlikely to be present: nearest known occurrences are in extreme southern Catron County, approximately 60 miles south of the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers late July to early September
Mogollon hawkweed (*Hieracium fendleri* var. *mogollense*; syn: *Hieracium brevipilum*)	NMRP SS	Grassy openings in ponderosa pine forest and in mountain meadows between 8,200 and 10,500 feet. Known distribution incudes Mogollon Mountains, Catron County, and neighboring White Mountains, Apache County, Arizona.	Unlikely to be present: nearest known occurrences are in extreme southern Catron County, approximately 60 miles south of the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers August to September
Mogollon Mountain draba (*Draba mogollonica*)	NMRP SS	Cool, moist northern slopes of mountains, ravines, and canyons on volcanic rocks and soil in montane forests between 5,000 and 9,000 feet. Distribution includes Mogollon and neighboring mountains; four New Mexico counties, including Catron County.	May be present: the BLWP area is within the species' general geographic and elevation range. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers April to May
Todilito stickleaf (*Mentzelia todiltoensis*)	BLM S	Outcrops of gypsum in the Todilto Formation between 5,600 and5,840 feet. Known from western Bernalillo County, eastern Cibola County, western Santa Fe County, and reported in Socorro County.	Unlikely to be present: BLWP area is outside of the known geographic range of the species.	Flowers June through September
White Mountain alumroot (*Heuchera wootonii*)	NMRP SS	Mountain slopes and protected, usually north-facing rock outcrops, or Gambel oak thickets in pinyon-juniper woodland and lower and upper montane coniferous forest between 7,000 and 12,000 feet. Distribution includes three New Mexico counties, including Catron County, where it occurs in the Datil Mountains.	Unlikely to be present: the nearest known species' occurrences are approximately 55 miles west of the BLWP area (Datil Mountains). There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers June to September
White Mountain clover (*Trifolium neurophyllum*)	NMRP SS	Wet meadows, springs, and along riparian corridors in montane coniferous forest between 6,500 and 9,000 feet. Range includes Catron County and adjacent Arizona.	May be present: there are no wet meadows, springs, or riparian corridors in the BLWP area; however, the edges of BLWP area playas may provide suitable conditions. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers late July to September
Willow Creek dock (*Rumex tomentellus*)	NMRP SS	Seasonally wet habitats along streams. Known elevation approximately 8,000 feet. Known from southern Catron County, Willow Creek.	Unlikely to be present: the BLWP area is outside (north) of the species' known occurrence and does not contain streambank habitats. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers in July

Common Name (*Scientific Name*)	Status*	Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
Winn Falls fleabane (*Erigeron scopulinus*)	NMRP SS	Crevices of rhyolitic rock cliff faces in lower montane coniferous forest between 6,000 and 9,000 feet. Known from the Black Range, Mogollon, San Mateo and Chiricahua Mountains; range includes southern Catron County.	Unlikely to be present: the BLWP area is outside (north) of the species' range. The Mogollon Mountains are approximately 60 miles south of the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers May to June
Wooton's hawthorn (*Crataegus wootoniana*)	NMRP SS	Canyon bottoms and forest understory in lower montane coniferous forest between 6,500 and 8,000 feet. Range: Pinos Altos and Sacramento Mountains; three New Mexico counties, including Catron County.	Unlikely to be present: nearest known occurrences are in extreme southern Catron County, approximately 60 miles south of the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers April to June
Wright's catchfly (*Silene wrightii*)	NMRP SS	Cliffs and rocky outcrops in montane and subalpine conifer forests between 6,800 and 8,000 feet. Range includes five New Mexico counties, including Catron County.	May be present: the BLWP area is within the species' general geographic and elevational range and contains rocky outcrops and ponderosa pine woodland. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers mid-July to October
Wright's marsh thistle (*Cirsium wrightii*)	BLM S	Wet, alkaline soils in spring seeps and marshy edges of streams and ponds between 3,450 and 8,500 feet). Known from New Mexico, Eddy, Chaves, Guadalupe, Otero, Sierra, and Socorro counties.	Unlikely to be present: the BLWP area is outside the species' known geographic range and does not contain streams or ponds.	Flowers August to October
Yeso twinpod (*Physaria newberryi* var. *yesicola*)	BLM S	Sandy gypsum and silty strata of the Yeso Formation in short grass steppe and juniper savanna between 5,700 and 6,900 feet). Known from Cibola and Valencia county in the Sierra Lucero Range.	Unlikely to be present: the BLWP area is outside the species' known geographic range.	Flowers April to May
Zuni milkvetch (*Astragalus accumbens*; syn: *Astragalus missouriensis* var. *accumbens*)	NMRP SS	Gravelly clay banks and knolls, in dry, alkaline soils derived from sandstone, in pinyon-juniper woodlands between 6,200 and 7,900 feet. Range includes three New Mexico counties, including Catron County.	May be present: the BLWP area is within the species' general geographic and elevational range and contains pinyon-juniper woodland. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Flowers May through June
Gastropod				
Gila springsnail (*Pyrgulopsis gilae*)	NM-T, SGCN	Limited to a series of cool springs along the Gila River in Grant County; has also been found in nearby thermal springs in association with the New Mexico hot springsnail. Associated with mud, debris, and vegetation (e.g., watercress; *Nasturtium officinale*) of springs, seeps, rivulets.	Unlikely to be present: habitat conditions for the species are not present within the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Known species occurrences are approximately 80 miles southeast of the BLWP area.	Year-round
False marsh slug (*Deroceras heterura*)	SGCN	Higher elevations fir-aspen and ponderosa pine-oak forests of the Mogollon Mountains and Black Range.	Little information available for this species. Unlikely to be present: based on limited known range/species' records. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round
New Mexico hot springsnail (*Pyrgulopsis thermalis*)	NM-T, SGCN	Thermal springs along the Gila River in the Gila River in Grant County. Found on vertical rock covered with thin sheets of water.	Unlikely to be present: habitat conditions for the species are not present within the BLWP area. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM. Known species occurrences are approximately 80 miles southeast of the BLWP area.	Year-round

Common Name (*Scientific Name*)	Status*	Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
Mammals				
Arizona gray squirrel *(Sciurus arizonensis)*	USFS SS	Deciduous forests with walnut, sycamore, oak, cottonwood, and pine trees. In New Mexico, the species is usually found in canyons with water and food sources such as walnuts and acorns.	Unlikely to be present: there are no riparian or deciduous forest habitats in the BLWP area.	Year-round
Arizona montane vole (*Microtus montanus arizonensis*)	USFS SS, NM-E, SGCN	Prefers high-elevation wet meadows, seeps, springs, and drainages from 7,000 to 9,000 feet. Often associated with wet soils, wet sedges, patches of cattail, and vertical grass cover. In New Mexico, may be found in Catron County within the San Francisco River drainage.	May be present: habitats adjacent to seasonally wet playas on-site may be marginally suitable for the subspecies. Known occurrences are approximately 15 miles south-southwest of the BLWP area (Jenkins Creek, Flanagan Spring). There are no known records of the subspecies in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round
Black bear (*Ursus americanus*)	SERI	Found in most woodland habitats, including pinyon-juniper, oak woodland, coniferous forest, and chaparral.	May be present: the BLWP area is within the species' geographic range.	Year-round; hibernates from November through March
Black-tailed prairie dog (*Cynomys ludovicianus)*	BLM S	Dry, flat, open plains and desert grasslands. Since prairie dogs do not like tall grass (<30cm preferred), they will choose a site with little vegetation, often in areas heavily grazed by cattle.	Unlikely to occur: the BLWP area contains suitable habitat but is outside the species' known range.	Year-round; may enter light hibernation in extreme cold
Cougar (*Puma concolor*)	SERI	Desert and forested mountains with broken terrain and steep slopes.	May be present: the BLWP area is within the species' geographic range.	Year-round
Elk (*Cervus canadensis*)	SERI	Mountain meadows and montane coniferous forests are used during the summer. Moves to lower-elevation mixed conifer forest, pinyon-juniper woodland, and grassland habitats in the winter.	Known to occur: there have been observations of the species in the central and southern portions of the BLWP area.	Year-round
Gunnison's prairie dog (prairie subspecies; *Cynomys gunnisoni zuniesis*)	BLM S, USFS SS, SGCN	Gently sloping grasslands and semi-desert and montane shrublands between 4,600 and 12,000 feet. In New Mexico, range includes northwestern and west-central portions of the state.	Known to occur: the species has been observed while conducting pre-construction wildlife surveys on-site. There are known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round; hibernates from October to mid-February/late-April
Mule deer (*Odocoileus hemionus*)	SERI	Occurs in a wide range of habitats from desertscrub to montane forests.	May be present: the BLWP area is within the species' geographic range.	Year-round
Spotted bat (*Euderma maculatum*)	BLM S, NM-T, SGCN	Roosts in crevices and cracks of cliff faces; sometimes roosts in caves or in buildings near cliffs. Variety of habitats including low to high deserts, riparian areas, ponderosa, and spruce-fir forests below 10,600 feet. In New Mexico, range includes western half of the state.	May be present: the BLWP area is within the species' geographic range. There are known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round; may migrate locally by elevation
Townsend's big-eared bat (*Corynorhinus townsendii*)	BLM S, USFS SS, SGCN	Day roosts and maternity and hibernation colonies in caves, mines, or buildings. Night roosts may include caves, buildings, and tree cavities. Associated with mesic forested habitats, but occupies a broad range of habitats including arid scrub, pine forest, pinyon-juniper, and wooded canyons between 500 and 8,400 feet. Range throughout New Mexico.	Known to occur; this species was detected during acoustic surveys. There are known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round, may migrate locally by elevation

Common Name (*Scientific Name*)	Status*	Range/Habitat Requirements	Potential for Occurrence in Project Area	Season/Life History Information Relevant to Project Area
Reptiles				
Arizona black rattlesnake (*Crotalus cerbeus*)	SGCN	Variety of biotic communities from approximately 4,000 to 9,000 feet. Often associated with rocky drainages with permanent or semi-permanent water and open, rocky slopes. Range in New Mexico includes western extreme of Catron County.	May be present: the BLWP area is in the extreme eastern edge of the species' geographic range. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round; den in winter and late fall.
Desert massasauga (*Sistrurus tergeminus)*	BLM S, SGCN	Found in valleys, on low sloping alluvial fans and on rolling grass-covered hills within the semidesert grassland. Found at elevations ranging from 3,500 feet to about 4,600 feet.	Unlikely to be present: the BLWP area is outside the known geographic range of the species.	Year round; den in winter and late fall.
Beg Bend slider (*Trachemys gaigeae*)	BLM S, SGCN	Freshwater riverine habitats of the desert southwest and northern Mexico. Found in the Rio Grande drainage from south-central New Mexico downstream to western Texas and Mexico. In New Mexico, the species uses ponds, marshes, and canals up to 1.25 mile from the Rio Grande.	Unlikely to be present: the BLWP area is outside the known geographic range of the species.	Year round; hibernate in winter.
Banded rock rattlesnake (*Crotalus lepidus klauberi*)	SGCN	Large rock outcrops, rocky stream beds, and steep talus slopes from approximately 4,000 to 8,500 feet. Often associated with permanent or intermittent streams, upper desert-grassland, and lower ponderosa pine forest. In New Mexico, occurs in southwestern portion of the state; uncommon in Gila National Forest.	Unlikely to be present: the BLWP area is outside the northern edge of the species' geographic range. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year-round; active throughout year
Sonora mud turtle (*Kinosternon sonoriense*)	SGCN	Rocky streams, creeks, and rivers from approximately sea level to approximately 6,700 feet; also in ponds, cattle tanks, and ditches. In New Mexico, occurs in southern and west-central portions of the state; known in the Gila National Forest.	May be present in cattle tanks: the BLWP area is in the extreme northern edge of the species' range. There are no known records of the species in the BLWP area vicinity (within 10 miles) based on data provided to SWCA by NHNM.	Year round; may hibernate in late fall and winter.

Notes: Range or habitat requirement information and potential occurrence justification from AGFD (2013), Audubon (2019), Bat Conservation International (2018), BISON-M (2018), Brennan (2012), eBird (2018 and 2019), Frey (2005), MacCarter (1996), NatureServe (2017), New Mexico Rare Plant Technical Council (NMRP) (2005a-e), Natureserve (2019), NHNM (2017), New Mexico Herpetological Society (2019), Pierce (2008), Rees et al (2005), Reid (2006), Rodewald (2015), Southwestern Center for Herpetological Research (2017), and Stuart and Ward (2009). Cited references are listed in Chapter 5. References of the Borderlands Wind Project FEIS.
BCC = Bird of Conservation Concern
BCR = Bird Conservation Region
BLM S = BLM sensitive species
USFS SS= USFS sensitive species provided by Gila National Forest; personal communication
NHNM = Natural Heritage New Mexico
NM-E = Endangered. Endangered species are those in jeopardy of extinction or extirpation from the state
NM-T = Threatened. Threatened species are those likely to become endangered within the foreseeable future throughout all or a significant portion of their range in the state
NMRP E = New Mexico Rare Plant Endangered
NMRP SS = New Mexico Rare Plant Strategy Species
SERI = Species of Economic and Recreational Importance
SGCN = Species of Greatest Conservation Need; species that are indicative of the diversity and health of the state's wildlife

APPENDIX F: VISUAL RESOURCE ANALYSIS DOCUMENTATION

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U.S. Department of the Interior
Bureau of Land Management

Borderlands Wind Project EIS and Resource Management Plan Amendment
VISUAL RESOURCE IMPACT ANALYSIS

DOI-BLM-NM-A020-2019-0002-RMP-EIS

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Visual Resource Impact Analysis

Borderlands Wind Project EIS and Resource Management Plan Amendment

DOI-BLM-NM-A020-2019-0002-RMP-EIS

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February 27, 2020

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1. INTRODUCTION

Borderlands Wind, LLC (a subsidiary of NextEra Energy Resources, LLC) is proposing development of an up to 100-megawatt (MW) wind-powered electrical generation facility in western Catron County, New Mexico (NM). The Borderlands Wind Project (BLWP) would be built near the Arizona (AZ)–NM border south of U.S. Highway 60 (U.S. 60) (Figure 1). Wind turbines and ancillary facilities, such as access roads, underground collection lines, and substation/switchyard areas, would be located on lands administered by the Bureau of Land Management (BLM) Socorro Field Office (SFO), New Mexico State Land Office (NMSLO)-owned lands, and privately owned lands. Borderlands Wind, LLC has filed an application with the BLM for a Federal Land Policy and Management Act of 1976 (FLPMA) Right-of-Way (ROW) authorization. The BLM must consider existing resource management plans (RMPs) in the decision to issue a ROW grant, in accordance with 43 Code of Federal Regulations (CFR) Part 1610.0-5(b). The proposed wind development alternatives are not in conformance with the SFO RMP (BLM 2010); therefore, the BLM is considering an amendment to the SFO RMP (2010) which would be required if the BLWP is approved. An amendment to the SFO RMP would modify the visual resource management (VRM) classes and ROW avoidance area status in the vicinity of the project area.

Subject to the BLM's approval of the ROW application, construction of the BLWP wind energy generation facility would commence in 2020, with generation and delivery of electricity to the grid by the end of 2021. When completed, the wind energy facility would operate year-round for up to 35 years. In addition to a summary of the BLWP below, a detailed description of the construction, operation, and decommissioning of the proposed wind energy facility is provided in the Borderlands Wind, LLC Plan of Development (POD) (Borderlands Wind, LLC 2020).

The BLWP is located in a broad and expansive plateau area in western New Mexico northwest of the Gallo Mountains within the Gila National Forest and south of Cimarron Mesa between Cow Springs Draw and Cerro La Mula. The BLWP area is characterized by sloping landforms with rock outcrops and subtle linear rocky bands and is covered in dense grasses, clusters of sagebrush, and scattered juniper. Developed uses such as ranching and grazing, clustered residential, and transportation routes also contribute to the landscape character of the BLWP area. Cultural (built features) development in the project area consists of transmission lines, improved and unimproved dirt roads, and range improvements.

The term "visual resources" refers to the composite of basic terrain, geologic, and hydrologic features, vegetative patterns, and built features that influence the visual appeal of a landscape. This report describes the existing context of the visual environment and assesses the potential impacts from the construction and operation of the BLWP within the visual resource analysis area (analysis area).

1.1. Proposed Action

The Proposed Action would be built on 43,528 acres in western Catron County, NM. The Proposed Action area (Figure 2) consists of approximately 30,338 acres of public lands administered by the BLM SFO, 5,693 acres of public lands managed by the NMSLO, and 7,497 acres of privately owned lands. Forty wind turbine generators and associated facilities would deliver up to 100 MW of electricity to the electrical transmission grid in the southwestern United States. Although the interconnection to the existing electrical grid has yet to be finalized, the Point of Interconnect is expected to be located adjacent to the existing Tucson Electric Power (TEP) Springerville to Greenlee 345-kV transmission line that currently traverses the project area.

The Proposed Action would consist of 40 constructed turbines, including 36 General Electric (GE) 2.5 MW and 4 GE 2.3 MW turbines (Figure 2). The GE 2.5 MW turbines have a maximum overall height of 499 feet, and the GE 2.3 MW turbines have a maximum overall height of 453 feet. Borderlands Wind, LLC has identified 46 turbine locations in the Proposed Action area in case turbine locations are determined not suitable during construction. This report evaluates all 46 turbine locations for the Proposed Action because the final turbine array layout would not be determined until construction. As a result, the potential disturbance and associated impacts on resources/uses within the Proposed Action area are greater than what the total impacts would be as constructed. A detailed

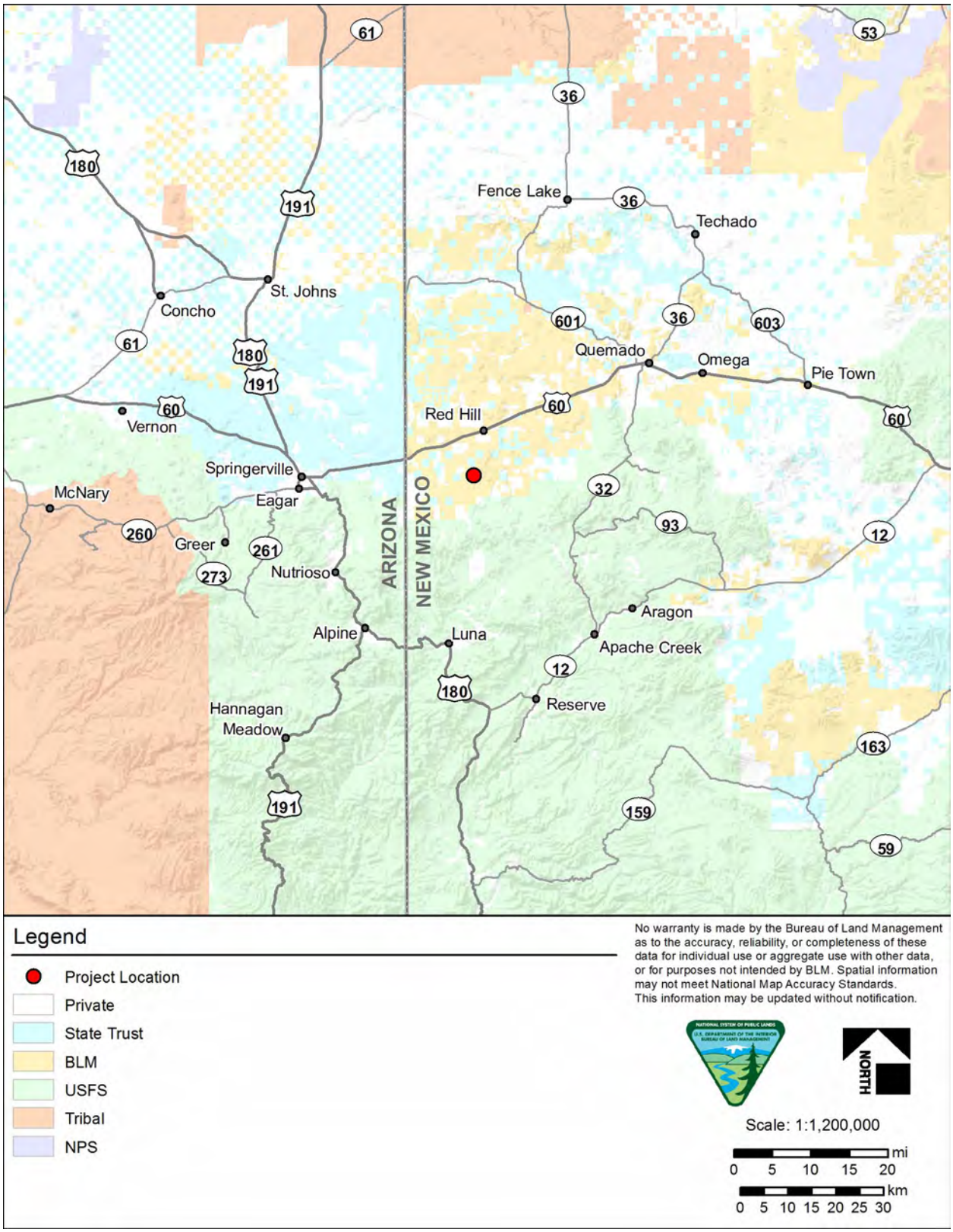

Figure 1. BLWP Vicinity

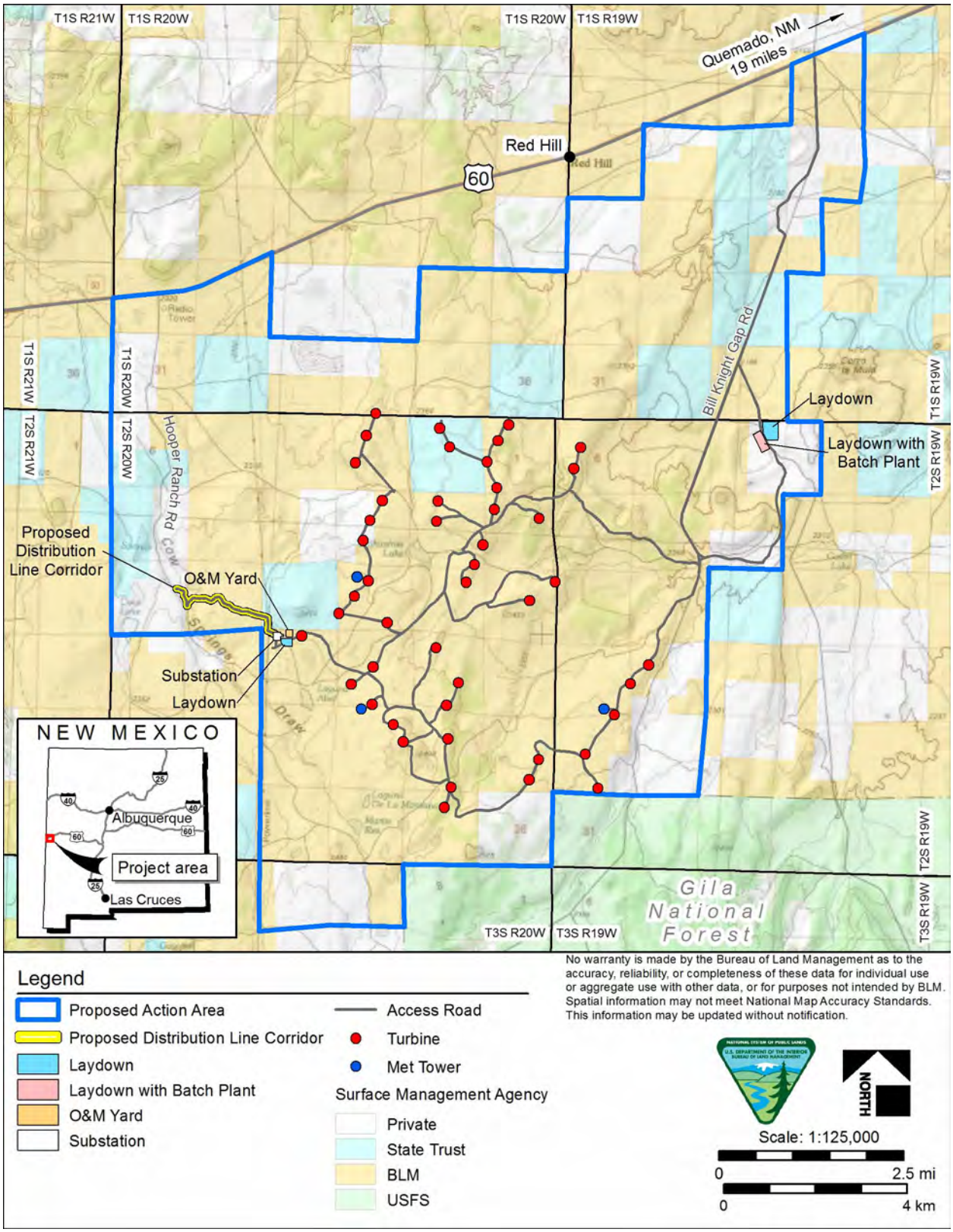

Figure 2. Proposed Action Components

description of the primary components of the BLWP and the temporary and permanent disturbance anticipated with the construction, operation and maintenance, and decommissioning activities are noted in Table 1.

As previously noted, the BLWP would have a life expectancy of 35 years, based on electrical demand, maintenance, and the expected life of the project facilities and major components. At some period of time in the future, the project may no longer be cost-effective to continue operation. At that time, the BLWP would be decommissioned and all project facilities would be dismantled and removed in accordance with applicable county, State, and Federal laws. However, underground distribution cables, foundations, and structures would remain in place except as noted in the Decommissioning Plan in the BLWP POD. To minimize impacts during the decommissioning phase of the project, design features/Best Management Practices (BMPs) would be implemented.

1.2. Alternative 1

Under Alternative 1, the wind energy generating facility would encompass 16,648 acres of lands, with 13,859 acres being public lands administered by the BLM SFO. The remaining lands in the Alternatives 1 and 2 area are managed by NMSLO (1,168 acres) or by private landowners (1,621 acres). This alternative would reduce the total project boundary acreage by 26,880 acres, including 16,479 acres of BLM-administered public lands, 4,525 acres of NMSLO-managed lands, and 5,876 acres of privately owned lands.

Alternative 1 would consist of 40 constructed turbines, including 36 GE 2.5 MW and 4 GE 2.3 MW turbines (Figure 3). This alternative would consist of the same number and type of turbines as the Proposed Action. Borderlands Wind, LLC has identified 44 turbine locations in the Alternative 1 area in case turbine locations are determined not suitable during construction. This report evaluates all 44 turbine locations for Alternative 1 because the final turbine array layout would not be determined until construction. As a result, the potential disturbance and associated impacts on resources/uses within the Alternative 1 area are greater than what the total impacts would be as constructed.

This alternative would slightly shift the locations of some of the project infrastructure (turbines, roads, collection lines) as compared to the Proposed Action to minimize impacts to sensitive environmental resources where feasible. In addition to the turbines, project components and ancillary facilities for Alternative 1 are discussed in Table 1.

1.3. Alternative 2

Alternative 2 has the same 44 turbine locations, ancillary facilities, and project boundary/legal description as Alternative 1. Alternative 2 would consist of 34 constructed turbines, including 30 GE 3.03 MW and 4 GE 2.5 MW turbines (Figure 3). The GE 3.03 MW turbines have a maximum overall height of up to 630 feet and the GE 2.5 MW turbines have a maximum overall height of 499 feet. This report evaluates all 44 turbine locations for Alternative 2 because the final turbine array layout would not be determined until construction. As a result, the potential disturbance and associated impacts on resources/uses within the Alternative 2 area are greater than what the total impacts would be as constructed. In addition to the turbines, project components and ancillary facilities for Alternative 2 are discussed in Table 1.

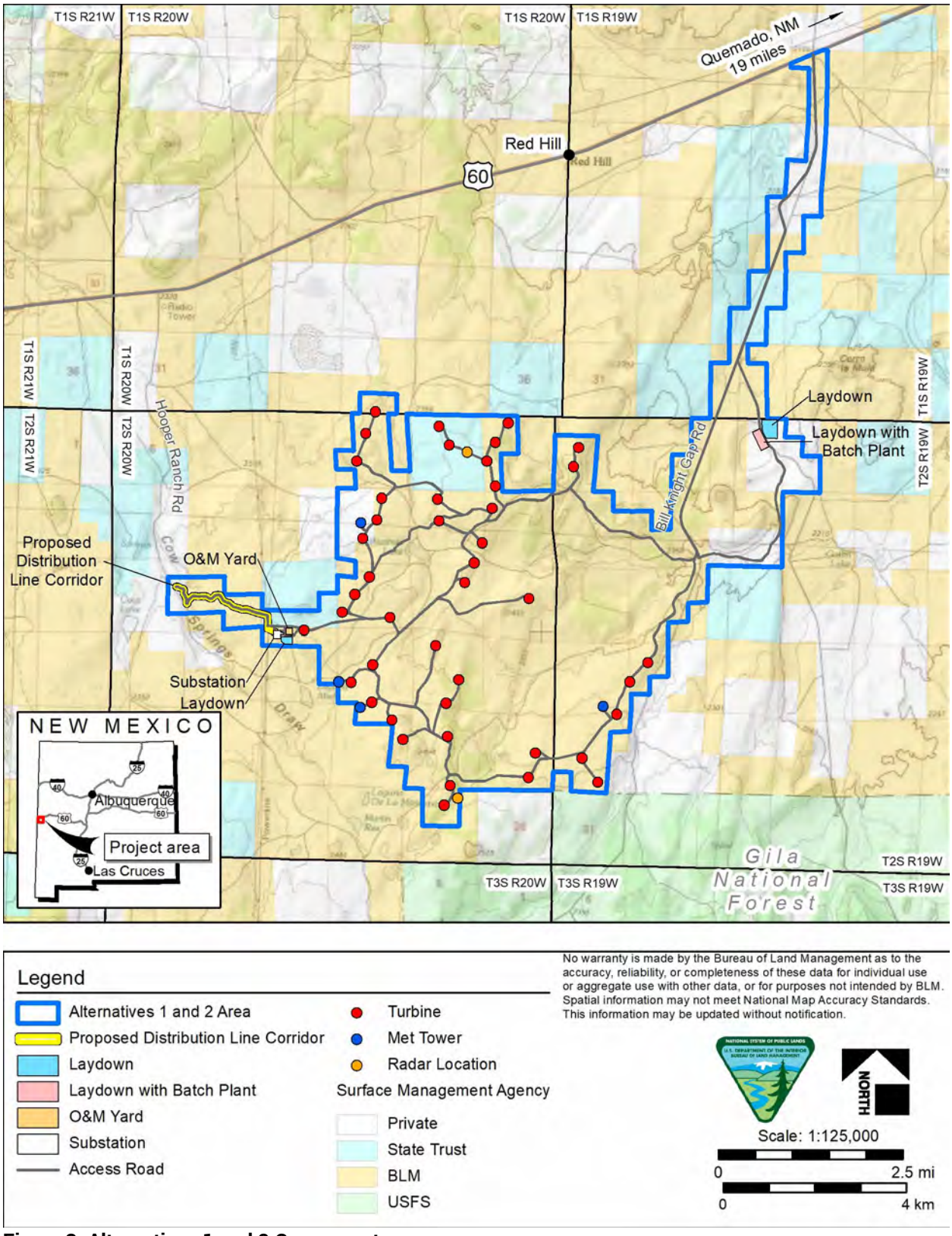

Figure 3. Alternatives 1 and 2 Components

Table 1. Description of Proposed Action, Alternative 1, and Alternative 2 Primary Project Components

Component	Description	Proposed Action	Alternative 1	Alternative 2
Wind Turbines and Pad-mounted Transformers[1]	Construction and installation of wind turbines to generate up to 100 MW of power. Each turbine would be mounted on a concrete pedestal, supported by a permanent underground concrete foundation with a tubular steel tower.	• 46 turbines permitted • 40 turbines constructed (36 GE 2.5 MW & 4 GE 2.3 MW) • 6 alternative locations • Temporary disturbance: – 1.6 acres/turbine – 74.5 acres total • Permanent disturbance: – 0.2 acre/turbine – 9.2 acres total	• 44 turbines permitted • 40 turbines constructed (36 GE 2.5 MW & 4 GE 2.3 MW) • 4 alternative locations • Temporary disturbance: – 6.5 acres/turbine – 286.6 acres total • Permanent disturbance: – 0.1 acre/turbine – 4.8 acres total	• 44 turbines permitted • 34 turbines constructed (30 GE 3.0 MW & 4 GE 2.5 MW) • 10 alternative locations • Temporary disturbance: – 6.5 acres/turbine – 286.6 acres total • Permanent disturbance: – 0.1 acre/turbine – 4.8 acres total
Electrical Interconnection Substation and Switchyard	The BLWP substation would be located where all underground electrical collection lines would terminate. The substation would step up the electricity generated by the BLWP to the voltage necessary to transmit it across the transmission system. The BLWP substation would include a power transformer, breakers, feeder breakers, switches, control house, and a substation superstructure. Exterior lighting at the substation would be down-shielded. The switchyard would be connected to, and in close proximity to, the BLWP substation. The switchyard would integrate the electricity generated by the BLWP onto the existing transmission system and may include circuit breakers, switches and controls, and a control building. Emergency backup power to the substation control house would be provided by connecting into Socorro Electric's existing distribution line.	• Temporary disturbance: – 7 acres total • Permanent disturbance: – 7 acres total	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
Underground Electric Collection System and Communication Lines	Each wind turbine would be connected to the substation by underground power and communication cables (i.e., the collection lines). Trenching for the underground collection lines would be approximately 4 feet wide and 3 feet deep. Where underground collection lines and access roads are co-located, trenching would occur adjacent to the roadbed, an average of 2 to 4 feet from the roadbed. It is anticipated that 60 feet of temporary workspace would be needed for trenching. Additionally, 11 junction boxes would be required throughout the proposed project area for Alternatives 1 and 2. A junction box is where all electrical wires meet, connect, and are protected before being routed to other locations in the proposed project. Each junction box location is estimated to be 6 feet long, 4 feet wide, 4 feet deep below the surface, and would be visible as a 3 by 3–foot square aboveground. Each junction box would have a 1-foot gravel ring around it as there is some grounding copper buried under and around the box.	• Temporary disturbance: – 29.7 miles (213.7 acres) total • Permanent disturbance: – 0 acres; all temporary areas of disturbance would be reclaimed	• Temporary disturbance: – 30.4 miles (203.5 acres) total • 11 junction boxes within the footprint of the O&M building; no additional disturbance Permanent disturbance: – 0.1 acre for junction boxes; all other areas would be reclaimed	• Temporary disturbance: – Same as Alternative 1 • Permanent disturbance: – Same as Alternative 1
O&M Facility	The 2,500-square-foot single-story O&M building would provide a home base for maintenance services and operational on-site monitoring. It would be a pre-manufactured building assembled on a concrete slab foundation. The O&M building would contain offices; restrooms; a kitchen/breakroom; a room to house the control system for the turbines; and a warehouse area that would store spare parts, tools, and maintenance equipment. Outside the O&M building would be a gravel parking area and outdoor storage area. Electricity to the O&M facility would be provided by connecting into Socorro Electric's existing distribution line.	• Temporary disturbance: – 5 acres total • Permanent disturbance: – 5 acres total	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
	A 1,000-gallon septic tank would also be constructed as part of the O&M facilities, if feasible. If construction of a septic tank would not be possible, either a holding tank would be constructed that would be pumped periodically or porta-potties would be placed near the O&M building.			
Distribution Line	An approximately 12-kV, single-phase line would be made of 45-foot-tall wooden poles. The poles would span approximately 250 feet. The distribution line would connect to an existing regional transmission line to deliver BLWP power to TEP.	• Temporary disturbance: – 1.8 miles long; 100 feet wide (22.7 acres) • Permanent disturbance: – 1.8 miles long; 100 feet wide (22.7 acres)	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action
Access Roads	Existing roads would be used to the extent feasible and would be improved by regrading and filling the surface to allow for all-weather access. Roads would be graded, include sufficient drainage, and be surfaced with an aggregate surface material. During construction, roads would be contained within the 150-foot-wide temporary disturbance corridor to accommodate construction activities. In the event that the access road would intersect with grazing fences, gates or cattle guards would be constructed and any damaged fencing would be repaired/replaced. Bill Knight Gap Road, from the intersection of U.S. 60, would be the primary access road to the BLWP. Improvements would be needed at the intersection of U.S. 60 and Bill Knight Gap Road. Permanent improvements to this intersection would include the widening of U.S. 60 to the north to construct: 1) an approximate 1,225-foot-long westbound deceleration lane, left-turn lane with storage, and associated taper, 2) an approximate 1,000-foot-long eastbound deceleration lane with storage and associated taper, and 3) apron improvements for turning movement.	• Temporary disturbance: – 48.1 miles total, including 41.3 miles of new roads – 872.7 acres • Permanent disturbance: – 48.1 miles total, including 40.3 miles of new roads and 1 mile of Bill Knight Gap Road reroute – 16 feet wide for all except Bill Knight Gap Road, which would be 24 feet wide (6.8 miles) – 101 acres	• Temporary disturbance: – 47.9 miles total, including 37.9 miles of new roads – 845.1 acres • Permanent disturbance: – 47.9 miles total including 36.9 miles of new roads; and 1 mile of Bill Knight Gap Road reroute – 16 feet wide for all except Bill Knight Gap Road, which would be 24 feet wide (6.8 miles) – 97.5 acres	• Temporary disturbance: – Same as Alternative 1 • Permanent disturbance: – Same as Alternative 1

Component	Description	Proposed Action	Alternative 1	Alternative 2
	Hooper Ranch Road, from the intersection of U.S. 60 south to the O&M building, would be a secondary access used only if the primary access is not available. A portion of Hooper Ranch Road (approximately 1.8 miles) would need to be improved between the interconnection and substation to allow for construction of the distribution line.			
Fencing	The substation/switchyard and the O&M facility are the only areas that would be permanently fenced. The substation/switchyard fence would consist of an 8-foot-tall chain-link structure with 1 foot of three-strand barbed wire on top, resulting in a total height of 9 feet. The O&M facility would be fenced with a 6-foot-tall chain-link fence with 1 foot of three-strand barbed wire on top, for a total height of 7 feet. The maximum depth of the fencing would be 4 inches. Facility fence gates would be locked when the facility is unattended. Temporary fencing would be used around areas of vegetation restoration. This fencing would be on previously disturbed lands and no additional ground disturbance is anticipated.	• Temporary disturbance: – Within the footprint of the substation/switchyard and the O&M facility, no additional disturbance • Permanent disturbance: – Within the footprint of the substation/switchyard and the O&M facility, no additional disturbance	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action
Construction Laydown/Staging Areas	Three secure areas for temporary construction offices, construction vehicle parking, equipment and construction materials storage, and stockpiled soil storage would be developed. The laydown areas would be cleared and graded by bulldozers, road graders, or other standard earth moving equipment. At the end of construction, these areas would be reclaimed and revegetated. Electricity to the construction laydown/staging areas would be provided by on-site generators.	• Temporary disturbance: – 60.8 acres total • Permanent disturbance: – 0 acres; all temporary areas would be reclaimed	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
Construction Concrete Batch Plant	The temporary concrete batch plant would be co-located within one of the construction laydown/staging areas. The plant would supply the concrete needed for project components (e.g., turbine foundations). The batch plant and associated facilities would include silos to contain fly ash, lime, and cement; aboveground storage tanks for water storage; and outside storage areas for sand- and gravel-mixing equipment. The heights of these facilities generally range from 30 to 50 feet. A washout area would be located within the laydown/staging area, with the concrete removed and reclaimed when the washout area is no longer needed. Electricity to the batch plant would be provided by on-site generators; one 500-kilowatt generator for the batch plant and two 60-kilowatt generators for the other facilities.	• Temporary disturbance: – 2 acres within the footprint of the laydown/staging area, no additional disturbance • Permanent disturbance: – 0 acres; all temporary areas would be reclaimed	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action
Water	Construction activities would require approximately 26 million gallons of water and would be pumped from an existing private well and conveyed through aboveground piping. Water rights would remain with the private well owner.	• Temporary disturbance: – 1.5 miles of water line would follow access road disturbance; no new disturbance – 0 acres for new well construction within the footprint of the O&M building; no additional disturbance • Permanent disturbance: – 0 acres; all temporary areas would be reclaimed – 0 acres for new well; within the footprint of the O&M building; no additional disturbance	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action	• Temporary disturbance: – Same as Proposed Action • Permanent disturbance: – Same as Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
	A new 5- to 6-gallon per minute well would be drilled for O&M water use; estimated withdrawal at 140,800 gallons per year. The new well would be located next to the O&M building. Until the new well adjacent to the O&M is fully functional, water may either be pumped from an existing domestic well and conveyed through aboveground piping to storage tanks, or trucked in and held in the storage tanks. O&M water use would be limited to restroom and kitchen use for staff. A domestic water use permit would be acquired for the O&M building well with water rights appropriated to Borderlands Wind, LLC for the life of the BLM ROW grant. Water rights would be conveyed to the BLM once the BLWP is decommissioned.			
Aviation Lighting	The turbines and meteorological (MET) towers would have medium-intensity, red strobe warning lights attached to the nacelles of the turbines. The FAA would make the final determination as to which turbines would require nighttime lights. If approved by FAA, the turbines and MET towers would have the Aircraft Detection Lighting System (ADLS), which would automatically be illuminated when aircraft are detected. Lighting would also be compatible with night vision goggles, as necessary for military training exercises.	No temporary or permanent ground disturbance	No temporary or permanent ground disturbance	No temporary or permanent ground disturbance
Meteorological (MET) Tower	Four MET tower locations would be considered, only two MET towers would be needed during operations. The MET tower would be no more than 361 feet tall and lighted with the ADLS, if approved by the FAA. Data collected from the MET tower would be transmitted wirelessly to an off-site location; frequent access to the tower would not be needed. It is anticipated that personnel would visit the MET tower one or two times a year to perform routine maintenance.	• Temporary disturbance: – 14.0 acres total • Permanent disturbance: – 0.1 acre total	• Temporary disturbance: – Same as the Proposed Action • Permanent disturbance: – Same as the Proposed Action	• Temporary disturbance: – Same as the Proposed Action • Permanent disturbance: – Same as the Proposed Action

Component	Description	Proposed Action	Alternative 1	Alternative 2
ADLS Radar Units and Associated Server Rack Houses	This system would require two radar units and associated server rack houses. The radar units would be no more than 33 feet tall and the server rack house units would be no more than 6 feet tall.	• Temporary disturbance: – all temporarily disturbed areas for the radar system installation would be within the footprint of the access road temporary disturbance; no additional disturbance • Permanent disturbance: – 0.1 acre total	• Temporary disturbance: – Same as the Proposed Action • Permanent disturbance: – Same as the Proposed Action	• Temporary disturbance: – Same as the Proposed Action • Permanent disturbance: – Same as the Proposed Action
Waste/Hazardous Materials	Minimal hazardous materials are expected to be used, stored, transported, or disposed of as a result of the project. The *Waste and Hazardous Materials Management and a Spill Prevention, Control, and Countermeasure plans* in the BLWP POD address non-hazardous waste-stream composition, lubricant spills and cleanup procedures, and protocols for identifying hazardous waste.	No temporary or permanent ground disturbance	No temporary or permanent ground disturbance	No temporary or permanent ground disturbance
Fire Protection	The *Emergency Preparedness and Response Plan* and *Fire Protection and Prevention Plan* are included in the BLWP POD to prevent and manage fire during construction and operation of the proposed wind facility.	No temporary or permanent disturbance	No temporary or permanent disturbance	No temporary or permanent disturbance

Table Abbreviations: ADLS = Aircraft Detection Lighting System; BLWP = Borderlands Wind Project; FAA = Federal Aviation Administration; GE = General Electric; kV = kilovolt; MW = megawatt; NMDOT = New Mexico Department of Transportation; O&M = operation and maintenance; POD = Plan of Development; TEP = Tucson Electric Power

Source: Borderlands Wind, LLC 2020

Table Notes: The numerical values in this report including those provided in tables, are shown to one decimal place. The data used to generate the values was maintained to 10 decimal places in order to capture small values in the analysis. In the EIS tables, the resultant outputs are rounded to one decimal place to make the values readable; therefore, totals and subtotals found in the tables may not appear to sum precisely.

[1] Acreages of temporary and permanent disturbance and miles/number of components provided in the table represent the construction of the total number of permitted turbines.

The actual amount of disturbance and miles/number of components would be less because the number of turbines constructed would be less than the number of turbines permitted. The final turbine array layout would not be determined until final design, which means the associated components such as the alignment of the collection system would also not be decided until final design.

Three models of wind turbine generators are proposed for the BLWP (Table 2). For all models, the turbine tower would be a tapered tubular steel structure manufactured in multiple sections depending on tower model height. Figure 4 depicts the parts of a wind turbine. The tower base would be approximately 15 feet in diameter, and the tower would be painted per Federal Aviation Administration (FAA) requirements (FAA 2018). The nacelle sits on top of the tower and houses the main mechanical components of the wind turbine, drive train, gearbox, and generator. The nacelle would be equipped with an anemometer and a wind vane that signals wind speed and direction information to an electronic controller. The hub attaches the blades to the rotor shaft and is covered by a nose-cone structure to streamline the airflow and protect the equipment. The hub also contains the mechanisms that allow the blades to pitch in response to wind, temperature, and air density conditions. As noted in the descriptions of the alternatives below, the number and size of the turbines to be constructed would depend on the alternative. Based on the turbines considered, the blades would turn at no more than 18 revolutions per minute depending on wind conditions. Turbines would also have a braking system to allow the controller to stop the rotor. Each turbine would be equipped with a computer control system to monitor variables consisting of wind speed and direction, air and machine temperatures, electrical voltages, currents, vibrations, blade pitch, and yaw (side-to-side) movement (BLM 2013).

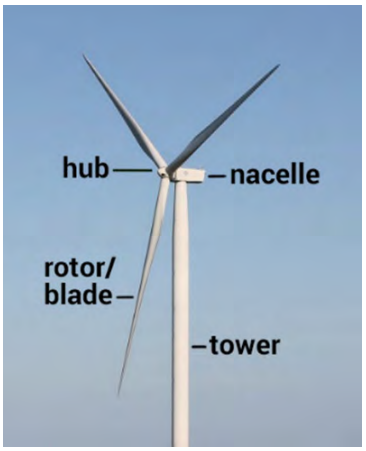

Figure 4. Parts of a wind turbine

Table 2. Proposed Wind Turbine Generator Model Characteristics

Turbine Component	GE 2-MW Platform 2.3 MW (feet)	GE 2-MW Platform 2.5 MW (feet)	GE 2-MW Platform 3.03 MW (feet)
Hub height	262	295	322 - 384
Rotor/blade radius	190	190	230
Rotor/blade diameter	380	381	459
Ground clearance	72	84	92 - 154
Maximum overall height	453	499	up to 630

Table Abbreviations: GE = General Electric; MW = megawatt
Table Notes: Technical data represent the maximum worst-case design characteristics for each model, based on available manufacturer specifications (Borderlands Wind, LLC 2020).

1.4. Regulatory Framework

There are several applicable regulations, policies, and procedures that pertain to visual resources as well as the construction and operations of the BLWP. The Council on Environmental Quality (CEQ) regulations for implementing National Environmental Policy Act (NEPA) identify aesthetic effects as a type of impact to be addressed in a review under NEPA, and state that Environmental Impact Statements (EISs) should include discussion of the design of the built environment (40 CFR 1502.16, 1508.8). The regulations also require discussion of possible conflicts of a proposed action with the objectives of Federal, regional, State, local, and tribal land use plans and policies; Federal land use plans, in particular, typically include guidance for management of visual resources. The CEQ regulations do not include more specific direction about aesthetic impact issues to be considered or means to evaluate aesthetic impacts.

Federal regulations for ROW grants under the FLPMA (43 CFR 2800) focus on administrative and procedural aspects of the grants. The BLM must further require compliance with the terms and conditions of the grant to control or prevent damage to "(i) Scenic, aesthetic . . . values…" per 43 CFR 28 2805.12(i)(3)(i). BLM consideration of visual resource issues associated with special-use permits is generally based on the visual resource provisions of standard BLM policies and procedures for land use planning and NEPA compliance.

The BLM has developed formal systems to inventory visual resources on the lands under their jurisdiction, evaluate visual change in the landscape, and manage visual resources under their jurisdiction. The BLM uses the Visual Resource Management (VRM) System to classify and manage visual resources on lands under its jurisdiction. The VRM System involves inventorying scenic values, establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives (BLM 1984). The BLM's VRM System incorporates scenic quality, viewer sensitivity, and distance zones to identify visual resource inventory (VRI) classes. These classes represent the relative value of the existing visual landscape, as well as the visual resource baseline from which to measure impacts that a Proposed Action may have on these values. In its planning process, the BLM weighs visual and competing resource values and designates the VRM classes, with associated management class objectives for a given area's visual setting. The assignment of one of four VRM classes (Table 3) becomes an important component of the BLM's resource management plan for the area.

Table 3. BLM VRM Class Objectives

VRM Class	Management Objective
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Table Source: BLM 1986a.

The analysis stage of the VRM process involves assessing and disclosing the potential visual impacts from proposed activities (NEPA compliance) and then determining whether such impacts will meet the management objectives established for the area (resource management plan compliance). To analyze and mitigate potential visual impacts associated with proposed activities, the BLM uses guidelines described in the BLM Handbook H-8431-1, Visual Resource Contrast Rating (BLM 1986b). The degrees of contrast determined from selected KOPs are categorized in a range including none, weak, moderate, or strong—where strong indicates a proposed activity will create contrast that demands attention, will not be overlooked, and is dominant in the landscape. Factors to be considered when applying the contrast criteria include distance, angle of observation, length of time the project activities is in view, relative size or scale, season of use, light conditions, recovery time, spatial relationships, atmospheric conditions, and motion.

The analysis area occurs within the administrative boundaries of the BLM Albuquerque District, SFO. As such, the 2010 SFO RMP and Record of Decision (BLM 2010) has been reviewed for visual resource management direction on the BLWP. Management direction for visual resources documented within the RMP applicable to the analysis area is summarized below.

1.5. Socorro Field Office Resource Management Plan

The SFO is located in Catron and Socorro Counties in west central New Mexico. The SFO issued the 2010 SFO RMP and Record of Decision to provide management direction for management of resources within the SFO (BLM 2010). A primary goal of the RMP is to implement management practices that ensure long-term sustainability of a healthy and productive landscape. The SFO RMP is a set of comprehensive, long-range decisions concerning the use and management of resources administered by the BLM over a period of time, usually up to 20 years.

The SFO RMP specifies that monitoring will be ongoing for all projects (including, but not limited to projects associated with any developments, land alterations, vegetation manipulation, etc.) which could potentially affect visual resources. These projects will be monitored to ensure conformance with established VRM classes. Monitoring will include use of the visual contrast rating system, described in BLM Manual 8400 (BLM 1984), where appropriate, during project review (BLM 2010).

Within the SFO, approximately 28,533 acres (2 percent of the total acreage) are to be managed as VRM Class I and 520,024 acres (36 percent of the total) are to be managed as VRM Class II. The remainder of the resource area is to be managed as VRM Class III (448,910 acres/28 percent) and Class IV (509,432 acres/34 percent) (BLM 2010). ///There are 30,338 acres and 13,859 acres of lands administered by the BLM within the Proposed Action and Alternatives 1 and 2 areas, respectively. Within the Proposed Action area, approximately 2,044 acres (7 percent) occur on lands managed as VRM Class II; 15,026 acres (50 percent) occur on VRM Class III; and 13,267 acres (44 percent) occur on VRM Class IV (Figure 5). Within the Alternatives 1 and 2 area, approximately 167 acres (1 percent) occur on lands managed as VRM Class II; 4,752 acres (34 percent) occur on VRM Class III; and 8,939 acres (65 percent) occur on VRM Class IV (Figure 6).

A current visual resource inventory (VRI) is not available for the SFO. A project-level VRI was conducted in June 2018 to determine visual quality within a 30-mile distance of the BLWP within the SFO (the VRI area) (refer to Appendix A, Figure A-4). Within the VRI area, 63,377 acres are classified as VRI Class I (10 percent), 34,762 acres (5 percent) as VRI Class II; 189,084 acres (29 percent) as Class III; and 369,508 acres (56 percent) as VRI Class IV. Within the Proposed Action Area (43,528 acres), approximately 21,930 acres (50 percent) occurs on VRI Class III and 21,598 acres (50 percent) occurs on VRI Class IV (Figure 7). Within the Alternatives 1 and 2 area (16,648 acres), approximately 3,978 acres (24 percent) occurs on VRI Class III and 12,669 acres (76 percent) occurs on VRI Class IV (Figure 8).

1.6. Other Managed Visual Resource Programs

1.6.1. State Lands

State lands that occur within the BLWP area are not subject to known visual management standards.

1.6.2. Local Government Lands

The analysis area includes all county and municipal lands where the BLWP may be visible. Review of the 2007 Catron County Comprehensive Plan indicates the Plan provides overall management direction for the County associated with protection of the County's natural beauty and resources but does not prescribe management direction or objectives specific to visual resources (Catron County 2007).

1.6.3. Private Lands

Private land is not subject to the visual resource management standards that Federal or State land management agencies would apply. Private lands within the analysis area are subject to land use regulation of the respective local government jurisdiction (i.e., county or municipality) within which they are located. As noted above, review of Catron County Comprehensive Plan applicable to the BLWP confirms that Catron County does not have an established visual resource management systems for the private lands under their jurisdiction. While local zoning ordinances typically include regulatory provisions that relate to aesthetic/visual concerns, such as height limitations for structures, the County does not classify private lands according to their visual resource attributes and does not prescribe levels of visual quality that must be maintained in specific locations.

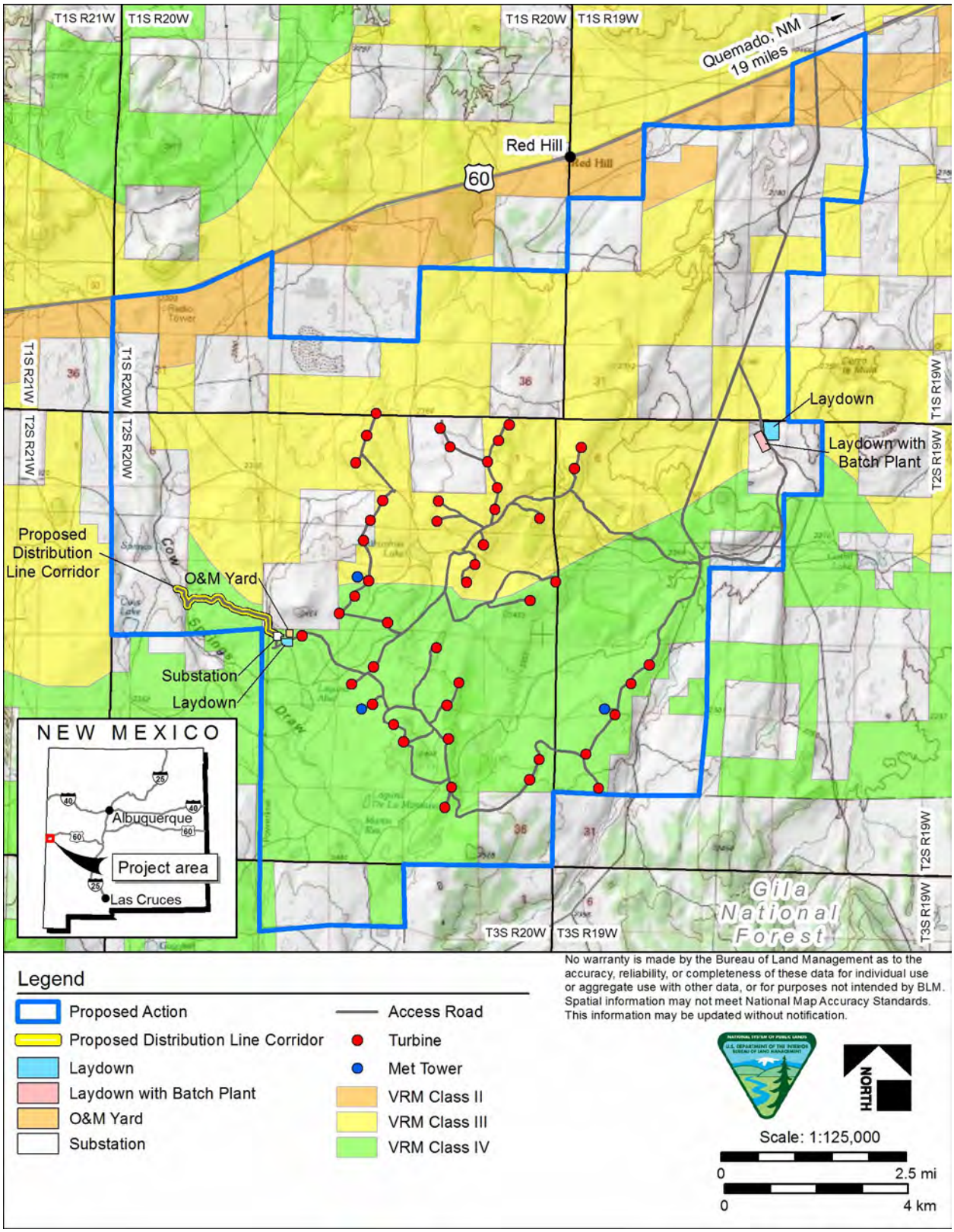

Figure 5. VRM Classes Within and Adjacent to the Proposed Action Area

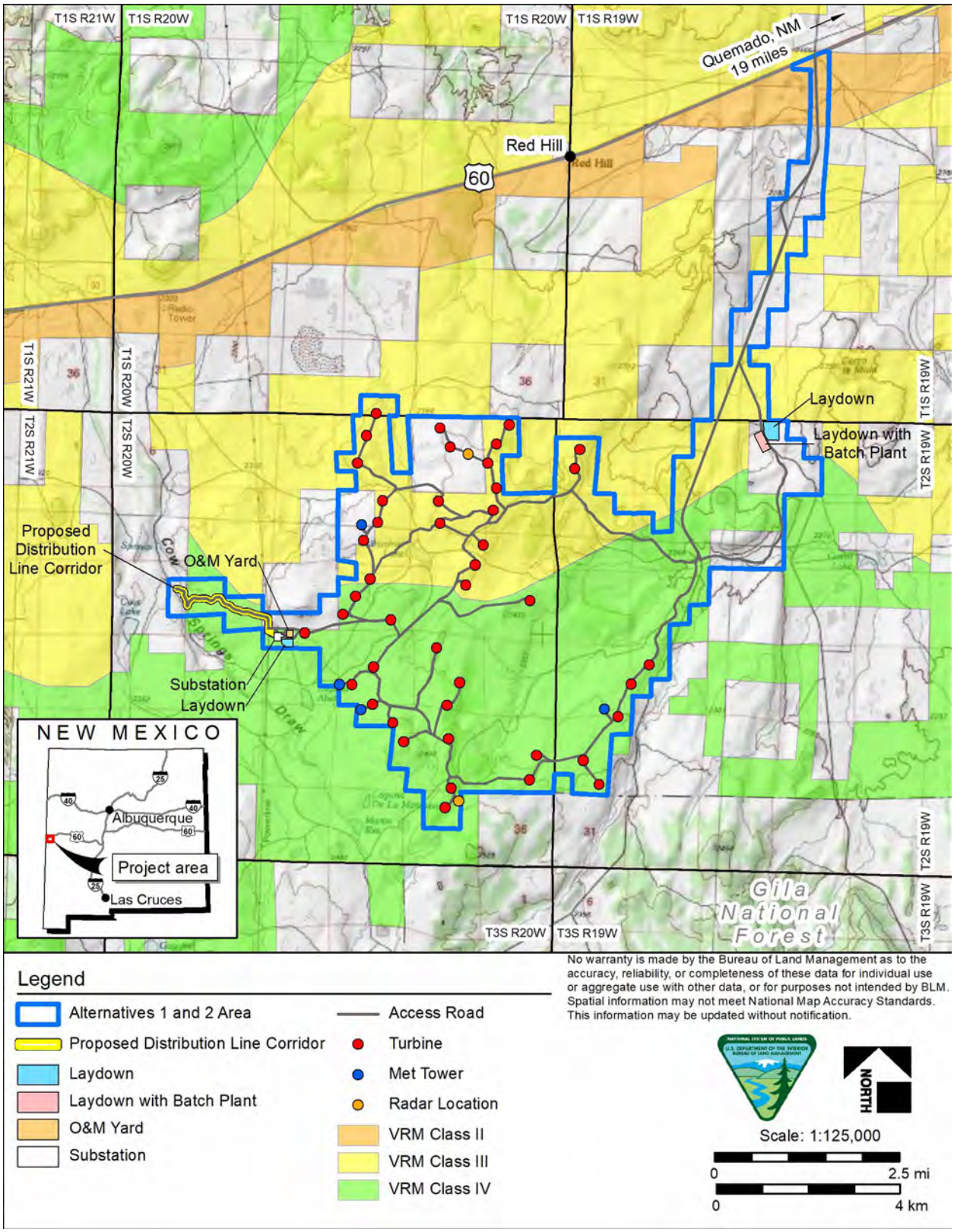

Figure 6. VRM Classes Within and Adjacent to the Alternatives 1 and 2 Area

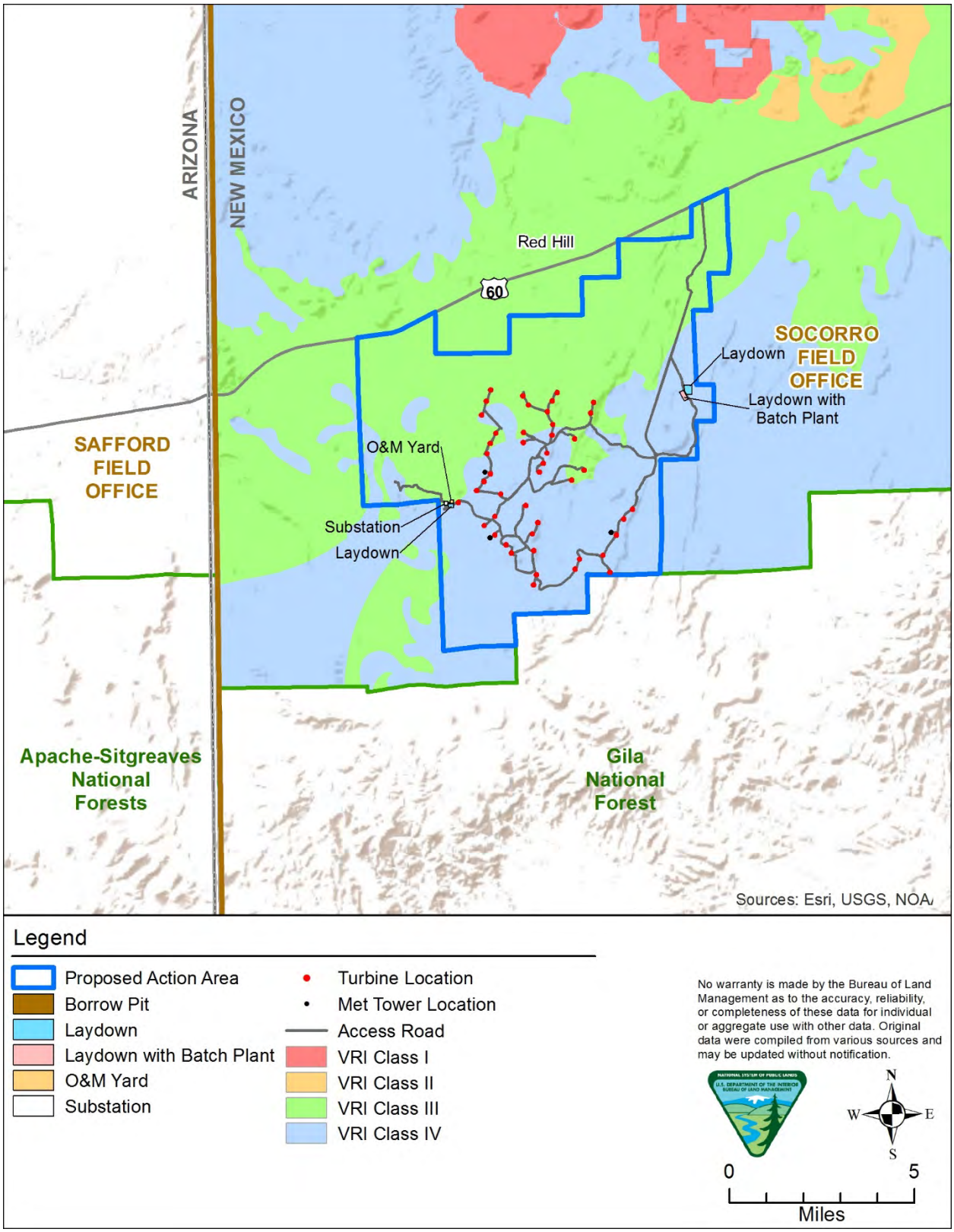

Figure 7. VRI Classes Within and Adjacent to the Proposed Action Area

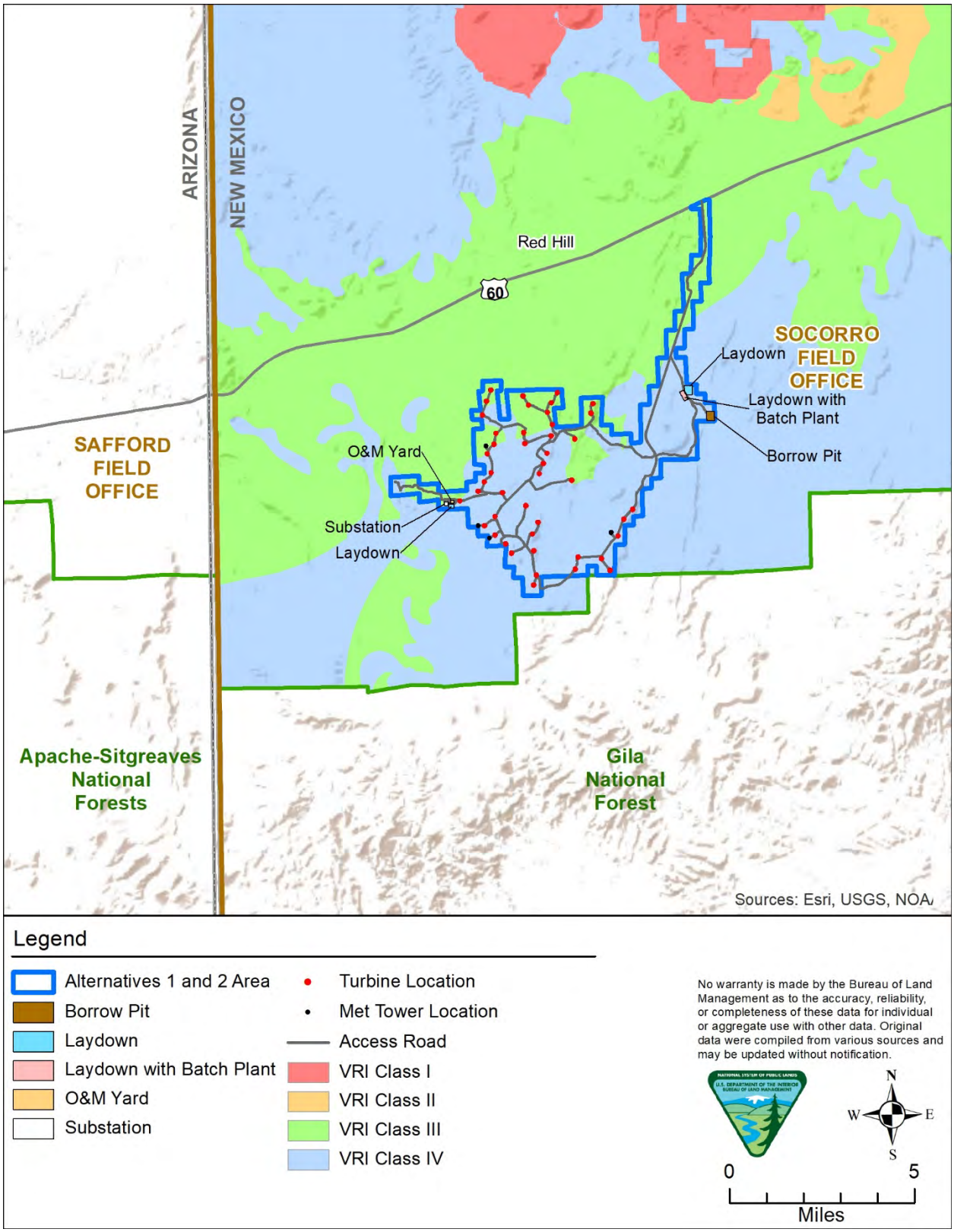

Figure 8. VRI Classes Within and Adjacent to the Alternatives 1 and 2 Area

2. METHODOLOGY

The analysis area for visual resources is defined as the area of visibility up to 30-miles from the location of BLWP wind turbines for the Proposed Action and Alternatives 1 and 2 (Figure 9 and Figure 10). This analysis area was determined following research conducted by Argonne National Laboratory and the BLM found within *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes* (Sullivan, R., et al. 2012).

The methodology used to analyze the impacts to visual resources from the construction and operation of the Proposed Action followed three primary steps: 1) establishing existing visual character and inherent scenic quality and identifying locations where people commonly view the landscape, 2) assessing the change to the landscape and the effects on views from key locations, and 3) determining conformance with visual resource management objectives.

The inventory and analysis of the visual environment was completed regardless of jurisdiction or land ownership. The character of the existing visual resources in the analysis area varies because of the different natural and man-made features or elements in the landscape and the diverse patterns that these elements create, when combined. Scenic or visual quality is the visual appeal of a landscape. The landscape is measured in terms of its distinctiveness (or memorability), scarcity, and variety of the landform, vegetation, water, color, adjacent scenery, and man-made features; and how well these features fit together. The visual character and inherent scenic quality were evaluated using visual analysis units (VAUs). Each unit has similar landforms, vegetation, land use, or man-made patterns and features, or contains water features such as rivers and lakes.

In addition to establishing the existing visual character and scenic quality, identifying locations where people view the landscape was also important. The phrases 'sensitive viewing platforms' or 'key observation points' refer to public areas within the analysis area where the BLWP could be visible. As part of the visual resource inventory, a visibility analysis was also conducted to determine where the BLWP could be seen from within the VRI area. A visibility analysis was performed using ArcGIS Spatial Analyst to identify all areas that would be visible from a distance of 30 miles from the Proposed Action and the Alternatives 1 and 2 turbines, access roads, and substation (Figure 9 and Figure 10). The analysis identified, by alternative, where the proposed project components would be visible if there were no vegetation or structures to obscure their view. This analysis based on "bare earth" visibility reflected the conservative scenario in determining the potential visual impacts. Existing vegetation may help to minimize the impacts by screening views to and from the BLWP. However, since vegetation is subject to fire and disease, it cannot be considered as a permanent measure to reduce impacts.

Visual impacts are defined as the change to the visual environment resulting from the introduction of modifications to the landscape. An analysis of visual dominance, scale, and contrast was used in determining to what degree the Proposed Action and Alternatives 1 and 2 would attract attention and to assess the relative change in character as compared to the existing characteristic landscape and its inherent scenic quality. The amount of visual contrast created is directly related to the amount of attention that is drawn to a feature in the landscape. In addition, changes in the viewsheds from sensitive viewing locations were evaluated and characterized.

The third step in the analysis of visual impacts was the determination of conformance of BLM's VRM objectives where the BLWP would occur on BLM-administered lands. The potential impact to the scenic byway is also addressed in this section.

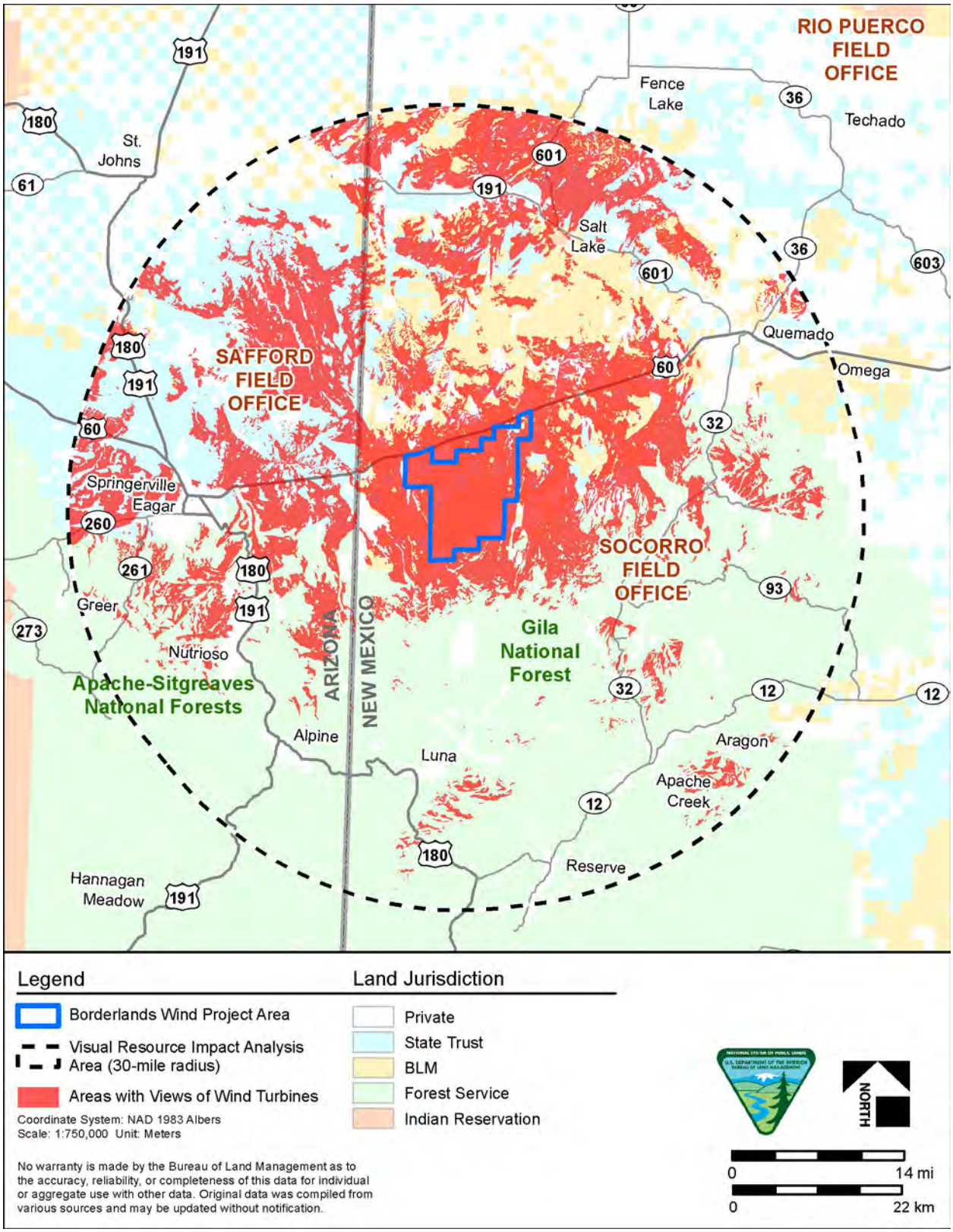

Figure 9. Visual Resource Analysis Area and Visibility Analysis for the Proposed Action

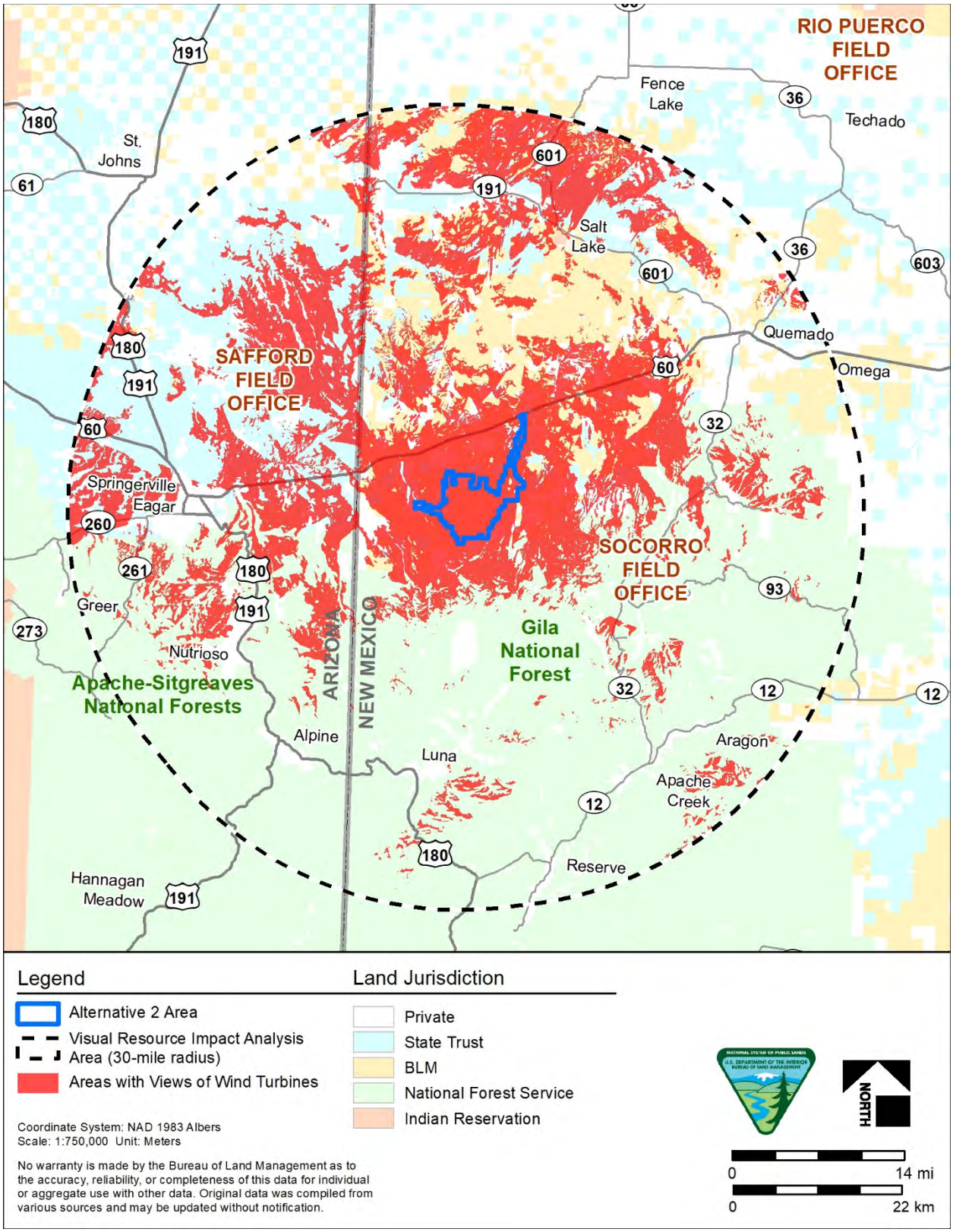

Figure 10. Visual Resource Analysis Area and Visibility Analysis for Alternatives 1 and 2

The following provide a more detailed description of the methodology to complete the project-level inventory of existing visual conditions and analysis the potential impacts from the BLWP. This methodology has been developed in consultation with BLM visual resource specialists.

2.1. Landscape Character

The existing landscape character is described for the analysis area by defining and referring to VAUs (Figure 11 and Figure 12). These project-level units are based on the concept of BLM VRI scenic quality rating units (SQRUs) and occur where there is visibility of the Proposed Action or Alternatives 1 and 2, based on bare earth GIS analysis. Where existing SQRUs are not available or easily translated to VAUs either due to geographic scale or relationship of landscape character to project location, VAUs are delineated and evaluated following the BLM VRI Scenic Quality rating process based on comparable characteristics with the Colorado Plateau physiographic province. The VAU delineations are based on areas with common landforms patterns and features, vegetation communities and patterns, built features, land use patterns, scarcity, and/or surface water resources. The June 2018 project level VRI was based on the visibility of the Proposed Action and Alternatives 1 and 2 wind turbines up to a distance of 30 miles within the SFO.

The VAUs, as described in Table 4, define the existing visual character and condition of the analysis area. Each VAU has been given a numerical identifier. The descriptions are separated into landform and vegetation elements and include additional information regarding the general degree of enclosure, views, land use, ownership, cultural modifications, adjacent scenery, and scarcity and identified sensitive viewing platforms/KOPs. This information was compiled for review of the distinct elements and to provide for consistent evaluation of the landscape in the impact assessment process.

2.2. Scenic Quality

The scenic quality of the analysis area for all lands regardless of jurisdiction/ownership was inventoried as part of the analysis process. Each VAU received a rating that relates to its inherent aesthetic value based on the key factors of landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications, which are used to evaluate the scenic quality of a landscape. The relative scenic quality (A, B, or C) is assigned to a landscape by rating the scenic quality evaluation key factors of landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications on a numerical scale. Landscapes considered to have the highest scenic value have a scenic quality rating of A; those with a rating of C are considered to be more common, less distinct landscapes (BLM 1986b). The entire BLWP area has a Scenic Quality C rating (refer to Appendix A, Figure A-1).

2.3. Visual Sensitivity

Visual sensitivity reflects the attitudes and perceptions held by people regarding the landscape and, in general, reflect the public's level of sensitivity for noticeable change to the landscape. Visual sensitivity levels for the visual resource analysis area within the SFO range from high to low (refer to Appendix A, Figure A-2). High levels of sensitivity are located along major roadway viewsheds such as U.S. 60, or associated with populated areas such as Quemado where the public views the landscape and has sensitivity or concern for change to the existing scenic quality. Moderate areas of sensitivity to change in scenic quality occur north of U.S. 60 in more remote and less populated areas where modifications to the landscape occur and changes in scenic quality are not as high of concern as those along U.S. 60. Low areas of sensitivity are located south of U.S. 60 adjacent to Gila National Forest in remote areas where changes in scenic quality are not perceived by the public due to limited visual access. Any areas where scenic values were one of the resources considered in their designation as a Special Management Area were also identified and the views from these areas evaluated.

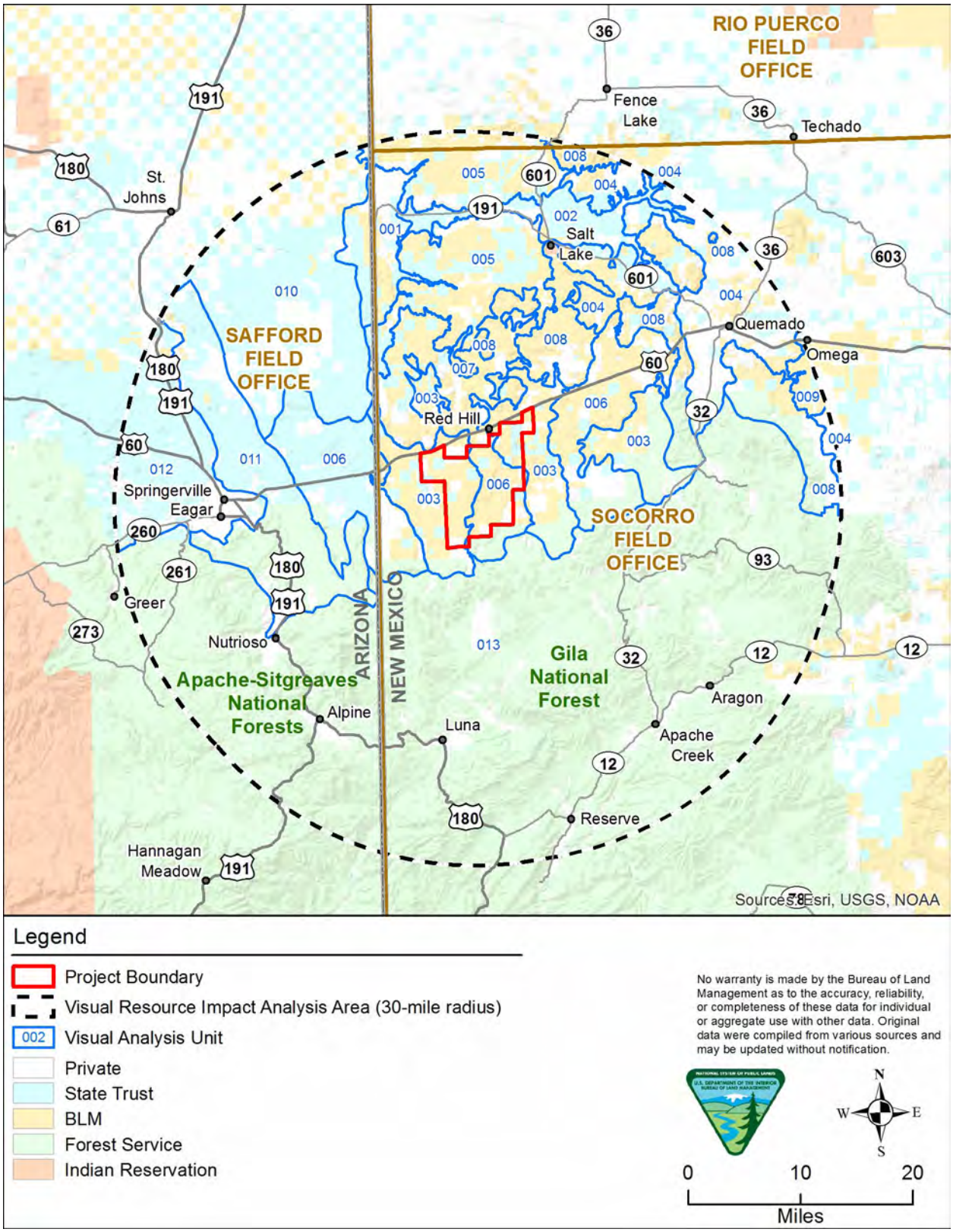

Figure 11. Visual Analysis Units within the BLWP Analysis Area and the Proposed Action Area

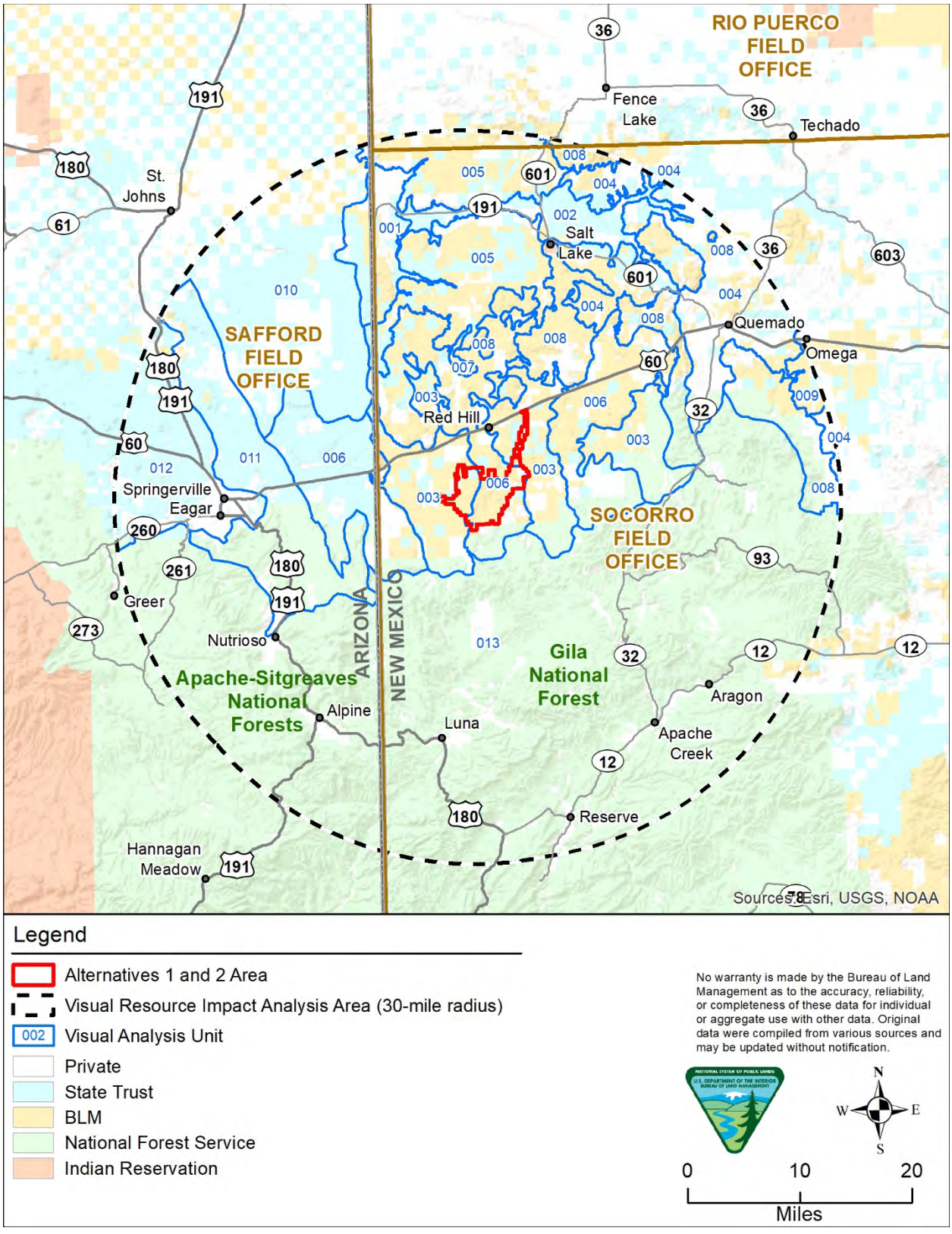

Figure 12. Visual Analysis Units within the BLWP Analysis Area and the Alternatives 1 and 2 Area

Table 4. Existing Landscape Character

Visual Analysis Units	Landforms	Vegetation	Land Use/Scenic Quality
VAU 1	• **Form:** Subtle rolling and gently sloping. • **Line:** Soft, undulating, and subtle. • **Color:** Light brown and khaki with reddish undertones. • **Texture:** Flowing and directional. • **Distinct Natural Features Visible:** Cienega Amarilla • **Adjacent Scenery:** Carrizo Wash, Cottonwood Canyon, St. Johns Mountain.	• **Representative Species:** Dominated by round pinyon-juniper, with low grasses and shrubs. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-15 feet. • **Texture/Pattern:** Dense, coarse, and bristly of pinyon-juniper. • **Colors:** Dark green, yellow, and light grey-green.	• **Distinct Built Features:** None visible. • **Land Use:** Undetermined. • Scenic Quality: C (8.0)
VAU 2	• **Form:** Flat, linear drainage, simple with few features. • **Line:** Sinuous, horizontal, and continuous. • **Color:** Light tan to khaki, with red and grey undertones. • **Texture:** Smooth, gentle, and continuous. • **Distinct Natural Features Visible:** Largo Creek. • **Adjacent Scenery:** Tejana Mesa, Zuni Salt Lake.	• **Representative Species:** Short indistinct grasses, with low shrubs, moderate height tamarisk along drainage, upright vasel forms of willow. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; tamarisk and willow 10-12 feet. • **Texture/Pattern:** Smooth to gentle overall with small patchy transitions. • **Colors:** Straw yellow and yellow-green.	• **Distinct Built Features:** Transmission line running north-south on west end of unit. • **Land Use:** Grazing. • Scenic Quality: C (8.5)
VAU 3	• **Form:** Gently rolling and broad; occasional moderate slopes. • **Line:** Undulating to flat/gentle rolling. • **Color:** Light reddish brown to khaki soils; variations in brown. • **Texture:** Smooth with gentle transitions. • **Distinct Natural Features Visible:** Cow Springs Draw, Cerro La Mula • **Adjacent Scenery:** Cimarron Mesa, Largo Mesa, Jones Peak.	• **Representative Species:** Low indistinct grasses, low rounded shrubs, and occasional rounded pinyon-juniper. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet. • **Texture/Pattern:** Consistent grasses and shrubs; broken, patchy, and stippled pinyon-juniper. • **Colors:** Light straw-buff, yellow-green, dark green.	• **Distinct Built Features:** Large transmission line running north-south through the unit. • **Land Use:** Grazing, utility alignment, transportation corridor. • Scenic Quality: C (9.5)
VAU 4	• **Form: Undulating, rolling, intermixed flats.** • **Line: Undulating and horizontal.** • **Color: Light brown and tan.** • **Texture: Smooth with subtle changes.** • **Distinct Natural Features Visible: Largo Creek.** • **Adjacent Scenery: Tejana Mesa, Mesa Tinaja, Cerro Prieto, Pomo Cerro, Escondido Mountain.**	• **Representative Species:** Low indistinct grasses, round shrubs, rounded rabbit brush, globe-like/rounded pinyon-juniper, and bushy/rounded riparian. • **Height:** Grasses: <1 foot; shrubs/brush 1-5 feet; pinyon-juniper and riparian 10-12 feet. • **Texture/Pattern:** Patchy, coarse, stippled; widely varied. • **Colors:** Light straw, green-yellow, grey-green, dark green.	• **Distinct Built Features:** Town of Quemado, various transportation corridors. • **Land Use:** Grazing, transportation corridors. • Scenic Quality: C (11.0)
VAU 5	• **Form:** Broad linear flats, intermixed exposed rock outcrops/escarpments. • **Line:** Distinctive horizontal banding in rock formations; undulating, inconsistent, and fragmented. • **Color:** Light tan-khaki, sand-buff, purple/magenta. • **Texture:** Broken and inconsistent rock formations; soft, gentle, flat transitions. • **Distinct Natural Features Visible:** Various washes and dry lakes. • **Adjacent Scenery:** Mesita Blanca, Carrizo Wash, Cienega Amarilla, Red Hill, Santa Rita Mesa.	• **Representative Species:** Indistinct grasses with scattered shrubs; sloped areas transition to pinyon-juniper. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet. • **Texture/Pattern:** Pinyon-juniper is inconsistent and stippled; grasses are dense and smooth. • **Colors:** Light buff-straw, dark green.	• **Distinct Built Features:** None visible • **Land Use:** Grazing. • Scenic Quality: B (12.0)

Visual Analysis Units	Landforms	Vegetation	Land Use/Scenic Quality
VAU 6	• **Form:** Rolling low hills with isolated rock outcrops. • **Line:** Undulating, converging, and horizontal. • **Color:** Reddish-brown, dark brown volcanic rock, and tan. • **Texture:** Undulating, bumpy, and varied. • **Distinct Natural Features Visible:** Cimarron Mesa. • **Adjacent Scenery:** Cerro La Mula, Red Hill, Black Peak, Jones Peak.	• **Representative Species:** Rounded pinyon-juniper, indistinct grasses with intermixed shrubs. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet. • **Texture/Pattern:** Course, patchy, and inconsistent. • **Colors:** Dark green-grey, grey-green, straw yellow.	• **Distinct Built Features:** Isolated residential homes. • **Land Use:** Grazing, transportation corridor. • Scenic Quality: C (11.0)
VAU 7	• **Form:** Distinctive, broken lava outcrops with coarse features; rounded/conical of Red Hill. • **Line:** Broken, rugged, and indistinctive. • **Color:** Deep dark brown, lighter tones of rust and red intermixed. • **Texture:** Coarse, broken, and inconsistent. • **Distinct Natural Features Visible:** Red Hill. • **Adjacent Scenery:** Cimarron Mesa.	• **Representative Species:** Indistinct grasses and rounded shrubs, occasional rounded pinyon-juniper. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet. • **Texture/Pattern:** Fine texture overall, patchy due to exposed rock and soils. • **Colors:** Light straw/buff and darker-green.	• **Distinct Built Features:** None visible • **Land Use:** Undetermined. • Scenic Quality: B (12.5)
VAU 8	• **Form:** Broad, angular faces with flat tops; low rolling at base; blocky rock outcrops; triangular scree slopes. • **Line:** Horizontal and angled; distinctive escarpments; rock banding. • **Color:** Chalky grey to khaki, reddish brown, adobe pink, and green-grey. • **Texture:** Consistent across tops, rougher more predominant faces where rock outcrops and escarpments occur. • **Distinct Natural Features Visible:** Tejana Mesa, Mesa Tinaja, Pomo Cerro, Zuni Salt Lake. • **Adjacent Scenery:** Escondido Mountain, Santa Rita Mesa, Largo Creek.	• **Representative Species:** Rounded pinyon-juniper, low indistinctive grasses and shrubs. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet. • **Texture/Pattern:** Consistent to patchy with areas of stippling; fine to gentle in between; denser on north faces. • **Colors:** Dark green, light green/tan.	• **Distinct Built Features:** None visible • **Land Use:** Undetermined. • Scenic Quality: B (14.0)
VAU 9	• **Form:** Broad, panoramic, flat with few features. • **Line:** Horizontal and continuous. • **Color:** Light tan to khaki, dark brown. • **Texture:** Soft, gentle, smooth. • **Distinct Natural Features Visible:** Flat plain. • **Adjacent Scenery:** Escondido Mountain.	• **Representative Species:** Dominant indistinct grasses and rounded shrubs, with isolated/minimal rounded pinyon-juniper. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet. • **Texture/Pattern:** Fine, soft, and consistent; stippled pinyon-juniper. • **Colors:** Light straw yellow, grey-green, and dark green.	• **Distinct Built Features:** Range improvements. • **Land Use:** Undetermined. • Scenic Quality: C (6.5)
VAU 10	• **Form:** Broad linear flats, rolling hills, exposed rock outcrops, angular faces with flat tops; varied. • **Line:** Undulating, inconsistent, horizontal and angled, rock banding. • **Color:** Light tan-khaki, dark grey, red-rust, light purple undertones. • **Texture:** Flat to undulating; broken, inconsistent rock formations; varied. • **Distinct Natural Features Visible:** St. Johns Mountain. • **Adjacent Scenery:** Cienega Amarilla, Lyman Lake, Little Colorado River.	• **Representative Species:** Indistinct grasses and rounded shrubs, with patchy pinyon-juniper. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet. • **Texture/Pattern:** Pinyon-juniper is inconsistent and stippled; grasses are dense and smooth. • **Colors:** Light buff-straw and dark grey-green.	• **Distinct Built Features:** Power plant in southern end of the unit. • **Land Use:** Undetermined. • Scenic Quality: C (6.0)

Visual Analysis Units	Landforms	Vegetation	Land Use/Scenic Quality
VAU 11	• **Form:** Broad, angular faces with flat tops; low rolling at base; undulating and flat in transitions. • **Line:** Distinctive horizontal banding in rock formations; undulating, inconsistent, and fragmented; flowing, directional in transitions. • **Color:** Tan and light greys, dark grey, undertones of red-rust and purple. • **Texture:** Consistent across tops and transitions, rougher more predominant faces where rock outcrops and escarpments occur. • **Distinct Natural Features Visible:** Lyman Lake, Little Colorado River, Scraper Knoll, Coyote Hills, Round Mountain. • **Adjacent Scenery:** St. Johns Mountain, Escudilla Mountain, Becker Lake.	• **Representative Species:** Indistinct grasses and shrubs; stippled to consistent pinyon-juniper; dense riparian areas. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet; riparian 5-10 feet. • **Texture/Pattern:** Stippled to dense pinyon-juniper; grasses and shrubs are and smooth and continuous; sinuous, dense riparian areas. • **Colors:** Light buff-straw, light yellow-green, dark green.	• **Distinct Built Features:** None visible • **Land Use:** Undetermined. • Scenic Quality: B (15.0)
VAU 12	• **Form:** Undulating, rolling, intermixed flats; isolated moderately sloped hills; few rock escarpments/outcrops. • **Line:** Undulating to flat/gentle rolling; angled near features. • **Color:** Light tan-khaki, sand-buff, red-brown. • **Texture:** Broken and inconsistent rock formations; gentle, rolling, flat transitions. • **Distinct Natural Features Visible:** Little Colorado River, Becker Lake. • **Adjacent Scenery:** Lyman Lake, Scraper Knoll, Coyote Hills, Round Mountain.	• **Representative Species:** Indistinct grasses and shrubs, inconsistent pinyon-juniper; scattered riparian areas. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-12 feet; riparian 5-10 feet. • **Texture/Pattern:** Pinyon-juniper is inconsistent and patchy to stipples; grasses and shrubs and smooth continuous; riparian areas are sinuous. • **Colors:** Light buff-straw, yellow-green, and dark green.	• **Distinct Built Features:** Towns of Springerville and Eagar. • **Land Use:** Residential, commercial. • Scenic Quality: C (10.0)
VAU 13	• **Form:** Sprawling mountains; broad, angular faces with triangular slopes; undulating to rolling hills in valleys/transitions. • **Line:** Horizontal and angled; rock banding; converging and directional. • **Color:** Chalky tans, light and dark greys, reddish-brown. • **Texture:** Broken, blocky, and inconsistent rock formations; soft, gentle transitions. • **Distinct Natural Features Visible:** Escudilla Mountain, Escondido Mountain, Gallo Peak, Agua Fria Mountain. • **Adjacent Scenery:** Cerro La Mula, Little Colorado River, Largo Mesa.	• **Representative Species:** Ponderosa Pine, pinyon-juniper, indistinct grasses and shrubs. • **Height:** Grasses: <1 foot; shrubs 1-2 feet; pinyon-juniper 10-15 feet; Ponderosa pine 60-100 feet. • **Texture/Pattern:** Ponderosa pine is dense across the mountains; pinyon-juniper is inconsistent and stippled; grasses are dense and smooth. • **Colors:** Tan-yellow, grey-green, dark green.	• **Distinct Built Features:** Scattered residential areas. • **Land Use:** Gila/Apache-Sitgreaves National Forests. • Scenic Quality: B (17.5)

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2.3.1. Sensitive Viewing Platforms

Visual sensitivity also recognizes specific places, areas, and features that have visual importance relative to one's home, social, business, and recreation environment. Sensitive viewing platforms represent viewing locations (key observation points [KOPs]) where the public would view the Proposed Action and Alternatives 1 and 2 both from a stationary location (e.g., residential area) or a linear (e.g., major roadway) location. KOPs were selected in coordination with BLM SFO staff. Sensitive viewing platforms include Cimarron Ranch, U.S. 60, Bill Knight Gap Road, Coronado Trail National Scenic Byway, Zuni Salt Lake Proprietary ACEC, and Cerro Pomo ACEC. White Mountain Scenic Road was considered but not analyzed in further detail due to the field analysis determination that it would not have views of project components for any alternative. U.S. 60, Bill Knight Gap Road, and the Coronado Trail National Scenic Byway are identified as linear platforms and viewpoints along each platform were identified to assess the potential impacts to visual resources within the analysis area. Table 5 and Figure 13 identify the rationale and location of each viewing platform in relation to the BLWP area.

2.3.2. Special Management Areas

Two special management areas (SMA) could be impacted by the Proposed Action and Alternatives 1 and 2. The SMAs listed below have either a scenic resource component (landforms) or cultural significance identified as one of the qualities that was considered as part of the rationale for the designation for special management.

- Cerro Pomo ACEC occurs within the Eagle Peak WSA. The SMA includes 8,784 acres of public land and contains significant cultural values. Diverse wildlife, vegetation, and landforms also occur within the SMA. The SMA serves to protect cultural and geologic resources, while providing and improving wildlife habitat and recreational opportunities (BLM 2010).
- The Zuni Salt Lake Proprietary ACEC is located northwest of Quemado. The SMA includes 4,839 acres of public land. The SMA is a location of traditional religious significance to the Zuni Tribe and to other Native American groups in the Southwest. This SMA serves to protect sociocultural values and cultural resources (BLM 2010).

2.4. Visibility Analysis and Distance Zones

A visibility analysis was performed using ArcGIS Spatial Analyst to identify all areas that would have visibility of the BLWP within the analysis area. The analysis identified where the BLWP components would be visible if there were no vegetation or structures to screen the project components (bare earth GIS analysis).

Due to the scale and visibility of wind turbines this analysis utilizes distance zones following research conducted by Argonne National Laboratory and the BLM found within *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes* (Sullivan, R., et al. 2012). For this analysis, the foreground distance zone is defined as the area up to 10 mile from the Proposed Action and Alternative 1 and 2 wind turbine locations or stationary KOPs, the middleground distance zone is the area from 10 miles to 20 miles, and the background is considered to be from 20 to 30 miles (refer to Appendix A, Figure A-3).

Table 5. Sensitive Viewing Platforms

Sensitive Viewing Platform Name/Location	Platform Type	Associated Visual Analysis Unit Number	Rationale for Platform Selection
Cimarron Ranch Subdivision	Stationary	6	The Cimarron Ranch Subdivision sensitive viewing platform was selected due do the number of residences and potential views from residences. The platform is located approximately 4.5 miles north of the nearest visible project components.
Zuni Salt Lake Proprietary ACEC	Stationary	8	The Zuni Salt Lake Proprietary ACEC sensitive viewing platform was selected due do the cultural importance of this location to Native American Tribes in the area. The platform is located approximately 21 miles north of the nearest visible wind turbines.
Cerro Pomo ACEC	Stationary	3,4,5,6,8	The Cerro Pomo ACEC sensitive viewing platform was selected due to the high scenic quality being a contributing value of the ACEC. The platform is located approximately 9 miles northeast of the nearest visible wind turbines.
U.S. 60	Linear	3, 6, 8, 4	The U.S. 60 sensitive viewing platform was selected due do the large amount of vehicular traffic associated with this highway which is within close proximity of the Proposed Action. This platform also has some historical significance and is identified as the Ocean to Ocean Highway as well as an alignment associated with the Magdalena Stock Driveway[1]. The platform is located approximately 2.5 miles north of the nearest visible wind turbines and intersects project infrastructure (transmission lines).
Bill Knight Gap Road/ County Road B007	Linear	3,6	Bill Knight Gap Road is a Catron County Road (B007) that is a north-south connector route between U.S. 60 and Luna NM. This linear platform parallels and is adjacent to the Proposed Action along the east side.
Coronado Trail National Scenic Byway/US 191	Linear	11	The Coronado Trail National Scenic Byway (US 191) is located approximately 16 miles from the nearest visible wind turbines. The angle of observation from this platform would be predominately head-on views and viewer position would be predominately neutral.

Table Abbreviations: ACEC = Area of Critical Environmental Concern
Table Notes: [1]The Magdalena Stock Driveway was a 125-mile long corridor that was used for movement of cattle and sheep to Magdalena, New Mexico for shipping in the late 1800's until the 1970's and is of historical significance in the region.

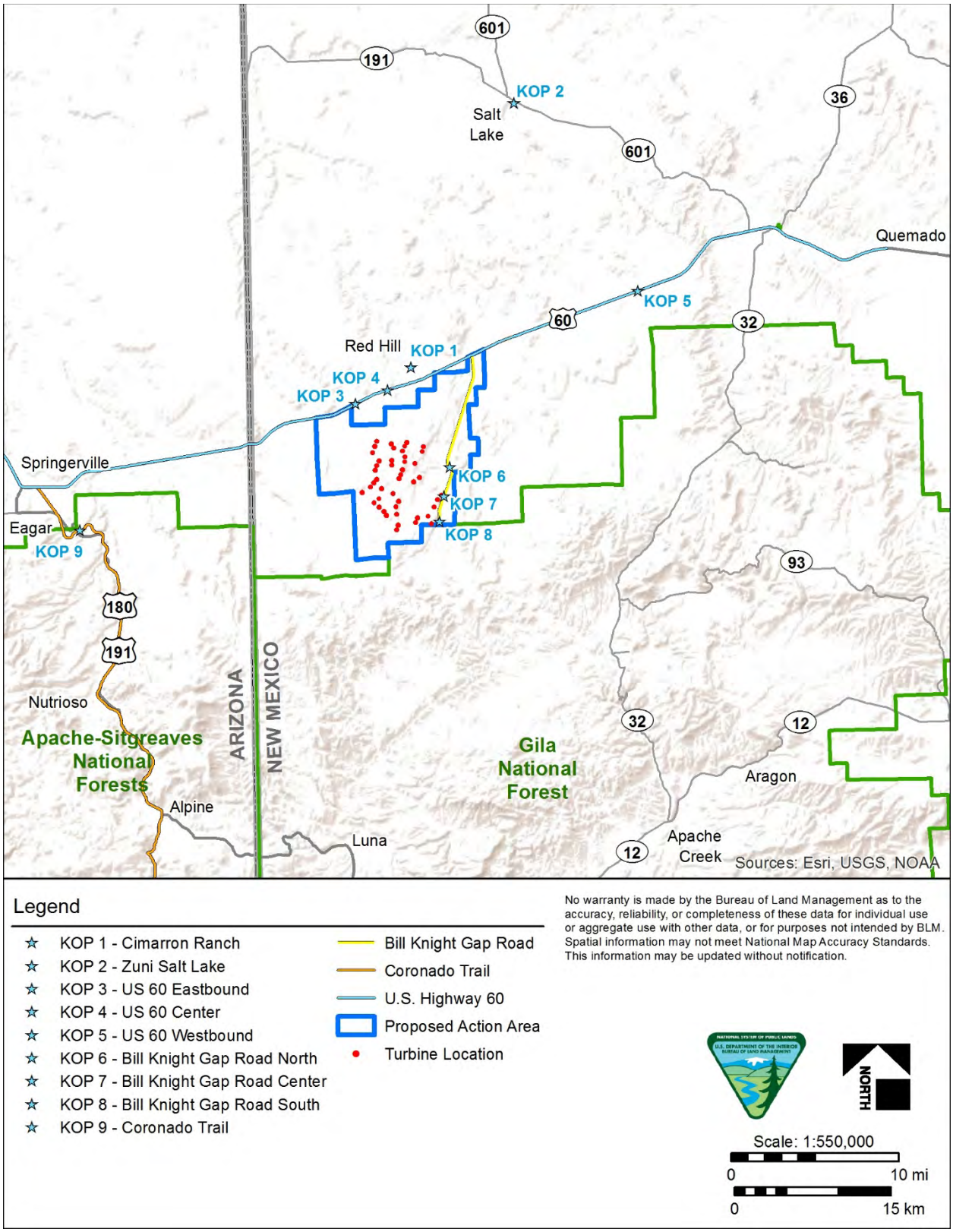

Figure 13. BLWP Analysis Area KOP Locations in Reference to the Proposed Action Area

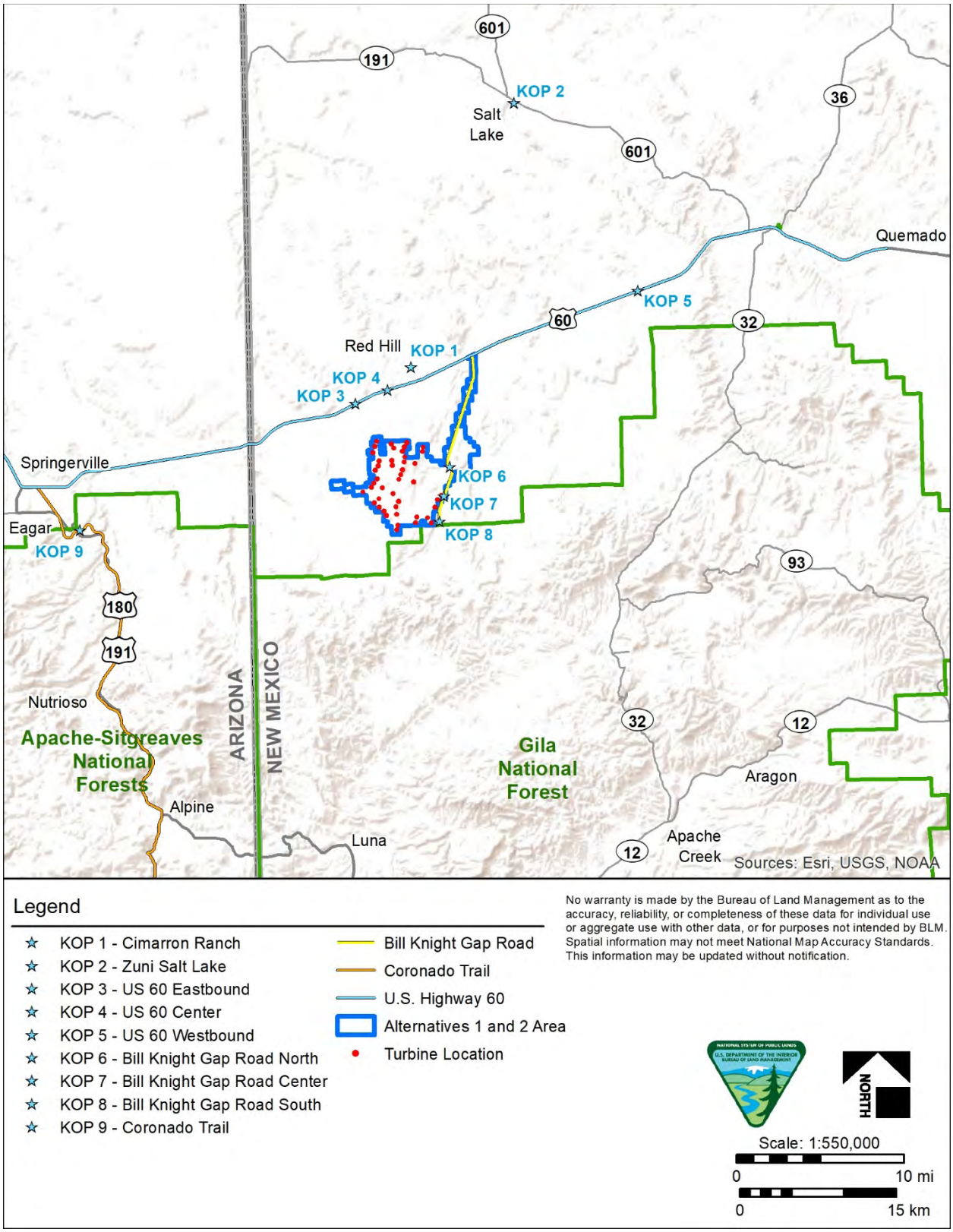

Figure 14. BLWP Analysis Area KOP Locations in Reference to the Alternatives 1 and 2 Area

There are four distance zone determinations that correspond with the above defined distance zones (Sullivan, R., et al. 2012):

- **Limit of Visual Preeminence - 0-10 miles (Foreground)** – At this distance, the wind facility would be a major focus of visual attention, drawing and holding visual attention. The facility may occupy a substantial portion of the field of view, with the repeated vertical lines of the towers contrasting strongly with horizontal landforms and blade motion and color contrasts also strongly attracting visual attention in some circumstances. The facility as a whole is likely to be perceived by some viewers as having a large visual impact.
- **Limit of Casual Visibility - 10-20 miles (Middleground)** - At this distance, under normal viewing conditions, including cloudy weather with shaded turbines, facilities would be noticed by casual observers, and potentially cause moderate impacts, depending on setting, viewer sensitivity, and other impacting factors.
- **Suggested Limit of Analysis - 20-30 miles (Background)** - This is suggested as a reasonable limit for viewshed analyses and impact descriptions. Facilities beyond this distance might sometimes be noticed by casual observers, but would appear to be so small as to have negligible impacts.
- **Limit of Visibility - 30-36 miles -** This is suggested as a reasonable limit of visibility of wind turbines in daylight settings. Visibility beyond this distance would probably require exceptional circumstances, but in any event, the turbines would be extremely difficult for most people to notice.

2.5. Environmental Factors

Environmental factors can influence the amount of visual contrast, dominance, and level of attraction introduced by project components. For this project-level analysis, the factors evaluated include visibility conditions, angle of view (relative viewer position and view orientation), duration of view (in time or distance), and scale and spatial relationship (degree of contrast) of the BLWP in relation to sensitive viewing platforms (BLM 1986a). An environmental factors evaluation was completed for each stationary and linear platform (Appendix A).

Visibility conditions refer to how the BLWP components would be viewed in the landscape from stationary or linear platforms, not whether the Proposed Action, Alternative 1, or Alternative 2 would be seen or not seen from the platforms. These conditions are assessed by looking at the juxtaposition of the project components in the landscape. One condition is whether the project components would be seen predominantly skylined along the horizon line of the landform or whether they would be seen backdropped against landforms. The second condition is whether the views of project components would be predominantly unobstructed or partially obstructed. The third visibility condition is whether views of the project components would be predominantly continuous—that is, landforms or other features would be viewed over a distance— or if the views of the project components would be intermittent. The view is considered to be intermittent or discontinuous when the landforms or other features would break up or block the view of the project component. The angle of view from stationary platforms is also evaluated to determine whether or not the project components would be seen in the same viewing direction as the primary feature, if there is one.

The duration of view—that is, how long, in time or distance, the project components would be seen from sensitive viewing platforms—is used to quantify the magnitude of potential impacts on the views from linear and stationary platforms. For linear platforms, the duration of view is calculated in terms of both time and distance as follows: (1) percentage of the total travel time (minutes) along the platform that the project components would be seen, (2) percentage of the total travel distance (miles) along the platform that the project components would be seen, and (3) percentage of the total miles of the project components that would be seen along the platform. To calculate travel time, 65 miles per hour (mph) was used as the average rate of speed for U.S. 60, 55 mph for Coronado Trail Scenic Byway and 45 mph for Bill Knight Gap Road. For stationary platforms, the duration of view is calculated in terms of percentage of the total acres of the project components that would be seen from the platform.

The last two environmental factors used in this analysis—scale and spatial relationship—evaluate the degree of contrast (prominence) of the BLWP components in relation to the surrounding landscape when viewed from linear and stationary viewing platforms. Scale refers to the size of the project components relative to various landscape features. The larger the project components would appear, the less they would repeat the common elements and patterns in the surrounding landscape; that is, the project components would appear to dominate the landscape.

In addition to scale, the arrangement or spatial relationship of landscape features can also affect the visual prominence of project components from sensitive viewing platforms. Consideration of the amount of visual contrast created is directly related to the amount of attention that is drawn to an element in the landscape. For example, if the view from a platform is of a panoramic or expansive landscape, the project components would be less prominent (lower contrast), whereas if the view is of an enclosed, or encircled landscape such as a narrow valley, the project components would be more prominent and would appear to dominate the landscape (higher contrast). The amount of visual contrast created is directly related to the amount of attention that is drawn to an element in the landscape. For this analysis, contrast is assessed by comparing the BLWP with the major features in the existing landscape.

Changes in the visual setting because of time of day and seasonal lighting changes, variable atmospheric conditions, and seasonal use differences are not evaluated as part of the environmental factors. It is also assumed that the communities within the analysis area would continue to develop in a manner similar to the existing land use patterns. However, the growth rate and ultimate land use patterns cannot be known, and future land use changes were not specifically considered in the evaluation of potential project impacts on the visual environment.

Impacts from the BLWP were also evaluated in terms of the impacts over time. For this analysis, short-term impacts are defined as effects that would last less than 5 years and long-term impacts are defined as effects that would last more than 5 years, as outlined in Section III.D.1 of BLM Handbook H-8431-1 (BLM 1986).

Table 6 defines the threshold of the visual resources impacts on the casual observers at the viewing platforms by each environmental factor and to the existing landscape's scenic quality and landscape character components. The magnitude of impact ranges from 'none' to 'high' for each factor. For example, a low magnitude of change to scenic quality would be considered where the landscape would appear to be intact after full build out. A high magnitude of change would be when the landscape would appear to be severely altered after full build out. The magnitude of the changes in visual character and quality from existing conditions to post-project conditions for this assessment are presented in Section 4. Environmental Consequences in Table 7.

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Table 6. Visual Impact Thresholds

Effects on Views from Sensitive Viewing Platforms						Effects on Scenic Quality and Landscape Character	
Visibility Conditions	**Angle of View (Linear Platforms)**	**Angle of View (Stationary Platforms)**	**Duration of View (Linear Platforms)**	**Duration of View (Stationary Platforms)**	**Scale/Spatial Relationship**	**Magnitude of Change to Scenic Quality [1], [2]**	**Magnitude of Change to Landscape Character**
None (No Impacts) (Green)							
• Not seen	• Not applicable	• Not applicable	• Not seen	• Not seen	• No perceived change	• No perceived change	• No perceived change
Negligible Impacts (Green)							
• Views of BLWP components are consistently backdropped against terrain. • Views are consistently partially obstructed • Views are sporadically intermittent	• Viewer position: superior • View orientation: views are occasionally parallel	• Viewer position: predominantly superior • Relative degree of exposure of the project components within the viewshed relative to the observer is 45 degrees or less	• The project components would be seen from 20 percent or less of the total miles of the linear platform within the analysis area. • The project components would be seen 20 percent or less of the total travel time along the linear platform within the analysis area. • 20 percent or less of the total acres of the project components would be seen along the linear platform. Or • Linear platform occurs within background distance zone of turbines (tower and blade components)	• 20 percent or less of the total acres of the project components would be seen from the stationary platform. Or • Turbines (tower and blade components) would occur in the Background distance zone of stationary platform	• Project components would repeat elements/patterns common in the landscape. • Project components would not be visually evident.	• Landscape would appear to be intact. • Project components would repeat form, line, color, texture or scale common in the landscape and would not be visually evident. • No apparent change in scenic quality.	• Subtle change • BLWP would not attract attention
Minor/Low Impacts (Yellow)							
• Views of BLWP components are predominantly backdropped against terrain • Views are predominantly partially obstructed • Views are predominantly intermittent	• Viewer position: are neutral and/or superior • View orientation: views are predominantly parallel	• Viewer position: neutral and/or superior • Relative degree of exposure of the project components within the viewshed relative to the observer is 90 degrees or less	• The project components would be seen 21 percent to 40 percent of the total miles of the linear platform within the analysis area. • The project components would be seen 21 percent to 40 percent of the total travel time along the linear platform within the analysis area. • 21 percent to 40 percent of the total acres of the project components would be seen along the linear platform. Or • Linear platform occurs within middleground distance zone of turbines (tower and blade components)	• 21 percent to 40 percent of the total acres of the project components would be seen from the stationary platform. Or • Turbines (tower and blade components) would occur in the middleground distance zone of stationary platform	• Project components would introduce elements/patterns common in the landscape. that would be visually subordinate • Project components would create low contrast as compared to other features in the landscape.	• Landscape would appear to be noticeably altered. • Project components would introduce form, line, color, texture, or scale common in the landscape and would be visually subordinate (low contrast). • Negative change in scenic quality rating of 0.5 from existing conditions.	• Notable change • BLWP would begin to attract attention

Effects on Views from Sensitive Viewing Platforms						Effects on Scenic Quality and Landscape Character	
Visibility Conditions	**Angle of View (Linear Platforms)**	**Angle of View (Stationary Platforms)**	**Duration of View (Linear Platforms)**	**Duration of View (Stationary Platforms)**	**Scale/Spatial Relationship**	**Magnitude of Change to Scenic Quality [1], [2]**	**Magnitude of Change to Landscape Character**
Moderate Impacts (Blue)							
• Views of BLWP components are equally backdropped against terrain and skylined. • Views are equally unobstructed and partially obstructed • Views are equally continuous and intermittent	• Viewer position: neutral and/or inferior • View orientation: views are equally head-on and parallel	• Viewer position: neutral and/or inferior • Relative degree of exposure of the project components within the viewshed relative to the observer is 180 degrees or less within a non-specified view or less than 45 degrees within the primary view of focus	• The project components would be seen 41 percent to 80 percent of the total miles of the linear platform within the analysis area. • The project components would be seen 41 percent to 80 percent of the total travel time along the linear platform within the analysis area. • 41 percent to 80 percent of the total acres of the project components would be seen along the linear platform. Or • Linear platform occurs within middleground distance zone of turbines (tower and blade components)	• 41 percent to 80 percent of the total acres of the project components would be seen from the stationary platform. Or • Turbines (tower and blade components) would occur in the middleground distance zone of stationary platform	• Project components would introduce elements/patterns not common in the landscape. • Project components would be visually prominent in the landscape and would create moderate contrast as compared to other features in the landscape.	• Landscape would appear to be substantially altered. • Project components would introduce form, line, color, texture, or scale not common in the landscape and would be visually prominent in the landscape (moderate contrast). • Negative change in scenic quality rating of 1.0 from existing conditions.	• Substantial change • BLWP would attract attention • BLWP would begin to dominate the visual setting
Major/High Impacts (Red)							
• Views of BLWP components are predominantly skylined. • Views are predominantly unobstructed • Views are predominantly continuous	• Viewer position: neutral and/or inferior • View orientation: views are predominantly head-on	• Viewer position: neutral and/or inferior • Relative degree of exposure of the project components within the viewshed relative to the observer is 225 degrees or less within a non-specified view or 45 degrees or greater within the primary view of focus	• The project components would be seen 81 percent or greater of the total miles of the linear platform. • The project components would be seen greater than 81 percent of the total travel time along the linear platform within the analysis area. • 81 percent or greater of the total acres of the project components would be seen along the linear platform. Or • Linear platform occurs within foreground distance zone of turbines (tower and blade components)	• 81 percent or greater of the total acres of the project components would be seen from the stationary KOP platform. Or • Turbines (tower and blade components) would occur in the foreground distance zone of stationary platform	• Project components would introduce elements/patterns that would be visually dominant and create strong contrast as compared to other features in the landscape.	• Landscape would appear to be severely altered. • Project components would introduce form, line, color, texture or scale not common in the landscape and would be visually dominant in the landscape (strong contrast). • Negative change in scenic quality rating of 1.5 or more from existing conditions.	• Severe change • BLWP would demand attention • BLWP would dominate in the visual setting

Table Notes: Summary of Impacts tables are color coded according to the scheme denoted in this table: None/negligible = green; low = yellow; moderate = blue; high = red.
[1] Magnitudes of impact align with BLM VRM degrees of contrast as follows: “None” impact = “None” contrast; “Low” impact = “Weak” contrast; “Moderate” impact = “Moderate” contrast; “High and Very High” impacts = “Strong” contrast.

3. AFFECTED ENVIRONMENT

The following section describes the existing visual character of the analysis area for assessment of visual resources. This section provides information about the character of the regional landscape and land use patterns that have modified the natural landscape.

3.1. Regional Landscape Character

Visual resources within the analysis area are a function of geology, climate, and historical processes and are influenced by topographic relief, vegetation, water, wildlife and land use. Human uses such as ranching and grazing, clustered residential and transportation routes also contribute to the landscape character of the analysis area. The BLWP area lies within the south-eastern area of the Colorado Plateau physiographic province. The Colorado Plateau consists of an uplifted, eroded, and deeply dissected land. Its benches, mesas, buttes, salt valleys, cliffs, and canyons are formed in and underlain by thick layers of sedimentary rock. Precipitous side-walls mark abrupt changes in local relief, often of 1,000 to 2,000 feet or more. The region is dominated by a mix of pinyon-juniper and grasslands.

The BLWP area is located in a broad, and expansive plateau area in eastern New Mexico northwest of the Gallo Mountains within the Gila National Forest and south of Cimarron Mesa between Cow Springs Draw and Cerro La Mula. The landscape is characterized by sloping landforms with rock outcrops and subtle linear rocky bands and is covered in dense grasses, clusters of sagebrush, and scattered juniper. Cultural development in the project area consists of transmission lines, improved and unimproved dirt roads and range improvements. The adjacent landscape character is a mix of undeveloped natural areas, and rural residential development north of U.S. 60.

4. ENVIRONMENTAL CONSEQUENCES

The construction, operation and maintenance, and decommissioning of the BLWP would result in direct and indirect effects on visual resources. The VAUs have been evaluated in terms of the anticipated magnitude of change in landscape character and scenic quality as well as the effects on views from the sensitive viewing platforms. An analysis of visual dominance, scale, continuity, and contrast was used in determining to what degree the BLWP would attract attention and to assess the relative change in character and scenic quality as compared to the existing characteristic landscape.

4.1. Design Features

The following visual resource design criteria as identified in the 2020 BLWP POD (Borderlands Wind, LLC 2020) are assumed to be incorporated as part of the project design and include standard BMPs that would be executed during the construction and operation of the BLWP. These design criteria were considered during the evaluation of environmental consequences.

- The turbine array would be integrated with the surrounding landscape to the extent practicable. Design elements to be addressed include visual uniformity, use of tubular towers, proportion and color of turbines, non-reflective paints, and prohibition of commercial messages on turbines.
- Other site design elements would visually blend with the surrounding landscape to the extent practicable including minimizing the profile of the ancillary structures, burial of cables, prohibition of commercial symbols, and lighting. The need for and amount of lighting on ancillary structures would be minimized.
- An access road siting and management plan would be prepared incorporating existing BLM standards regarding road design, construction, and maintenance such as those described in the BLM 9113 Roads Manual.
- The design of the project would avoid (if possible), minimize, or mitigate impacts to visual resources.

4.2. Direct and Indirect Impacts from the BLWP

A summary of the direct and indirect impacts for the BLWP as well as a discussion of the general impacts are described and address the magnitude of the changes to scenic quality and landscape character in the defined foreground, middleground and background, as well as impacts to people's general views of the landscape from selected stationary and linear platforms. Potential impacts summarized below are based on the information provided in Table 7. As a reference, the definitions of the degree of impact to the change in scenic quality and landscape character are provided in Table 6 along with the definitions of the degree of impact to views from stationary and linear platforms.

4.2.1. Construction

If approved, the BLWP would affect the area's visual character and scenic quality by generating fugitive dust, equipment and vehicles moving in and out of the project area, presence of construction cranes, transmission line stringing, and the stockpiling of material. The construction activities would introduce forms, lines, colors, and textures that would temporarily attract attention and strongly contrast with the existing setting. Removal of vegetation would expose lighter-colored soils from the laydown/staging areas, trenching of underground electrical collection system, and the clearing of areas to build the distribution poles, new access roads, and the turbine towers.

The construction-related impacts would create a subtle degree of change in the characteristic landscape in the foreground area[1] of three of the KOPs: U.S. 60, Bill Knight Gap Road, and the Cimarron Ranch Subdivision. There would be no apparent change in the middleground because of the open and irregular vegetation pattern, much of the ground disturbance would not be readily apparent at that distance, and because of the presence of other cultural modifications and areas of disturbance such as the Red Hill Community sand and gravel pit and unpaved roads.

4.2.2. Operation and Maintenance

Scenic Quality

Foreground: Based on the degree of cultural modification associated elements associated with the wind turbines as well as the scale and spatial relationships of the wind turbines, the change to the existing landscape would be a high magnitude of change in scenic quality within the foreground area of the BLWP in this landscape. The BLWP components would introduce line, form, color and scale not common in the landscape and would be visually dominant in the landscape. The landscape is characterized by gently sloping landforms with grass and scattered pinyon juniper on which the BLWP would occur. The proposed distribution lines would not create a new element within the characteristic landscape. The presence of the wind turbines would severely reduce the scenic quality within the foreground because the elements would dominate the landscape. The improvement to existing access roads would create opportunities for people to access previously inaccessible areas of the landscape. This could result in trampling vegetation and additional resource damage such as increased erosion, which may potentially lower the scenic quality in these areas. The proposed access roads would also provide potential scenic viewing opportunities not currently available to people.

Middleground: Within the middleground of the BLWP, views of the project components would be limited by the increased distance from the project components and presence of landforms. Impacts to scenic quality in the middleground would be low because the BLWP would become visually subordinate compared to other features

[1] The foreground distance zone is defined as the area up to 10 mile from the BLWP area wind turbines or the KOPs, the middleground distance zone is the area from 10 miles to 20 miles, and the background is considered to be from 20 to 30 miles.

in the landscape. Visibility conditions such as time of day, sun angle and/or atmospheric conditions also influence the effects of the BLWP within the middleground.

Background: Within the background of the BLWP, views of the project components would be limited by the distance (20+ miles) from the project components. Overall there would be low to negligible impacts to scenic quality in the background because components would not be visually evident in a large portion of the background. Visibility conditions such as time of day, sun angle and/or atmospheric conditions also influence the effects of the BLWP within the background.

Landscape Character

The magnitude of change in landscape character associated with the project components would be high to low within the foreground and middleground area of the BLWP. The scale, vertical nature and motion of the wind turbines in contrast with the existing natural landscape would dominate the visual setting and demand attention from the casual observer.

Stationary Viewing Platforms

There would be high to negligible impacts to people's views from each of the selected stationary KOPs associated with the BLWP. Impacts from stationary KOPs are associated with visibility conditions and angle of view. There are no stationary viewing platforms in the middleground area.

Foreground: The Cimarron Ranch stationary KOP would have high impacts due to proximity of the BLWP (4.5 miles from the Proposed Action and Alternatives 1 and 2) which would demand attention and dominate the visual setting. The visual setting would appear to be severely altered because the dominance of the wind turbines in scale, color and form as well as the motion of the turbine blades would introduce elements and patterns that create strong contrast as compared to other features within the landscape. Approximately 46 wind turbines would be visible form Cimarron Ranch under the Proposed Action and 44 turbines would be visible under Alternatives 1 and 2. The ADLS, when activated, would result in strong short-duration contrast to the surrounding landscape, and night sky where turbines rise above the horizon. The short duration synchronized flashing would have less visual impacts than standard continuously flashing aircraft warning systems due to the short duration of activation. Should the ADLS not be approved, the synchronized flashing of the red aviation obstruction warning lights and the extent of the lighting at night would result in strong contrast to the landforms in the background, and night sky where turbines rise above the horizon.

Background: People's views of the BLWP (approximately 21 miles from the Proposed Action and Alternatives 1 and 2) from the Zuni Salt Lake KOP would include predominantly skylined views of a portion of the wind turbine blades. The blade motion would be skylined resulting in a low degree of impact to visibility conditions along with the turbines being partially obstructed by landforms when viewed from this location. Wind turbines would begin to attract attention as a result of blade motion and would be visually subordinate due to distance and the spatial relationship of the turbines in relation to the scale of landforms within the viewshed. The visual setting would appear to be noticeably altered as a result of the introduction of blade motion. Overall, project components when viewed from this platform would create low contrast due to distance and atmospheric conditions. Approximately 26 wind turbines would be visible from the Zuni Salt Lake KOP under the Proposed Action, 25 turbines under Alternative 1, and 37 turbines under Alternative 2.

Linear Viewing Platforms

Foreground: The U.S. 60 and Bill Knight Gap Road occur within the foreground of the BLWP. Views of wind turbines would predominately be skylined and occasionally backdropped based on viewer perspective which is often parallel and either in a neutral or inferior position. From the U.S. 60 KOP, approximately 46 turbines and 18-32 percent of associated project component acreage would be visible under the Proposed Action. From the

Bill Knight Gap Road KOP, approximately 42 turbines and 21-29 percent of associated project component acreage would be visible under the Proposed Action.

Under Alternatives 1 and 2, from the U.S. 60 KOP, approximately 44 turbines and 18-30 percent of the associated project component acreage would be visible. From the Bill Knight Gap Road KOP, approximately 41-42 turbines and 21-30 percent of the associated project component acreage would be visible.

Similarly, those traveling along Bill Knight Gap Road and U.S. 60 would experience a generally high degree of impact associated with the amount of view because people would experience views of the project components for approximately 100 percent of the total time traveled along the Bill Knight Gap Road and approximately 22-24 percent of the time traveled on U.S. 60 within the analysis area, for all alternatives. The range of visibility of the project components from the platforms can be attributed to Bill Knight Gap Road being an a more inferior position to the project components which reduces visibility and U.S. 60 having more open and expansive views of the project area from more superior locations along the platform which provides more opportunity to view the project components. Similarly to the Cimarron Ranch stationary KOP, should the ADLS not be approved, the flashing and the extent of the red aviation obstruction warning lights at night would result in strong contrast to the landforms in the background, and night sky where turbines rise above the horizon for motorist along U.S. 60 and Bill Knight Gap Road.

Middleground: The U.S. 60 and Coronado Scenic Byway occur within the middleground of the BLWP. Views of project components, particularly wind turbines, from U.S. 60 would be equally backdropped against mountainous terrain and skylined. Approximately 43-46 wind turbines would be visible from U.S. 60, depending on the alternative. People traveling along the linear platform would experience high impacts related to predominantly head-on views of the BLWP. The BLWP project components, aside from the wind turbine, would not be visible from the U.S. 60 linear platform in the middleground. People traveling along the linear platform would experience a negligible degree of impact in the middleground because they would be exposed to views of the project components for approximately 3-6 percent of the total time traveled along the platform within the analysis area, for all alternatives.

People's views of the project components would only occur in southbound direction along the Coronado Trail Scenic Byway and views of the BLWP would be partially obstructed when visible, resulting in negligible impacts to visibility conditions. Approximately 39-43 turbines would be visible from the Coronado Scenic Byway, depending on the alternative. People traveling along the linear platform would experience high impacts related to predominantly head-on views of the BLWP. The amount of the BLWP that people would see in the middleground from the Coronado Trail Scenic Byway would be low, with approximately 22-23 percent of project components being visible from the platform, for all alternatives. People traveling along the linear platform would also experience a negligible degree of impact in the middleground because they would be exposed to views of the project components for approximately 1-2 percent of the total time traveled along the platform within the analysis area, for all alternatives.

Background: Within the background distance zone, 14 of the Proposed Action wind turbine locations, 13 of the Alternative 1 wind turbine locations, and 20 of the Alternative 2 wind turbine locations would be visible from U.S. 60; no other project components would be seen. The BLWP would be visible to motorists for approximately 2-3 percent of the total time travelled along the platform within the analysis area in the eastbound direction. The BLWP components would not be visible within the background distance zone traveling in the westbound direction.

There are no views of the BLWP in the background area along Bill Knight Gap Road or the Coronado Scenic Byway due to the distance from the BLWP, as well as the variations in topography and vegetation density, which all contribute to the lack of visibility of the BLWP from the linear platforms.

Special Management Areas

The Cerro Pomo ACEC occurs within the foreground, middleground, and background area of the BLWP. There are no views of the BLWP in the background area. The nearest wind turbines visible from within the ACEC are at a distance of approximately nine miles. Views of the wind turbines from the ACEC would be equally backdropped and skylined, and partially obstructed by landforms that occur in the foreground and immediate foreground.

There are 34,878 acres within the ACEC, approximately 5,656 acres (21 percent) of the ACEC would have views of the BLWP in the foreground under the Proposed Action; 5,376 acres (15 percent) of the ACEC would have views of the BLWP for Alternative 1; and 5,785 acres (17 percent) of the ACEC would have views of the BLWP for Alternative 2.

Within the middleground area, approximately 1,003 acres (4 percent) of the BLWP would be visible under the Proposed Action; 760 acres (2 percent) of the ACEC would have views of the BLWP for Alternative 1; and 922 acres (3 percent) of the ACEC would have views of the BLWP for Alternative 2. Overall, impacts to the Cerro Pomo ACEC would be negligible to moderate.

Night Sky Impacts

Aircraft Detection Lighting Systems: To avoid collisions with aircraft, the proposed turbines must be lighted at night. Night-sky contrasts can be substantial in rural, undeveloped areas such as the BLWP area because there are few other light sources and there is uniform and generally featureless dark background. The lights may be visible for more than 20 miles depending on atmospheric conditions (Sullivan, et.al. 2012, NPS 2014). The synchronized flashing of the ADLS as proposed in the BLWP POD (Borderlands Wind, LLC 2020) when activated would result in strong, short-duration contrast on the surrounding landscape until the aircraft leaves the airspace.

The short duration synchronized flashing of the ADLS when activated by aircraft entering the airspace and approximately 30 seconds after leaving the airspace would have substantially less visual impacts at night than the standard continuous, medium-intensity red strobe light aircraft warning systems due to the short duration of activation. The ADLS would result in negligible to low contrast against the night sky from the Cimarron Ranch, U.S. 60, and Bill Knight Gap Road KOPs.

Continuous Flashing Red Aviation Obstruction Warning Lights: The use of the ADLS may not be approved for use by the FAA. To avoid collisions with aircraft, the proposed turbines must be lighted at night. Aerial hazard navigation lighting that would be placed on top of proposed turbines would directly impact the natural lightscape and dark night skies in the foreground and middleground. Night-sky contrasts can be substantial in rural, undeveloped areas such as the BLWP area because there are few other light sources and there is uniform and generally featureless dark background. While not every turbine would have lights, the lighted turbines would flash on and off at the same time. The lights can be visible for more than 20 miles (Sullivan, et.al. 2012, National Park Service 2014). Synchronized flashing of the red aviation obstruction warning lights and the extent of the red aviation obstruction warning lights at night would result in strong contrast against the night sky from the Cimarron Ranch, U.S. 60, and Bill Knight Gap Road KOPs.

4.2.3. Decommissioning

Decommissioning activities would have a similar effect to visual resources as the construction activities. As the BLWP features are removed during decommissioning, an incremental reduction to visual contrast would be expected. Viewers situated adjacent to the BLWP area may see localized decommissioning of turbines; however views would be temporary and include an incremental reduction in visual contrast from BLWP components. The degree to which decommissioning of the BLWP would restore scenic quality the characteristic landscape would depend on the extent of other development in the area at the time of decommissioning.

4.2.4. Summary by Magnitude of Impact

Table 7 is a summary of impacts associated with the magnitude of change to landscape character and scenic quality as well as the magnitude of the effects to views from sensitive viewing platforms. These impacts are summarized for stationary and linear platforms, as well as the Special Management Area.

The BLM's scenic quality rating system was used to disclose impacts to scenic quality for the entire analysis area, regardless of land ownership or management. Impacts on scenic quality within the analysis area are included in Table 7. Impacts to scenic quality are identified for the foreground, middleground and background area for each VAU within analysis area. Impacts are calculated based on the acreage in each VAU that would have views of the project, and are further separated by those that would result in a numerical rating change and those that would result in both a numerical change and a change in classification.

There would be approximately 157,442 acres within the foreground area of the Proposed Action, 155,268 acres within the foreground area of Alternative 1, and 162,570 acres within the foreground area of Alternative 2 for which the magnitude of impact to scenic quality would be high. High Impacts would be where the landscape would appear to have severe change in the foreground from views of the BLWP and the negative change in scenic quality associated with cultural modifications score is 1.5 or greater. This change in scenic quality score accounts for approximately 87 percent of visible acres within the foreground analysis area for all alternatives (Table 8, Table 9, and Table 10). The remaining 13 percent of visible acres in the foreground area (approximately 23,069 acres for the Proposed Action, 22,636 acres for Alternative 1, and 24,041 acres for Alternative 2) would have a low magnitude of impact to scenic quality. Low Impacts would be where the landscape would appear to have notable change in the foreground from views of the BLWP and would have a negative change in scenic quality score of 0.5 associated with adjacent scenery (Table 8, Table 9, and Table 10).

There would be approximately 63,425 acres within the middleground area of the Proposed Action, 59,744 acres within the middleground area of Alternative 1, and 64,179 acres within the middleground area of Alternative 2 for which the magnitude of impact to scenic quality would be low under the Proposed Action. Low Impacts would occur where the landscape would appear to have notable change in the foreground from views of the BLWP and the negative change in scenic quality associated with cultural modifications score is 0.5. This change in scenic quality score accounts for approximately 31 percent of visible acres within the middleground area of the Proposed Action, 33 percent of Alternative 1, and 32 percent of Alternative 2 (Table 8, Table 9, and Table 10).

Within the analysis area, there are no lands that are considered as scenic quality A rated landscapes. There would be approximately 22,943 acres of scenic quality B landscapes that would be impacted by the Proposed Action, 22,527 acres of scenic quality B landscapes that would be impacted by Alternative 1, and 23,864 acres of scenic quality B landscapes that would be impacted by Alternative 2. There would be no change in scenic quality rating in scenic quality B landscapes under any alternative. The BLWP would be visible from approximately 220,993 acres of scenic quality C landscapes under the Proposed Action, 215,122 acres of scenic quality C landscapes under Alternative 1, and 226,926 acres of scenic quality C landscapes under Alternative 2. Within the SFO, the rating for 22,943 acres, 22,527 acres, or 23,864 acres within scenic quality classification B rated landscapes would be lower for the Proposed Action, Alternative 1, or Alternative 2, respectively. Further, the rating for 220,993 acres, 215,122 acres, or 226,926 acres within scenic quality classification C rated landscapes would be lower for the Proposed Action, Alternative 1, or Alternative 2, respectively. However, the BLWP under any alternative would not result in a drop in scenic quality classification of the landscape within the visual resource impact analysis area (i.e., from a scenic quality B rated landscape to a scenic quality C rated landscape) (Table 8, Table 9, and Table 10).

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Table 7. Summary of Impacts by Visual Analysis Units, Stationary and Linear Sensitive Platforms within Analysis Area for All Alternatives

	Visibility Conditions (Number of Turbines)			Angle of View (Degrees)			Project Seen from Linear Platform			Linear Platform with Views of Project			Duration of View of Project along Linear Platform			Acres of Project Seen from Stationary Platform (%)			Scale and Spatial Relationship				Magnitude of Change to Scenic Quality						Magnitude of Change to Landscape Character		
	FG	MG	BG	FG	MG	BG	FG	MG	BG	FG	MG	BG	FG	MG	BG	FG	MG	BG	FG	MG	BG	Existing Rating	FG Post-Project Rating	FG Impact	MG Post-Project Rating	MG Impact	BG Post-Project Rating	BG Impact	FG Impact	MG Impact	BG Impact
Visual Analysis Units																															
1																						C (8.0)	N/A	N/A	NC	NC	NC	None	None	NC	None
2																						C (8.5)	N/A	N/A	N/A	N/A	NC	None	N/A	N/A	None
3																						C (9.5)	5.5	H	9.0	L	N/A	N/A	H	L	N/A
4																						C (11.0)	N/A	N/A	NC	None	NC	None	N/A	None	None
5																						B (12.0)	N/A	N/A	NC	None	NC	None	N/A	None	None
6																						C (11.0)	7.0	H	10.5	L	N/A	N/A	H	L	N/A
7																						B (12.5)	12.0	L	NC	None	N/A	N/A	L	None	N/A
8																						B (14.0)	13.5	L	NC	None	NC	None	L	None	None
9																						C (6.5)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10																						C (6.0)	5.5	L	NC	None	NC	None	L	None	None
11																						B (15.0)	14.5	L	NC	None	NC	None	L	None	None
12																						C (10.0)	N/A	N/A	NC	None	NC	None	N/A	None	None
13																						B (17.5)	17.0	L	NC	None	NC	None	L	None	None
Stationary Viewing Platforms																															
Cimarron Ranch	H	N/A	N/A	N	N/A	N/A										H	N/A	N/A	H	N/A	N/A										
Zuni Salt Lake	N/A	N/A	L	N/A	N/A	N										N/A	N/A	N	N/A	N/A	L										
Linear Viewing Platforms																															
U.S. 60	M	M	N	L	H	H	H	M	N	H	M	N	H	M	N				H	M	N										
Coronado Trail Scenic Byway	N/A	L	N/A	N/A	H	N/A	N/A	L	N/A	N/A	L	N/A	N/A	L	N/A				N/A	L	N/A										
Bill Knight Gap Road	H	N/A	N/A	M	N/A	N/A	H	N/A	N/A	H	N/A	N/A	H	N/A	N/A				H	N/A	N/A										
SMA																															
Cerro Pomo SMA	M	L	N/A	L	L	N/A										N	N	N/A	M	L	N/A										

Table Abbreviations: VAU= Visual Analysis Unit; VRM = Visual Resource Management; NC = No change; FG = foreground distance; MG = middleground distance; H = high (red); M = moderate (blue); L = low (yellow); N = negligible (green); None = no impact (green); N/A = not applicable.

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Table 8. Scenic Quality Impacts by Visual Analysis Unit within the Analysis Area for the Proposed Action

VAU Number	Acres of VAU with Views of BLWP			Existing Scenic Quality Classification	Post-project Scenic Quality Ratings within Visible Areas			Acres of Change
	FG	MG	BG		FG	MG	BG	
1	-	4,952	6,866	C (8.0)	-	NC	NC	NC
2	-	-	13,927	C (8.5)	-	-	NC	NC
3	89,562	18,771	-	C (9.5)	C (5.5)*	C (9.0)*	-	108,333
4	-	753	15,557	C (11.0)	-	NC	NC	NC
5	-	22,939	51,231	B (12.0)	-	NC	NC	NC
6	67,880	44,654	-	C (11.0)	C (7.0)*	C (10.5)*	-	112,534
7	971	12	-	B (12.5)	B (12.0)**	NC	-	971
8	572	17,317	11,319	B (14.0)	B (13.5)**	NC	NC	572
9	-	-	-	C (6.5)	-	-	-	NC
10	126	38,193	24,031	C (6.0)	C (5.5)**	NC	NC	126
11	3,214	30,706	7,873	B (15.0)	B (14.5)**	NC	NC	3,214
12	-	37	32,645	C (10.0)	-	NC	NC	NC
13	18,186	23,151	36,201	B (17.5)	B (17.0)**	NC	NC	18,186
							Subtotal change within scenic quality classification B	22,943
							Subtotal change within scenic quality classification C	220,993
							Subtotal change in scenic quality classification (from B to C)	NC
							Total for the Proposed Action	243,936

Table Source: Logan Simpson
Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NA = not applicable; NC = no change.
Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 9. Scenic Quality Impacts by Visual Analysis Unit within the Analysis Area for Alternative 1

VAU Number	Acres of VAU with Views of BLWP			Existing Scenic Quality Classification	Post-project Scenic Quality Ratings within Visible Areas			Acres of Change
	FG	MG	BG		FG	MG	BG	
1	-	4,263	3,930	C (8.0)	-	NC	NC	NC
2	-	-	9,934	C (8.5)	-	-	NC	NC
3	88,947	17,989	-	C (9.5)	C (5.5)*	C (9.0)*	-	106,936
4	-	375	12,576	C (11.0)	-	NC	NC	NC
5	-	18,327	47,144	B (12.0)	-	NC	NC	NC
6	66,321	41,755	-	C (11.0)	C (7.0)*	C (10.5)*	-	108,076
7	941	10	-	B (12.5)	B (12.0)**	NC	-	941
8	526	15,857	9,804	B (14.0)	B (13.5)**	NC	NC	526
9	-	-	-	C (6.5)	-	-	-	NC
10	109	32,536	17,968	C (6.0)	C (5.5)**	NC	NC	109
11	3,120	28,288	4,465	B (15.0)	B (14.5)**	NC	NC	3,120
12	-	17	25,945	C (10.0)	-	NC	NC	NC
13	17,940	20,205	30,726	B (17.5)	B (17.0)**	NC	NC	17,940
							Subtotal change within scenic quality classification B	22,527
							Subtotal change within scenic quality classification C	215,122
							Subtotal change in scenic quality classification (from B to C)	NC
							Total for Alternative 1	237,649

Table Source: Logan Simpson
Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NA = not applicable; NC = no change.
Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

Table 10. Scenic Quality Impacts by Visual Analysis Unit within the Analysis Area for Alternative 2

VAU Number	Acres of VAU with Views of BLWP			Existing Scenic Quality Classification	Post-project Scenic Quality Ratings within Visible Areas			Acres of Change
	FG	MG	BG		FG	MG	BG	
1	-	4,730	5,316	C (8.0)	-	NC	NC	NC
2	-	-	12,088	C (8.5)	-	-	NC	NC
3	91,758	18,849	-	C (9.5)	C (5.5)*	C (9.0)*	-	110,607
4	-	653	13,821	C (11.0)	-	NC	NC	NC
5	-	22,567	49,102	B (12.0)	-	NC	NC	NC
6	70,812	45,330	-	C (11.0)	C (7.0)*	C (10.5)*	-	116,142
7	1,020	16	-	B (12.5)	B (12.0)**	NC	-	1,020
8	564	17,078	10,481	B (14.0)	B (13.5)**	NC	NC	564
9	-	-	-	C (6.5)	-	-	-	NC
10	177	38,013	20,394	C (6.0)	C (5.5)**	NC	NC	177
11	3,307	30,378	6,042	B (15.0)	B (14.5)**	NC	NC	3,307
12	-	29	29,672	C (10.0)	-	NC	NC	NC
13	18,973	23,778	35,120	B (17.5)	B (17.0)**	NC	NC	18,973
							Subtotal change within scenic quality classification B	23,864
							Subtotal change within scenic quality classification C	226,926
							Subtotal change in scenic quality classification (from B to C)	NC
							Total for Alternative 2	250,791

Table Source: Logan Simpson
Table Abbreviations: VAU = visual analysis unit; FG = foreground distance; MG = middleground distance; NA = not applicable; NC = no change.
Table Notes: Asterisk (*) indicates that the post-project rating change is based on a decrease in the cultural modifications rating for the VAU. Double asterisk (**) indicates that the post-project rating change is based on a decrease in the adjacent scenery rating for the VAU.

4.2.5. Measures to Avoid and/or Reduce Adverse Impacts

In consultation with BLM, measures would be developed and incorporated into the final project design to minimize adverse effects to specific visual resources prior to the issuance of the Final EIS. This analysis describes the types of measures available to address residual impacts, but it does not quantify the mitigation that could be required once final project engineering and design is complete. Measures that could be implemented to reduce adverse effects to identified visual resources in the area include modification of the project and associated elements such as:

- Use of wind turbine towers, nacelles, and rotors that are uniform and that conform to high standards of industrial design to present a trim, uncluttered, aesthetic appearance.
- Use of low-reflectivity, neutral white finishes for the towers, nacelles, and rotors to minimize contrast with the sky backdrop and to minimize the reflections that can call attention to structures in the landscape.
- Use of neutral gray, white, off-white, or earth tone finishes for the small cabinets containing pad-mounted equipment that might be located at the base of each turbine, to help the cabinets blend into the surrounding ground plane.
- Placement of much of the Facility's electrical collection system underground (as much as possible), minimizing the system's visual impacts.
- Use of a low-reflectivity finish for the exterior of the O&M facility building to maximize its visual integration into the surrounding landscape.
- Restriction of outdoor night lighting at the O&M facility and the substation to the minimum required for safety and security; sensors and switches will be used to keep lighting turned off when not required, and all lights will be hooded and directed to minimize backscatter and offsite light trespass.
- Measures to reduce visual contrast resulting from lighting would include the Aircraft Detection Lighting Systems (ADLS) as proposed in the BLWP POD (Borderlands Wind, LLC 2020). This system when activated would result in strong, short-duration contrast on the surrounding landscape until the aircraft leaves the airspace. Agency decisions pertaining to the implementation of such a warning system would include:
    - FAA approval of ADLS as part of the Hazard to Air Navigation permit process for the wind turbines.
    - Successful test application at one or two other commercial-scale wind farms to demonstrate the system works reliably and effectively.
    - Anticipated effectiveness of reducing visual contrast and impacts on dark skies in consideration of other land development in the BLWP area at the time of implementation.
    - If FAA denies the use of the ADLS, the BLM and Borderlands Wind, LLC would evaluate seeking approval of a similar system within five year to account for changes in technology, costs, or resource impacts that may occur over time.
- Use of a low-reflectivity finish for substation equipment to minimize its visual prominence.
- Use of dull gray porcelain insulators to reduce insulator visibility.
- Use of fencing with a dull finish around the substation to reduce the fence's contrast with the surroundings.

While the BLM places a priority on mitigating impacts to an acceptable level onsite, there are times when on-site mitigation alone may not be sufficient. This is particularly the case with large scale development, which often involves a long-term commitment of resources over a relatively large area. In these instances, the BLM may consider requirements for regional mitigation of those unavoidable impacts that could exacerbate problematic regional trends. Unavoidable impacts to visual resources are those that cannot be adequately mitigated within the analysis area by avoidance and/or by the implementation of design features meant to minimize impacts that lead to a loss or reduction in inventoried visual values. It is also recognized that regional mitigation may not always be warranted for all unavoidable visual resource impacts. The BLM's interim policy, Draft Manual

Section 1794, "Regional Mitigation" outlines the interim policy for taking a landscape-scale regional approach to mitigating project impacts to resources and values managed by the agency.

4.3. Conformance with BLM Management Objectives

BLM has developed measurable standards for managing the visual resources of BLM lands. As previously noted, management classes with established objectives have been identified for the project area's visual resources as part of the RMP process. This analysis determined whether or not the BLWP would be in conformance with the established objectives. Based on the respective VRM class, the stated management objectives were compared to the BLWP regarding magnitude of change in visual character and scenic quality, viewer sensitivity, and visual contrast with and dominance in the existing landscape.

BLM Manual 8431-1 (BLM 1986) was used to evaluate the visual contrast created between the BLWP alternatives and the existing landscape for those sensitive viewing platforms (KOPs) that were identified to assess potential visual resource impacts on BLM-administered lands. The degree to which a management activity affects the visual quality of a landscape is largely dependent on the visual contrast created between a project and the existing landscape. The contrast can be measured by comparing the project features or components with the major features in the landscape. The basic visual elements of form, line, color, and texture are used to make this comparison in addition to consideration of environmental factors incorporating the angle of observation and length of time the project is in view.

The contrast rating worksheets for each KOP assessing BLM-administered lands were completed. Photorealistic simulations associated with each stationary KOP within the analysis area relating to BLM lands were also completed (Appendix A). The determination of whether or not the BLWP Proposed Action and Alternatives 1 and 2 would be in conformance with the various BLM management objectives are provided in Table 11 and Table 12 by KOP. The description of the management objectives of each class are provided in Table 3. The level of contrast in VRM Class I can be no greater than weak, VRM Class II cab ne no greater than low, VRM Class III can be no greater than moderate, and for VRM Class IV the contrast can be strong. Table 11 and Table 12 also summarize the acres of conformance and nonconformance by VRM class.

The BLWP would introduce elements into the characteristic landscape that would create levels of contrast from none to strong associated with form, line, color and texture when viewed from identified stationary and linear KOPs. The BLWP would be in conformance with approximately 3,456 visible acres of VRM Class II for the Proposed Action and 581 of visible acres for Alternatives 1 and 2 when viewed from Cimarron Ranch Subdivision, U.S. 60, Bill Knight Gap Road and Coronado Scenic Byway, collectively, and either would not be visible or would be seen, but would not attract attention from these KOPs. The U.S. 60 intersection improvements would be within the VRM Class II managed landscapes and would meet the class objectives[2].

Conformance with VRM Class III objectives associated with the BLWP would not be met for approximately 20,723 visible acres for the Proposed Action and 6,907 visible acres for Alternatives 1 and 2 when viewed from the Cimarron Ranch, U.S. 60 and Bill Knight Road KOPs, collectively. The scale and visual dominance of the wind turbines in the characteristic landscape would create strong contrast which would demand attention and would not be overlooked when viewed from these KOPs.

The BLWP would be in conformance with approximately 22,528 visible acres off VRM Class IV for the Proposed Action and 8,597 visible acres for Alternatives 1 and 2 when viewed from Cimarron Ranch Subdivision, U.S. 60, Bill Knight Gap Road and Coronado Scenic Byway collectively. VRM Class IV allows for strong levels of contrast

[2] The proposed improvements to the intersection of U.S. 60 and Bill Knight Road/County B007 have not been completed. It is assumed that the improvements would be temporary and in place only during the relatively short construction period for the turbine structures.

and project components may dominate the view and may be a major focus of attention. Conformance with VRM objectives was not determined associated with the Zuni Salt Lake KOP. The upper portions of the wind turbines are only visible from this KOP. Determination of visible acres of lands administered by the BLM to determine VRM conformance is not possible to due distance and landform obstructions in relation to the KOP location.

Due to nonconformance of the BLWP associated with VRM Class III managed lands, the current SFO RMP would need to be amended to VRM Class IV to accommodate the BLWP, for all alternatives.

Table 11. BLM Conformance by KOP for the Proposed Action

KOP	VRM Class	BLM Acres Visible	Contrast Rating	Conformance
Cimarron Ranch Subdivision	II	16	None	Meets
	III	2,363	Strong	Does Not Meet
	IV	23	Strong	Meets
U.S. 60	II	2,908	Weak	Meets
	III	13,876	Strong	Does Not Meet
	IV	6,257	Strong	Meets
Bill Knight Gap Road	II	525	Weak	Meets
	III	4,484	Strong	Does Not Meet
	IV	4,508	Strong	Meets
Coronado Trail Scenic Byway	II	7	None	Meets
	III	317	Weak	Meets
	IV	952	Weak	Meets
Total Acres of Nonconformance	**II**	**0**	**N/A**	**N/A**
	III	**20,723**		
	IV	**0**		

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

Table 12. BLM Conformance by KOP for Alternatives 1 and 2

KOP	VRM Class	BLM Acres Visible	Contrast Rating	Conformance
Cimarron Ranch Subdivision	II	0	None	Meets
	III	387	Strong	Does Not Meet
	IV	23	Strong	Meets
U.S. 60	II	312	Weak	Meets
	III	3,816	Strong	Does Not Meet
	IV	4,204	Strong	Meets
Bill Knight Gap Road	II	269	Weak	Meets
	III	2,704	Strong	Does Not Meet
	IV	3,401	Strong	Meets
Coronado Trail Scenic Byway	II	0	None	Meets
	III	254	Weak	Meets
	IV	969	Weak	Meets
Total Acres of Nonconformance	**II**	**0**	**NA**	**NA**
	III	**6,907**	**NA**	**NA**
	IV	**0**	**NA**	**NA**

Table Abbreviations: KOP = key observation point; N/A = not applicable; VRM = Visual Resource Management.

4.3.1. Conformance with Coronado Trail Scenic Byway Management Objectives

The BLWP would be visible from the Coronado Trail Scenic Byway and would be visible for approximately 1-2 percent of the total time of the total time traveled along the scenic byway within the analysis area, for all alternatives. The motion of the wind turbines would attract attention but would not dominate the landscape and would be visible for approximately 24-26 seconds traveling in the southbound direction, for all alternatives. Visibility and atmospheric conditions along with distance would limit views of the BLWP which would be predominately skylined, consistently partially obstructed, and sporadically intermittent. Therefore, neither the BLWP Proposed Action, Alternative 1, nor Alternative 2 would not adversely affect the intrinsic qualities and user experience of the travelers along the Coronado Trail Scenic Byway.

4.4. Direct and Indirect Impacts from the No Action Alternative

Under the No Action alternative, the BLM would not authorize the new grant application to construct, operate and maintain, and decommission the BLWP. No new disturbance to the characteristic landscape would occur, and no new elements or patterns would be introduced. Therefore, there would be no impact on the casual viewer from stationary KOPs, linear KOPs, or special management areas.

4.5. Cumulative Effects

The determination of what past, present, and reasonably foreseeable future actions to consider in the impact analysis is based on the resources being affected by the BLWP. A cumulative effect is defined under NEPA as "the impact on the environment which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). Past, present, and reasonably foreseeable future actions that incrementally add to the potential adverse or beneficial cumulative impacts of the BLWP are considered in this report. The intent of this analysis is to capture the total effects of several actions over time that would be missed by evaluating each action individually.

4.5.1. Cumulative Effects Analysis Area and Timeframe of Effects

The BLM NEPA Handbook H-1790-1 (2008a) recommends that geographic (spatial) and time (temporal) boundaries be established for cumulative effects analysis. Each resource has a defined cumulative effects analysis area (CEAA) for the No Action Alternative and BLWP. Table 13 provides the geographic area of the CEAA for visual resources.

Table 13. Visual Resources CEAA

Resource	CEAA[1] and Rationale for CEAA	Acres of Proposed Action CEAA	Proposed Area Percent of Total CEAA	Acres of Alternatives 1 and 2 CEAA	Alternatives 1 and 2 Percent of Total CEAA
Visual Resources	30 miles. Due to the scale and visibility of wind turbines, facilities beyond this distance might sometimes be noticed by casual observers but would appear to be so small as to have negligible impacts.	2,570,753	1.69	2,417,815	0.69

[1] Where miles are used, miles refer to the distance from the BLWP area boundary.

In terms of timeframe, the cumulative effects analysis is considered over a 35-year time period. The BLWP has a proposed life expectancy of 35 years, based on electrical demand, maintenance, and the expected life of the project facilities and major components.

4.5.2. Past and Present Actions

The cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. Existing conditions reflect the aggregate impact of prior human actions and natural events that have affected the environment and could contribute to cumulative effects. By looking at current conditions, the residual effects of past human actions and natural events are captured, regardless of which particular action or event contributed those effects. The Council on Environmental Quality issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, "agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions."

4.5.3. Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions are actions that have existing decisions, funding, or formal proposals or that are highly probable. These actions are not connected to the BLWP. They are projections being made so that future effects, cumulative and otherwise, can be estimated, as required by NEPA. Specific projects within the resource CEAA's have been reviewed by land managers, including the Forest Service Schedule of Proposed Actions, New Mexico Department of Transportation, Arizona Department of Transportation, NMSLO, and Catron, Apache, and Greenlee counties. Table 14 identifies the name and provides a brief description of each project within the CEAA.

Table 14. Projects in the Visual Resources CEAA

Project Name	Owner/Proponent	Project Summary
Sheep Cabin Water System CE	Gila National Forest Quemado Ranger District	Improve existing water sources on the El Caso Allotment near Poison Canyon. These water improvement structures will benefit wildlife, including bats, and livestock. Action will install approximately 2.3 miles of pipeline, 4 storage tanks, 3 troughs, and 1 well.
Quemado RD Willie Steele and Escondido Trail Re-Routes CE	Gila National Forest Quemado Ranger District	Decommission approximately 0.75 mile of trail segments on Willie Steele and Escondido trails that dead end on private land and construct 1.6- and 1.0-mile segments of Willie Steele and Escondido trails, respectively, around private land to provide access entirely on Forest Service lands.
Agua Fria Water System CE	Gila National Forest Quemado Ranger District	Improve existing water sources on the Agua Fria Allotment to benefit wildlife and livestock. Proposed to install approximately 2.7 miles of pipeline, 1 or 2 storage tanks, and 2 troughs.

Table Abbreviations: 4FRI = CE = Categorical Exclusion, RD = Ranger District

Other reasonably foreseeable future actions and management activities occurring in the CEAA which area highly probable include livestock grazing, range improvements, vegetation management, recreation (hunting, OHV use), road improvements, special designation areas, temporary met towers, transmission lines, telephone lines, communication towers, and community development. Other disturbances that are ongoing include wildland fire and establishment and spread of noxious weeds and invasive plant species.

4.5.4. Cumulative Impacts on Visual Resources

For this analysis, cumulative resource impacts for the CEAAs are the combined direct and indirect effects of the present and reasonably foreseeable future actions, in addition to the direct and indirect impacts of the Proposed Action, Alternatives 1 and 2, and No Action Alternative. The levels of cumulative impacts are categorized as major, moderate, or minor based on the same thresholds defined in Table 6. If the results of the analysis of direct or indirect impacts were considered to be none or negligible as a result of the build alternatives and No Action Alternative, there would be no measurable contribution to a cumulative effect; therefore, no cumulative effects analysis for the respective resource/use has been done.

Based on the analysis of direct and indirect impacts, only short-term impacts would occur from the construction or decommissioning of the Proposed Action or Alternatives 1 and 2 for a resource/use. It is unlikely that all of the reasonably foreseeable future actions and management activities occurring in the CEAAs would be built at the same time as the Proposed Action or Alternatives 1 and 2. Therefore, there would be no measurable contribution of the alternatives' short-term impacts to a given resource's/use's cumulative impacts, and no cumulative short-term effects analysis for the respective resource/use has been done.

The types of projects or actions that could contribute to impacts to visual resources include overhead transmission lines, MET towers, pipelines, communication towers, and community development. These actions have generally result in a transformation of the natural landscape to a more developed setting when viewed during both day and night conditions over the long-term. In addition, wildland fire would also create a substantial change in the characteristic landscape for decades, depending on the scale and intensity of the wildfire. The expansion of residential areas would expand the footprint of developed areas through the addition of structures, roads, and electrical distribution lines. The expanded developed area would be particularly evident during nighttime conditions, when lighting would extend for substantial distance from the area. Impacts of the combined actions would be perceived as strongest where viewed from sensitive viewing platforms, traditional areas identified by Native American tribes, and from wilderness and wilderness study areas. The implementation of the respective visual management objectives for BLM and Forest Service lands within the CEAA would help to implement measures to reduce adverse impacts. In combination, past, present, and reasonably foreseeable future actions would result in long-term, direct and indirect, minor to moderate, adverse impacts to visual resources that overall would reduce scenic quality and notably transform the characteristic landscape.

BLWP Contribution to Cumulative Impacts

The large stature of the proposed wind turbines with the white color of the towers, the movement of the blades and the synchronized flashing of the ADLS at night when activated (or if the ADLS is not approved, the flashing would be continuous at night) would attract attention, create a substantial change in the landscape character, and result in a strong visual contrast within the foreground area of both linear and stationary sensitive viewing platforms (i.e., KOPs). The view of the casual observer from the foreground of these sensitive viewing platforms would be visually dominated by the Proposed Action and Alternatives 1 and 2. Based on the analysis of potential effects in this report, the Proposed Action and Alternatives 1 and 2 would have long-term, direct and indirect, minor to major, impacts to visual resources depending on the distance from the proposed project components. Cumulatively, effects of the Proposed Action and Alternatives 1 and 2, when combined with past, present, and reasonably foreseeable future actions, would result in long-term, direct and indirect, minor to moderate, cumulative impacts to the visual resources within the Visual Resources CEAA. The Proposed Action and Alternatives 1 and 2 would have a moderate contribution to the cumulative effects to visual resources because of the scale, strong contrast, and industrial characteristic of the wind facility in a sparsely populated and relatively undeveloped area. Visual resource impacts created by the wind farm would be largely reversible with decommissioning of the BLWP at the end of its use life and restoration of the landscape.

No Action Alternative Contribution to Cumulative Impacts

There would be no contribution to cumulative impacts to visual resource because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to visual resources.

5. REFERENCES

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APPENDIX A: VISUAL RESOURCE IMPACT ANALYSIS SUPPORTING DOCUMENTATION

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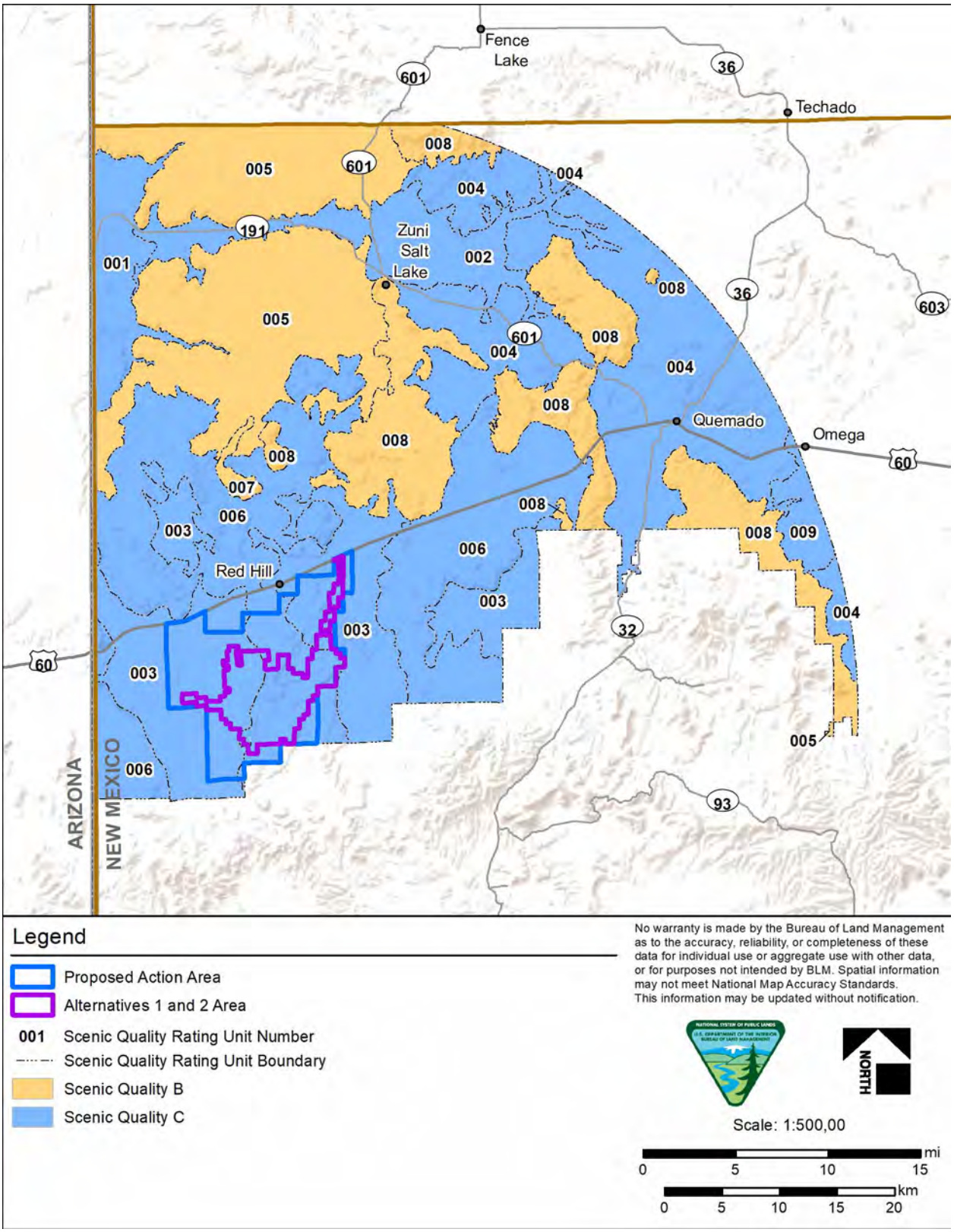


Figure A-1. Scenic Quality Rating Units

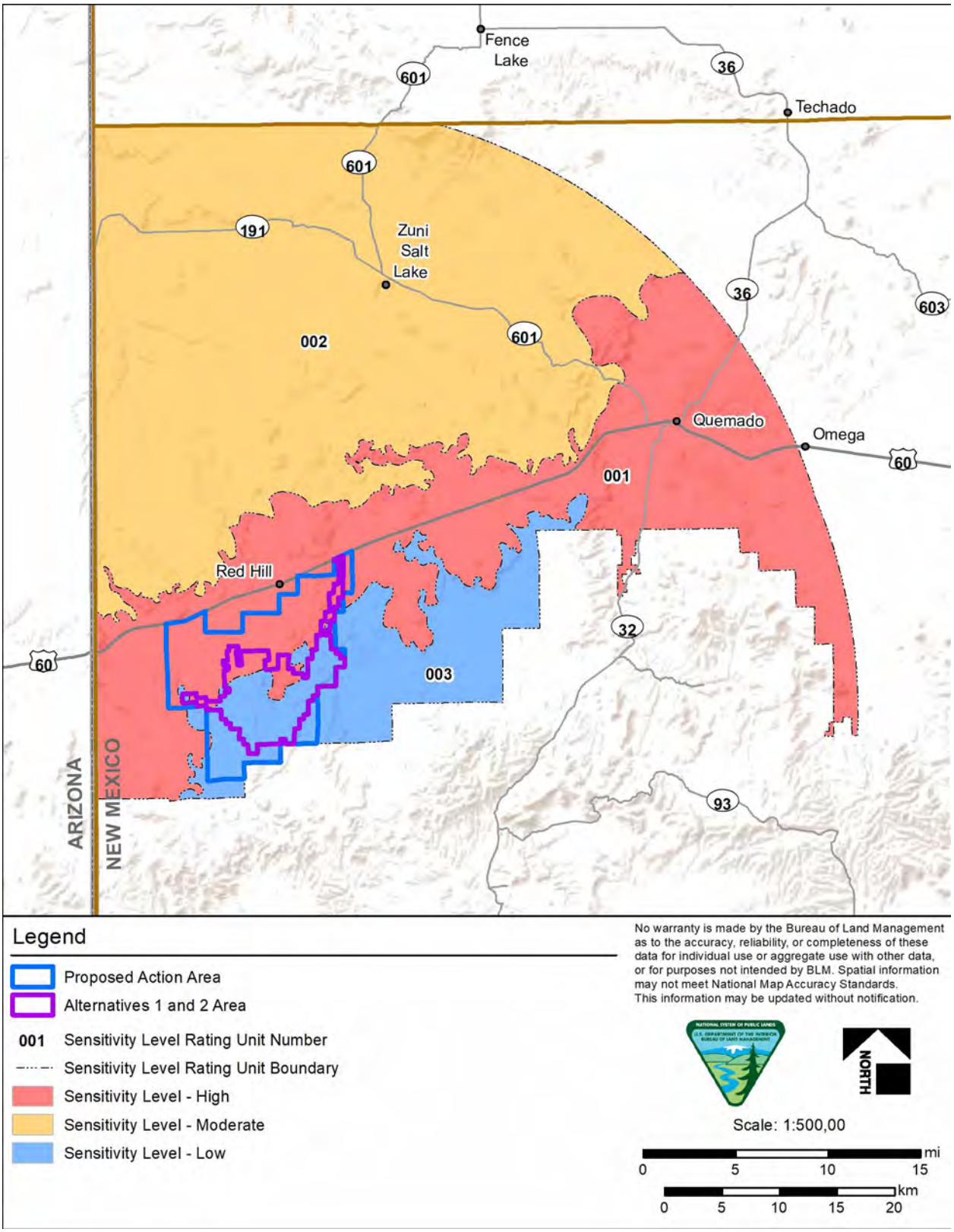


Figure A-2. Sensitivity Level Rating Units

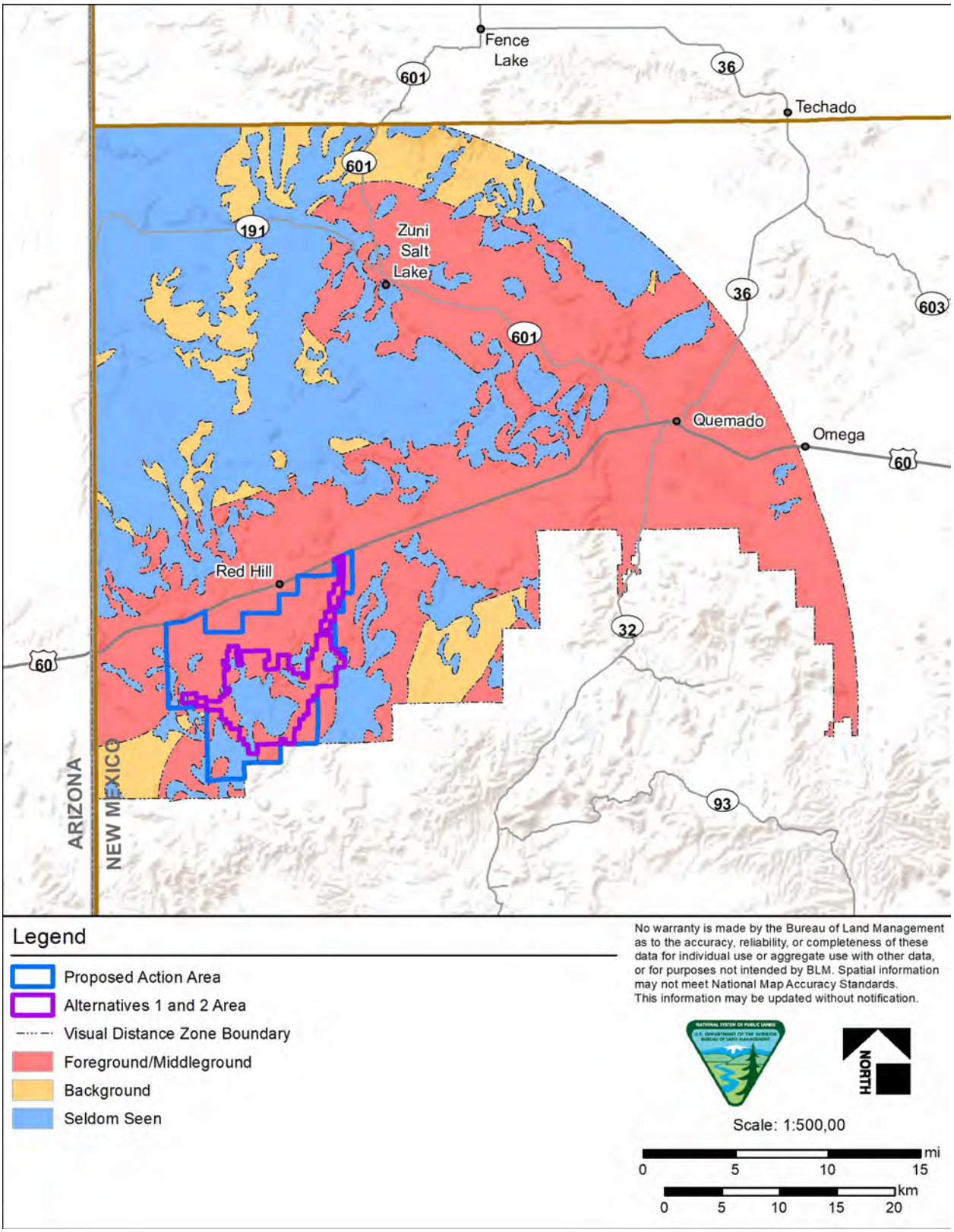


Figure A-3. Visual Distance Zones

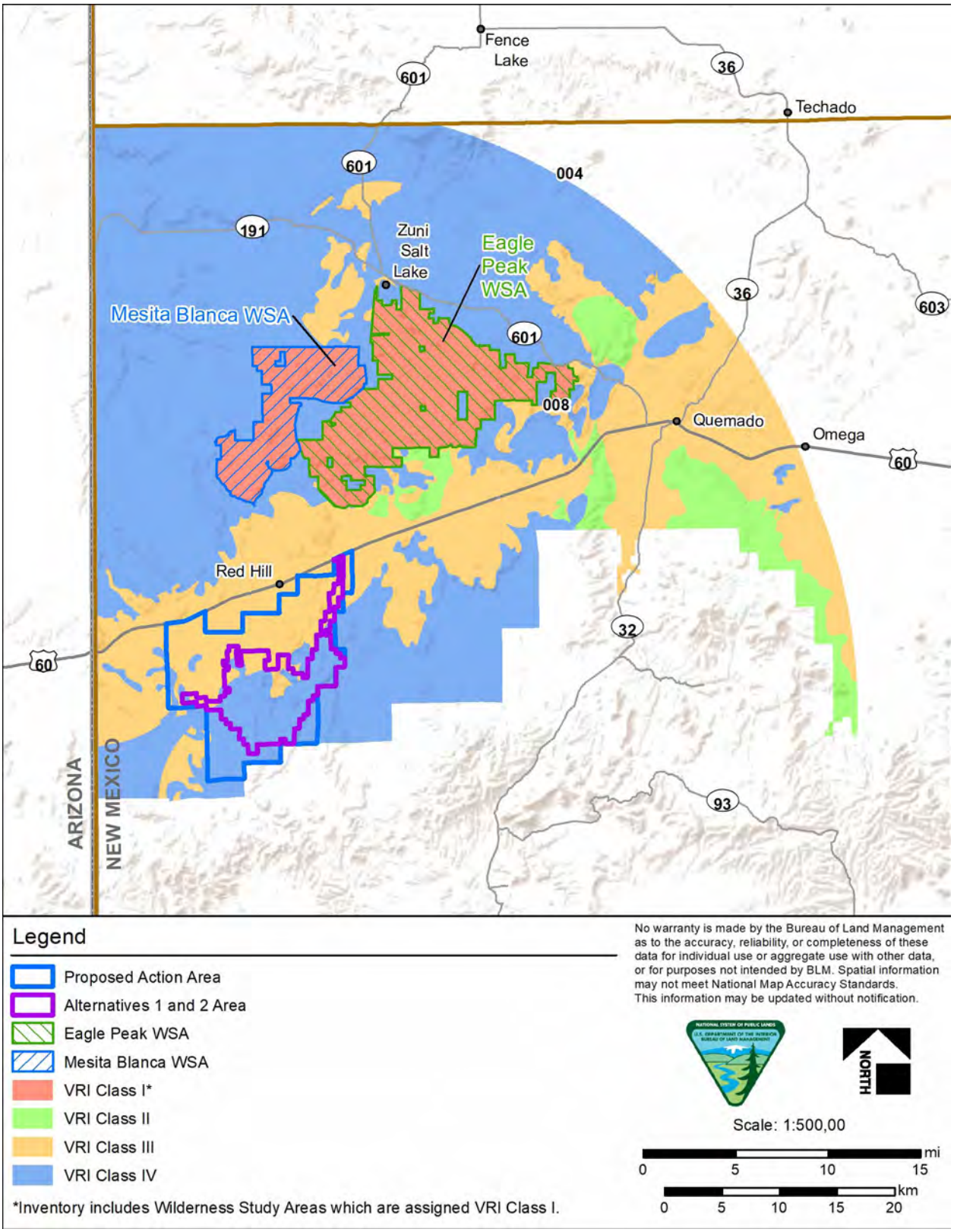


Figure A-4. Visual Resource Inventory Classes

Proposed Action Contrast Rating Forms, Environmental Factors, and Simulations

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: April 2019 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

1. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 1S Range: 19W	5. Location sketch *See attached map*
2. Key Observation Point **Cimarron Ranch Subdivision**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	No perceived change.
Line	No perceived change.	No perceived change.	No perceived change.
Color	No perceived change.	No perceived change.	No perceived change.
Texture	No perceived change.	No perceived change.	No perceived change.

SECTION D. CONTRAST RATING SHORT TERM **X** LONG TERM (>5 years) **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes☒ No☐ (Explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes☐ No☒
Element	Form				X				X				X	Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X				X	
	Color				X				X				X	
	Texture				X				X				X	

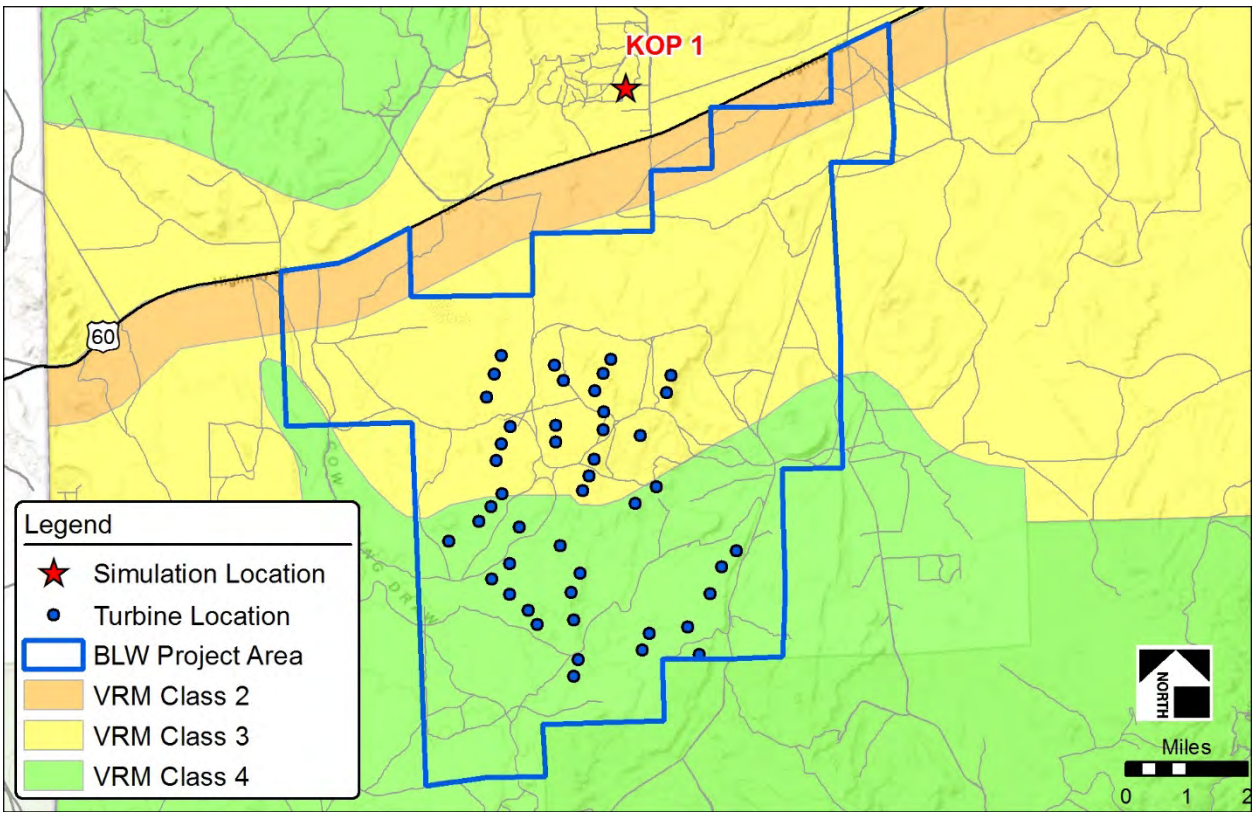
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. There are no proposed BLWP components planned within VRM II that would be visible from this KOP. Therefore, the Proposed Action would be in conformance with VRM II management objectives from the viewpoint of the Cimarron Ranch Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: April 2019 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

3. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
4. Key Observation Point **Cimarron Ranch Subdivision**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. .
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.

Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

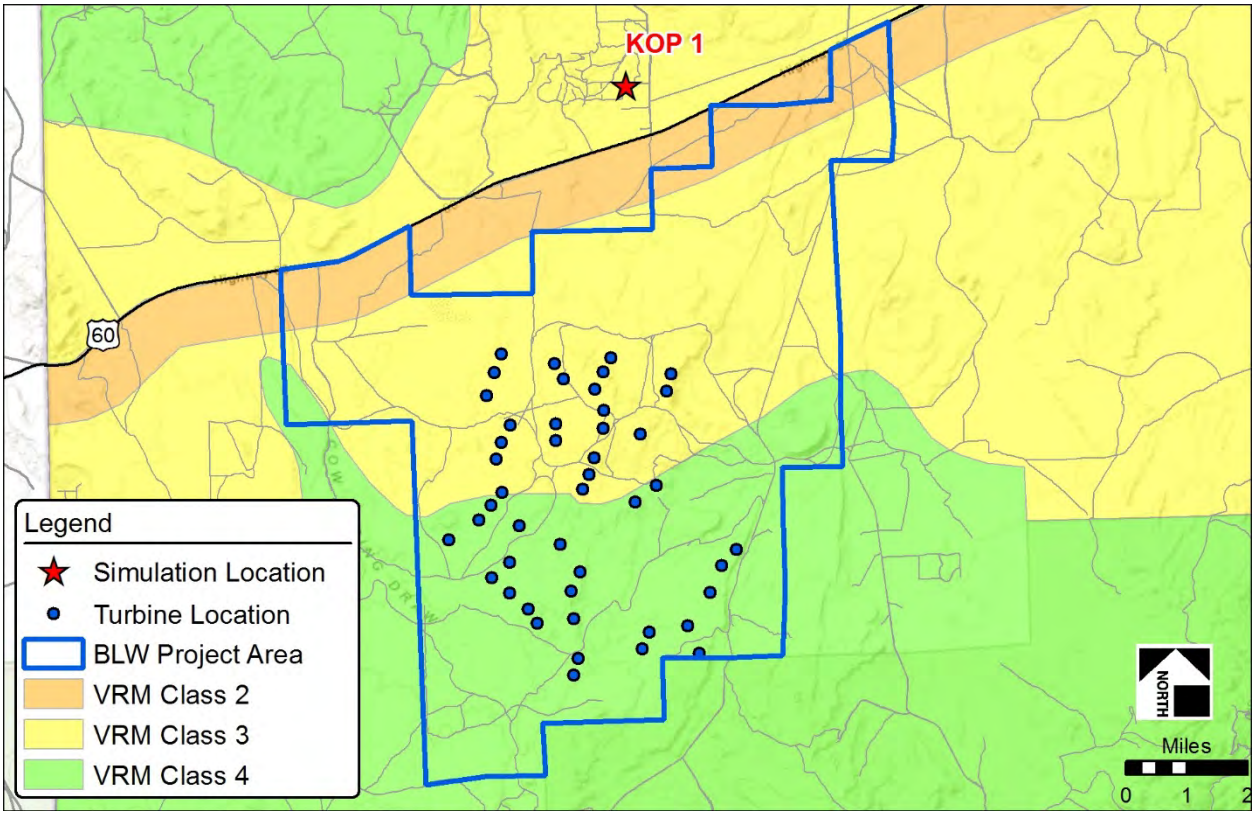
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines, overhead distribution transmission lines, and access roads would be visible within the foreground of the Cimarron Ridge Subdivision KOP. Up to 22 turbines would be visible in VRM Class III from this KOP. The primary focus of the viewer's attention is the broad open landscape from which the project components would be predominately skylined. The visual resource management objective for this class, Class III, allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. The Proposed Action would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, the Proposed Action would not be in conformance with Class III visual resource management objectives from the viewpoint of the Cimarron Ridge Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: April 2019

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

5. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
6. Key Observation Point **Cimarron Ranch Subdivision**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. .
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.

Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

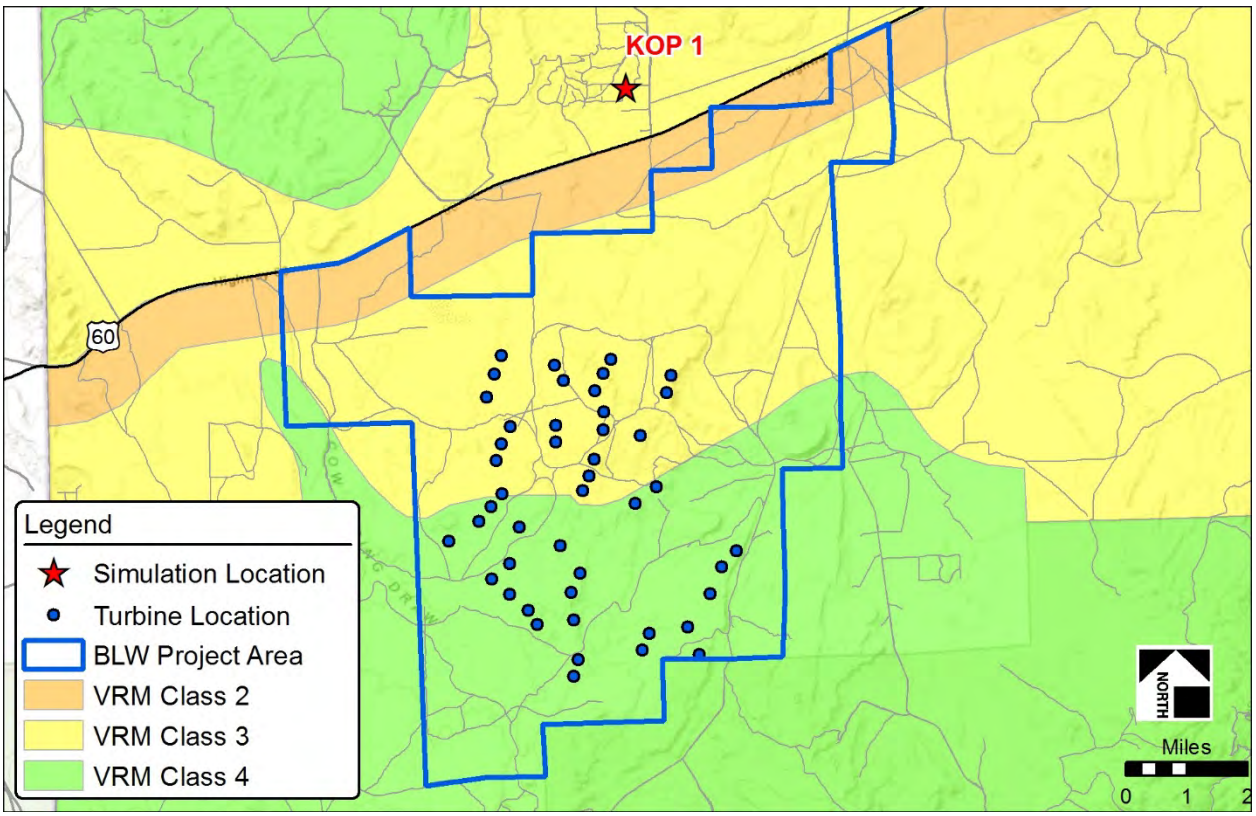
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines, overhead distribution transmission lines, and access roads would be visible within the foreground of the Cimarron Ranch Subdivision KOP. Up to 24 turbines would be visible in VRM Class IV from this KOP. The primary focus of the viewer's attention is the broad open landscape from which the project components would be predominately skylined. The visual resource management objective for Class IV allows for the level of change to the characteristic landscape can be high. The Proposed Action would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the Cimarron Ridge Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Stationary Platform Environmental Factors

Alternative: **Proposed Action**
Stationary Platform Name: **Cimarron Ranch Subdivision**
Date: April 2019
Evaluator Name: D. Simpson-Colebank, R. Baker; C. Bockey; D. Chavez; V. Alguire
Simulation: Yes

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 4.5 miles from the nearest visible turbine. This platform is approximately 4.7 miles from the nearest visible project infrastructure (roads/ ancillary facilities).	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Visibility Conditions	This platform is located in a panoramic landscape that includes broad rolling plains with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. In the foreground (FG) of the platform, views of the project components would be predominately skylined; equally unobstructed and partially obstructed; equally continuous and intermittent/continuous.	
Angle of View	In the FG, the amount of viewer exposure of the project components from the platform would be approximately 40°. The primary focus of the viewer's attention is the broad open landscape from which the project components would be in view. The viewer position would be predominately neutral.	
Quantification of View (Project percent seen)	Based on bare earth GIS analysis approximately 46 turbines would be seen in the FG of the platform, which would represent 100 percent of the total turbines within the project area. There are 140.1 acres of surface disturbance within the FG of the platform. Based on bare earth GIS analysis approximately 5 acres would be seen in the FG of the platform, which would represent 3 percent of the total acres of surface disturbance within the FG of the platform.	
Scale/Spatial Relationship	The project components within the FG of the platform would demand attention and dominate the visual setting; the visual setting would appear to be severely altered because the dominance of the wind turbines in scale, color and form as well as the motion of the turbine blades would introduce elements and patterns that create strong contrast as compared to other features within the landscape.	

BLWP – Cimarron Ranch Subdivision Simulation – Proposed Action

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: April 2019 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

7. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
8. Key Observation Point **Coronado Trail Scenic Road**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes; and isolated rock outcrops	Predominately rounded pinyon-juniper; low indistinctive grasses	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Converging with undulating edges at transition to adjacent landforms.	Round to globe-like of pinyon-juniper; continuous flowing.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown; darker brown volcanic rock.	Light straw-buff of grasses; dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth with some bumpy areas; gentle transitions.	Continuous coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses are inconsistent.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade.

Color	No perceived change	No perceived change	Monotone color of light/white value turbine structure and blade.
Texture	No perceived change	No perceived change	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No☒
Element	Form				X				X			X		Evaluator's Names D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

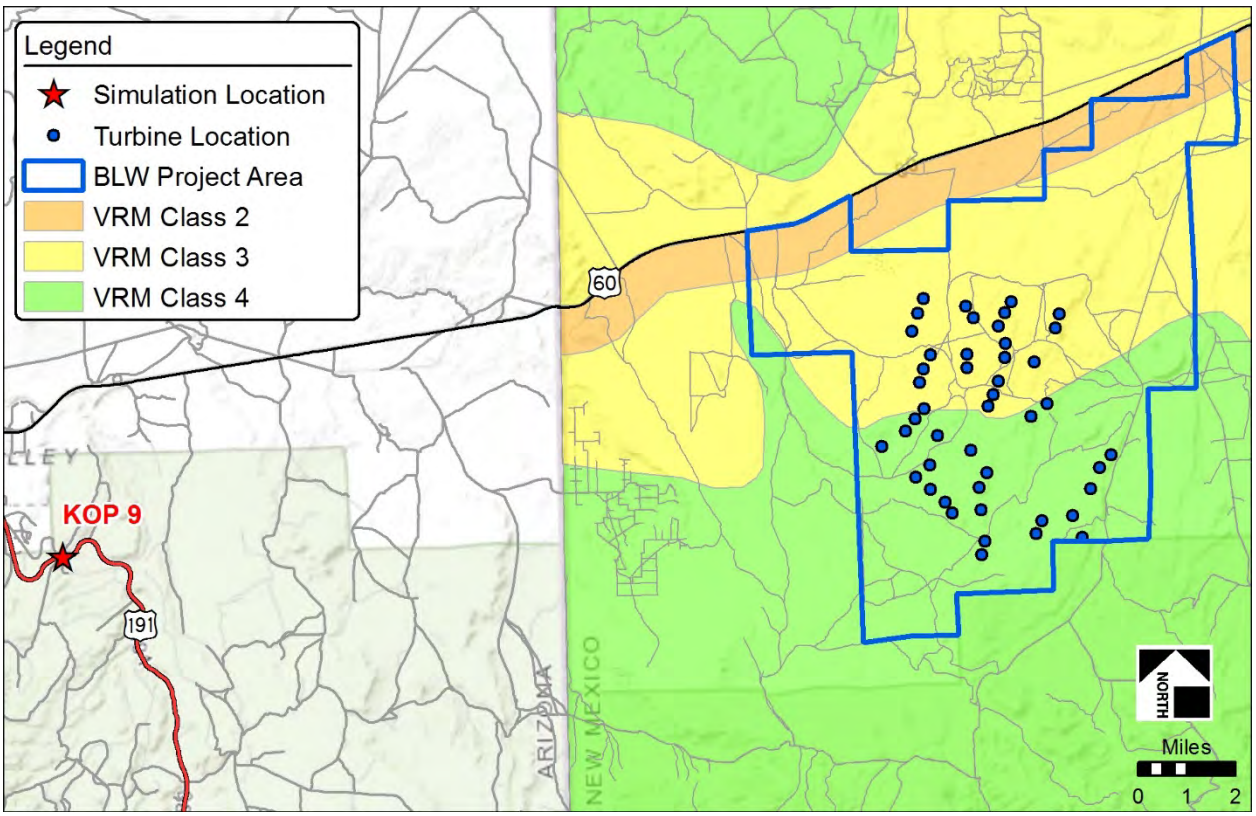
Comments from Item 2.

The view from this linear platform consists of rolling hills and a scattering of distant mountain landforms in the background. The vegetation consists primarily of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class III. The statuesque wind turbines with their rotating blades and lighted hubs would attract attention but would not dominate the landscape. The proposed turbines would be visible within the middleground and background area of the Coronado Trail Scenic Road KOP. This platform is approximately 16 miles from the nearest visible turbines. Views of the project components (turbines) would be skylined; consistently partially obstructed and sporadically intermittent when viewed from this KOP due to visibility conditions. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. The Proposed Action would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day, atmospheric conditions, and direction of view (visible to southbound travelers only). Therefore, the Proposed Action would be in conformance with Class III visual resource management objectives from the viewpoint of Coronado Trail Scenic Road KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: April 2019

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

9. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
10. Key Observation Point **Coronado Trail Scenic Road**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes; and isolated rock outcrops	Predominately rounded pinyon-juniper; low indistinctive grasses	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Converging with undulating edges at transition to adjacent landforms.	Round to globe-like of pinyon-juniper; continuous flowing.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown; darker brown volcanic rock.	Light straw-buff of grasses; dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth with some bumpy areas; gentle transitions.	Continuous coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses are inconsistent.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade.
Color	No perceived change	No perceived change	Monotone color of light/white value turbine structure and blade.

Texture	No perceived change	No perceived change	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No ☒
Element	Form				X				X			X		Evaluator's Names D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

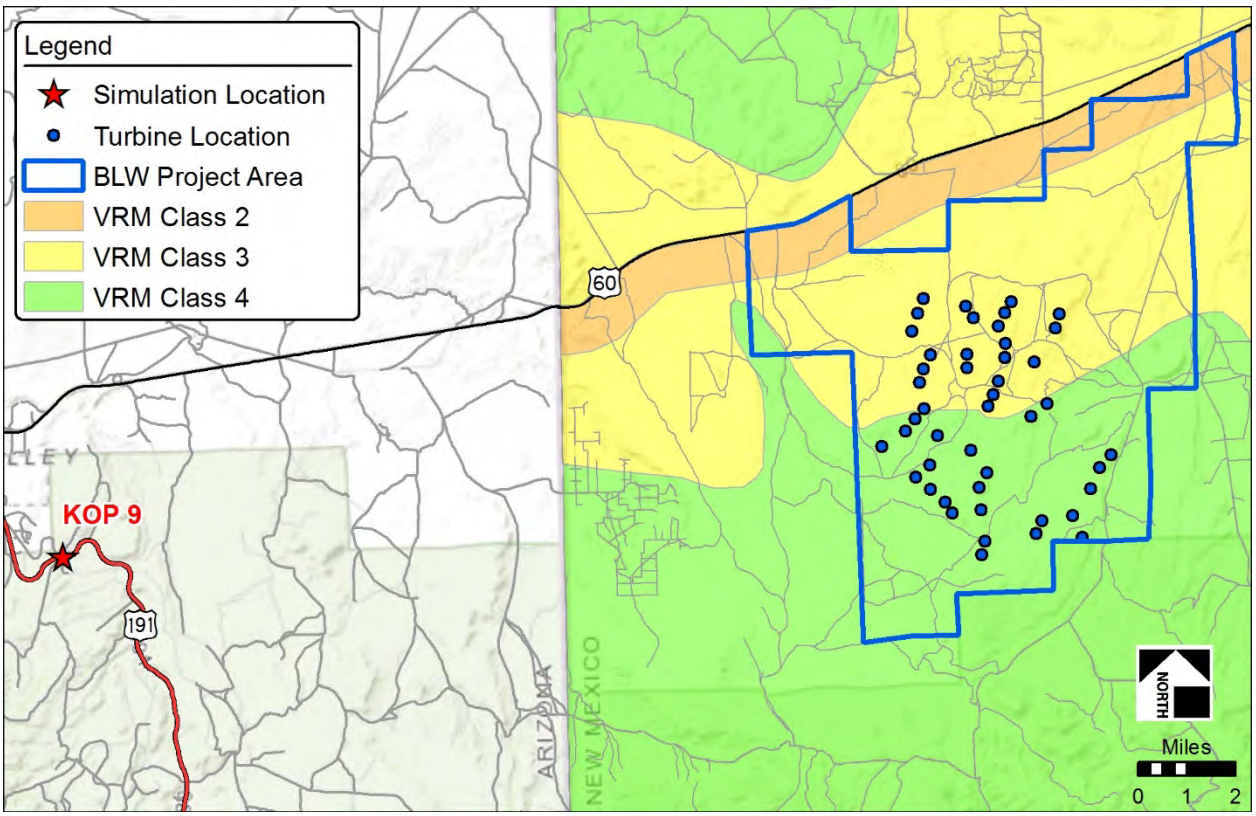
Comments from Item 2.

The view from this linear platform consists of rolling hills and a scattering of distant mountain landforms in the background. The vegetation consists primarily of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would attract attention but would not dominate the landscape. The proposed turbines would be visible within the middleground of the Coronado Trail Scenic Road KOP. This platform is approximately 16 miles from the nearest visible turbines. Views of the project components (turbines) would be predominately skylined; consistently partially obstructed and sporadically intermittent when viewed from this KOP due to visibility conditions. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. The Proposed Action would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day and atmospheric conditions. Therefore, Proposed Action would be in conformance with Class IV visual resource management objectives from the viewpoint of Coronado Trail Scenic Road KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



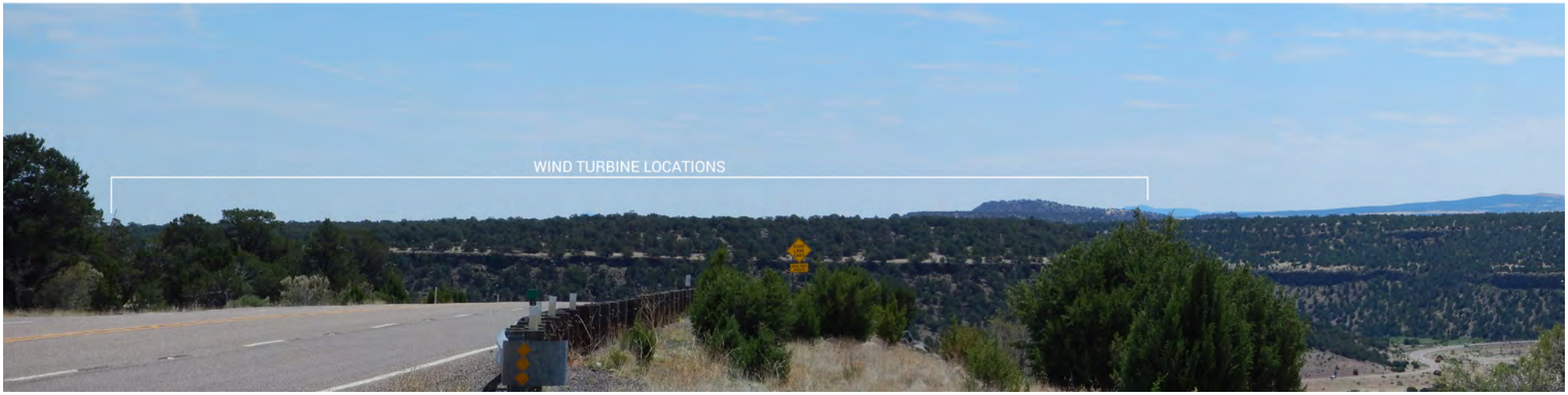
Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Proposed Action**
Linear Platform Name: **Coronado Trail Scenic Road**
Date: April 2019
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: Yes

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 16 miles from the nearest visible turbine. This platform is approximately 14 miles from the nearest visible project infrastructure (distribution line). Platform does not occur within the foreground of the proposed project.	
Visibility Conditions	This platform is located in a panoramic landscape that includes no apparent limit to the view. Traveling in the northbound direction project components would not be visible. Traveling in the southbound direction project components would not be visible within the background area of the proposed project. Traveling in the southbound direction in the middleground (MG) area of the proposed project, views of the project components (turbines) would be predominately skylined; predominately partially obstructed and predominately intermittent.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling southbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral	
Quantification of View	**Platform percent seen from project components:** There are a total of 36.6 miles of linear platform within the analysis area. Traveling southbound in the MG there are 22.6 miles of linear platform The project components would be seen for approximately .4 miles within the MG or 1% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 140.1 acres of surface disturbance within the analysis area; 31 acres /22% would be seen from the platform traveling in the southbound direction within the MG. There are 46 turbines within the analysis area: Traveling in the southbound direction within the MG, up to 43 turbines/ 93% would be seen from the platform. **Duration of view from linear platform:** There are a total of 36.6 miles of linear platform within the analysis area. Traveling southbound based on a vehicular travel speed of 55 mph, and a total travel time of 25 minutes within the MG of the project, the project components would be seen for a total of approximately 24 seconds or 1% of the total travel time within the analysis area. The project components would be more visible traveling in the southbound direction.	

Spatial Relationship/ Size and Scale	Traveling southbound in the MG of the proposed project, the project components would begin to attract attention and be visually subordinate within the visual setting; the visual setting within the MG of the proposed project would appear to be noticeably altered because project components (turbines) would begin to attract attention when visible and would generally create low contrast due to distance and atmospheric conditions when viewed from this platform.	

BLWP – Coronado Trail Simulation – Proposed Action



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: April 2019 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

11. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township:1S Range:19W Section: 10	5. Location sketch *See attached map*
12. Key Observation Point **County Road B007/ Bill Knight Gap Rd.**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change	No perceived change.	No perceived change.
Line	No perceived change	No perceived change	No perceived change

Color	No perceived change	No perceived change.	No perceived change.
Texture	No perceived change	No perceived change	No perceived change

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form				X				X				X	Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X				X	
	Color				X				X				X	
	Texture				X				X				X	

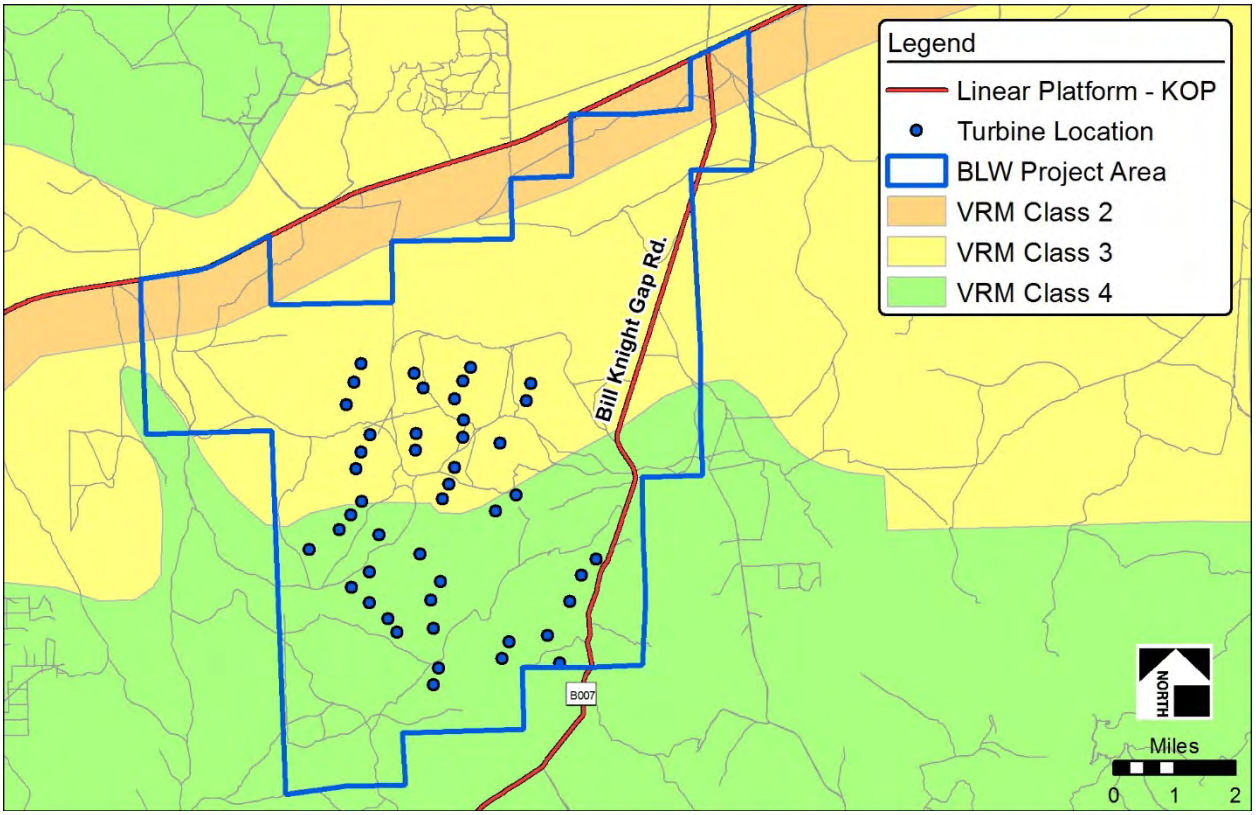
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The proposed turbines, overhead distribution transmission lines, access roads, and US 60 turn lanes would be visible within the foreground of the County Road B007 KOP. The visual resource management objective for Class II allows for a low level of change to the characteristic landscape. The visual resource management objective for Class II allows for a low level of change to the characteristic landscape. These changes should repeat the basic elements found in the characteristic landscape and should not attract the attention of the casual observer. Road improvements, access roads, and US 60 turn lane modifications would be visible within the foreground of the County Road B007 KOP, but not perceivable. Therefore, the Proposed Action would be in conformance with Class II visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



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UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: April 2019

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

13. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
14. Key Observation Point **County Road B007/ Bill Knight Gap Rd.**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.

Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

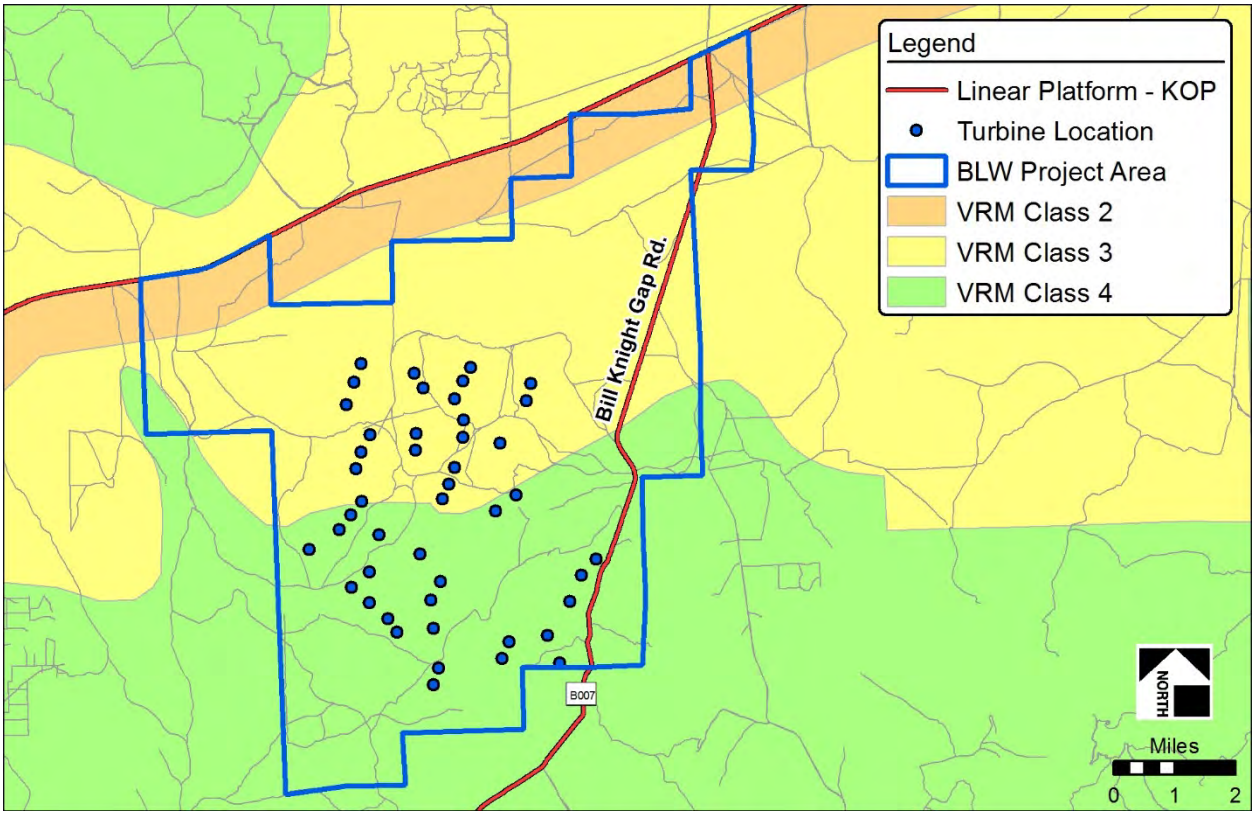
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines, and access roads would be visible from County Road B007 KOP. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. The Proposed Action would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, the Proposed Action would not be in conformance with Class III visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: April 2019 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

15. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
16. Key Observation Point **County Road B007/ Bill Knight Gap Rd.**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.

Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Dark brown wood of transmission line structures. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: X LONG TERM (>5 years): X

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: X No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

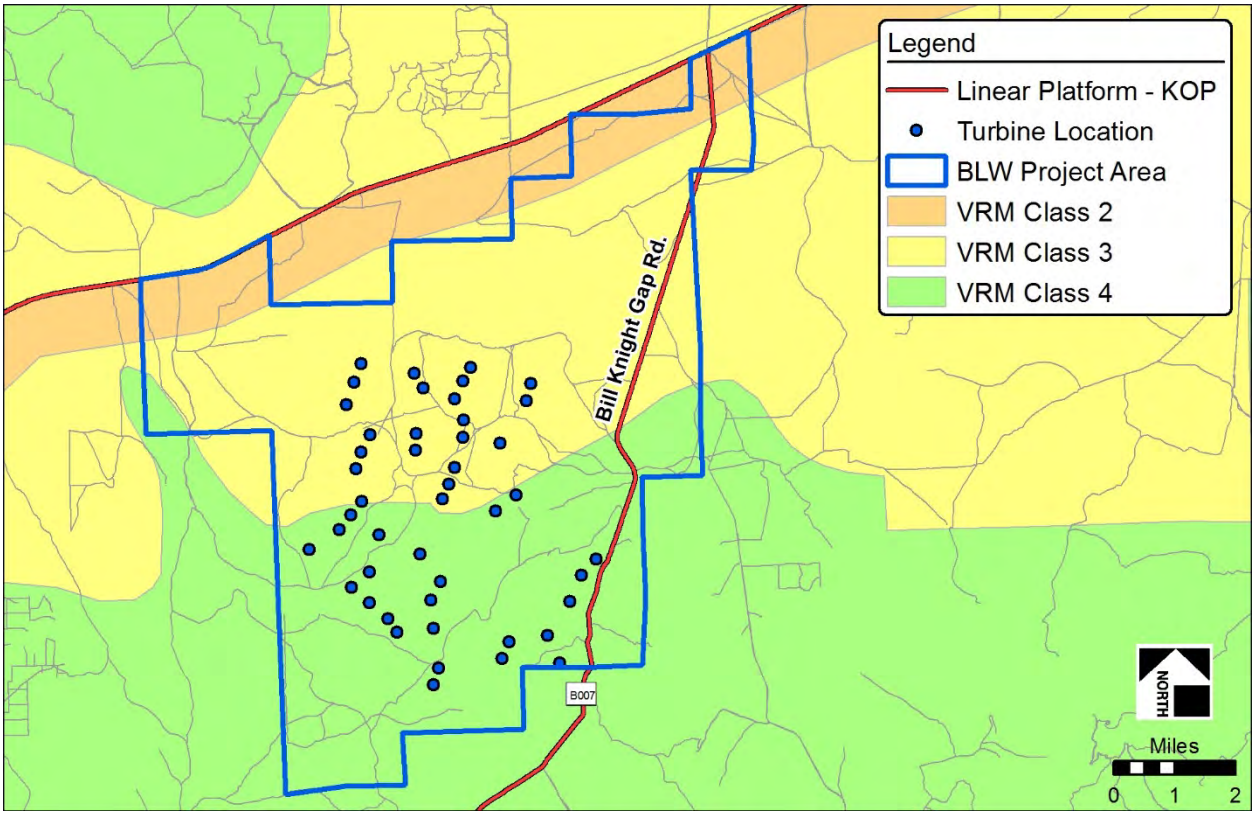
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines and access roads would be visible within the foreground of County Road B007 KOP. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. The Proposed Action would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Proposed Action**
Linear Platform Name: **Catron County Road B007/ Bill Knight Gap**
Date: April 2019
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: No

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 850 feet from the nearest visible turbine. This platform intersects project infrastructure (most commonly road improvements).	
Visibility Conditions	This platform is located in a panoramic landscape that includes broad plains and low rolling hills with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. Traveling in the northbound direction in the foreground (FG) area of the proposed project, views of the project components would be predominately skylined; predominantly unobstructed and predominately continuous. Traveling in the southbound direction in the FG area of the proposed project, views of the project components would be predominately skylined; predominantly partially unobstructed and predominately continuous. Platform does not occur within the middleground or background of the project area.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling northbound in the FG of the project components, the angle of observation from this platform would be predominately head-on and parallel views. The viewer position would be predominately inferior. Traveling southbound in the FG of the project components, the angle of observation from this platform would be predominately head-on and parallel views. The viewer position would be predominately inferior.	
Quantification of View	**Platform percent seen from project components:** There are a total of 10.6 miles of linear platform within the analysis area Traveling northbound in the FG there are 10.6 miles of linear platform. The project components would be seen for approximately 10.6 miles or 100% of the total platform miles within the analysis area. Traveling southbound in the FG there are 10.6 miles of linear platform. The project components would be seen for approximately 10.6 miles or 100% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 140.1 acres of project components within the analysis area; approximately 30 acres or 21% would be seen from the platform traveling in the northbound direction within the FG and approximately 41 acres or 29% would be seen from the platform traveling in the southbound direction within the FG. There are 46 turbines within the analysis area: Traveling in the northbound direction within the FG 42 turbines or 91% would be seen from the platform. Traveling in the southbound direction within the FG 42 turbines or 91% would be seen from the platform.	

	Duration of view from linear platform: There are a total of 10.6 miles of linear platform within the analysis area Traveling northbound based on a vehicular travel speed of 45 mph, and a total travel time of 14 minutes within the FG of the project, the project components would be seen for a total of approximately 14 minutes within the FG or 100% of the total travel time within the analysis area. Traveling southbound based on a vehicular travel speed of 45 mph, and a total travel time of 14 minutes within the FG of the project, the project components would be seen for a total of approximately 14 minutes within the FG or 100% of the total travel time within the analysis area. The project components would be equally visible when traveling in either direction.	
Spatial Relationship/ Size and Scale	Traveling northbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components would introduce elements, patterns and scale that would be visually dominant and create strong contrast as compared to other features in the landscape. Traveling southbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components would introduce elements, patterns and scale that would be visually dominant and create strong contrast as compared to other features in the landscape.	

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: April 2019

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

17. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township:1S Range:19W	5. Location sketch *See attached map*
18. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Linear, flat to rolling, symmetrical, regular form of US 60 turn lanes.
Line	No perceived change.	Straight to curving, horizontal continuous line of vegetation created from the construction of US 60 turning lanes.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Defined, vertical, rigid, and repetitive transmission line structures. Curvilinear, horizontal, continuous, and flowing line of US 60 turn lanes.

Color	No perceived change.	No perceived change.	Monotone color of light/white value turbine structure and blade. Dark brown wood of transmission line structures. Dark monotone color of US 60 turning lanes.
Texture	No perceived change.	Directional, continuous, and ordered adjacent to US 60 turning lanes.	Coarse, rough, discontinuous, and dotted turbines. Consistent, directional, and repetitive transmission line structures. Smooth, directional, continuous, fine texture of US 60 turning lanes.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form				X				X			X		Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X			X				X		
	Color				X				X			X		
	Texture				X			X				X		

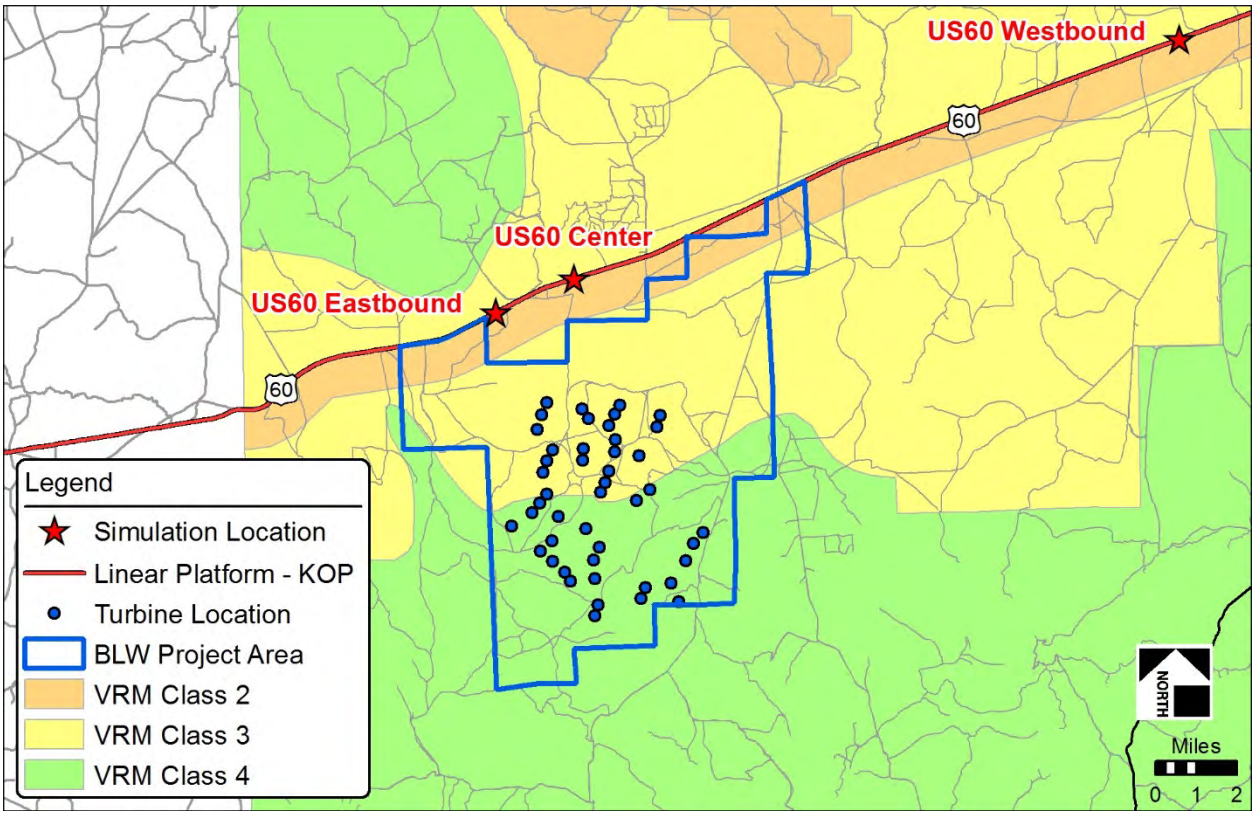
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The proposed turbines, overhead distribution transmission lines, access roads, and US 60 turn lanes would be visible within the foreground of the US 60 (Ocean to Ocean Highway) KOP. The visual resource management objective for Class II allows for a low level of change to the characteristic landscape. These changes should repeat the basic elements found in the characteristic landscape and should not attract the attention of the casual observer. The proposed US 60 turn lanes and the crossing of overhead transmission line would be the only project components within the Class II area and would repeat the elements present within the setting and as well, would not attract the attention of the casual observer. Within VRM Class II, the Proposed Action would create weak contrast in form, line, color, and texture in the characteristic landscape from the US 60 turn lanes and overhead transmission line crossing US 60. Therefore, the Proposed Action would be in conformance with Class II visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: April 2019

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

19. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
20. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Defined, vertical, rigid, and

			repetitive transmission line structures. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Dark brown wood of transmission line structures. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Consistent, directional, and repetitive transmission line structures. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

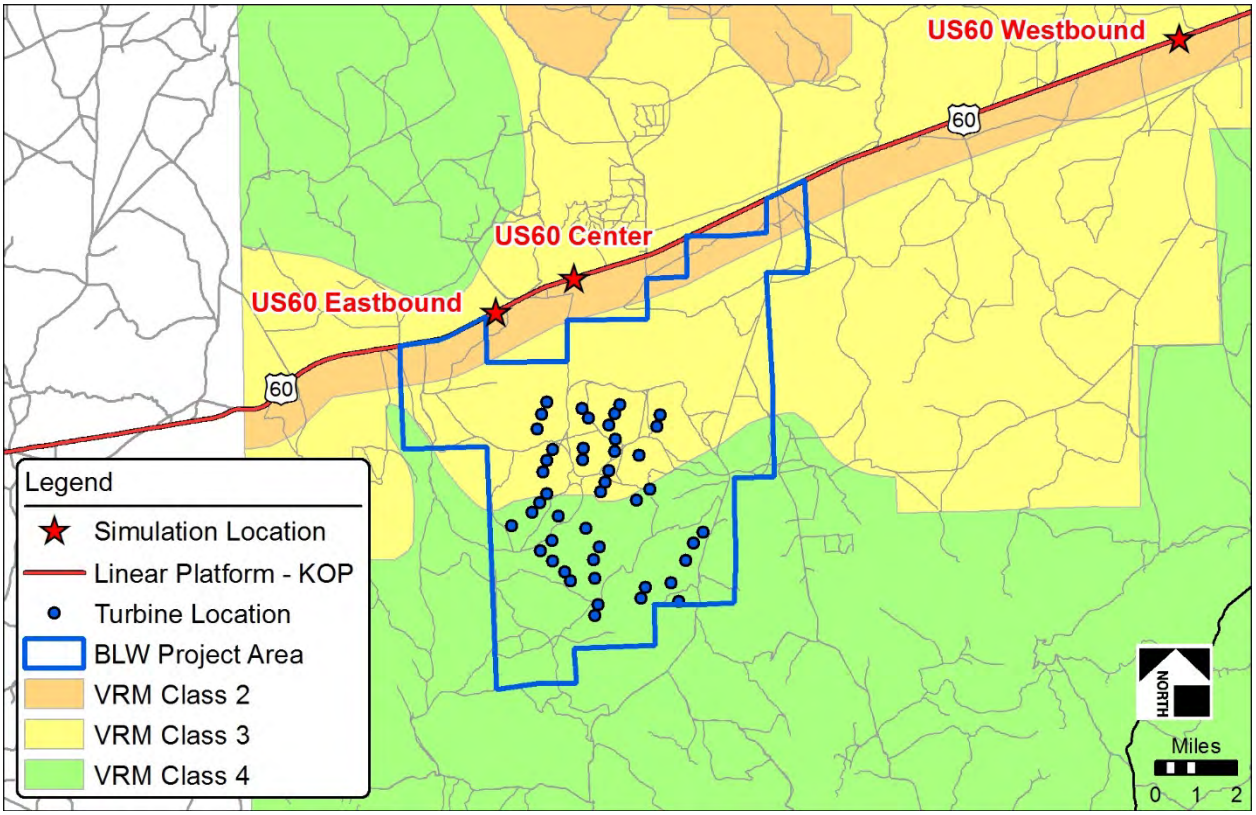
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class III and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines, overhead distribution transmission lines, and access roads would be visible within the foreground of the US 60 (Ocean to Ocean Highway) KOP. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. The Proposed Action would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, the Proposed Action would not be in conformance with Class III visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: April 2019 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

21. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township:2S Range:19&20W	5. Location sketch *See attached map*
22. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Defined, vertical, rigid, and

			repetitive transmission line structures. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Dark brown wood of transmission line structures. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Consistent, directional, and repetitive transmission line structures. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

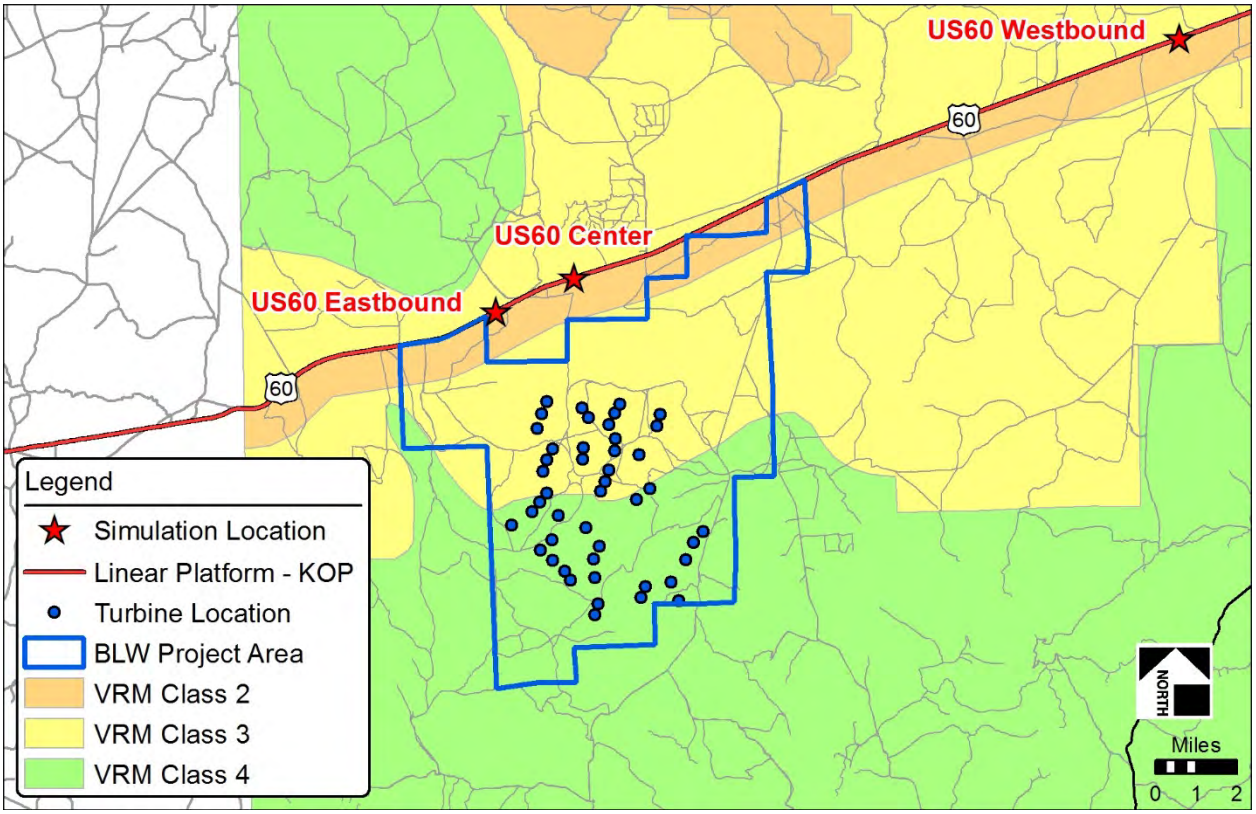
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines and access roads would be visible within the foreground of US 60 (Ocean to Ocean Highway) KOP. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. The Proposed Action would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Proposed Action**
Linear Platform Name: **US 60**
Date: April 2019
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: Yes

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 2.5 miles from the nearest visible turbine. This platform intersects project infrastructure (roads or ancillary facilities).	
Visibility Conditions	This platform is located in a panoramic landscape that includes broad plains and low rolling hills with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. Traveling in the eastbound direction in the foreground (FG) area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skylined; equally unobstructed and partially obstructed and equally continuous and intermittent. Traveling in the eastbound direction in the middleground (MG) area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the eastbound direction in the background (BG) area of the proposed project, views of the project components would be predominately backdropped; partially obstructed and sporadically intermittent. Distance and atmospheric conditions would restrict visibility. Traveling in the westbound direction in the FG area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the westbound direction in the MG area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the westbound direction project components are not visible in the BG area.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling eastbound in the FG of the project components, the angle of observation from this platform would be predominately parallel views. The viewer position would be predominately neutral. Traveling eastbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral. Traveling eastbound in the BG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately inferior. Distance and atmospheric conditions would restrict visibility. Traveling westbound in the FG of the project components, the angle of observation from this platform would be predominately parallel views. The viewer position would be predominately neutral. Traveling westbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral.	

Quantification of View	**Platform percent seen from project components:** There are a total of 67.0 miles of linear platform within the analysis area. Traveling eastbound in the FG of the project there are 29.5 miles of linear platform. . The project components would be seen for approximately 15 miles within the FG or 22% of the total platform miles within the analysis area. Traveling eastbound in the MG of the project there are 22.4 miles of linear platform. The project components would be seen for approximately 4 miles within the MG or 6% of the total platform miles within the analysis area. Traveling eastbound in the BG of the project there are 15.1 miles of linear platform. The project components would be seen for approximately 2 miles within the BG or 3% of the total platform miles within the analysis area. Traveling westbound in the FG of the project there are 29.5 miles of linear platform. The project components would be seen for approximately 16 miles within the FG or 24% of the total platform miles within the analysis area. Traveling westbound in the MG of the project there are 22.4 miles of linear platform. The project components would be seen for approximately 2 miles within the MG or 3% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 140.1 acres of surface disturbance within the analysis area; approximately 25 acres or 18% would be seen from the platform traveling in the eastbound direction within the FG and approximately 45 acres or 32% would be seen from the platform traveling in the westbound direction within the FG. There are 46 turbines within the analysis area: Traveling in the eastbound direction within the FG 46 turbines or 100% would be seen from the platform. Traveling in the eastbound direction within the MG 46 turbines or 100% would be seen from the platform. Traveling in the eastbound direction within the BG 14 turbines or 30% would be seen from the platform. Traveling in the westbound direction within the FG 46 turbines or 100% would be seen from the platform. Traveling in the westbound direction within the MG 46turbines or100% would be seen from the platform. **Duration of view from linear platform:** There are a total of 67.0 miles of linear platform within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 27 minutes within the FG of the project, the project components would be seen for a total of approximately 14 minutes within the FG or 22% of the total travel time within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 21 minutes within the MG of the project, the project components would be seen for a total of approximately 4 minutes or 6% of the total travel time within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 14 minutes within the BG of the project, the project components would be seen for a total of approximately 2 minutes or 3% of the total travel time within the analysis area.	

	Traveling westbound based on a vehicular travel speed of 65 mph, and a total travel time of 27 minutes within the FG of the project, the project components would be seen for a total of approximately 15 minutes or 24% of the total travel time within analysis area. Traveling westbound based on a vehicular travel speed of 65 mph, and a total travel time of 21 minutes within the MG of the project, the project components would be seen for a total of approximately 2 minutes or 3% of the total travel time within the MG of the project. The project components would be more visible traveling in the eastbound direction (20 minutes or 32% of the total travel time within the analysis area) vs. traveling in the westbound direction (17 minutes or 27% of the total travel time within the analysis area).	
Spatial Relationship/ Size and Scale	Traveling eastbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components (infrastructure and turbines) would introduce elements and patterns that would be visually dominant ad create strong contrast as compared to the other features in the landscape. Traveling eastbound in the MG of the proposed project, the project components would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting within the MG of the proposed project would appear to be substantially altered because project components (turbines) would introduce elements and patterns not common in the landscape and would create moderate contrast as compared to other features in the landscape. Traveling eastbound in the BG of the proposed project, the project components would not attract attention and the landscape would appear intact within the visual setting; project component visibility would be limited by distance and atmospheric conditions. Traveling westbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components (infrastructure and turbines) would introduce elements and patterns that would be visually dominant ad create strong contrast as compared to the other features in the landscape. Traveling westbound in the MG of the proposed project, the project components would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting within the MG of the proposed project would appear to be substantially altered because project components (turbines) would introduce elements and patterns not common in the landscape and would create moderate contrast as compared to other features in the landscape.	

BLWP – US 60 Center Simulation – Proposed Action

BLWP – US 60 Eastbound Simulation – Proposed Action

BLWP – US 60 Westbound Simulation – Proposed Action

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: April 2019 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

23. Project Name Borderlands Wind Project – **Proposed Action**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
24. Key Observation Point **Zuni Salt Lake**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Low, rectangular scattered building structures. Low, vertical, thin, curing, linear, fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive and fencing structures. Regular, angular, and geometric lines associated with building structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Muted tones of varying shades of building structure. Dark monotone paved roads and light to medium beige/gray unpaved roads. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive fencing. Discontinuous, scattered, medium to coarse, building structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade
Color	No perceived change.	No perceived change.	Monotone color of light/white value turbine structure and blade.

Texture	No perceived change.	No perceived change.	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No ☐
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No ☒
Element	Form				X				X			X		Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

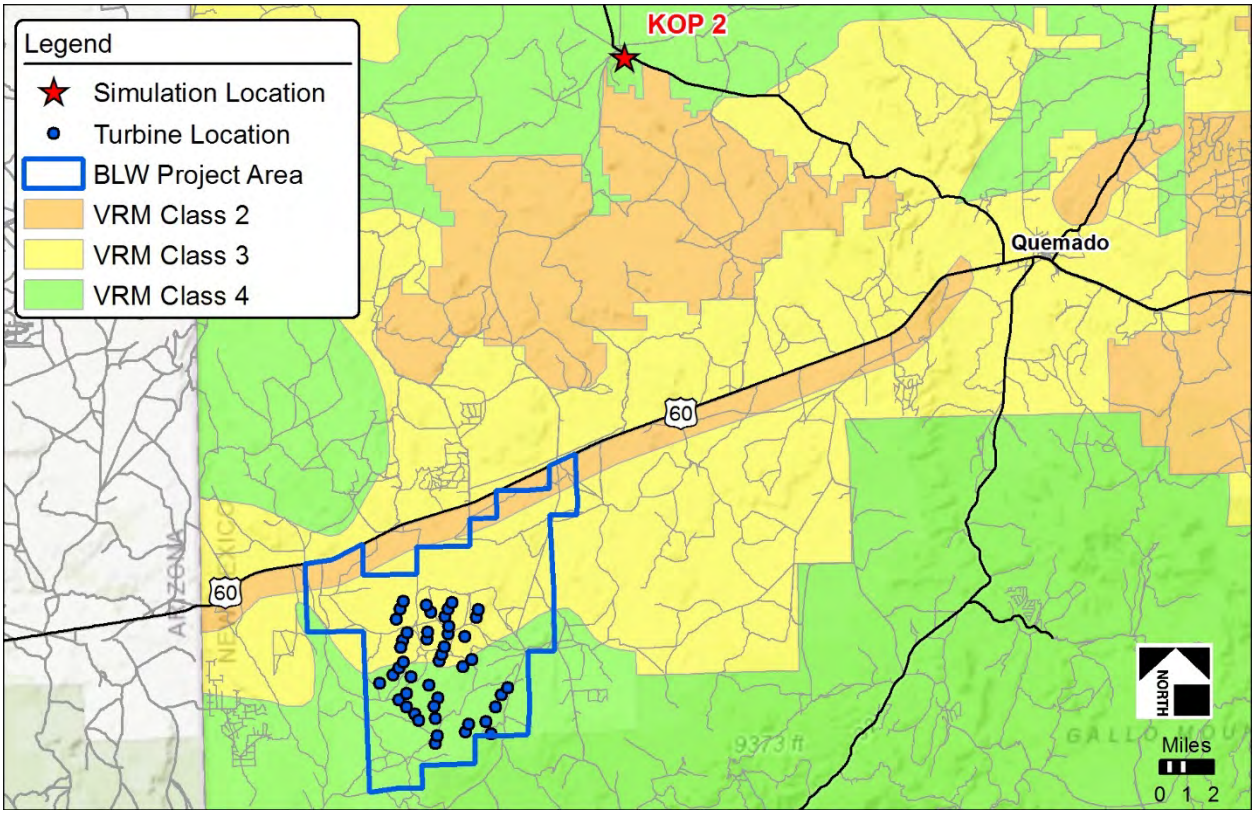
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class III and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. This KOP is approximately 21 miles from the nearest visible turbines. Approximately 17 turbines would be visible within the background of the Zuni Salt Lake KOP. The amount of viewer exposure of the project components from the platform would be approximately 15 degrees. The primary focus of the viewer's attention is Zuni Lake from which the project components would be in view. The viewer position would be predominately inferior. The visual resource management objective for this class, Class III, allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. The Proposed Action would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day and atmospheric conditions. Therefore, the Proposed Action would be in conformance with Class III visual resource management objectives from the viewpoint of Zuni Salt Lake KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Stationary Platform Environmental Factors

Alternative: **Proposed Action**
Stationary Platform Name: **Zuni Salt Lake**
Date: April 2019
Evaluator Name: D. Simpson-Colebank, R. Baker; C. Bockey; D. Chavez; V. Alguire
Simulation: Yes

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 21 miles from the nearest visible turbine. Project infrastructure (transmission line/ roads/ ancillary facilities) are not visible from this platform.	Foreground limit 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Visibility Conditions	This platform is located in a predominately panoramic landscape that includes plains with scattered low rolling hills and mesas. In the background (BG) of the platform, views of the wind turbine blades would be predominately skylined; towers predominately partially obstructed and predominately intermittent.	The majority of project components (turbines) occur behind landforms when viewed from this platform. Distance and atmospheric conditions reduce visibility of turbines.
Angle of View	In the BG, the amount of viewer exposure of the project components from the platform would be approximately 15°. The primary focus of the viewer's attention is Zuni Lake from which the project components would be in view. The viewer position would be predominately inferior.	
Quantification of View (Project percent seen)	Based on bare earth GIS analysis approximately 26 turbines would be seen in the BG of the platform, which would represent 57 percent of the total turbines within the project area. Project infrastructure (transmission line/ roads/ ancillary facilities) are not visible from this platform.	
Scale/Spatial Relationship	The project components within the BG of the platform and would begin to attract attention and be visually subordinate within the visual setting; the visual setting would appear to be noticeably altered because the turbines would introduce color contrast, vertical elements and motion that would be visually subordinate within the landscape and create generally low contrast due to distance and atmospheric conditions.	

BLWP – Zuni Salt Lake Simulation – Proposed Action

Borderlands Wind Project Special Management Area (SMA) Environmental Factors

Alternative: **Proposed Action**
Stationary Platform Name: **Cerro Pomo ACEC**
Date: April 2019
Evaluator Name: C. Bockey
Simulation: No

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 9 miles from the nearest visible turbine. This platform is approximately 3 miles from the nearest visible project infrastructure (road improvements).	
Visibility Conditions	This platform is located in a predominately panoramic landscape that includes plains with scattered low rolling hills and mesas. In the foreground (FG) of the platform, views of the project components would be equally backdropped against mountainous terrain and skylined; equally unobstructed and partially obstructed and equally continuous and intermittent. In the middleground (MG) of the platform, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and predominately intermittent.	Project components are not visible in the Background
Angle of View	In the FG, the amount of viewer exposure of the project components from the platform would be approximately 60°. The primary focus of the viewer's attention is nonspecific from which the project components would be in view. The viewer position would be predominately neutral. In the MG, the amount of viewer exposure of the project components from the platform would be approximately 50°. The primary focus of the viewer's attention is nonspecific from which the project components would be in view. The viewer position would be predominately neutral.	
Quantification of View (Project percent seen)	There are 34,878 acres within the SMA. Based on bare earth GIS analysis approximately 5,656 acres/ 21 percent of the SMA would have views of project components (turbines, transmission lines, roads, ancillary facilities) within the FG area. Based on bare earth GIS analysis approximately 1,003 acres/ 4 percent of the SMA would have views of project components (turbines, transmission lines, roads, ancillary facilities) within the MG area.	

Scale/Spatial Relationship	The project components within the FG of the platform and would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting would appear to be substantially altered because project components would be visually prominent in the landscape and would create moderate contrast as compared to other features in the landscape depending on visibility conditions and location within ACEC. The project components within the MG of the platform and would begin to attract attention and be visually subordinate within visual setting; the visual setting would appear to be noticeably altered because project components would be visually subordinate in the landscape and would create generally low contrast as compared to other features in the landscape depending on visibility conditions and location within ACEC.	

Alternative 1 Contrast Rating Forms, Environmental Factors, and Simulations

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

25. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township: 1S Range: 19W	5. Location sketch *See attached map*
26. Key Observation Point **Cimarron Ranch Subdivision**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	No perceived change.
Line	No perceived change.	No perceived change.	No perceived change.
Color	No perceived change.	No perceived change.	No perceived change.
Texture	No perceived change.	No perceived change.	No perceived change.

SECTION D. CONTRAST RATING SHORT TERM **X** LONG TERM (>5 years) **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes☒ No☐ (Explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes☐ No☒
Element	Form				X				X				X	Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X				X	
	Color				X				X				X	
	Texture				X				X				X	

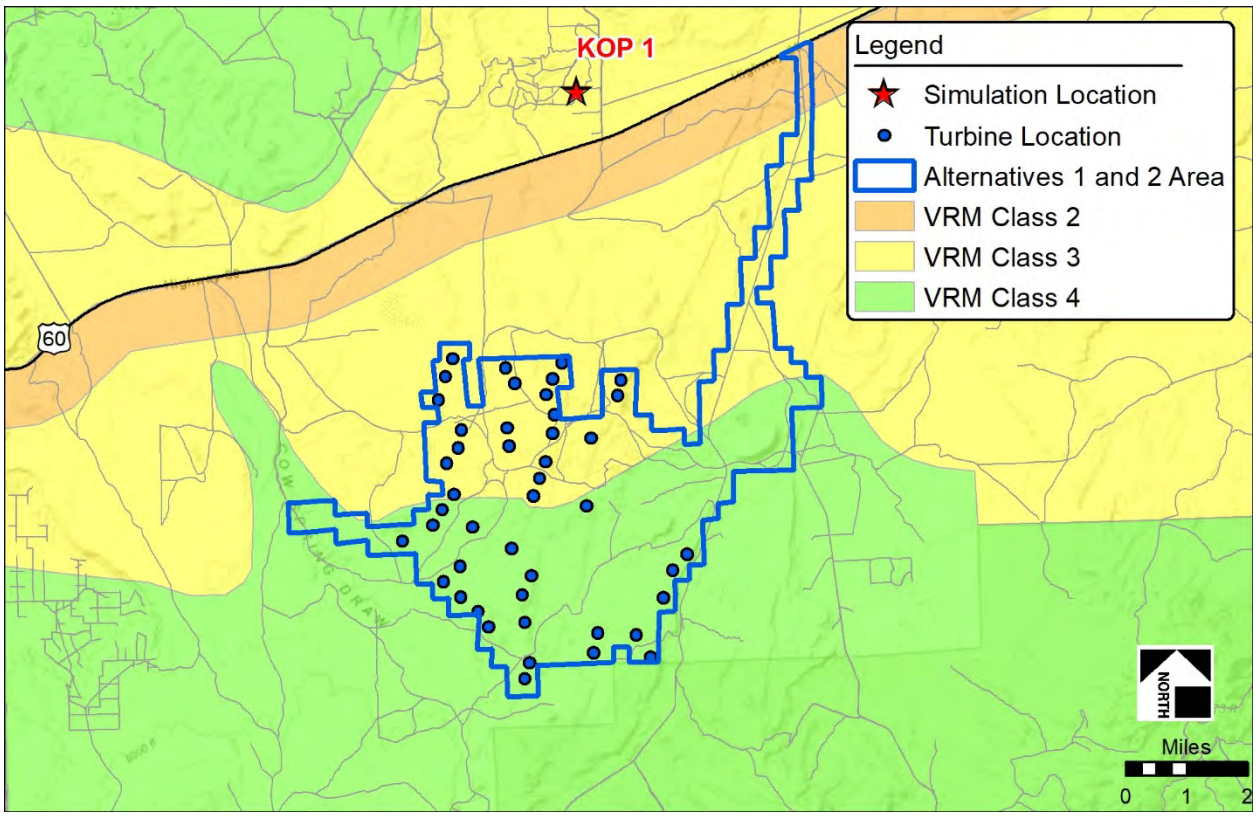
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. There are no proposed BLWP components planned within VRM II that would be visible from this KOP. Therefore, Alternative 1 would be in conformance with VRM II management objectives from the viewpoint of the Cimarron Ranch Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

27. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
28. Key Observation Point **Cimarron Ranch Subdivision**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. .
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.

Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

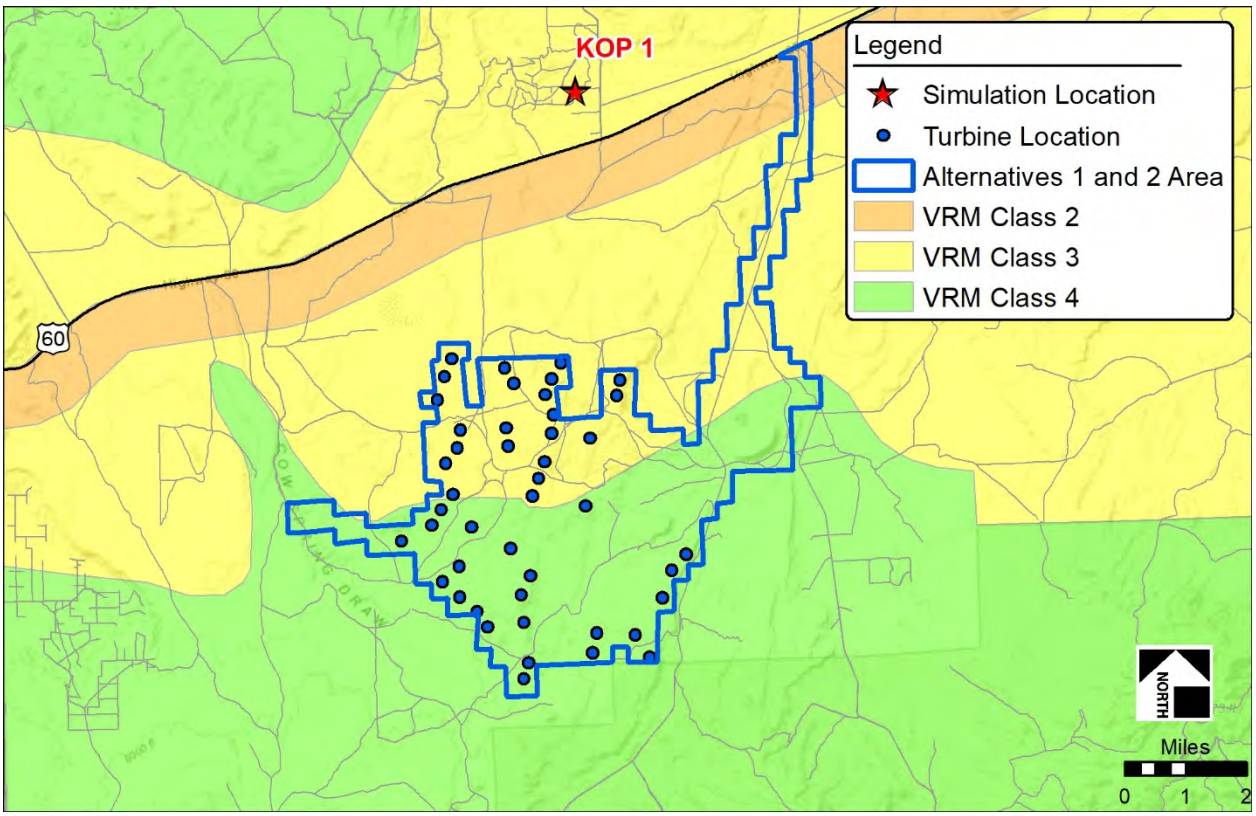
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 1 project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The turbines, overhead distribution transmission lines, and access roads would be visible within the foreground of the Cimarron Ridge Subdivision KOP. Up to 22 turbines would be visible in VRM Class III from this KOP. The primary focus of the viewer's attention is the broad open landscape from which the project components would be predominately skylined. The visual resource management objective for this class, Class III, allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 1 would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, Alternative 1 would not be in conformance with Class III visual resource management objectives from the viewpoint of the Cimarron Ridge Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

29. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
30. Key Observation Point **Cimarron Ranch Subdivision**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. .
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.

Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

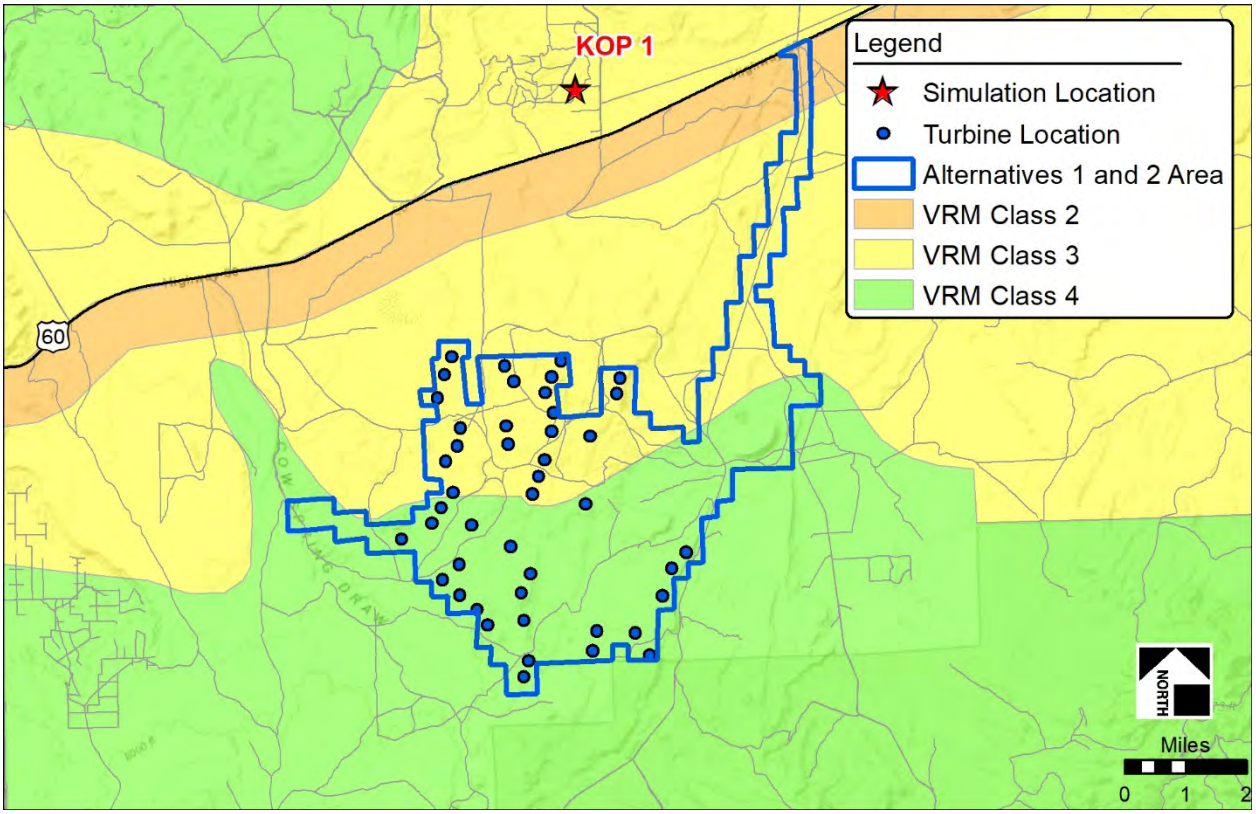
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 1 project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The turbines, overhead distribution transmission lines, and access roads would be visible within the foreground of the Cimarron Ranch Subdivision KOP. Up to 23 turbines would be visible in VRM Class IV from this KOP. The primary focus of the viewer's attention is the broad open landscape from which the project components would be predominately skylined. The visual resource management objective for Class IV allows for the level of change to the characteristic landscape can be high. Alternative 1 would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the Cimarron Ridge Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Stationary Platform Environmental Factors

Alternative: **Alternative 1**
Stationary Platform Name: **Cimarron Ranch Subdivision**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker; C. Bockey; D. Chavez; V. Alguire
Simulation: Yes

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 4.5 miles from the nearest visible turbine. This platform is approximately 4.7 miles from the nearest visible project infrastructure (roads/ ancillary facilities).	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Visibility Conditions	This platform is located in a panoramic landscape that includes broad rolling plains with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. In the foreground (FG) of the platform, views of the project components would be predominately skylined; equally unobstructed and partially obstructed; equally continuous and intermittent/continuous.	
Angle of View	In the FG, the amount of viewer exposure of the project components from the platform would be approximately 40°. The primary focus of the viewer's attention is the broad open landscape from which the project components would be in view. The viewer position would be predominately neutral.	
Quantification of View (Project percent seen)	Based on bare earth GIS analysis approximately 44 turbines would be seen in the FG of the platform, which would represent 100 percent of the total turbines within the project area. There are 133.3 acres of surface disturbance within the FG of the platform. Based on bare earth GIS analysis approximately 5 acres would be seen in the FG of the platform, which would represent 4 percent of the total acres of surface disturbance within the FG of the platform.	
Scale/Spatial Relationship	The project components within the FG of the platform would demand attention and dominate the visual setting; the visual setting would appear to be severely altered because the dominance of the wind turbines in scale, color and form as well as the motion of the turbine blades would introduce elements and patterns that create strong contrast as compared to other features within the landscape.	

BLWP – Cimarron Ranch Subdivision Simulation – Alternative 1

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

31. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
32. Key Observation Point **Coronado Trail Scenic Road**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes; and isolated rock outcrops	Predominately rounded pinyon-juniper; low indistinctive grasses	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Converging with undulating edges at transition to adjacent landforms.	Round to globe-like of pinyon-juniper; continuous flowing.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown; darker brown volcanic rock.	Light straw-buff of grasses; dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth with some bumpy areas; gentle transitions.	Continuous coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses are inconsistent.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade.

Color	No perceived change	No perceived change	Monotone color of light/white value turbine structure and blade.
Texture	No perceived change	No perceived change	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No☒
Element	Form				X				X			X		Evaluator's Names D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

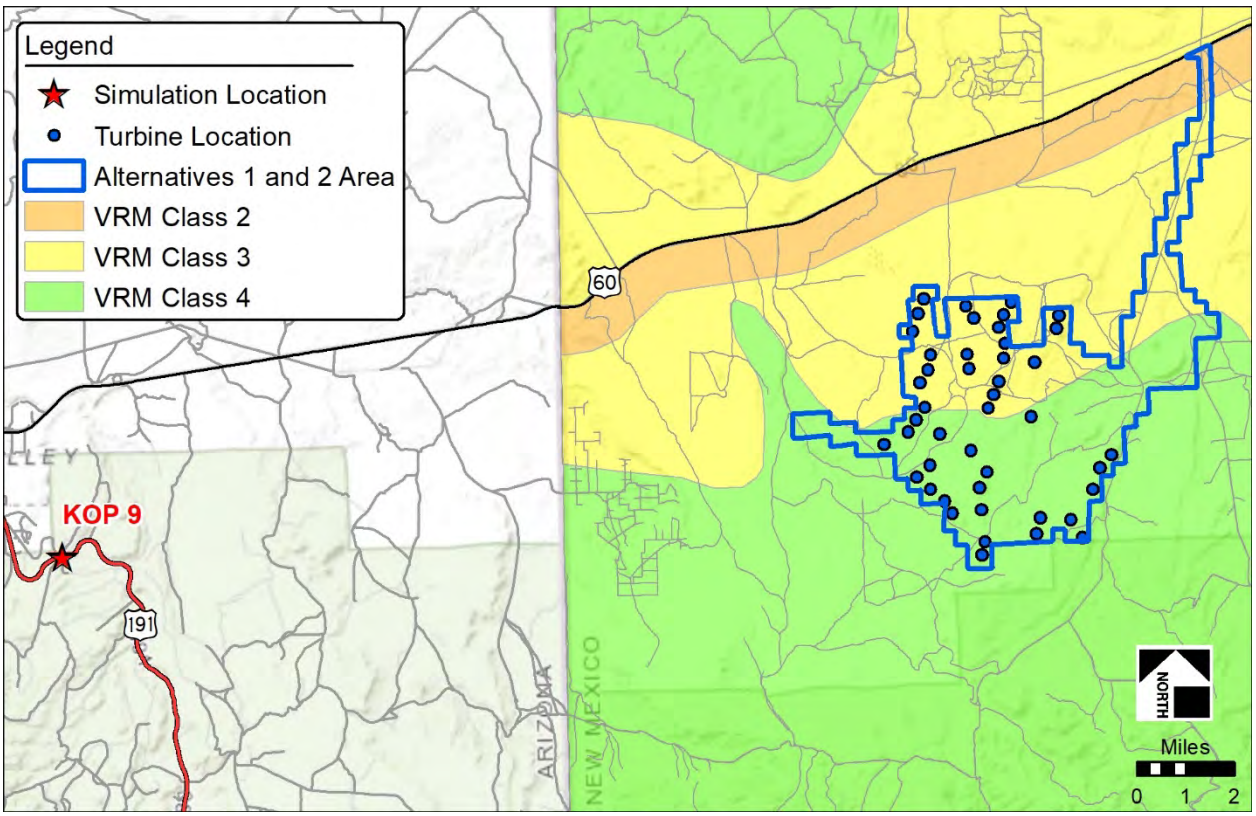
Comments from Item 2.

The view from this linear platform consists of rolling hills and a scattering of distant mountain landforms in the background. The vegetation consists primarily of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class III. The statuesque wind turbines with their rotating blades and lighted hubs would attract attention but would not dominate the landscape. The turbines would be visible within the middleground and background area of the Coronado Trail Scenic Road KOP. This platform is approximately 16 miles from the nearest visible turbines. Views of the project components (turbines) would be skylined; consistently partially obstructed and sporadically intermittent when viewed from this KOP due to visibility conditions. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 1 would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day, atmospheric conditions, and direction of view (visible to southbound travelers only). Therefore, Alternative 1 would be in conformance with Class III visual resource management objectives from the viewpoint of Coronado Trail Scenic Road KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: January 2020

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

33. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
34. Key Observation Point **Coronado Trail Scenic Road**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes; and isolated rock outcrops	Predominately rounded pinyon-juniper; low indistinctive grasses	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Converging with undulating edges at transition to adjacent landforms.	Round to globe-like of pinyon-juniper; continuous flowing.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown; darker brown volcanic rock.	Light straw-buff of grasses; dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth with some bumpy areas; gentle transitions.	Continuous coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses are inconsistent.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade.
Color	No perceived change	No perceived change	Monotone color of light/white value turbine structure and blade.

Texture	No perceived change	No perceived change	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No ☒
Element	Form				X				X			X		Evaluator's Names D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

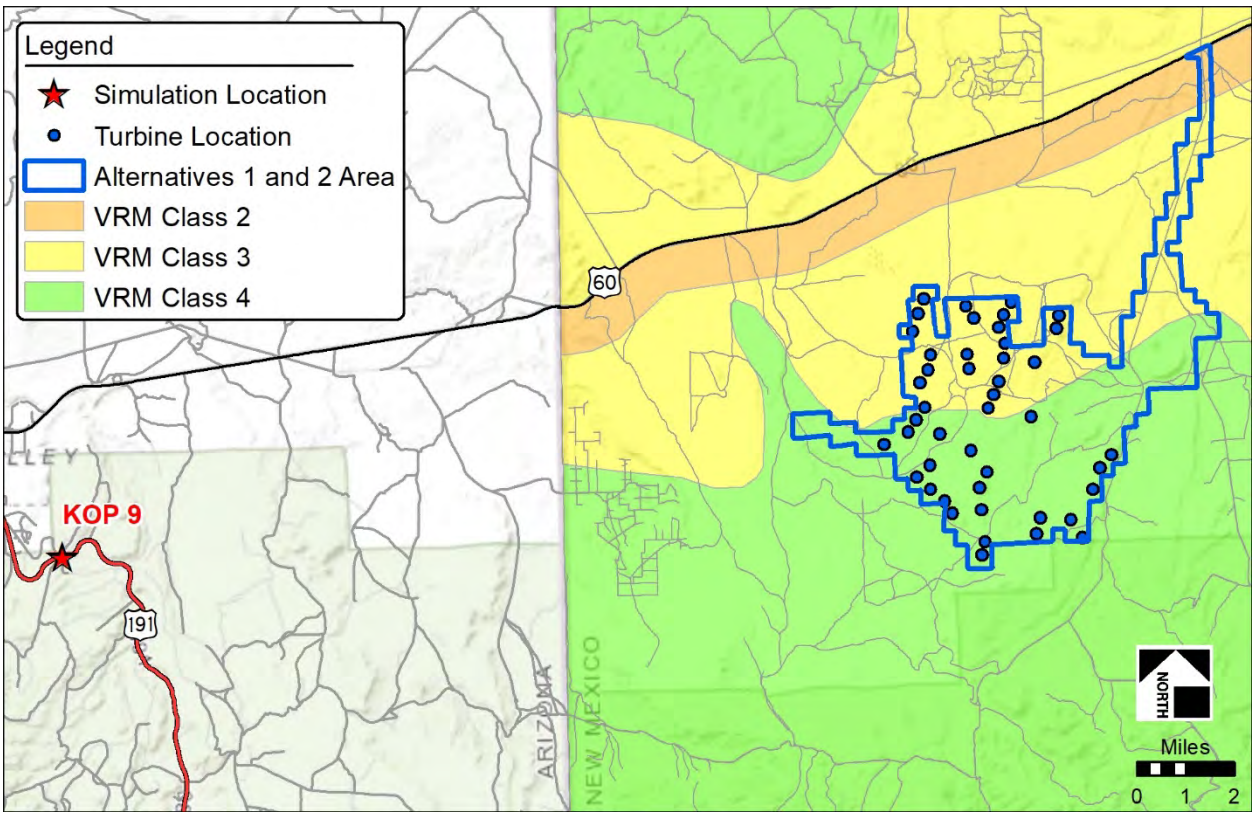
Comments from Item 2.

The view from this linear platform consists of rolling hills and a scattering of distant mountain landforms in the background. The vegetation consists primarily of pinyon-juniper. Alternative 1 project components visible from this KOP would occur in areas currently managed as Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would attract attention but would not dominate the landscape. The proposed turbines would be visible within the middleground of the Coronado Trail Scenic Road KOP. This platform is approximately 16 miles from the nearest visible turbines. Views of the project components (turbines) would be predominately skylined; consistently partially obstructed and sporadically intermittent when viewed from this KOP due to visibility conditions. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. Alternative 1 would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day and atmospheric conditions. Therefore, Alternative 1 would be in conformance with Class IV visual resource management objectives from the viewpoint of Coronado Trail Scenic Road KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



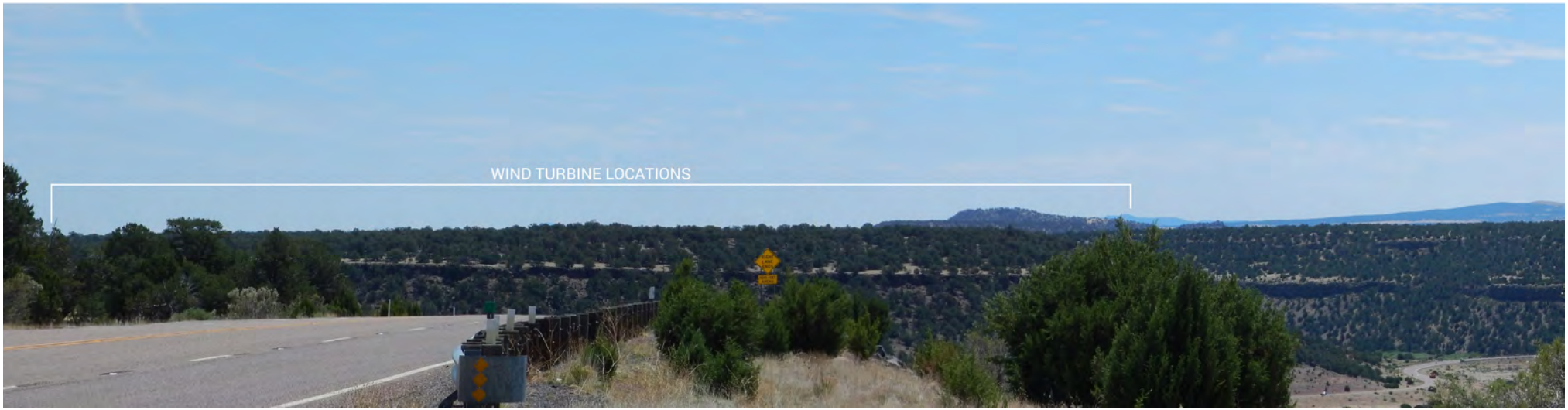
Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Alternative 1**
Linear Platform Name: **Coronado Trail Scenic Road**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: Yes

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 16 miles from the nearest visible turbine. This platform is approximately 14 miles from the nearest visible project infrastructure (distribution line). Platform does not occur within the foreground of the proposed project.	
Visibility Conditions	This platform is located in a panoramic landscape that includes no apparent limit to the view. Traveling in the northbound direction project components would not be visible. Traveling in the southbound direction project components would not be visible within the background area of the proposed project. Traveling in the southbound direction in the middleground (MG) area of the proposed project, views of the project components (turbines) would be predominately skylined; predominately partially obstructed and predominately intermittent.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling southbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral	
Quantification of View	**Platform percent seen from project components:** There are a total of 36.6 miles of linear platform within the analysis area. Traveling southbound in the MG there are 22.6 miles of linear platform The project components would be seen for approximately 0.4 miles within the MG or 1% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 133.3 acres of surface disturbance within the analysis area; 31 acres /23% would be seen from the platform traveling in the southbound direction within the MG. There are 44 turbines within the analysis area: Traveling in the southbound direction within the MG, up to 39 turbines/ 89% would be seen from the platform. **Duration of view from linear platform:** There are a total of 36.6 miles of linear platform within the analysis area. Traveling southbound based on a vehicular travel speed of 55 mph, and a total travel time of 25 minutes within the MG of the project, the project components would be seen for a total of approximately 26 seconds or 2% of the total travel time within the analysis area. The project components would be more visible traveling in the southbound direction.	

Spatial Relationship/ Size and Scale	Traveling southbound in the MG of the proposed project, the project components would begin to attract attention and be visually subordinate within the visual setting; the visual setting within the MG of the proposed project would appear to be noticeably altered because project components (turbines) would begin to attract attention when visible and would generally create low contrast due to distance and atmospheric conditions when viewed from this platform.	

BLWP – Coronado Trail Simulation – Alternative 1



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

35. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township:1S Range:19W Section: 10	5. Location sketch *See attached map*
36. Key Observation Point **County Road B007/ Bill Knight Gap Rd.**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change	No perceived change.	No perceived change
Line	No perceived change	No perceived change	No perceived change

Color	No perceived change	No perceived change.	No perceived change
Texture	No perceived change	No perceived change	No perceived change

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form				X				X				X	Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X				X	
	Color				X				X				X	
	Texture				X				X				X	

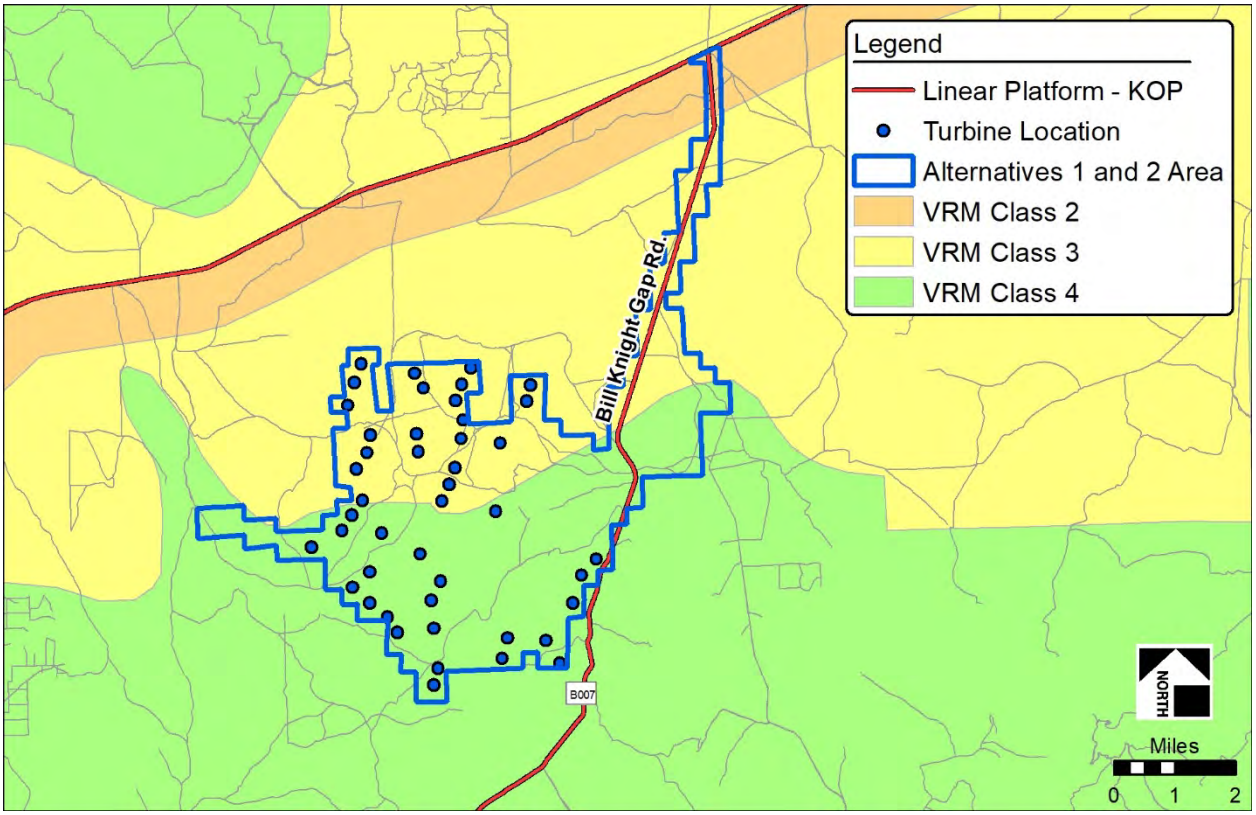
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 1 project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The visual resource management objective for Class II allows for a low level of change to the characteristic landscape. These changes should repeat the basic elements found in the characteristic landscape and should not attract the attention of the casual observer. Road improvements, access roads, and US 60 turn lane modifications would be visible within the foreground of the County Road B007 KOP, but not perceivable. Therefore, Alternative 1 would be in conformance with Class II visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

37. Project Name Borderlands Wind Project- **Alternative 1**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
38. Key Observation Point **County Road B007/ Bill Knight Gap Rd.**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.

Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

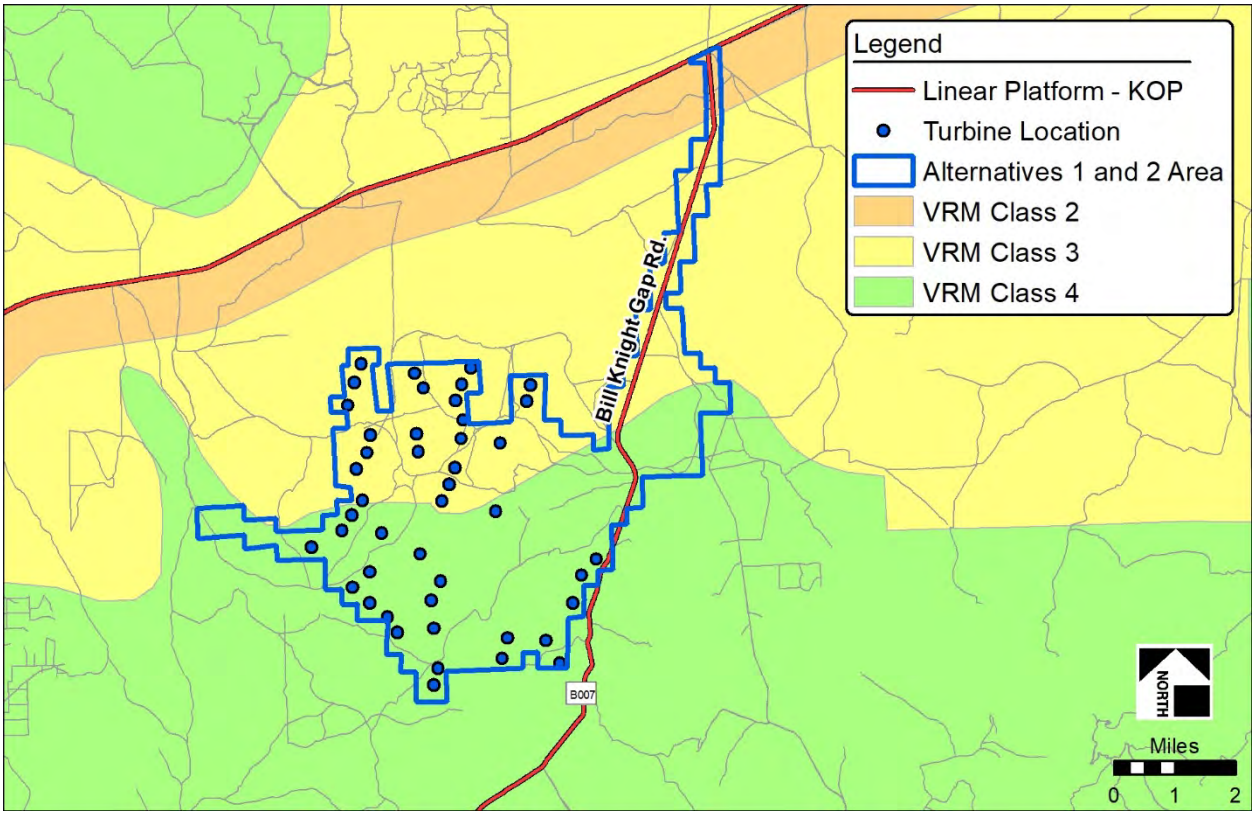
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines and access roads would be visible from County Road B007 KOP. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 1 would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, Alternative 1 would not be in conformance with Class III visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

39. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
40. Key Observation Point **County Road B007/ Bill Knight Gap Rd.**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.

Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: X LONG TERM (>5 years): X

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: X No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

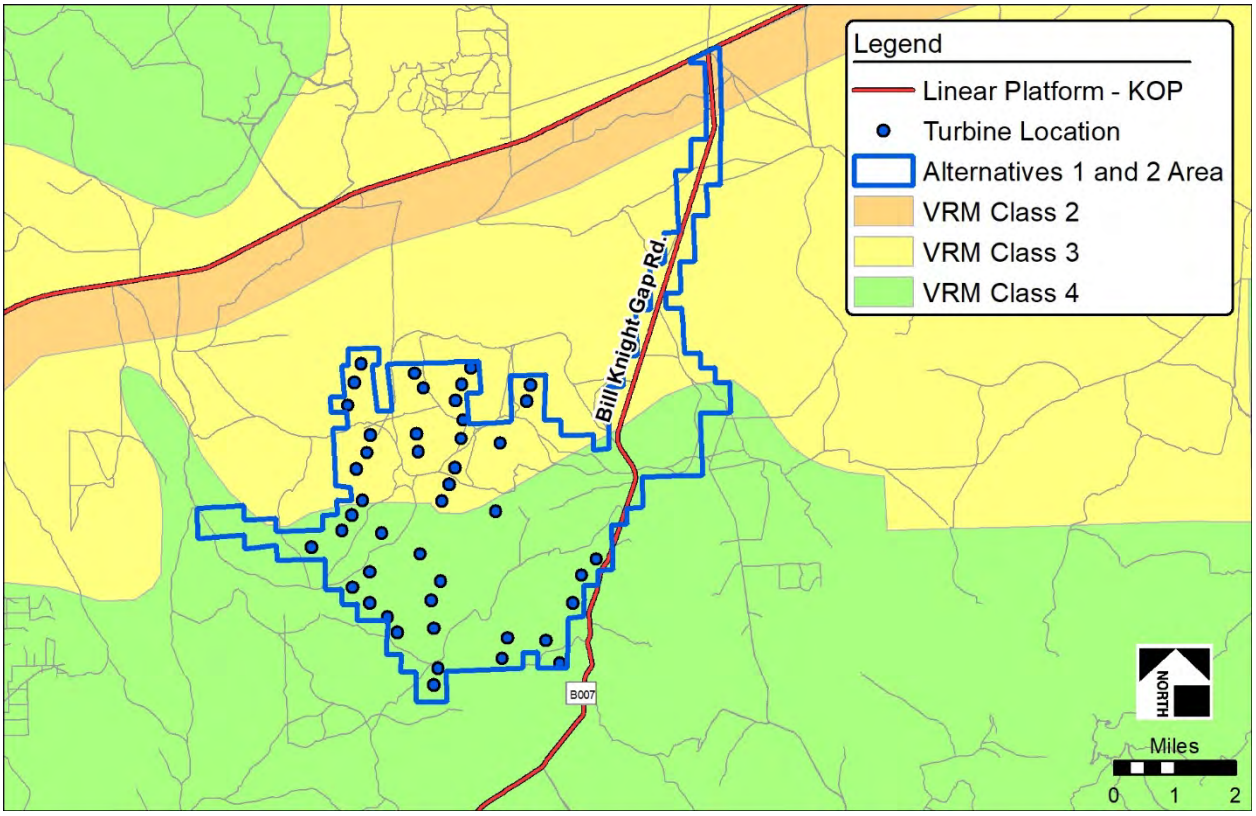
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as VRM Class II, III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines and access roads would be visible within the foreground of County Road B007 KOP. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. Alternative 2 would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Alternative 1**
Linear Platform Name: **Catron County Road B007/ Bill Knight Gap**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: No

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 850 feet from the nearest visible turbine. This platform intersects project infrastructure (most commonly road improvements).	
Visibility Conditions	This platform is located in a panoramic landscape that includes broad plains and low rolling hills with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. Traveling in the northbound direction in the foreground (FG) area of the proposed project, views of the project components would be predominately skylined; predominantly unobstructed and predominately continuous. Traveling in the southbound direction in the FG area of the proposed project, views of the project components would be predominately skylined; predominantly partially unobstructed and predominately continuous. Platform does not occur within the middleground or background of the project area.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling northbound in the FG of the project components, the angle of observation from this platform would be predominately head-on and parallel views. The viewer position would be predominately inferior. Traveling southbound in the FG of the project components, the angle of observation from this platform would be predominately head-on and parallel views. The viewer position would be predominately inferior.	
Quantification of View	**Platform percent seen from project components:** There are a total of 10.6 miles of linear platform within the analysis area Traveling northbound in the FG there are 10.6 miles of linear platform. The project components would be seen for approximately 10.6 miles or 100% of the total platform miles within the analysis area. Traveling southbound in the FG there are 10.6 miles of linear platform. The project components would be seen for approximately 10.6 miles or 100% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 133.3 acres of project components within the analysis area; approximately 29 acres or 21% would be seen from the platform traveling in the northbound direction within the FG and approximately 41 acres or 30% would be seen from the platform traveling in the southbound direction within the FG. There are 44 turbines within the analysis area: Traveling in the northbound direction within the FG 41 turbines or 93% would be seen from the platform. Traveling in the southbound direction within the FG 41 turbines or 93% would be seen from the platform.	

	Duration of view from linear platform: There are a total of 10.6 miles of linear platform within the analysis area Traveling northbound based on a vehicular travel speed of 45 mph, and a total travel time of 14 minutes within the FG of the project, the project components would be seen for a total of approximately 14 minutes within the FG or 100% of the total travel time within the analysis area. Traveling southbound based on a vehicular travel speed of 45 mph, and a total travel time of 14 minutes within the FG of the project, the project components would be seen for a total of approximately 14 minutes within the FG or 100% of the total travel time within the analysis area. The project components would be equally visible when traveling in either direction.	
Spatial Relationship/ Size and Scale	Traveling northbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components would introduce elements, patterns and scale that would be visually dominant and create strong contrast as compared to other features in the landscape. Traveling southbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components would introduce elements, patterns and scale that would be visually dominant and create strong contrast as compared to other features in the landscape.	

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

41. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township:1S Range:19W	5. Location sketch *See attached map*
42. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	No perceived change.
Line	No perceived change.	No perceived change.	No perceived change.
Color	No perceived change.	No perceived change.	No perceived change.

Texture	No perceived change.	No perceived change.	No perceived change.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form				X				X				X	Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X				X	
	Color				X				X				X	
	Texture				X				X				X	

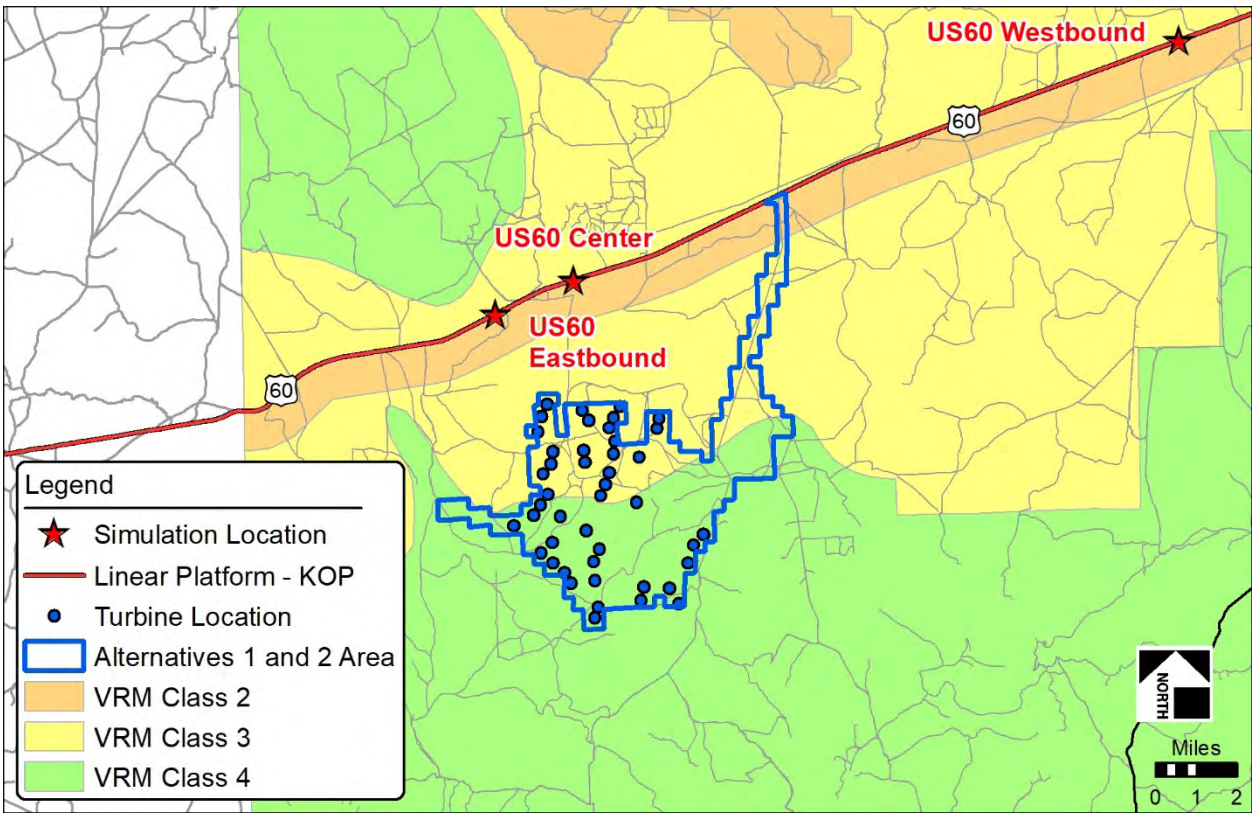
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The visual resource management objective for Class II allows for a low level of change to the characteristic landscape. These changes should repeat the basic elements found in the characteristic landscape and should not attract the attention of the casual observer. Within VRM Class II, the Alternative 1 project components would not be perceivable. Therefore, Alternative 1 would be in conformance with Class II visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: January 2020

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

43. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
44. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.

Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

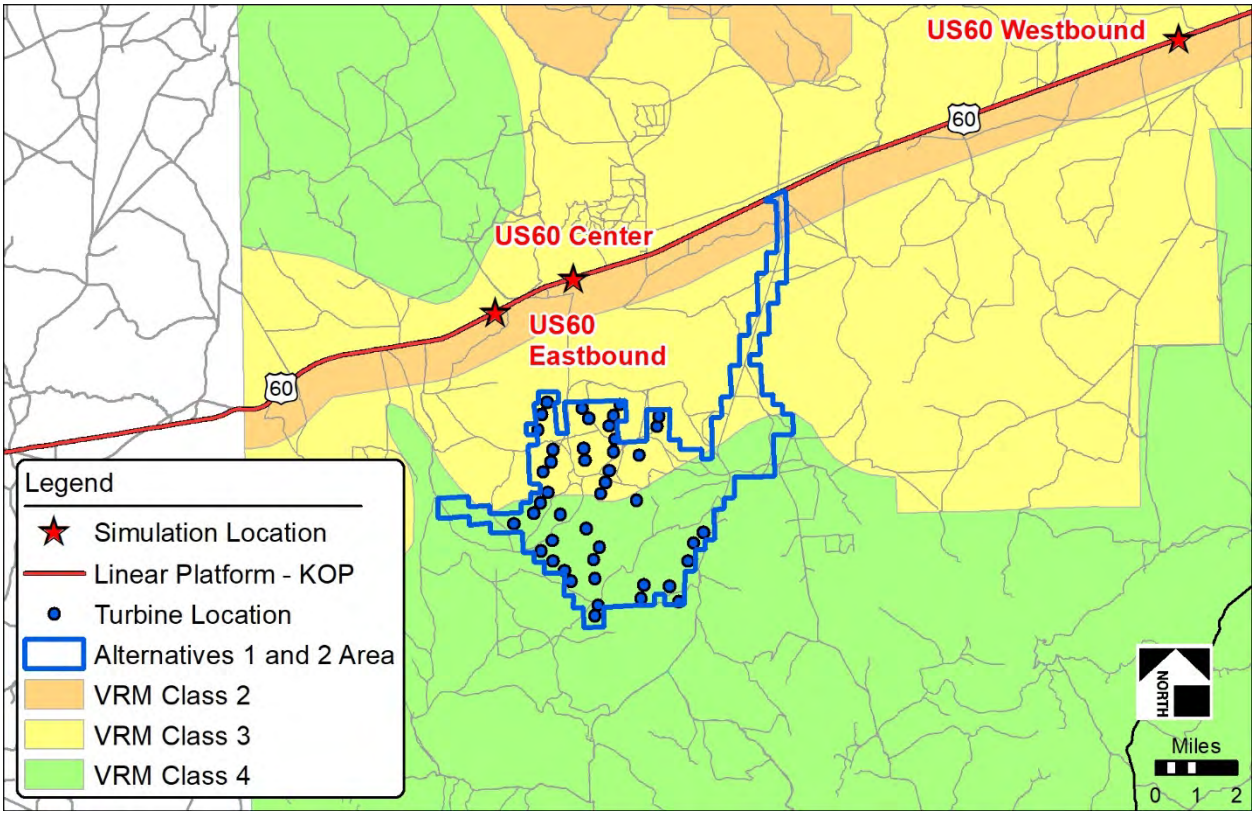
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 1 project components visible from this KOP would occur in areas currently managed as VRM Class III and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines, and access roads would be visible from the US 60 (Ocean to Ocean Highway) KOP. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 1 would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, the Proposed Action would not be in conformance with Class III visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

45. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township:2S Range:19&20W	5. Location sketch *See attached map*
46. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.

Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

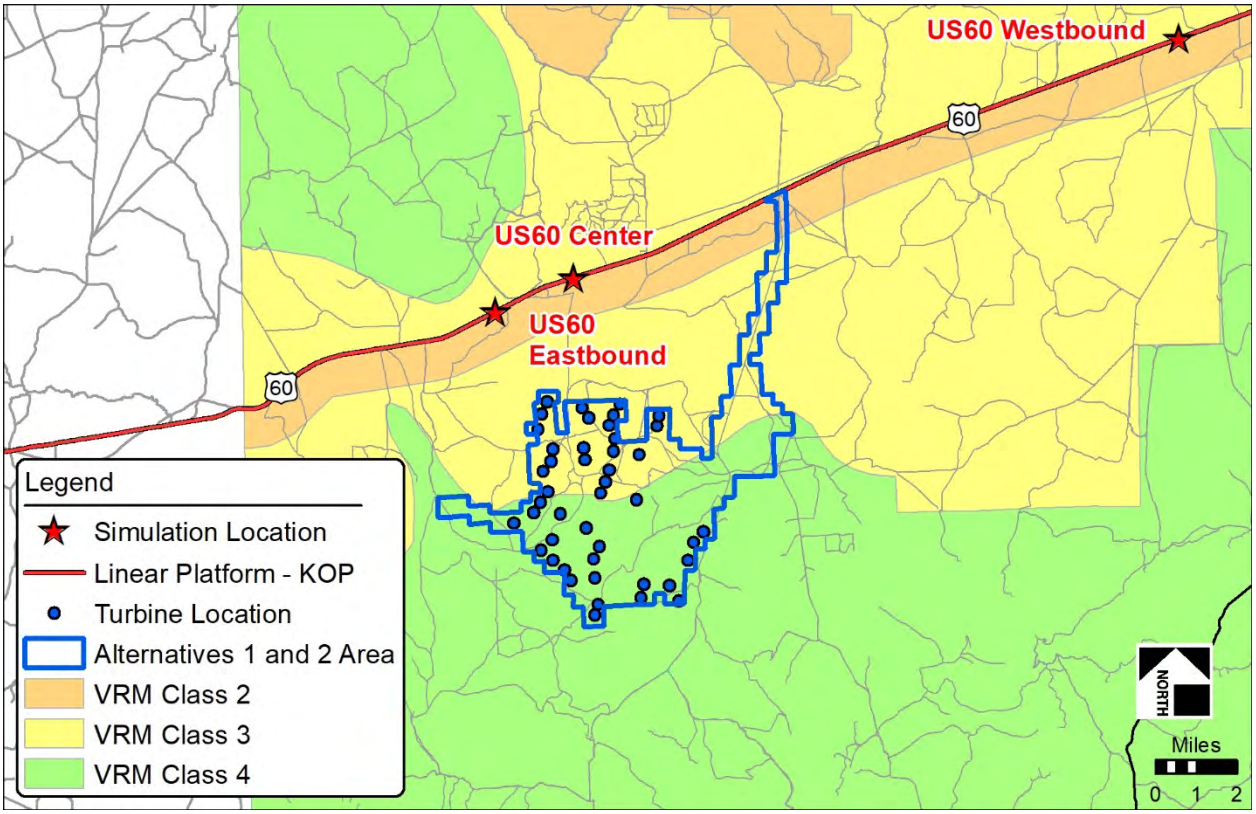
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 1 project components visible from this KOP would occur in areas currently managed as VRM Class II, III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines and access roads would be visible from the US 60 (Ocean to Ocean Highway) KOP. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. The Proposed Action would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Alternative 1**
Linear Platform Name: **US 60**
Date: April 2019
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: Yes

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 2.5 miles from the nearest visible turbine. This platform intersects project infrastructure (roads or ancillary facilities).	
Visibility Conditions	This platform is located in a panoramic landscape that includes broad plains and low rolling hills with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. Traveling in the eastbound direction in the foreground (FG) area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skylined; equally unobstructed and partially obstructed and equally continuous and intermittent. Traveling in the eastbound direction in the middleground (MG) area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the eastbound direction in the background (BG) area of the proposed project, views of the project components would be predominately backdropped; partially obstructed and sporadically intermittent. Distance and atmospheric conditions would restrict visibility. Traveling in the westbound direction in the FG area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the westbound direction in the MG area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the westbound direction project components are not visible in the BG area.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling eastbound in the FG of the project components, the angle of observation from this platform would be predominately parallel views. The viewer position would be predominately neutral. Traveling eastbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral. Traveling eastbound in the BG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately inferior. Distance and atmospheric conditions would restrict visibility. Traveling westbound in the FG of the project components, the angle of observation from this platform would be predominately parallel views. The viewer position would be predominately neutral. Traveling westbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral.	

Quantification of View	**Platform percent seen from project components:** There are a total of 67.0 miles of linear platform within the analysis area. Traveling eastbound in the FG of the project there are 29.5 miles of linear platform. The project components would be seen for approximately 15 miles within the FG or 22% of the total platform miles within the analysis area. Traveling eastbound in the MG of the project there are 22.4 miles of linear platform. The project components would be seen for approximately 4 miles within the MG or 6% of the total platform miles within the analysis area. Traveling eastbound in the BG of the project there are 15.1 miles of linear platform. The project components would be seen for approximately 1 mile within the BG or 1% of the total platform miles within the analysis area. Traveling westbound in the FG of the project there are 29.5 miles of linear platform. The project components would be seen for approximately 16 miles within the FG or 24% of the total platform miles within the analysis area. Traveling westbound in the MG of the project there are 22.4 miles of linear platform. The project components would be seen for approximately 2 miles within the MG or 3% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 133.3 acres of surface disturbance within the analysis area; approximately 24 acres or 18% would be seen from the platform traveling in the eastbound direction within the FG and approximately 40 acres or 30% would be seen from the platform traveling in the westbound direction within the FG. There are 44 turbines within the analysis area: Traveling in the eastbound direction within the FG 44 turbines or 100% would be seen from the platform. Traveling in the eastbound direction within the MG 43 turbines or 98% would be seen from the platform. Traveling in the eastbound direction within the BG 13 turbines or 30% would be seen from the platform. Traveling in the westbound direction within the FG 44 turbines or 100% would be seen from the platform. Traveling in the westbound direction within the MG 44 turbines or100% would be seen from the platform. **Duration of view from linear platform:** There are a total of 67.0 miles of linear platform within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 27 minutes within the FG of the project, the project components would be seen for a total of approximately 14 minutes within the FG or 23% of the total travel time within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 21 minutes within the MG of the project, the project components would be seen for a total of approximately 4 minutes or 6% of the total travel time within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 14 minutes within the BG of the project, the project components would be seen for a total of approximately 1 minute or 2% of the total travel time within the analysis area.	

	Traveling westbound based on a vehicular travel speed of 65 mph, and a total travel time of 27 minutes within the FG of the project, the project components would be seen for a total of approximately 15 minutes or 24% of the total travel time within analysis area. Traveling westbound based on a vehicular travel speed of 65 mph, and a total travel time of 21 minutes within the MG of the project, the project components would be seen for a total of approximately 2 minutes or 3% of the total travel time within the MG of the project. The project components would be more visible traveling in the eastbound direction (19 minutes or 31% of the total travel time within the analysis area) vs. traveling in the westbound direction (17 minutes or 27% of the total travel time within the analysis area).	
Spatial Relationship/ Size and Scale	Traveling eastbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components (infrastructure and turbines) would introduce elements and patterns that would be visually dominant ad create strong contrast as compared to the other features in the landscape. Traveling eastbound in the MG of the proposed project, the project components would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting within the MG of the proposed project would appear to be substantially altered because project components (turbines) would introduce elements and patterns not common in the landscape and would create moderate contrast as compared to other features in the landscape. Traveling eastbound in the BG of the proposed project, the project components would not attract attention and the landscape would appear intact within the visual setting; project component visibility would be limited by distance and atmospheric conditions. Traveling westbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components (infrastructure and turbines) would introduce elements and patterns that would be visually dominant ad create strong contrast as compared to the other features in the landscape. Traveling westbound in the MG of the proposed project, the project components would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting within the MG of the proposed project would appear to be substantially altered because project components (turbines) would introduce elements and patterns not common in the landscape and would create moderate contrast as compared to other features in the landscape.	

BLWP – US 60 Center Simulation – Alternative 1

BLWP – US 60 Eastbound Simulation – Alternative 1

BLWP – US 60 Westbound Simulation – Alternative 1

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(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

47. Project Name Borderlands Wind Project – **Alternative 1**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
48. Key Observation Point **Zuni Salt Lake**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Low, rectangular scattered building structures. Low, vertical, thin, curing, linear, fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive and fencing structures. Regular, angular, and geometric lines associated with building structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Muted tones of varying shades of building structure. Dark monotone paved roads and light to medium beige/gray unpaved roads. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive fencing. Discontinuous, scattered, medium to coarse, building structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade
Color	No perceived change.	No perceived change.	Monotone color of light/white value turbine structure and blade.

Texture	No perceived change.	No perceived change.	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No☐
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No☒
Element	Form				X				X			X		Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

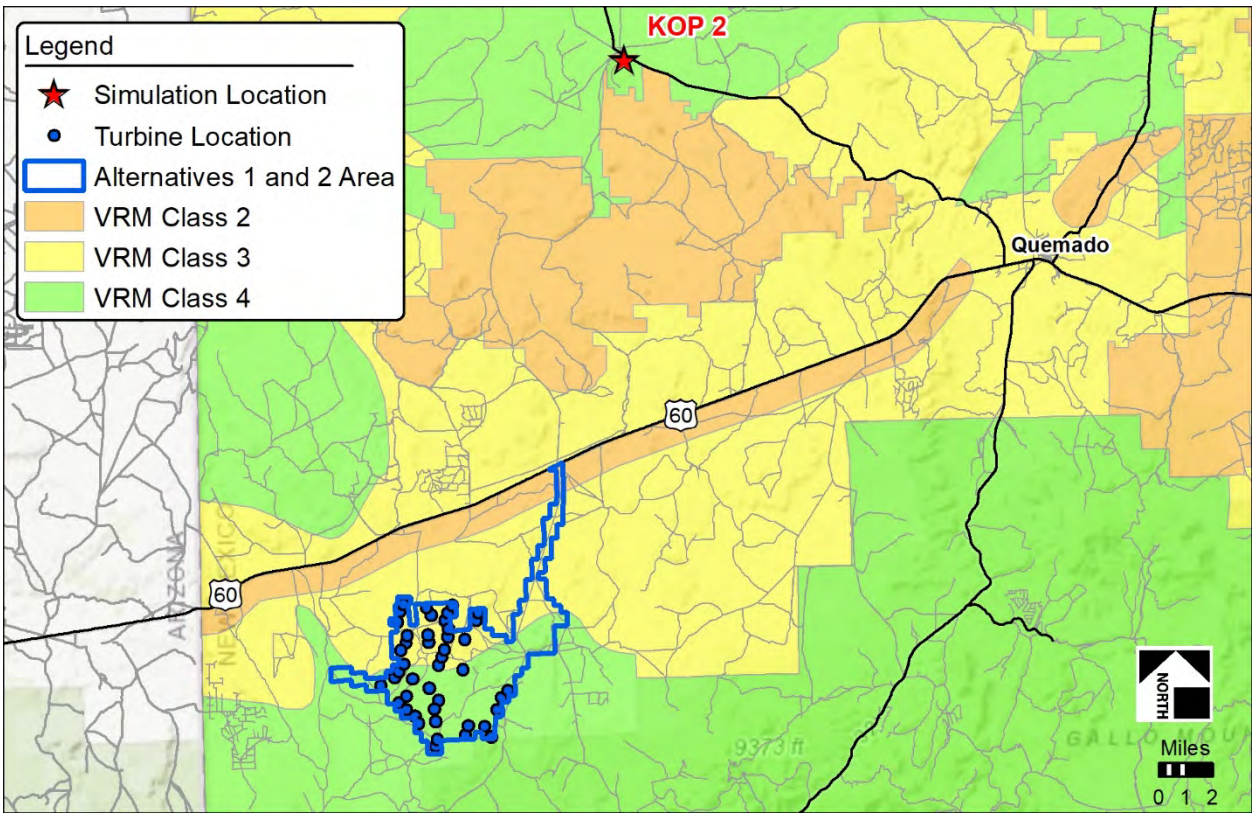
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class III and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. This KOP is approximately 21 miles from the nearest visible turbines. Approximately 19 turbines would be visible within the background of the Zuni Salt Lake KOP. The amount of viewer exposure of the project components from the platform would be approximately 15 degrees. The primary focus of the viewer's attention is Zuni Lake from which the project components would be in view. The viewer position would be predominately inferior. The visual resource management objective for this class, Class III, allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 1 would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day and atmospheric conditions. Therefore, Alternative 1 would be in conformance with Class III visual resource management objectives from the viewpoint of Zuni Salt Lake KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Stationary Platform Environmental Factors

Alternative: **Alternative 1**
Stationary Platform Name: **Zuni Salt Lake**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker; C. Bockey; D. Chavez; V. Alguire
Simulation: Yes

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 21 miles from the nearest visible turbine. Project infrastructure (transmission line/ roads/ ancillary facilities) are not visible from this platform.	Foreground limit 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Visibility Conditions	This platform is located in a predominately panoramic landscape that includes plains with scattered low rolling hills and mesas. In the background (BG) of the platform, views of the wind turbine blades would be predominately skylined; towers predominately partially obstructed and predominately intermittent.	The majority of project components (turbines) occur behind landforms when viewed from this platform. Distance and atmospheric conditions reduce visibility of turbines.
Angle of View	In the BG, the amount of viewer exposure of the project components from the platform would be approximately 15°. The primary focus of the viewer's attention is Zuni Lake from which the project components would be in view. The viewer position would be predominately inferior.	
Quantification of View (Project percent seen)	Based on bare earth GIS analysis approximately 25 turbines would be seen in the BG of the platform, which would represent 57 percent of the total turbines within the project area. Project infrastructure (transmission line/ roads/ ancillary facilities) are not visible from this platform.	
Scale/Spatial Relationship	The project components within the BG of the platform and would begin to attract attention and be visually subordinate within the visual setting; the visual setting would appear to be noticeably altered because the turbines would introduce color contrast, vertical elements and motion that would be visually subordinate within the landscape and create generally low contrast due to distance and atmospheric conditions.	

BLWP – Zuni Salt Lake Simulation – Alternative 1

Borderlands Wind Project Special Management Area (SMA) Environmental Factors

Alternative: **Alternative 1**
Stationary Platform Name: **Cerro Pomo ACEC**
Date: January 2020
Evaluator Name: C. Bockey
Simulation: No

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 9 miles from the nearest visible turbine. This platform is approximately 3 miles from the nearest visible project infrastructure (road improvements).	
Visibility Conditions	This platform is located in a predominately panoramic landscape that includes plains with scattered low rolling hills and mesas. In the foreground (FG) of the platform, views of the project components would be equally backdropped against mountainous terrain and skylined; equally unobstructed and partially obstructed and equally continuous and intermittent. In the middleground (MG) of the platform, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and predominately intermittent.	Project components are not visible in the Background
Angle of View	In the FG, the amount of viewer exposure of the project components from the platform would be approximately 60°. The primary focus of the viewer's attention is nonspecific from which the project components would be in view. The viewer position would be predominately neutral. In the MG, the amount of viewer exposure of the project components from the platform would be approximately 50°. The primary focus of the viewer's attention is nonspecific from which the project components would be in view. The viewer position would be predominately neutral.	
Quantification of View (Project percent seen)	There are 34,878 acres within the SMA. Based on bare earth GIS analysis approximately 5,376 acres/ 15 percent of the SMA would have views of project components (turbines, transmission lines, roads, ancillary facilities) within the FG area. Based on bare earth GIS analysis approximately 760 acres/ 2 percent of the SMA would have views of project components (turbines, transmission lines, roads, ancillary facilities) within the MG area.	

Scale/Spatial Relationship	The project components within the FG of the platform and would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting would appear to be substantially altered because project components would be visually prominent in the landscape and would create moderate contrast as compared to other features in the landscape depending on visibility conditions and location within ACEC. The project components within the MG of the platform and would begin to attract attention and be visually subordinate within visual setting; the visual setting would appear to be noticeably altered because project components would be visually subordinate in the landscape and would create generally low contrast as compared to other features in the landscape depending on visibility conditions and location within ACEC.	

Alternative 2 Contrast Rating Forms, Environmental Factors, and Simulations

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

49. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township: 1S Range: 19W	5. Location sketch *See attached map*
50. Key Observation Point **Cimarron Ranch Subdivision**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	No perceived change.
Line	No perceived change.	No perceived change.	No perceived change.
Color	No perceived change.	No perceived change.	No perceived change.
Texture	No perceived change.	No perceived change.	No perceived change.

SECTION D. CONTRAST RATING SHORT TERM **X** LONG TERM (>5 years) **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes [X] No [ ] (Explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes [ ] No [X]
Element	Form				X				X				X	Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X				X	
	Color				X				X				X	
	Texture				X				X				X	

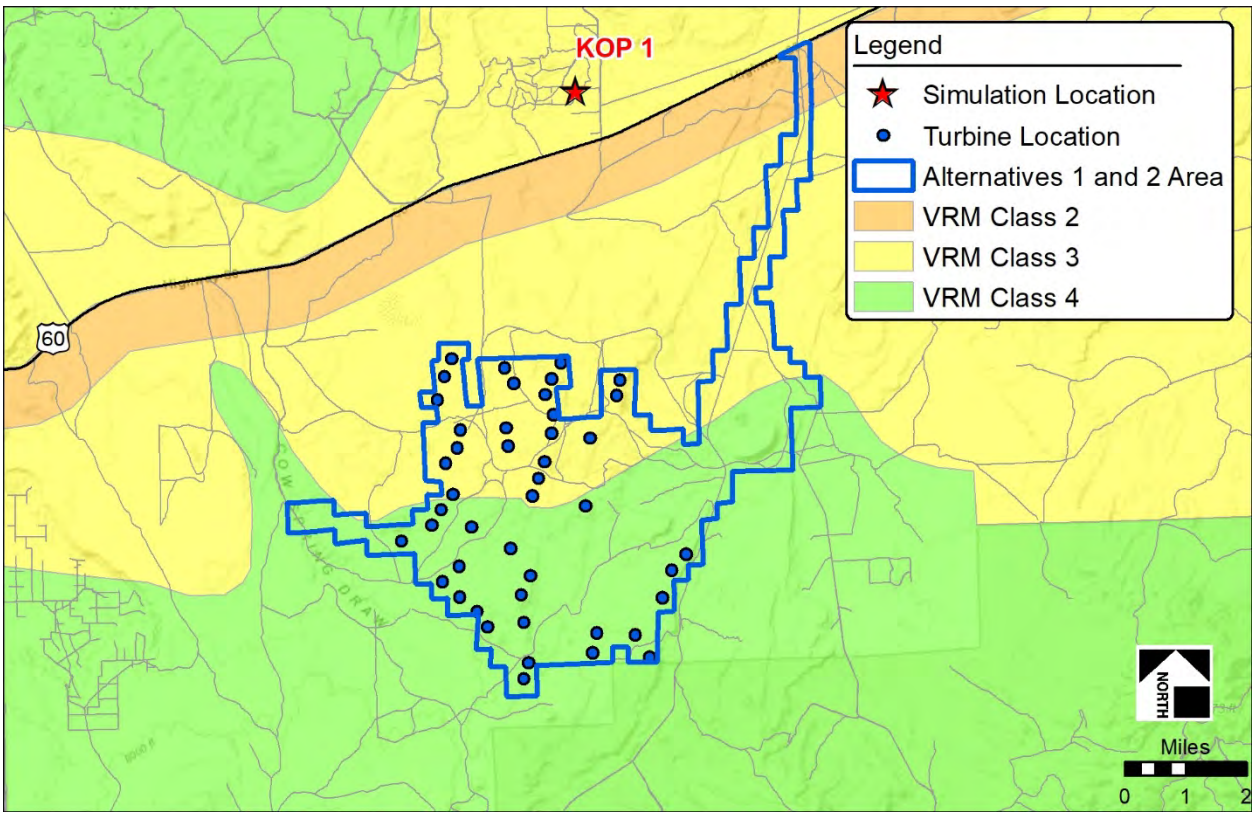
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. There are no proposed BLWP components planned within VRM II that would be visible from this KOP. Therefore, Alternative 1 would be in conformance with VRM II management objectives from the viewpoint of the Cimarron Ranch Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

51. Project Name Borderlands Wind Project – **Alternative 2** 52. Key Observation Point **Cimarron Ranch Subdivision** 3. VRM Class: **III**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. .
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.

Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

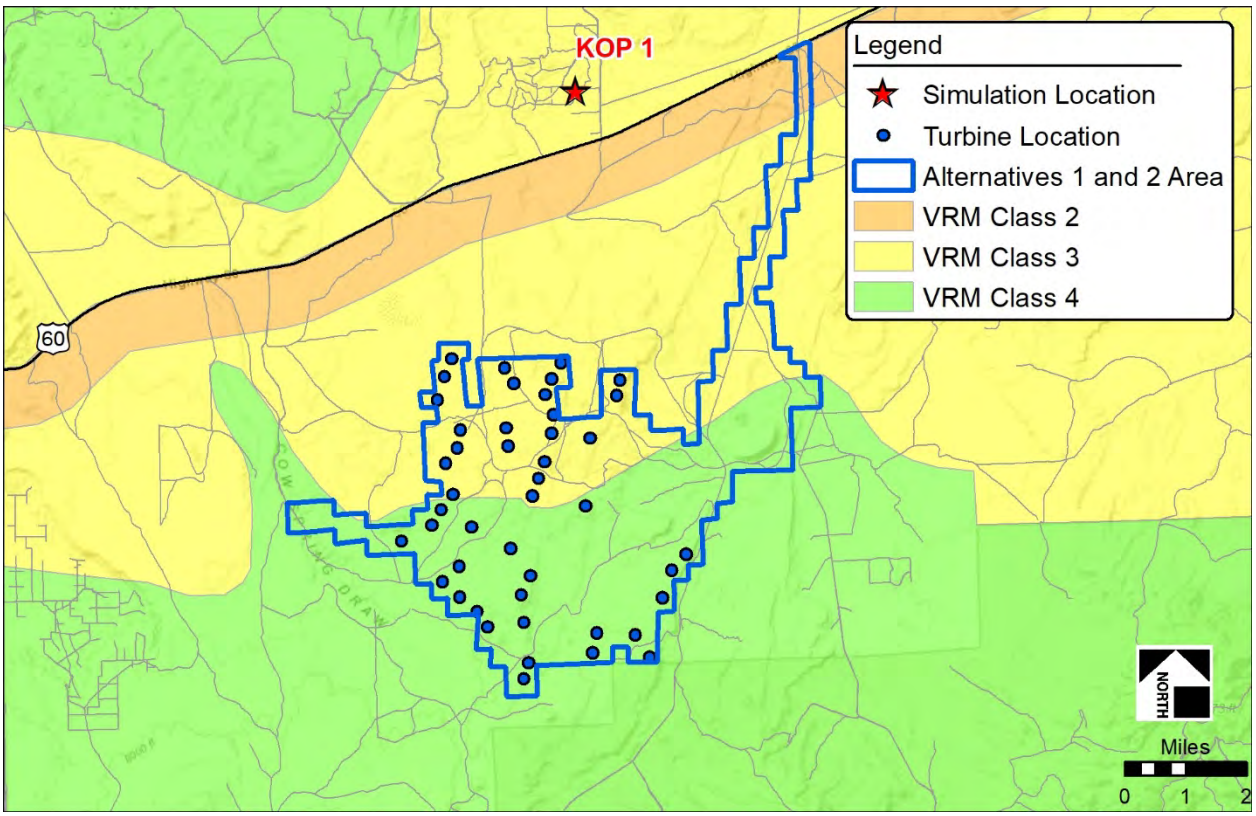
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The turbines, overhead distribution transmission lines, and access roads would be visible from the Cimarron Ridge Subdivision KOP. Up to 22 turbines would be visible in VRM Class III from this KOP. The primary focus of the viewer's attention is the broad open landscape from which the project components would be predominately skylined. The visual resource management objective for this class, Class III, allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 2 would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, Alternative 2 would not be in conformance with Class III visual resource management objectives from the viewpoint of the Cimarron Ridge Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

53. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
54. Key Observation Point **Cimarron Ranch Subdivision**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, thin, curing, linear, fencing.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. .
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.

Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

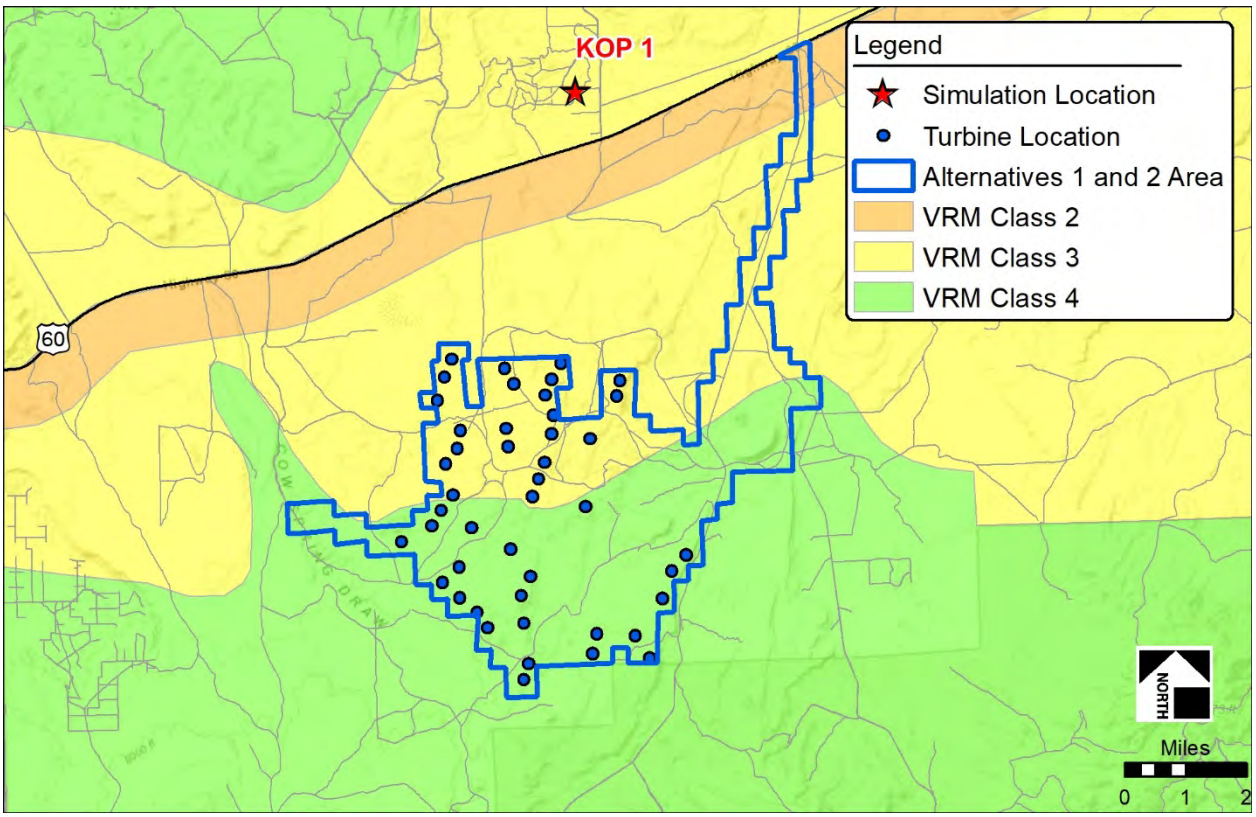
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The turbines, overhead distribution transmission lines, and access roads would be visible from the Cimarron Ranch Subdivision KOP. Up to 23 turbines would be visible in VRM Class IV from this KOP. The primary focus of the viewer's attention is the broad open landscape from which the project components would be predominately skylined. The visual resource management objective for Class IV allows for the level of change to the characteristic landscape can be high. Alternative 2 would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the Cimarron Ridge Subdivision KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Stationary Platform Environmental Factors

Alternative: **Alternative 2**
Stationary Platform Name: **Cimarron Ranch Subdivision**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker; C. Bockey; D. Chavez; V. Alguire
Simulation: Yes

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 4.5 miles from the nearest visible turbine. This platform is approximately 4.7 miles from the nearest visible project infrastructure (roads/ ancillary facilities).	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Visibility Conditions	This platform is located in a panoramic landscape that includes broad rolling plains with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. In the foreground (FG) of the platform, views of the project components would be predominately skylined; equally unobstructed and partially obstructed; equally continuous and intermittent/continuous.	
Angle of View	In the FG, the amount of viewer exposure of the project components from the platform would be approximately 40°. The primary focus of the viewer's attention is the broad open landscape from which the project components would be in view. The viewer position would be predominately neutral.	
Quantification of View (Project percent seen)	Based on bare earth GIS analysis approximately 44 turbines would be seen in the FG of the platform, which would represent 100 percent of the total turbines within the project area. There are 133.3 acres of surface disturbance within the FG of the platform. Based on bare earth GIS analysis approximately 5 acres would be seen in the FG of the platform, which would represent 4 percent of the total acres of surface disturbance within the FG of the platform.	
Scale/Spatial Relationship	The project components within the FG of the platform would demand attention and dominate the visual setting; the visual setting would appear to be severely altered because the dominance of the wind turbines in scale, color and form as well as the motion of the turbine blades would introduce elements and patterns that create strong contrast as compared to other features within the landscape.	

BLWP – Cimarron Ranch Subdivision Simulation – Alternative 2

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

55. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
56. Key Observation Point **Coronado Trail Scenic Road**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes; and isolated rock outcrops	Predominately rounded pinyon-juniper; low indistinctive grasses	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Converging with undulating edges at transition to adjacent landforms.	Round to globe-like of pinyon-juniper; continuous flowing.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown; darker brown volcanic rock.	Light straw-buff of grasses; dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth with some bumpy areas; gentle transitions.	Continuous coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses are inconsistent.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade.

Color	No perceived change	No perceived change	Monotone color of light/white value turbine structure and blade.
Texture	No perceived change	No perceived change	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No☒
Element	Form				X				X			X		Evaluator's Names D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

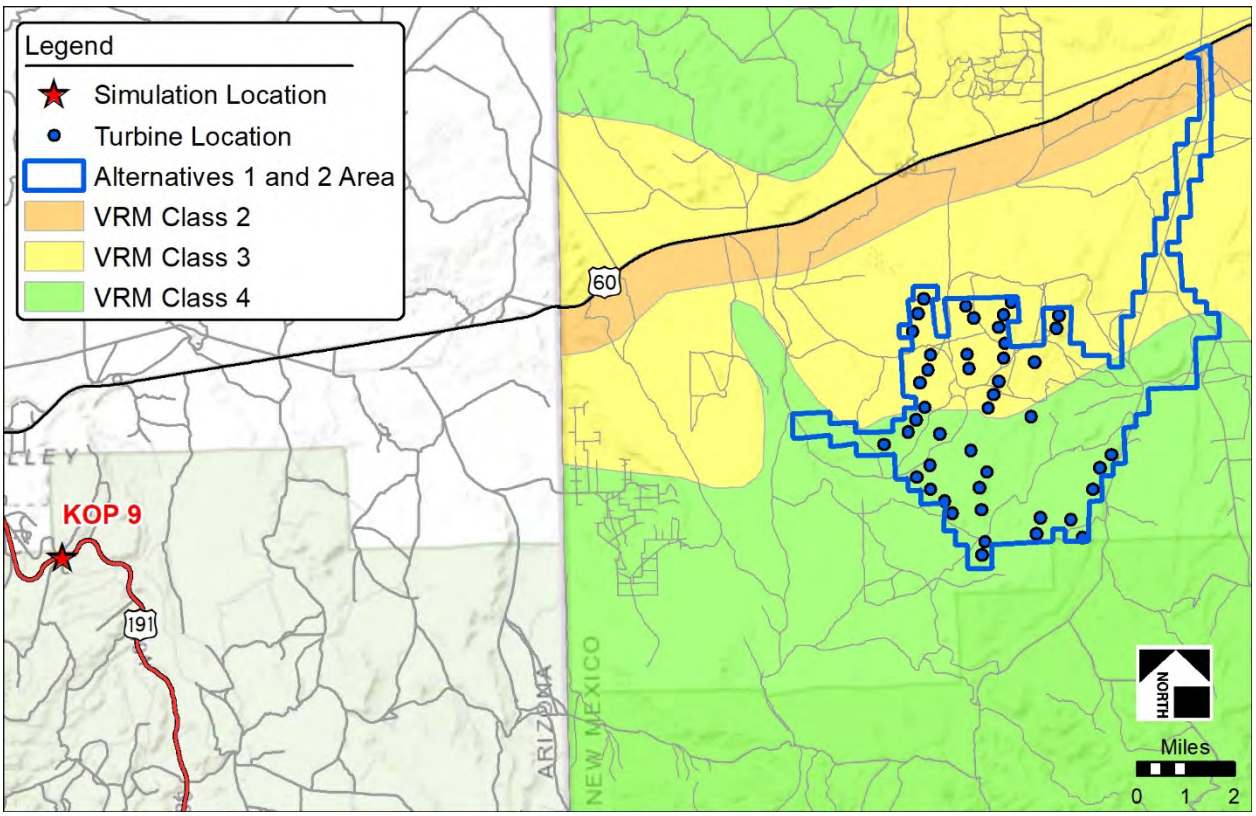
Comments from Item 2.

The view from this linear platform consists of rolling hills and a scattering of distant mountain landforms in the background. The vegetation consists primarily of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class III. The statuesque wind turbines with their rotating blades and lighted hubs would attract attention but would not dominate the landscape. The turbines would be visible within the middleground and background area of the Coronado Trail Scenic Road KOP. This platform is approximately 16 miles from the nearest visible turbines. Views of the project components (turbines) would be skylined; consistently partially obstructed and sporadically intermittent when viewed from this KOP due to visibility conditions. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 2 would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day, atmospheric conditions, and direction of view (visible to southbound travelers only). Therefore, Alternative 2 would be in conformance with Class III visual resource management objectives from the viewpoint of Coronado Trail Scenic Road KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: January 2020

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

57. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
58. Key Observation Point **Coronado Trail Scenic Road**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes; and isolated rock outcrops	Predominately rounded pinyon-juniper; low indistinctive grasses	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Converging with undulating edges at transition to adjacent landforms.	Round to globe-like of pinyon-juniper; continuous flowing.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown; darker brown volcanic rock.	Light straw-buff of grasses; dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth with some bumpy areas; gentle transitions.	Continuous coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses are inconsistent.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade.
Color	No perceived change	No perceived change	Monotone color of light/white value turbine structure and blade.

Texture	No perceived change	No perceived change	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes ☐ No ☒
Element	Form				X				X			X		Evaluator's Names D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

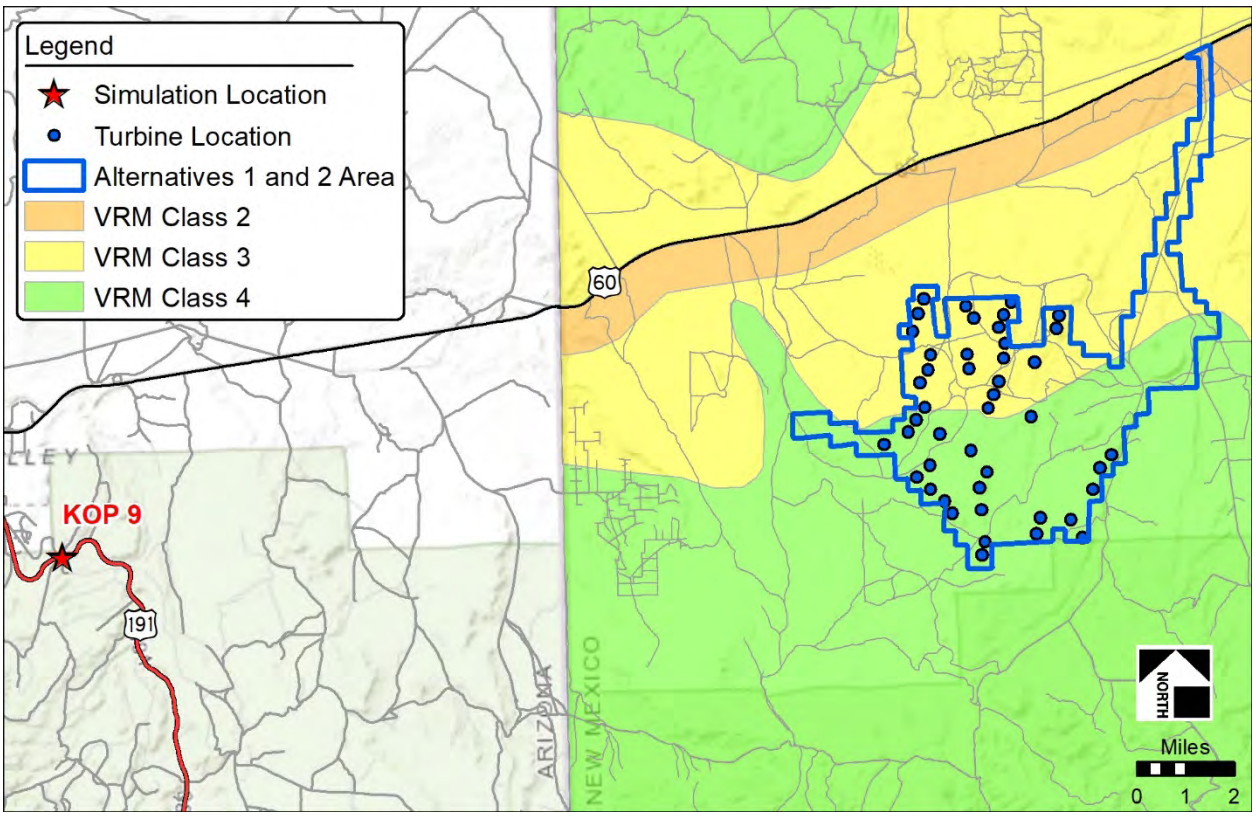
Comments from Item 2.

The view from this linear platform consists of rolling hills and a scattering of distant mountain landforms in the background. The vegetation consists primarily of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would attract attention but would not dominate the landscape. The proposed turbines would be visible within the middleground of the Coronado Trail Scenic Road KOP. This platform is approximately 16 miles from the nearest visible turbines. Views of the project components (turbines) would be predominately skylined; consistently partially obstructed and sporadically intermittent when viewed from this KOP due to visibility conditions. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. Alternative 2 would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day and atmospheric conditions. Therefore, Alternative 2 would be in conformance with Class IV visual resource management objectives from the viewpoint of Coronado Trail Scenic Road KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



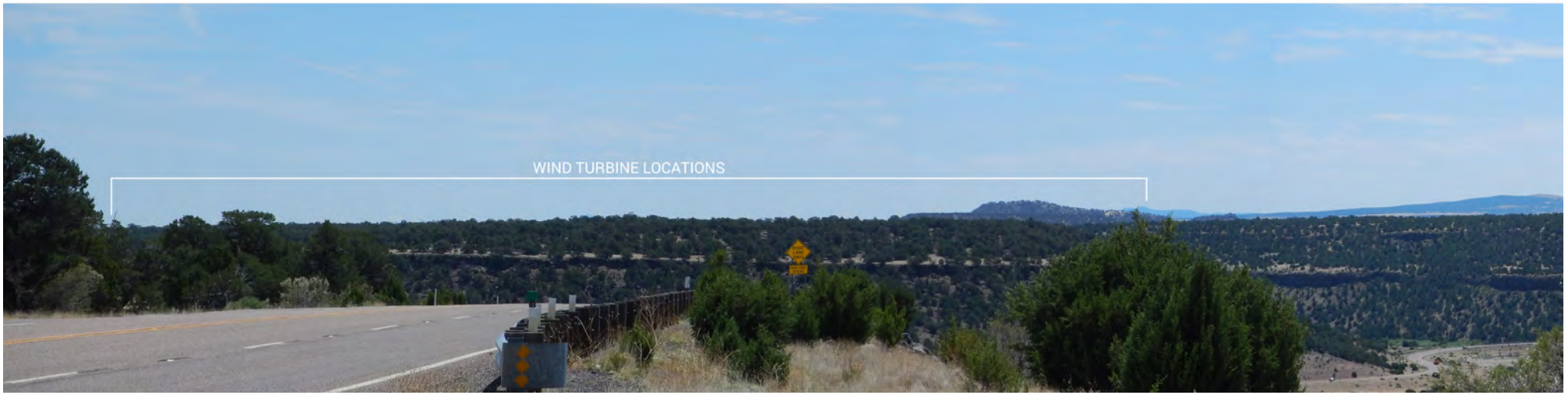
Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Alternative 2**
Linear Platform Name: **Coronado Trail Scenic Road**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: Yes

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 16 miles from the nearest visible turbine. This platform is approximately 14 miles from the nearest visible project infrastructure (distribution line). Platform does not occur within the foreground of the proposed project.	
Visibility Conditions	This platform is located in a panoramic landscape that includes no apparent limit to the view. Traveling in the northbound direction project components would not be visible. Traveling in the southbound direction project components would not be visible within the background area of the proposed project. Traveling in the southbound direction in the middleground (MG) area of the proposed project, views of the project components (turbines) would be predominately skylined; predominately partially obstructed and predominately intermittent.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling southbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral	
Quantification of View	**Platform percent seen from project components:** There are a total of 36.6 miles of linear platform within the analysis area. Traveling southbound in the MG there are 22.6 miles of linear platform. The project components would be seen for approximately .4 miles within the MG or 1% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 133.3 acres of surface disturbance within the analysis area; approximately 31 acres /23% would be seen from the platform traveling in the southbound direction within the MG. There are 44 turbines within the analysis area: Traveling in the southbound direction within the MG, up to 39 turbines/ 89% would be seen from the platform. **Duration of view from linear platform:** There are a total of 36.6 miles of linear platform within the analysis area. Traveling southbound based on a vehicular travel speed of 55 mph, and a total travel time of 25 minutes within the MG of the project, the project components would be seen for a total of approximately 24 seconds or 2% of the total travel time within the analysis area. The project components would be more visible traveling in the southbound direction.	

Spatial Relationship/ Size and Scale	Traveling southbound in the MG of the proposed project, the project components would begin to attract attention and be visually subordinate within the visual setting; the visual setting within the MG of the proposed project would appear to be noticeably altered because project components (turbines) would begin to attract attention when visible and would generally create low contrast due to distance and atmospheric conditions when viewed from this platform.	

BLWP – Coronado Trail Simulation – Alternative 2



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

59. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township:1S Range:19W Section: 10	5. Location sketch *See attached map*
60. Key Observation Point **County Road B007/ Bill Knight Gap Rd.**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change	No perceived change.	No perceived change
Line	No perceived change	No perceived change	No perceived change

Color	No perceived change	No perceived change.	No perceived change
Texture	No perceived change	No perceived change	No perceived change

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form				X				X				X	Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X				X	
	Color				X				X				X	
	Texture				X				X				X	

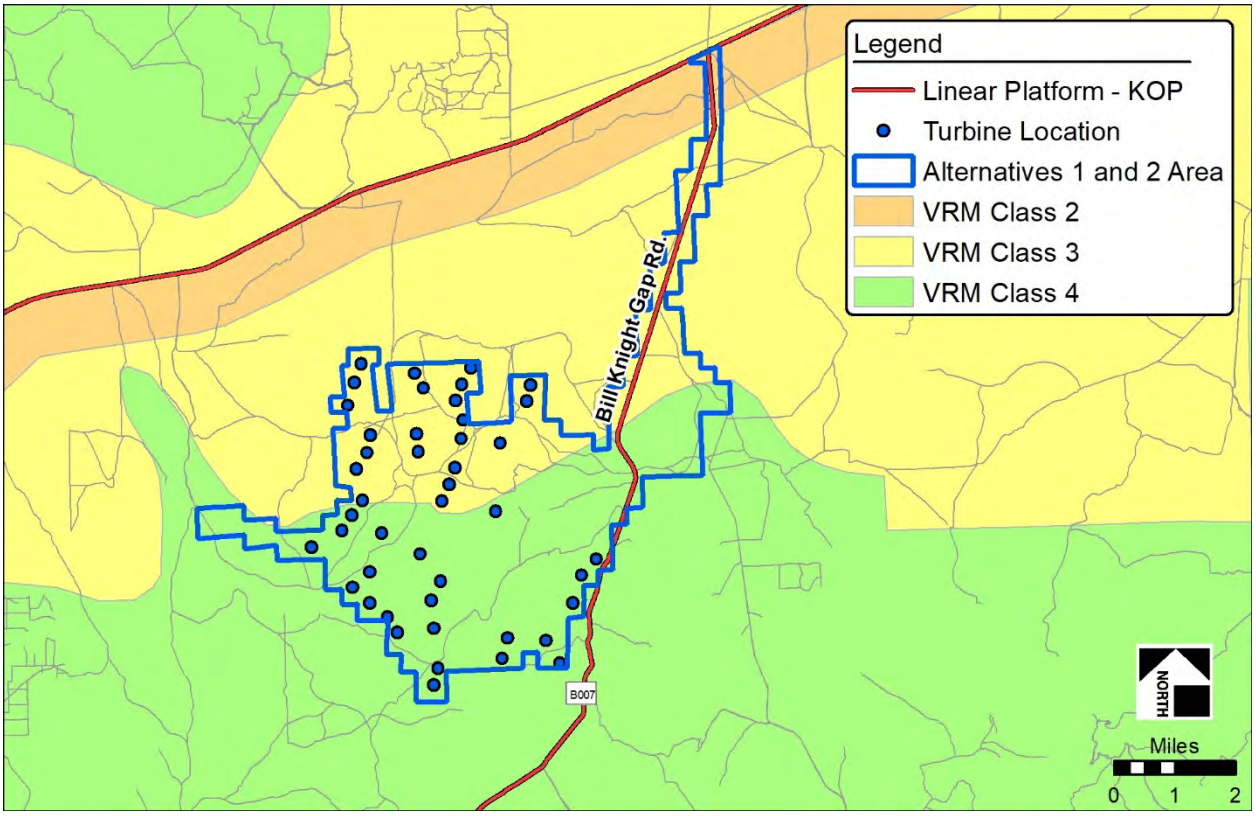
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The visual resource management objective for Class II allows for a low level of change to the characteristic landscape. These changes should repeat the basic elements found in the characteristic landscape and should not attract the attention of the casual observer. Road improvements, access roads, and US 60 turn lane modifications would be visible within the foreground of the County Road B007 KOP, but not perceivable. Therefore, Alternative 2 would be in conformance with Class II visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: January 2020

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

61. Project Name Borderlands Wind Project- **Alternative 2**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
62. Key Observation Point **County Road B007/ Bill Knight Gap Rd**.		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.

Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

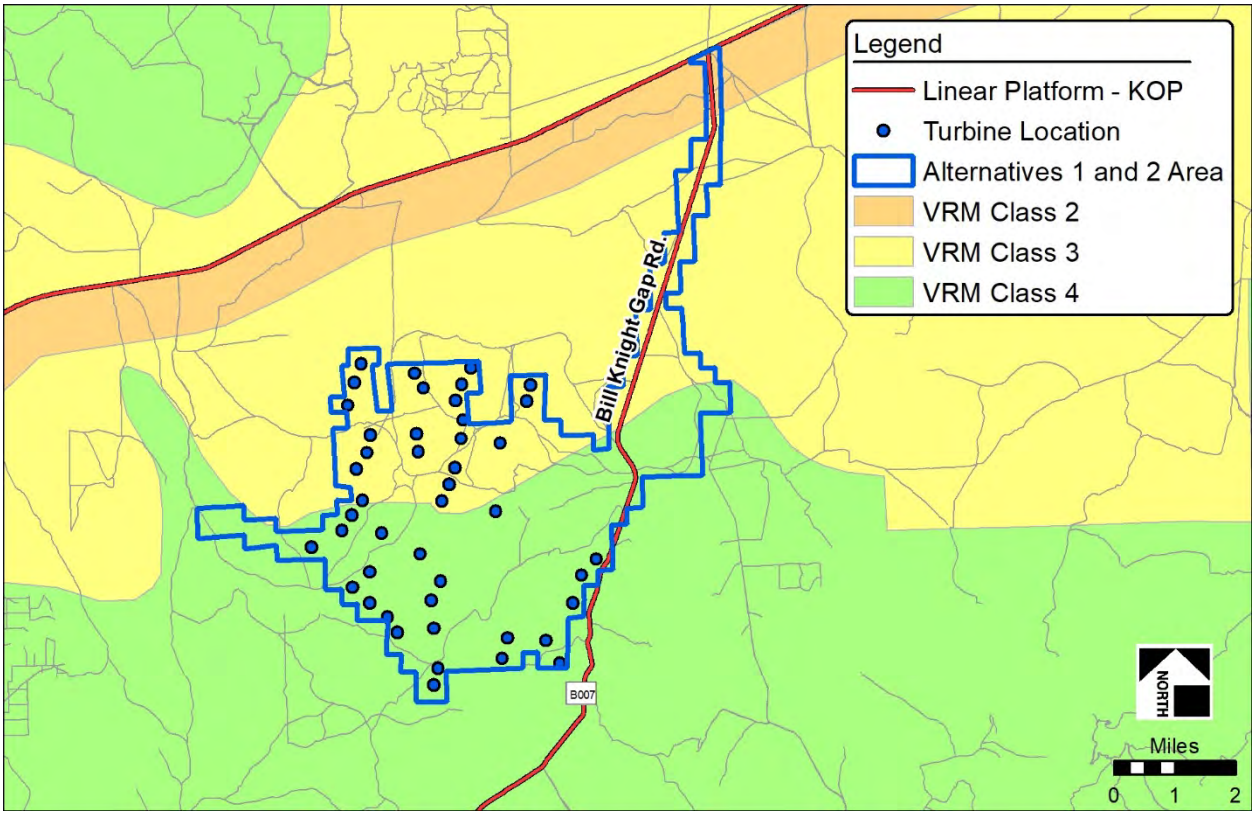
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines and access roads would be visible from County Road B007 KOP. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 2 would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, Alternative 2 would not be in conformance with Class III visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: January 2020

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

63. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
64. Key Observation Point **County Road B007/ Bill Knight Gap Rd.**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of unpaved roads. Amorphous, irregular, concave, asymmetrical form of gravel pit.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads. Broken, irregular, complex lines of gravel pit.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Light to medium beige/gray unpaved roads and gravel pit.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine unpaved roads. Coarse to medium discontinuous, clumped texture of gravel pit.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.

Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.
Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: X LONG TERM (>5 years): X

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: X No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

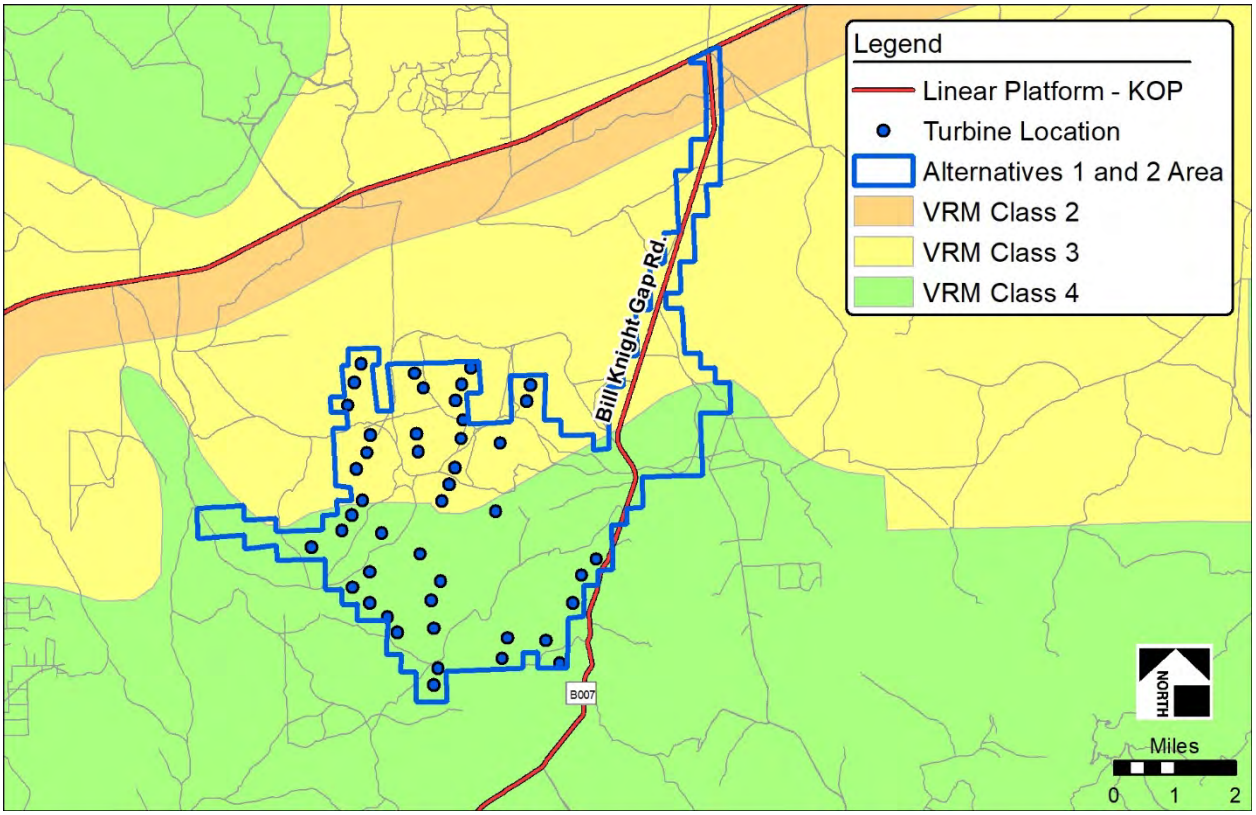
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as VRM Class II, III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines and access roads would be visible within the foreground of County Road B007 KOP. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. Alternative 2 would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the County Road B007 KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Alternative 2**
Linear Platform Name: **Catron County Road B007/ Bill Knight Gap**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: No

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 850 feet from the nearest visible turbine. This platform intersects project infrastructure (most commonly road improvements).	
Visibility Conditions	This platform is located in a panoramic landscape that includes broad plains and low rolling hills with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. Traveling in the northbound direction in the foreground (FG) area of the proposed project, views of the project components would be predominately skylined; predominantly unobstructed and predominately continuous. Traveling in the southbound direction in the FG area of the proposed project, views of the project components would be predominately skylined; predominantly partially unobstructed and predominately continuous. Platform does not occur within the middleground or background of the project area.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling northbound in the FG of the project components, the angle of observation from this platform would be predominately head-on and parallel views. The viewer position would be predominately inferior. Traveling southbound in the FG of the project components, the angle of observation from this platform would be predominately head-on and parallel views. The viewer position would be predominately inferior.	
Quantification of View	**Platform percent seen from project components:** There are a total of 10.6 miles of linear platform within the analysis area Traveling northbound in the FG there are 10.6 miles of linear platform. The project components would be seen for approximately 10.6 miles or 100% of the total platform miles within the analysis area. Traveling southbound in the FG there are 10.6 miles of linear platform. The project components would be seen for approximately 10.6 miles or 100% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 133.3 acres of project components within the analysis area; approximately 29 acres or 21% would be seen from the platform traveling in the northbound direction within the FG and approximately 39 acres or 29% would be seen from the platform traveling in the southbound direction within the FG. There are 44 turbines within the analysis area: Traveling in the northbound direction within the FG 42 turbines or 95% would be seen from the platform. Traveling in the southbound direction within the FG 42 turbines or 95% would be seen from the platform.	

	Duration of view from linear platform: There are a total of 10.6 miles of linear platform within the analysis area Traveling northbound based on a vehicular travel speed of 45 mph, and a total travel time of 14 minutes within the FG of the project, the project components would be seen for a total of approximately 14 minutes within the FG or 100% of the total travel time within the analysis area. Traveling southbound based on a vehicular travel speed of 45 mph, and a total travel time of 14 minutes within the FG of the project, the project components would be seen for a total of approximately 14 minutes within the FG or 100% of the total travel time within the analysis area. The project components would be equally visible when traveling in either direction.	
Spatial Relationship/ Size and Scale	Traveling northbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components would introduce elements, patterns and scale that would be visually dominant and create strong contrast as compared to other features in the landscape. Traveling southbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components would introduce elements, patterns and scale that would be visually dominant and create strong contrast as compared to other features in the landscape.	

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

65. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township:1S Range:19W	5. Location sketch *See attached map*
66. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **II**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	No perceived change.
Line	No perceived change.	No perceived change.	No perceived change.
Color	No perceived change.	No perceived change.	No perceived change.

Texture	No perceived change.	No perceived change.	No perceived change.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form				X				X				X	Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X				X	
	Color				X				X				X	
	Texture				X				X				X	

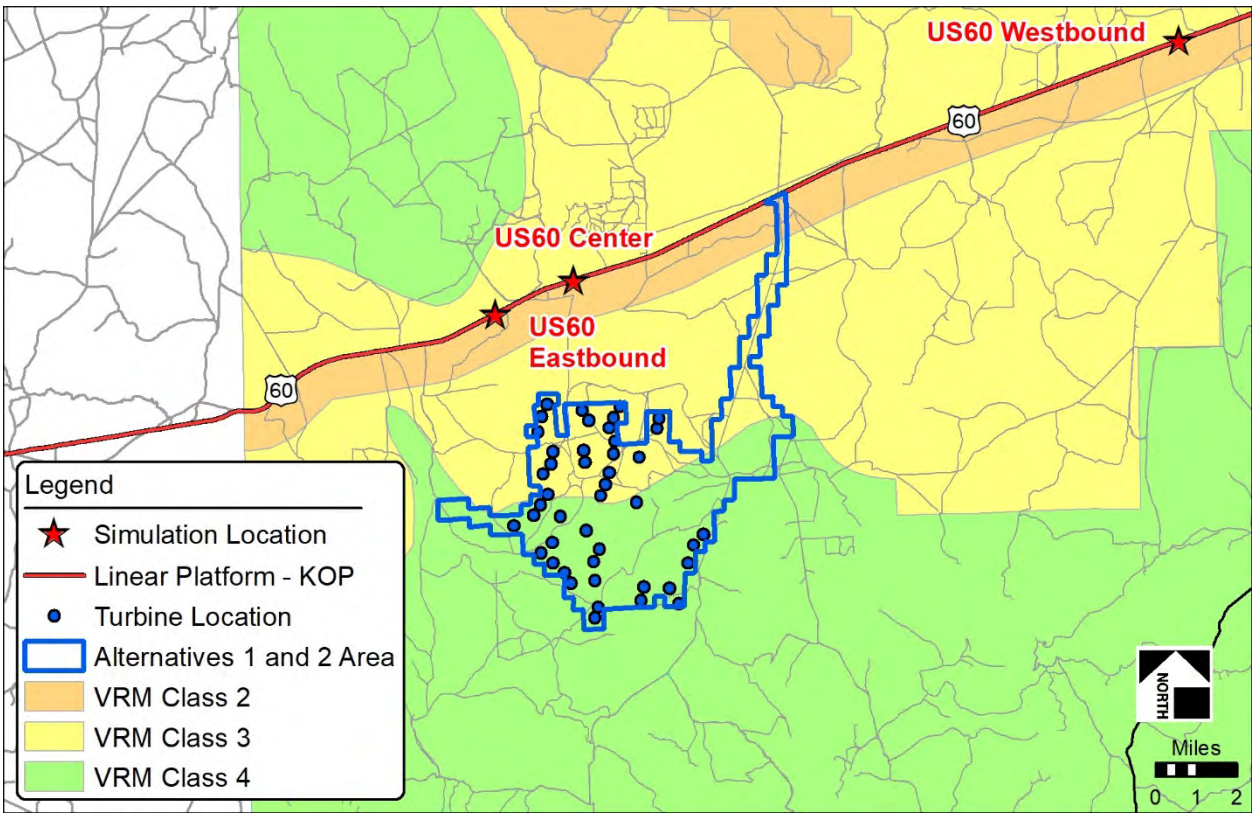
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as VRM Class II, Class III, and Class IV. The visual resource management objective for Class II allows for a low level of change to the characteristic landscape. These changes should repeat the basic elements found in the characteristic landscape and should not attract the attention of the casual observer. Within VRM Class II, the Alternative 2 project components would not be perceivable. Therefore, Alternative 2 would be in conformance with Class II visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: January 2020

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

67. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
68. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.

Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: No X explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: No X
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

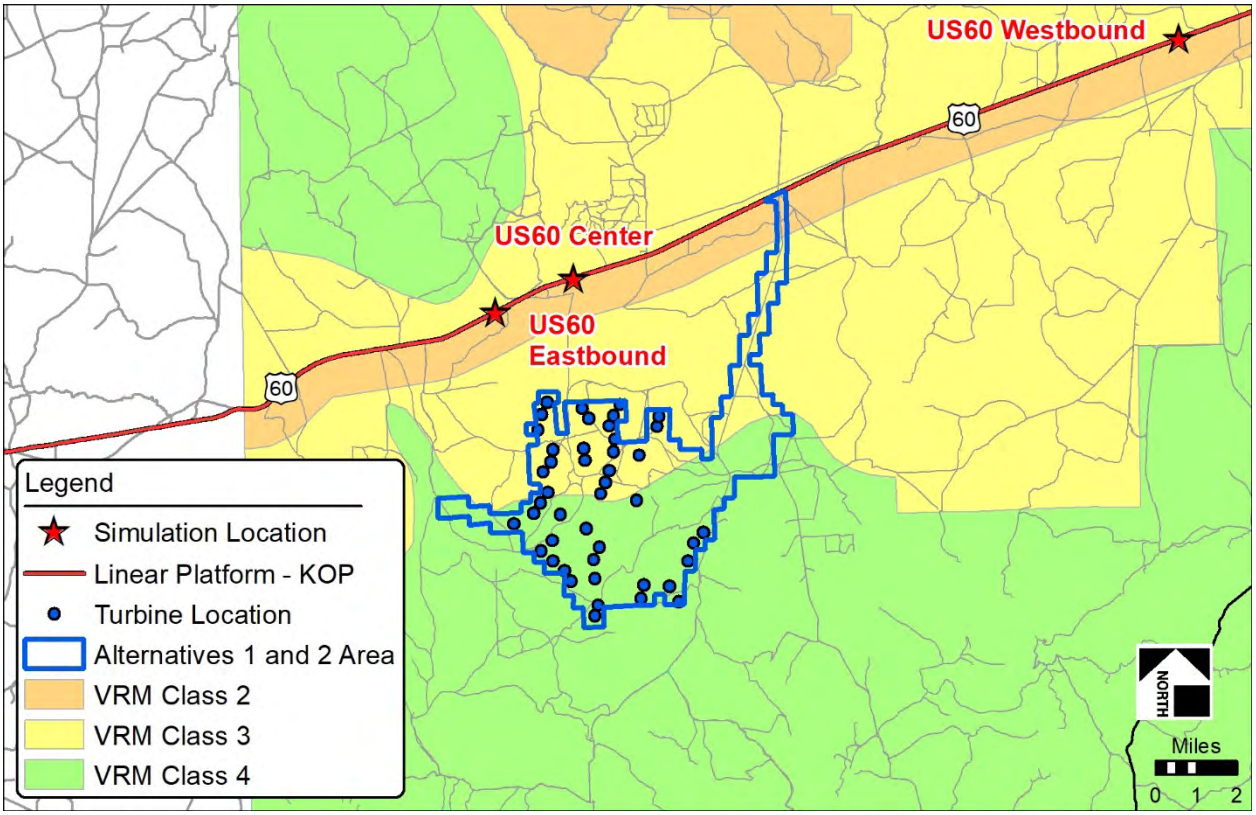
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as VRM Class III and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines, and access roads would be visible from the US 60 (Ocean to Ocean Highway) KOP. The visual resource management objective for Class III allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 2 would create strong contrast in form, line, color, and texture in the characteristic landscape, dominate the view, and would not be overlooked. Therefore, Alternative 2 would not be in conformance with Class III visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: January 2020

District/ Field Office: Socorro Field Office

Resource Area:

Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

69. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township:2S Range:19&20W	5. Location sketch *See attached map*
70. Key Observation Point **US 60 (Ocean to Ocean Highway)**		
3. VRM Class: **IV**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Vertical, geometric, thin, triangular transmission line structures, with angular guy-wires. Low, rectangular scattered residential structures. Low, vertical, curving, linear fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive transmission line and fencing structures. Regular, angular, and geometric lines associated with residential structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Dark brown wood of transmission line structures. Muted tones of varying shades of residential structure. Dark gray, dull post and wire of fencing. Dark monotone paved roads and light to medium beige/gray unpaved roads.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive transmission line and fencing. Discontinuous, scattered, medium to coarse, residential structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Horizontal, block landform modification for turbine construction areas.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night. Linear, flat to rolling, symmetrical, strip, curving, regular form of access roads.
Line	Horizontal, regular, simple, and geometric lines for turbine construction area.	Straight to curving, horizontal continuous line of vegetation created from the construction of access roads.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade. Curvilinear, horizontal, continuous, and flowing line of access roads.

Color	Light, monotone, light, and brown/gray hues of landform exposure for turbine construction area.	No perceived change.	Monotone color of light/white value turbine structure and blade. Monotone color, light brown/gray access roads.
Texture	Smooth, uniform, ordered, scattered landform modification for turbine construction area.	Directional, continuous, and ordered adjacent to access roads.	Coarse, rough, discontinuous, and dotted turbines. Smooth, directional, continuous, and medium to fine access roads.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No: ☐ explain on reverse)
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No: ☒
Element	Form			X					X	X				Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line			X				X		X				
	Color			X					X	X				
	Texture			X				X		X				

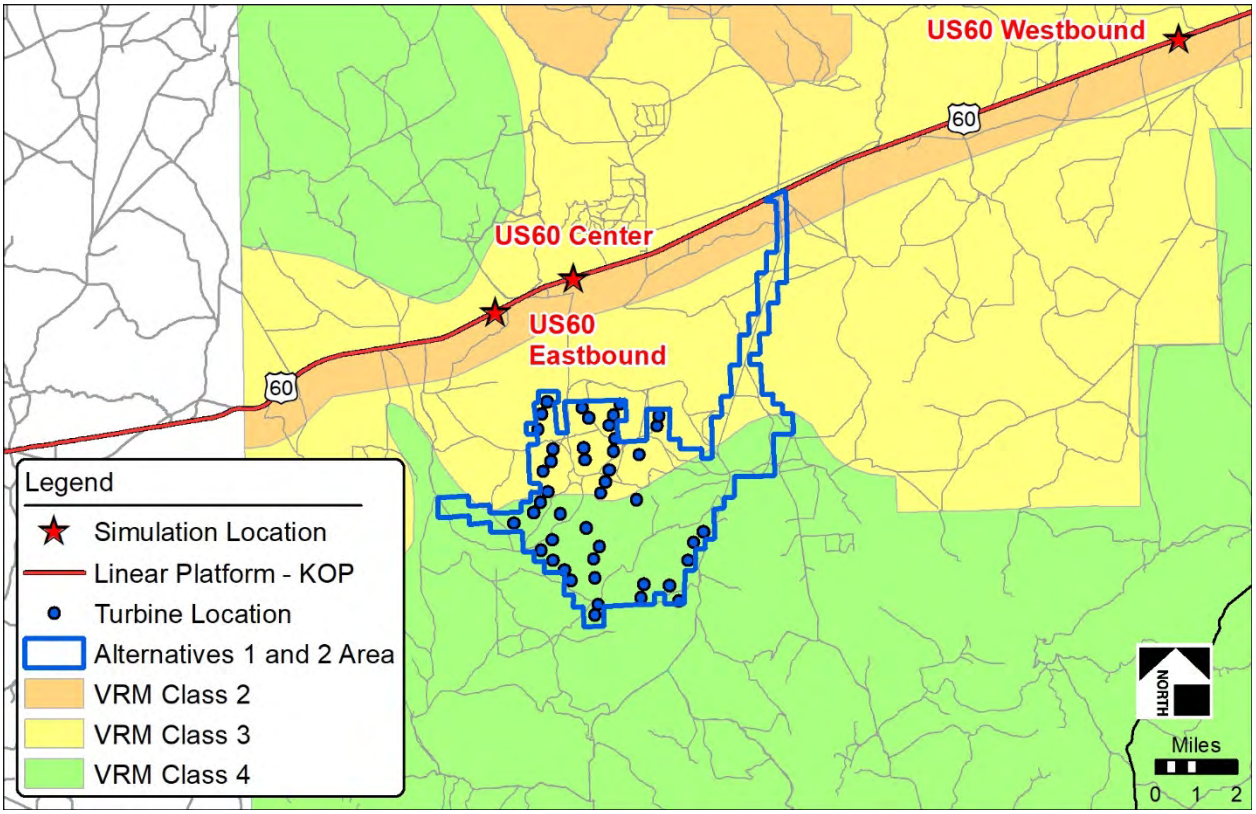
Comments from Item 2.

The view from this linear platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Alternative 2 project components visible from this KOP would occur in areas currently managed as VRM Class II, III, and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. The proposed turbines and access roads would be visible from the US 60 (Ocean to Ocean Highway) KOP. The visual resource management objective for this class, Class IV, allows for the level of change to the characteristic landscape can be high. Alternative 2 would create strong contrast in form, line, color, and texture in the characteristic landscape and would be in conformance with Class IV visual resource management objectives from the viewpoint of the US 60 (Ocean to Ocean Highway) KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Linear Platform Environmental Factors

Alternative: **Alternative 2**
Linear Platform Name: **US 60**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker, C. Bockey
Simulation: Yes

Environmental Factors	As Considered from Linear Platform	Comments
Distance to Project Components	This platform is approximately 2.5 miles from the nearest visible turbine. This platform intersects project infrastructure (roads or ancillary facilities).	
Visibility Conditions	This platform is located in a panoramic landscape that includes broad plains and low rolling hills with low grasses, shrubs and dispersed pinyon-juniper up to approximately 10-feet in height. Traveling in the eastbound direction in the foreground (FG) area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skylined; equally unobstructed and partially obstructed and equally continuous and intermittent. Traveling in the eastbound direction in the middleground (MG) area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the eastbound direction in the background (BG) area of the proposed project, views of the project components would be predominately backdropped; partially obstructed and sporadically intermittent. Distance and atmospheric conditions would restrict visibility. Traveling in the westbound direction in the FG area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the westbound direction in the MG area of the proposed project, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and equally continuous and intermittent. Traveling in the westbound direction project components are not visible in the BG area.	Foreground 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Angle of View	Traveling eastbound in the FG of the project components, the angle of observation from this platform would be predominately parallel views. The viewer position would be predominately neutral. Traveling eastbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral. Traveling eastbound in the BG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately inferior. Distance and atmospheric conditions would restrict visibility. Traveling westbound in the FG of the project components, the angle of observation from this platform would be predominately parallel views. The viewer position would be predominately neutral. Traveling westbound in the MG of the project components, the angle of observation from this platform would be predominately head-on views. The viewer position would be predominately neutral.	

Quantification of View	**Platform percent seen from project components:** There are a total of 67.0 miles of linear platform within the analysis area. Traveling eastbound in the FG of the project there are 29.5 miles of linear platform. The project components would be seen for approximately 16 miles within the FG or 24% of the total platform miles within the analysis area. Traveling eastbound in the MG of the project there are 22.4 miles of linear platform. The project components would be seen for approximately 4 miles within the MG or 6% of the total platform miles within the analysis area. Traveling eastbound in the BG of the project there are 15.1 miles of linear platform. The project components would be seen for approximately 2 miles within the BG or 2% of the total platform miles within the analysis area. Traveling westbound in the FG of the project there are 29.5 miles of linear platform. The project components would be seen for approximately 16 miles within the FG or 24% of the total platform miles within the analysis area. Traveling westbound in the MG of the project there are 22.4 miles of linear platform. The project components would be seen for approximately 2 miles within the MG or 3% of the total platform miles within the analysis area. **Project percent seen from linear platform:** There are 133.3 acres of surface disturbance within the analysis area; approximately 24 acres or 18% would be seen from the platform traveling in the eastbound direction within the FG and approximately 40 acres or 30% would be seen from the platform traveling in the westbound direction within the FG. There are 44 turbines within the analysis area: Traveling in the eastbound direction within the FG 44 turbines or 100% would be seen from the platform. Traveling in the eastbound direction within the MG 44 turbines or 100% would be seen from the platform. Traveling in the eastbound direction within the BG 20 turbines or 45% would be seen from the platform. Traveling in the westbound direction within the FG 44 turbines or 100% would be seen from the platform. Traveling in the westbound direction within the MG 44 turbines or100% would be seen from the platform. **Duration of view from linear platform:** There are a total of 67.0 miles of linear platform within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 27 minutes within the FG of the project, the project components would be seen for a total of approximately 15 minutes within the FG or 24% of the total travel time within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 21 minutes within the MG of the project, the project components would be seen for a total of approximately 4 minutes or 6% of the total travel time within the analysis area. Traveling eastbound based on a vehicular travel speed of 65 mph, and a total travel time of 14 minutes within the BG of the project, the project components would be seen for a total of approximately 2 minutes or 3% of the total travel time within the analysis area.	

	Traveling westbound based on a vehicular travel speed of 65 mph, and a total travel time of 27 minutes within the FG of the project, the project components would be seen for a total of approximately 15 minutes or 24% of the total travel time within analysis area. Traveling westbound based on a vehicular travel speed of 65 mph, and a total travel time of 21 minutes within the MG of the project, the project components would be seen for a total of approximately 2 minutes or 3% of the total travel time within the MG of the project. The project components would be more visible traveling in the eastbound direction (21 minutes or 34% of the total travel time within the analysis area) vs. traveling in the westbound direction (17 minutes or 27% of the total travel time within the analysis area).	
Spatial Relationship/ Size and Scale	Traveling eastbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components (infrastructure and turbines) would introduce elements and patterns that would be visually dominant ad create strong contrast as compared to the other features in the landscape. Traveling eastbound in the MG of the proposed project, the project components would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting within the MG of the proposed project would appear to be substantially altered because project components (turbines) would introduce elements and patterns not common in the landscape and would create moderate contrast as compared to other features in the landscape. Traveling eastbound in the BG of the proposed project, the project components would not attract attention and the landscape would appear intact within the visual setting; project component visibility would be limited by distance and atmospheric conditions. Traveling westbound in the FG of the proposed project, the project components would demand attention and dominate the visual setting; the visual setting within the FG of the proposed project would appear to be severely altered because project components (infrastructure and turbines) would introduce elements and patterns that would be visually dominant ad create strong contrast as compared to the other features in the landscape. Traveling westbound in the MG of the proposed project, the project components would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting within the MG of the proposed project would appear to be substantially altered because project components (turbines) would introduce elements and patterns not common in the landscape and would create moderate contrast as compared to other features in the landscape.	

BLWP – US 60 Center Simulation – Alternative 2

BLWP – US 60 Eastbound Simulation – Alternative 2

BLWP – US 60 Westbound Simulation – Alternative 2

Form 8400-4
(September 1985)
(Format modified March 22, 2011)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT **VISUAL CONTRAST RATING WORKSHEET**	Date: January 2020 District/ Field Office: Socorro Field Office Resource Area: Activity (program): Renewable Energy

SECTION A. PROJECT INFORMATION

71. Project Name Borderlands Wind Project – **Alternative 2**	4. Location Township: 2S Range: 19&20W	5. Location sketch *See attached map*
72. Key Observation Point **Zuni Salt Lake**		
3. VRM Class: **III**		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	Gently rolling, broad, and continuous with subtle variations; occasional moderate slopes.	A mix of vegetation with low indistinct grasses, low rounded shrubs, and amorphous patches of rounded pinyon-juniper.	Low, rectangular scattered building structures. Low, vertical, thin, curing, linear, fencing. Linear, flat to rolling, symmetrical, strip, curving, regular form of paved and unpaved roads.
Line	Undulating to flat/gentle rolling; undulating edge at transition to adjacent units.	Broken and indistinct.	Defined, vertical, rigid, and repetitive and fencing structures. Regular, angular, and geometric lines associated with building structures. Curvilinear, horizontal, continuous, and flowing line of paved and unpaved roads.
Color	Light reddish brown to khaki soils; variations in brown.	Light straw-buff of grasses, yellow-green of rabbit brush, dark green of pinyon-juniper.	Muted tones of varying shades of building structure. Dark monotone paved roads and light to medium beige/gray unpaved roads. Dark gray, dull post and wire of fencing.
Texture	Predominantly smooth, with gentle transitions.	Broken and patchy with coarse areas of pinyon-juniper. Stippled pinyon-juniper in transition areas. Grasses and shrubs are consistent and continuous.	Consistent, directional, and repetitive fencing. Discontinuous, scattered, medium to coarse, building structures. Smooth, directional, continuous, and medium to fine paved and unpaved roads.

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LANDFORM/WATER	2. VEGETATION	3. STRUCTURE (*General*)
Form	No perceived change.	No perceived change.	Bold, distinct, solid, tall, vertical, and rigid turbine structures. Circular motion of blade during the day and lighted hub at night.
Line	No perceived change.	No perceived change.	Bold, straight, vertical, and perpendicular, turbine structure; bold, circular, and continuous line of blade
Color	No perceived change.	No perceived change.	Monotone color of light/white value turbine structure and blade.

Texture	No perceived change.	No perceived change.	Coarse, rough, discontinuous, and dotted turbines.

SECTION D. CONTRAST RATING SHORT TERM: **X** LONG TERM (>5 years): **X**

		Land/Water Body (1)				Vegetation (2)				Structures (3)				2. Does the project design meet visual resource management objectives? Yes: **X** No☐
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	3. Additional mitigation measures recommended Yes: ☐ No☒
Element	Form				X				X			X		Evaluator's Names V. Alguire D. Chavez D. Simpson-Colebank R. Baker
	Line				X				X			X		
	Color				X				X			X		
	Texture				X				X			X		

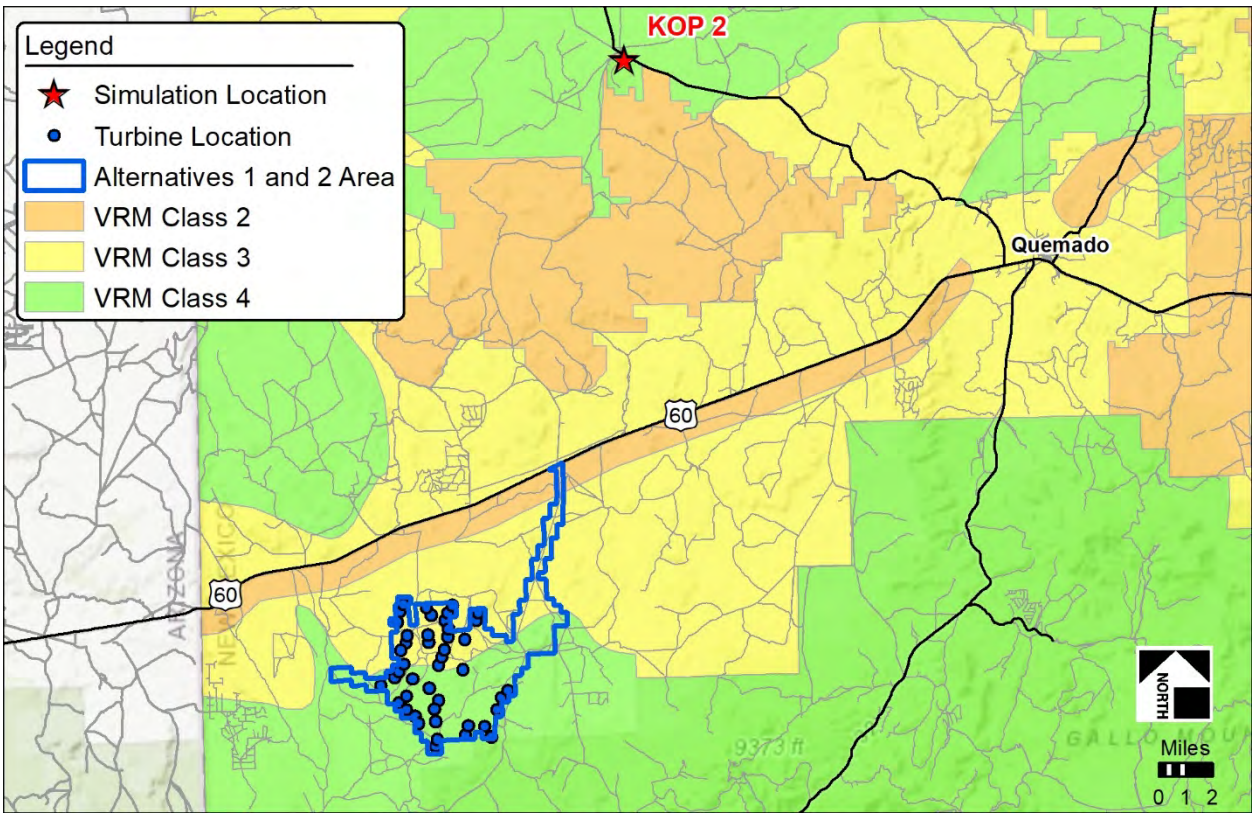
Comments from Item 2.

The view from this stationary platform consists of broad gently rolling hills, with occasional moderately sloped features and a scattering of distant mountain landforms in the background. The vegetation is a mix of short grasses and with large expansive patches of pinyon-juniper. Proposed project components visible from this KOP would occur in areas currently managed as VRM Class III and Class IV. The statuesque wind turbines with their rotating blades and lighted hubs would demand attention and dominant the landscape. This KOP is approximately 21 miles from the nearest visible turbines. Approximately 22 turbines would be visible within the background of the Zuni Salt Lake KOP. The amount of viewer exposure of the project components from the platform would be approximately 15 degrees. The primary focus of the viewer's attention is Zuni Lake from which the project components would be in view. The viewer position would be predominately inferior. The visual resource management objective for this class, Class III, allows for a moderate level of change to the characteristic landscape. However these changes should repeat the basic elements found in the characteristic landscape and should not dominate the view of the casual observer. Alternative 2 would create weak contrast in form, color, and texture in the characteristic landscape and may attract attention depending on the time day and atmospheric conditions. Therefore, Alternative 2 would be in conformance with Class III visual resource management objectives from the viewpoint of Zuni Salt Lake KOP.

Additional Mitigation Measures (see Item 3)

None identified.

KOP Location Map



Borderlands Wind Project Stationary Platform Environmental Factors

Alternative: **Alternative 2**
Stationary Platform Name: **Zuni Salt Lake**
Date: January 2020
Evaluator Name: D. Simpson-Colebank, R. Baker; C. Bockey; D. Chavez; V. Alguire
Simulation: Yes

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 21 miles from the nearest visible turbine. Project infrastructure (transmission line/ roads/ ancillary facilities) are not visible from this platform.	Foreground limit 0-10 miles Middleground 10.1-20 miles Background 20.1-30 miles
Visibility Conditions	This platform is located in a predominately panoramic landscape that includes plains with scattered low rolling hills and mesas. In the background (BG) of the platform, views of the wind turbine blades would be predominately skylined; towers predominately partially obstructed and predominately intermittent.	The majority of project components (turbines) occur behind landforms when viewed from this platform. Distance and atmospheric conditions reduce visibility of turbines.
Angle of View	In the BG, the amount of viewer exposure of the project components from the platform would be approximately 15°. The primary focus of the viewer's attention is Zuni Lake from which the project components would be in view. The viewer position would be predominately inferior.	
Quantification of View (Project percent seen)	Based on bare earth GIS analysis approximately 37 turbines would be seen in the BG of the platform, which would represent 84 percent of the total turbines within the project area. Project infrastructure (transmission line/ roads/ ancillary facilities) are not visible from this platform.	
Scale/Spatial Relationship	The project components within the BG of the platform and would begin to attract attention and be visually subordinate within the visual setting; the visual setting would appear to be noticeably altered because the turbines would introduce color contrast, vertical elements and motion that would be visually subordinate within the landscape and create generally low contrast due to distance and atmospheric conditions.	

BLWP – Zuni Salt Lake Simulation – Alternative 2

Borderlands Wind Project Special Management Area (SMA) Environmental Factors

Alternative: **Alternative 2**
Stationary Platform Name: **Cerro Pomo ACEC**
Date: January 2020
Evaluator Name: C. Bockey
Simulation: No

Environmental Factors	As Considered from Stationary Platform	Comments
Distance to Project Components	This platform is approximately 9 miles from the nearest visible turbine. This platform is approximately 3 miles from the nearest visible project infrastructure (road improvements).	
Visibility Conditions	This platform is located in a predominately panoramic landscape that includes plains with scattered low rolling hills and mesas. In the foreground (FG) of the platform, views of the project components would be equally backdropped against mountainous terrain and skylined; equally unobstructed and partially obstructed and equally continuous and intermittent. In the middleground (MG) of the platform, views of the project components would be equally backdropped against mountainous terrain and skyline; predominantly partially obstructed and predominately intermittent.	Project components are not visible in the Background
Angle of View	In the FG, the amount of viewer exposure of the project components from the platform would be approximately 60°. The primary focus of the viewer's attention is nonspecific from which the project components would be in view. The viewer position would be predominately neutral. In the MG, the amount of viewer exposure of the project components from the platform would be approximately 50°. The primary focus of the viewer's attention is nonspecific from which the project components would be in view. The viewer position would be predominately neutral.	
Quantification of View (Project percent seen)	There are 34,878 acres within the SMA. Based on bare earth GIS analysis approximately 5,785 acres/ 17 percent of the SMA would have views of project components (turbines, transmission lines, roads, ancillary facilities) within the FG area. Based on bare earth GIS analysis approximately 922 acres/ 3 percent of the SMA would have views of project components (turbines, transmission lines, roads, ancillary facilities) within the MG area.	

Scale/Spatial Relationship	The project components within the FG of the platform and would attract attention, be visually prominent, and begin to dominate the visual setting; the visual setting would appear to be substantially altered because project components would be visually prominent in the landscape and would create moderate contrast as compared to other features in the landscape depending on visibility conditions and location within ACEC. The project components within the MG of the platform and would begin to attract attention and be visually subordinate within visual setting; the visual setting would appear to be noticeably altered because project components would be visually subordinate in the landscape and would create generally low contrast as compared to other features in the landscape depending on visibility conditions and location within ACEC.	

APPENDIX G: COMMENTS AND RESPONSES TO COMMENTS ON THE DRAFT EIS

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Table G-1. Comments and Responses to Comments on the Draft EIS

Comment ID	Comment on the Draft EIS	Response to Comment
01.AS-1	I just wanted to say that what happens here in this county and in this small town with this wind farm has an effect on Quay County in Tucumcari, New Mexico, specifically Mesa Lands Community College. I teach wind technicians how to maintain turbines. And when there's a proposed wind farm, I generally get an influx of students from the surrounding high schools in my program. So it's a wonderful boon to our dying little town. There's a lot of dying little towns in New Mexico, and these projects really do boost our economy. And it's not just felt here locally around the local wind farm. It's felt in other places. I just wanted to make that known and that I really appreciate the consideration of the wind farm going in here.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
01.MK-1	Generators, light towers, and other equipment powered by diesel, gasoline, or natural gas engines may require registration or an air quality permit if the emissions of any criteria air pollutant will exceed 10 pounds per hour and 10 tons per year. If the proposed project includes this type of equipment, please contact the NMED Air Quality Bureau Permitting Section to determine if a permit is required. For more information on air quality permitting and modeling requirements, please refer to 20.2.72 NMAC.	The construction contractor would ensure that all generators, light towers and other equipment powered by diesel, gasoline or natural gas engines would acquire the appropriate air quality permits from NMED Air Quality Bureau Permitting Section.
01.MK-2	The project as proposed should have no significant negative impacts on ambient air quality.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The BLM considered potential impacts to air quality in the EIS; refer to Table 3-1.
01.MK-3	Implementation of the project may involve the use of heavy equipment leading to a possibility of contaminant releases associated with equipment malfunctions (e.g., fuel, hydraulic fluid, etc.). The GWQB advises all parties involved in the project to be aware of notification requirements for accidental discharges as specified at 20.6.2.1203 NMAC. A copy of the Ground and Surface Water Protection Regulations, 20.6.2 NMAC, is available at http://164.64.110.239/nmac/parts/title20/20.006.0002.pdf.	Comment acknowledged. The BLM appreciates the information provided. The BLWP POD includes a Health and Safety Plan which includes Waste and Hazardous Material Management (Appendix C of the EIS).
01.MK-4	There is one 'no further action' release site in the project area (see below). There are no active facilities within the proposed area. GoNM - OpenEnviroMap https://gis.web.env.nm.gov/oem/?map=gonm. This release site has a current status of “no further action”. Facilities for which PSTB records show there are no longer petroleum storage tanks that we regulate and there has not been a release are not included in these comments. There are a number of reasons that there could be tanks present or a release, but the Petroleum Storage Tank Bureau does not have a record of it in our database. For further information, please consult our online resources. Many of	Comment acknowledged. The BLM appreciates the information provided.

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	the records requested from the Petroleum Storage Tank Bureau are available online, and you can access them quickly yourself by following the directions below.	
01.MK-5	If you'd like a further response from this bureau, please reply with the information you find (say no information if none; say whether you found info on leaks or not; and if possible, say whether there are tanks and whether they are underground or aboveground). In addition, please use any FID's (facility identification numbers) or RID's (release identification numbers) you've found in these searches for the facilities or releases you are seeking information on, and please state specifically which records you're looking for. If you want to see all records for a facility, you're welcome to arrange a time with us to come look at the files. If you need any help using the online resources, please let me know.	Comment acknowledged. The BLM appreciates the information provided.
01.MK-6	Please review the lists on the webpage, https://www.env.nm.gov/ust/lists.html. Click on the Active Leaking and NFA Sites link. The first document lists NFA sites (sites for which no further action is currently required) by county and city. The third document lists active sites alphabetically by priority (the second and fourth documents are pdfs). Click on the document you need, then click Download for the option you choose in the window that opens. You can search the Active Leaking or NFA Sites spreadsheets (or any other spreadsheet) by holding down the ctrl key on your keyboard and then hitting the F key, or by going to Find & Select (all the way to the right) on the Home tab of the spreadsheet, selecting Find, and entering an address or part of an address, a name, or any information you'd like to search on and then clicking on Find Next repeatedly to find all records that fit your search. You can download the No Further Action letter for many of these records by clicking the link in the last column of the NFA spreadsheet. If the No Further Action letter is not online and you need it or any other information, let us know.	Comment acknowledged. The BLM appreciates the information provided.

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01.MK-7	If you are looking for information about the presence of underground or aboveground storage tanks at an address, please download the All Storage Tank list, also at https://www.env.nm.gov/ust/lists.html. This lists all storage tanks in the state that fall or fell under our regulations and have been registered with us, whether they are still present or not. This spreadsheet can be searched the same way as the above ones. If you only need to know about tanks that are currently in use or temporarily out of use, download the Active Storage Tank list.The GoNM map link also enables you to locate quite a bit of information that will facilitate your search, including NFA letters. Not all information about each site has been uploaded there, but recently many site documents have been added. Instructions for Go NM: Go to https://www.env.nm.gov/ust/lists.html. Click on the GoNM link at the bottom left of the page. Documents may download more easily if you use Internet Explorer. When you are in the GoNM Mapper, you can use the zoom slider at the upper left of the map to zoom in. Colored and white shapes represent facilities that have or had tanks and/or have been involved in a release. To find out more about a facility, click on the white i inside the blue circle at top of the screen and then click on the shape that represents that facility. When the dialog box pops up, you can click on either the Report or any link under Documents If it is a leaking site, there will usually be a link under Documents. Many No Further Action letters and other documents are accessible and downloadable this way. If you click on the icon under Report at the left of the dialogue box, there is also quite a bit of information there. If there is a triangle (like a “play” symbol on a media player) at the top right of the dialog box, click on it, and a second page of information will open. If you have questions or need further information, please call the Petroleum Storage Tank Bureau at 505-476- 4397.	Comment acknowledged. The BLM appreciates the information provided.

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01.MK-8	NPDES Construction General Permit The U.S. Environmental Protection Agency (USEPA) administers the National Pollutant Discharge Elimination System (NPDES) program under Section 402 of the Federal Clean Water Act (CWA) in the State of New Mexico. Any "construction activity" that will disturb, or that is part of a common plan of development or sale that will disturb, one or more acres of land and discharges stormwater to waters of the U.S. must obtain NPDES Construction General Permit (CGP) coverage. The CGP was re-issued January 11, 2017 effective February 16, 2017 and includes requirements for endangered species and historic properties, and additional state and tribal requirements in Part 9 of the permit. Among other things, the CGP requires that a SWPPP be prepared for the site and that appropriate Best Management Practices (BMPs) be installed and maintained both during and after construction to prevent, to the extent practicable, pollutants (primarily sediment, oil & grease and construction materials from construction sites) in storm water runoff from entering waters of the U.S. This permit also requires that permanent stabilization measures, and permanent storm water management measures be implemented post construction to minimize, in the long term, pollutants in storm water runoff from entering these waters. In addition, permittees must ensure that there is no increase in sediment yield and flow velocity from the construction site (both during and after construction) compared to pre-construction, undisturbed conditions. More information on the CGP as well as links to the eReporting tool (NeT-CGP) to apply for coverage or waivers is available at: https://www.epa.gov/npdes/2017-construction-general-permit-cgp	Comment acknowledged. The BLM appreciates the information provided.
01.MK-9	USACE Section 404 Dredge and Fill Permits and NMED 401 Certifications The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into waters of the United States, including wetlands, under Section 404 of the Federal Clean Water Act (CWA). The USACE issues or authorizes Standard Individual Permits (IPs), Nationwide Permits (NWPs), and the Emergency Regional General Permit (RGP) for activities such as earth-moving work within wetlands, lakes, and streams (including ephemeral streams or arroyos) that are waters of the United States. If you have questions about activities within watercourses or wetlands that may require coverage under a CWA Section 404 permit, then more information is available on-line from the USACE, Albuquerque District, Regulatory Division at http://www.spa.usace.army.mil/Missions/Regulatory-Program-and-Permits/.A water quality certification is required under Section 401 of the Federal CWA for activities regulated under Section 404. More information on the permitting and certification requirements is available on-line from NMED at https://www.env.nm.gov/surface-water-quality/dredgeandfillactivities/. If you have questions related to dredge and fill activities,	Comment acknowledged. The BLM appreciates the information provided.

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	then contact Abe Franklin, Program Manager, Watershed Protection Section, NMED Surface Water Quality Bureau at 505-827-2793.	
01.MK-10	Thank you for providing NMED with the opportunity to review and comment on this proposed project. Going forward, please email me request for review at the below email address.	The BLM has noted your request and any future public notification regarding the project will be emailed to you at your request.
02.EM-1	In review of the Draft EIS, we note that there is a small area of emergent wetlands within the proposed project rights-of-way. Although their jurisdictional status is unclear, it is not clear whether-or-not project activities will introduce fill into these areas. Should any activities planned necessitate the introduction of fill into waters of the United States, the U.S. Army Corps of Engineers will need to be coordinated with as required by Section 404 of the Clean Water Act (CWA). IF a Section 404 permit is required, EPA will review the project for compliance with the Federal Guidelines for Specification of Disposal sites for Dredged or Fill Materials (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA. Subsequent requirement of Section 404(b)(1) of CWA compliance should also be discussed.	Comment acknowledged. There is a small area of emergent herbaceous wetlands mapped in the western portion of the Proposed Action area along Cow Springs Draw that would not be impacted during construction, O&M, or decommissioning. The BLM appreciates the information provided. No change has been made to the EIS.
02.LB-1	Please explain why we in this area should experience all the drawbacks/degradation of visual, auditory and other aspects while no one here will benefit. I am willing to bet that the number of people hired locally will be minor, as will any other commercial benefit in construction or maintenance. None of the power generated will be used locally. The only beneficiary will be the company.	The electricity that would be generated by the proposed BLWP would be used by TEP for distribution to the electrical transmission grid, which includes the Socorro Electrical Cooperative. A sales tax would be paid to Catron County during construction would be a benefit to the County and local residents in addition to the annual payment by Borderlands Wind, LLC would be made over 30 years as part of the Industrial Revenue Bond structure (refer to EIS Section 3.3.2). No change has been made to the EIS.
02.LB-2	I have a question concerning erosion. During construction there will be a tremendous amount of dust blown away and there will be huge ruts in any muddy ground even if the roads go in early. Both dust and ruts will contribute to erosion. Plus the 40 plus miles of roads and the huge bases for the towers (10 times the size of the tower base according to (NextEra) will greatly reduce the amount of land surface which can absorb rain/snow. That runoff will also lead to erosion and loss of water for local plant use.	The BLM appreciates your comment. Dust control and erosion prevention measures would be put in place if the BLPW is approved by the BLM. Refer to Appendix D. Stormwater Pollution Prevention Plan and Appendix O. Dust Control and Air Quality Plan in the POD for specific measures. The POD is included in Appendix C of the EIS.

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03.EI-1	As mentioned in our scoping letter dated December 3, 2018, we have concerns regarding the location of Tower 40. Per the BLM GIS tower layer, Tower 40 is within 400 feet of the forest boundary, which is the closest tower to the National Forest Boundary. The Forest is concerned of potential encroachment and possible impacts to forest resources depending on the layout, land configuration, and size of the construction disturbance areas (table 2-2 DEIS) or if the tower falls during construction or implementation. All three tower heights are more than 400 feet (table 2-1 DEIS) and therefore have the potential to reach forest lands. We continue to recommend for easier management and maintenance as well as avoiding the need for additional surveys and permitting processes, to set Tower 40 back well beyond tower height from the forest boundary or be designed to reduce the risk of direct impacts on forest lands.	Tower 40 has been relocated to be approximately 720 feet from the Gila National Forest boundary. If the tower were to fail, it would not reach Forest lands and no impacts to the National Forest would occur.
03.EI-2	Page 2-7 describes the aviation lighting of the MET and turbine towers being medium-intensity, red strobe warning lights or Aircraft Detection Lighting System (ADLS). The effects of lighting is addressed in chapter 3, but we are providing the following information of National Forest resources that have the potential to be altered or impacted by this project's lighting alternatives for the towers. The Gila National Forest has concerns related to visuals and especially the night-time visuals associated with lighting of the turbines and MET. Recreational opportunities including dispersed recreation is an important value on the forest, especially with being able to experience solitude outside of designated wilderness areas while partaking in various activities. The Final Assessment Report of Ecological / Social/ Economic Sustainability Conditions and Trends; Gila National Forest, 2017 [https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprdS44951.pdt] describes public concern as: The public are concerned about the quality of their environment, including aesthetic values of the landscape, particularly scenery and spiritual values (USDA FS 1995b) . ... It is important to manage scenic resources to provide natural appearing landscapes that ensure quality sightseeing and other recreation opportunities/or the public, as well as maintaining natural landscapes/or communities adjacent to the Forest. Natural appearing scenery provides the basis for high quality recreation experiences on the Forest. In other words, scenery is an integral component of all Forest settings, and contributes to the quality of visitors' recreation experience. Scenic resources or natural settings are recognized as a central component of the recreation niche of the Forest. Another concern is the Gila National Forest offers many visitors the chance to view and admire the natural night sky and boasts some of the darkest nights in the Southwest (Final Assessment Report of Ecological/ Social/ Economic Sustainability Conditions and Trends, Gila National Forest, 2017 pages 550-551). With trends of more and more people residing in expanding urban and suburban	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The BLM considered potential impacts to visual resources and potential impacts to dark skies in the EIS; refer to Section 3.9 and Appendix F of the EIS.

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	areas, the experience of viewing the natural night sky is becoming rarer and more unique This opportunity to view the natural night sky is relevant not only to astronomers, but also stargazing recreationists .... Currently there are limited islands of areas that have these qualities across the region and they will be increasingly rare as more development occurs (Figure 171, page 551 of Assessment Report displays a map of dark sky areas). Based on the Gila National Forest's recreation niche, solitude, and dark sky opportunities, we feel that these forest values may be negatively impacted. If a build alternative is selected, these impacts would be less provided the ADLS system is implemented which would greatly reduce illumination time.	

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03.EI-3	**Groundwater Withdrawals** The project proposes the need for approximately 26 million gallons of water for construction and that this water would be pumped from an existing private well, plus an additional well to withdraw approximately 140,800 gallons per year for operation and maintenance. Page 3-9 of the DEIS states that the amount of groundwater use would be "negligible to minor, specifically over the long tenn." We do not find any assessment of what the short-tenn impacts would be of withdrawing 26 million gallons over a five to six months construction period. We see that the 2015 USGS data for Catron County (page 3-9 DEIS) water use was used in the assessment and question whether the values estimated in the assessment are appropriate for considering the withdrawal impacts from the existing private welt and project use. Catron County overlaps 3 different underground water basins and this project is located within the Gallup Underground Basin (Office of State Engineers underground water basins map at https://www.ose.state.nm.us/Maps/PDF/underground_water.pdf). Concern is whether there are differences in underground water basins as well as distribution of public water use across Catron County and associated underground basins. The Gila National Forest has concerns with the drawdown of 26 million gallons (nearly 80 acre feet of water) in a short period of time (five to six months). There are 7 wells within 10 miles of the forest/project boundary that provide water to allotments for both livestock and wildlife benefits that are managed by the Quemado Ranger District. Three are in Arizona and others in New Mexico (1 on private, 3 on forest property). Currently one of the wells, the Mangitas Well, located within 2.4 miles of the forest boundary has recently stopped producing water, impacting the supply of water to 13 troughs. This one well is the major water supplier for the allotment. The Forest has great concern over the potential impact of additional pressure on water resources in the area and to associated wildlife and permitted livestock operations.Additionally, the aquifer associated with the existing and proposed wells could pose devastating effects to groundwater-dependent resources, in particular riparian and aquatic systems located on National Forest System lands. Water removed from aquifers at depth may easily impact shallower water table aquifers, drying perennial streams and wetlands. Significant land subsidence is also a possible concern if extensive groundwater pumpage from an unconsolidated aquifer-aquitard system is permitted. Groundwater withdraw of magnitude proposed in the short time period has the potential to negatively affect surface water, groundwater, and senior water right holders, both on and off National Forest System lands.	As noted on page 2-7 of the DEIS, the well that would be used for construction water would be an existing well on private land, and the water would be conveyed through aboveground piping to the project area. Further information regarding the permitting of wells indicates that the New Mexico Office of the State Engineer issues permits for water use in New Mexico. Through the permitting process, the State will determines if the well is hydrologically feasible; that the well will not impair existing water rights or state's interstate obligations; that the well will not be detrimental to public welfare of the state; and that the well will not cause harm to users of land and water within the area of hydrological concern. The BLM does not have the authority to approve or deny the well. The New Mexico Office of the State Engineer has approved the private well which the Borderlands Wind, LLC proposes to use (See WR File Number 'G-03218' on the New Mexico Water Rights Reporting System). Since the publication of the DEIS, the BLM NMSO has conducted analyses to determine the impact of the new well, and its associated use for the construction of BLWP, on the aquifer it would draw water from. According to the BLM's analyses, if, during construction, the BLWP were to use 26 million gallons of water in a five-month period (the maximum impact scenario), at a distance of one mile from the well, the estimated aquifer drawdown is less than 0.001-feet. There are two populated places adjacent to the permitted wells, Manuelito Place (2.6 miles away), and Red Hill (5.9 miles away). The results of these calculations indicate that there would be a negligible impact on the aquifer in the vicinity of these populated places, or any other location over one-mile from the well. Refer to Table 3-1 in the EIS.

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03.EI-4	The forest has reviewed the effects outlined in the DEIS, and provide the following as continued concerns from scoping regarding potential direct and indirect impacts to the forest from project implementation: • For wildlife, concern regarding disruption or fragmentation of travel corridors through the project area disrupting access to or from the forest either through the air or on the ground. Want to ensure that wildlife species diversity and viability are maintained on National Forest lands.	The general wildlife and associated habitat that are present within the BLWP area are relatively common within the region. The estimated long-term loss of habitat is approximately 140 acres for the Proposed Action and 137 acres for Alternatives 1 and 2, both of which represent less than 0.01 percent of similar habitat within the NM region (within 30 miles from the BLWP area within NM and would include a small portion of the Gila National Forest). There are no known wildlife movement or migration corridors present in the BLWP area that would be impacted by the proposed project. While some smaller or less mobile species or individuals may be displaced by the BLWP, the majority of the wildlife that would be impacted by construction, O&M, and decommissioning of the BLWP would continue to use the area. Wildlife travel corridors on National Forest lands would not be disrupted or fragmented. The BLWP is not anticipated to contribute to loss of wildlife species diversity and/or viability. No change has been made to the EIS.
03.EI-5	• With new ground disturbing activities and equipment being brought in from other locations, there is a concern with the potential establishment and spread of noxious or invasive plants into the area and then spreading onto the forest by vehicles, wildlife, wind, or other vectors. Concern for impacts to vegetation and species habitat from establishment and spread of invasive species. We continue the emphasis on design features to ensure vehicles and equipment be cleaned, especially the undercarriage, prior to starting work and monitoring in disturbed areas the establishment of noxious or invasive plants.	Comment acknowledged. Refer to Table 3-1. Determination and Rationale for Detailed Analysis by Resource/Use in the EIS and as well, refer to the Appendix E of the POD that would be implemented to control noxious weeds and invasive species in the project area.
03.EI-6	Page 3-4 describes that BLM wildland fire management would not be impacted by the build alternatives. For the Gila National Forest, this is the first-time wind turbines may need to be considered during project development and all fire management activities. So, the Forest has questions or concerns mostly regarding prescribed fires and wildland fire management, including smoke management, related to the proposed infrastructures. For example, the Gila National Forest coordinates with Tucson Electric Power and El Paso Electric when there are planned prescribed fires and wildland fire activities, mostly related to smoke in and around the powerlines. Prior to prescribed burn activities, the forest contacts the company to plan and integrate features into the burn plan to protect powerlines, associated infrastructure, and timing of power interruption in	The BLM would request that Borderlands Wind, LLC coordinate with the Gila National Forest on developing common procedures and contacts for the fire management program. This information would be included in the Fire Protection and Prevention Plan in the POD. No change has been made to the EIS.

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	the line. Should a build alternative be selected, the Forest Service would like to coordinate with Borderlands Wind, LLC, to develop common procedures and contacts for the fire management program and other forest projects that may have influence on the function and workings of the wind turbines as was developed with the other power companies.	
03.EI-7	We would like to stay informed as the project progresses. Should there be a need identified requiring a change to the project boundary or need to access National Forest System Lands for project design, construction or maintenance, please contact and coordinate with Emily Irwin, District Ranger, at the Quemado Ranger District office located at Quemado, NM at 575-773-4678 or emilv.irwinfaJusda.gov or Lisa Mizuno, Environmental Coordinator at the Supervisor's Office at 575-388-8267 or lisa.mizuno@usda.gov.	Comment acknowledged. The BLM appreciates the information provided.
03.SH-1	I personally think they grossly underestimated the damage they're going to do to the land and how long it's not going to heal, and I can prove that by what Ridgeway did when they were trying to do their CO2 thing. If anybody wants to come out, I'll be glad to give them a tour. So I think that's a big hole there that needs to be looked at better for the livestock, animals, the land itself. I don't understand why we can't keep some of our land like God made it in a pristine -- the way it was made, pristine.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The EIS provides detail analysis to the resources and uses of the BLWP project area; refer to Chapter 3 of the EIS.
03.SH-2	As far as the tax deal, I don't know. I'd like to learn more about the 90-some-odd-thousand dollars or whatever it was they were going to give the county as opposed to what the taxes would be after X number of years.	The funds and amount of the sales tax that will be paid during construction and the Industrial Revenue Bond are between Catron County and Borderlands Wind, LLC, not the BLM. No change has been made to the EIS.
03.SH-3	And there is also a question in my mind about the length of this project from the time they get it completed until they shut it off. How many years is it going to run?	The length of construction is estimated to be up to 12 months. As noted in Section 2.2.3 of the EIS, subject to the BLM's approval of the ROW application (with or without modification), the wind energy facility would operate year-round for up to 35 years. No change has been made to the EIS.
03.SH-4	And then another big thing is water. I've also heard tonight that they're proposing to drill a well right up the canyon from my ranch on the neighbors to the south, Houston's place. And I have springs and ponds and irrigation ditches that been there since we've owned the ranch and well before that. We bought it in 1976. That concerns me about my water rights and what it's going to do to my water in my wells, because water is pretty iffy out	Refer to response to Comment 03.EI-3. The well drilling permit locations are on private land on the east side of the BLWP area, located outside of the canyon and approximately 8 miles from the springs and ditches

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	there. And those springs are very unique for the area, also. So, anyway, that's just a few of the things. I could stand up here and talk forever. I just think there's lots of stuff that needs to be thought about more thoroughly and more answers given to the people before this thing moves on. Thanks for your time.	mentioned in the comment. No change has been made to the EIS.
04.SM-1	Many here are retired and hope to pass on what we've built here to the next generation. A lot of us have grown up in the area and chose to stay and invest their lives here. We have all chosen to live in what is deemed a frontier area. We like it that way. Only a handful of permanent jobs will be created. Generally, the construction is done by specialized crews. The restaurants and motel may have some temporary benefit and that's about it. The power generated is for Tucson Electric. Theoretically, the local electric company could buy it back from its destination.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 for a discussion of the potential impacts to the local economy and the rural character of the land.
04.SM-2	The community as a whole have negative impacts. Highway 60 will be even busier with large trucks moving heav equipment for the two-year phase. According to the previously provided documents, they had two years to build it. During ·this time, no access for the public is allowed at the site. The majority of the site is "public land.? An automatic additional two years with no access to the public can be granted, according to the previously provided documents. This could be four years of the traffic destroying the already well-used road. When last November I inquired about this, I was told no provision to repair the road would have been made. We were told something different tonight. The county maintains the road with money from the federal government as a U.S. highway. Will the feds pony up more money to fix the damage from its increased use?	As stated in the EIS in Section 3.2.2, “Development of a wind farm would not prohibit other permitted uses such as grazing, use of existing ROWs, and dispersed recreation.” Additionally, “the oversized loads and slow-moving equipment on public roads and highways could result in temporary delays for local users “, and “The addition of approximately 40 miles of new access roads would provide access for dispersed recreation, hunting, and grazing and livestock management because motorized (and non-motorized) vehicle access would be allowed on new roads established in the Proposed Action area, except those within restricted facility areas.” To address the question on road repair, Borderlands Wind, LLC would assess the quality of roads before construction (videotaping routes, photos etc.). Following construction, Borderlands Wind, LLC would restore roads to the equivalent, or better condition that what they were prior to construction. No change has been made to the EIS.
04.SM-3	The proposed wind farm will wreak havoc to the property values in the entire county because of the sparse population of little turnover in homes. Comparisons and values ·throughout the county are used in appraisals. Values of the homes and the development will plummet, adversely affecting all various valuations countywide. The schools are funded from a percentage of our property taxes which would go down as	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The distribution of the funds from the sales tax and the Industrial Revenue Bond would be determined by Catron County, not the BLM. The potential impacts to property values is discussed in Section 3.3.1.2 of the EIS.

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	land values decrease, which means less money for the schools. Will the funds from the project make up for the shortfall in tax revenues? I don't know.	
04.SM-4	Many of the turbines are 500, 600 feet at the top of the blades or close to it. The new-towered python is 42 feet tall. Some of these will be half again as high. The dark sky ordinance could be mitigated with the radar system only if this is approved. Please put your wind farm by Tucson. Put it where the folks who will benefit by it will live. We know why you think you can put it here. There are very few of us here in Catron County, less people to impact. This is outrageous. This country was built by frontier people who moved away from other countries and other parts of this country. If we are indeed a frontier area of the United States, please stop trying to ruin it with this proposed project.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The height of the turbines including the blade could range up to 630 feet. A discussion of the potential impact to night skies is provided in Section 3.9.2 of the EIS.
05.RB-1	... wind turbines do cause electromagnet interference that affect TV, radio reception and cell phone interference, can be caused by the defraction, reflection and scattering, so it might affect your TV signal and your cell phone and all that. I happen to be right between satellite and the wind turbines, so I'm going to have a big problem, probably.	Borderlands Wind, LLC conducted both a federal beam path study and a non-federal beam path study to address the issue of turbines interfering with communications type equipment including cell phones, TV, radio etc. The federal beam path study informs several government agencies (i.e., DoD, DOE, NSF, NOAA, etc.) of the intent to build the project so that they can highlight any concerns they have. Since most of the federal beam paths are confidential, any adjustments would be made during the final site design, if needed, based on the agencies' responses. The non-federal beam path study scans all publicly licensed beam paths with the FCC. The data from the registered beam paths would then be used to avoid placing turbines in locations that would interfere with non-federal telecommunication mediums.
05.RB-2	Also, we've been having to drill our wells every so often to keep our water out there. They're probably going to run it dry out there when they go out there. And I'd like to know where are the Fish and Wildlife survey results? And as far as -- since I'm going to lose a lot of my property value probably, is the county going to reduce our taxes accordingly? I doubt it. Is Tucson Electric Power people here? How about the people from NextEra, the ones that are going to make all the money, are they here? The ones that are going to make all the money are here, I guess.	Refer to response to Comment 03.EI-3.
05.RB-3	So we have a nice community out there, Red Hill. I have a great view and it's going to be full of windmills spinning around, and I'm not happy about it. So sorry if I seem a little angry, but that's the way I see it. So that's basically the points I want to bring up.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The BLM considered potential impacts to visual resources and potential impacts to dark skies in the EIS; refer to Section

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		3.9 and Appendix F of the EIS. The BLM has a multiple use "mandate" through FLPMA, which states that the resources and uses on public land must be utilized in a balanced combination that will best meet the needs of the people (current and future needs for current and future generations).
06.SD-1	Without water, we have nothing. We have to drill wells. We have to drill deeper wells, and sometimes that don't work. We·just drilled a new well for the community. It was 700 feet deep. There's wells that are on top of the hill are probably close to 800. They're enough to supply a house. So a drop in water from the south -- my understanding the water runs from the south to the north. And if they're pumping it out down in the south, what are we going to do up north? We've got nothing. And nobody has done a study on water. They don't know how water runs. We do. And that's definitely going to be a big problem.	Refer to response to Comment 03.EI-3.
06.SD-2	Another thing is what about all this dust that's going to be taken on the road? I know in a lot of construction sites, they have to have water trailers there to maintain the dirt levels. You go to Arizona, there's a water truck on every job. Are they going to let that happen here? There's more water that's got to be consumed. Most of the source of the water I know of is probably Springerville. It's 30 miles away. Are they going to truck it in? Great. More trucks on the road again. And of course, if you don't keep the road dust down, you've got air quality issues. Most of us are elderly out there. Some of us have a little trouble breathing anyway. So who's going to take care of that?	Comment acknowledged. Dust control and erosion prevention measures would be put in place if the BLWP is approved by the BLM. Refer to Appendix D. Stormwater Pollution Prevention Plan and Appendix O. Dust Control and Air Quality Plan in the POD for specific measures.
06.SD-3	Another thought was the caliche. Nobody I've talked to so far understands what caliche is. They know it's just something you dig up and put it back in place and things start to grow. Well, they don't start to grow. You dig it back up, you've got three to six inches of topsoil. That's it. When that topsoil is gone, you've got this white caliche rock. If it stays on the surface, then nothing grows. It don't support any vegetation or very, very little or next to none. So they're going to dig it up and put it right back in and they're going to have topsoil. They say, well, we'll put topsoil back on it. Where is all this excess caliche going to go? Who are they going to dump it on? So it's going to go somewhere, and they're going to take it and dump it in somebody else's lot. Even if you plant it with good topsoil, you've got to have water. It won't come up on its own. This grass has been here for several hundred years and it's developed three to six inches of topsoil. That's it. And we're going to destroyit all for a windmill.	As noted in Table 3-1 of the EIS: "The Final Wind Energy PEIS (BLM 2005:p. 6-3) states that impacts to soils from wind facilities would be minimal to negligible because BMPs and other design features would be followed to prevent or address potential increases in soil erosion. Implementation of the BMPs and other design features for the build alternatives would reduce potential impacts to soils, including around playas to minimize erosion and sedimentation (refer to Appendix B)." The complete list of design features and BMPs is provided in Appendix B of the EIS, including measures to minimize effects to soils.

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06.SD-4	I've not heard anything tonight of how it's going to affect the people that have to look at those. Nobody has said anything about how it's going to impact us. I brought up camouflage. Let's camouflage the damn things like they do hunting equipment so we don't have to look at it. But we don't know if they can do that. I don't know if they've got the paint. That's a cop-out. They got the paint. They can do anything they want if they want to do it. So I think they need to take a whole nother look at this and leave us alone out here. That's the reason we're here. Thank you.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The BLM considered potential impacts to visual resources and potential impacts to dark skies in the EIS; refer to Section 3.9 and Appendix F of the EIS.
07.LS-1	These alternatives all include New Mexico State lands. They call it SLO, State Land Office. I contacted the State Land Office to see what the public process would be for this, presuming that they had a public involvement process just like federal agencies do. The State Land Office commissioner contacted me back and said that Borderlands does not apply to the State Land Office for this land. So I would like to know what will happen to this project if the State Land Office does not go along with it. Catron County has prided itself on its rural environment, the natural beauty, the rural custom and culture. We don't mind traffic lights. We have one blinking light on U.S. 60 in Datil, few paved roads. Cattle go where they will, as does wildlife. Incredible scenic views. Our county's comprehensive plan expresses the desire of our citizens to preserve our way of life and our natural resources and beauty. This project is indirect contradiction to our citizens' desires.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Catron County and the NMSLO are both cooperating agencies on the EIS. Their input has been considered in the preparation of the EIS.
08.RB-1	Will the County reduce our property taxes by half due to the loss of value of our homes.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Property taxes are determined by Catron County, not the BLM. No change has been made to the EIS.
08.RB-2	Wind turbines cause electromagnetic interference & affect TV & radio reception. Electromagnetic interference can be caused by near field affects, diffraction or reflection and scattering.	Please refer to this US National Library of Medicine, National Institute of Health study (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3943383/) which indicates that “there is nothing unique to wind farms with respect to EMF exposure; in fact, magnetic field levels in the vicinity of wind turbines were lower than those produced by many common household electrical devices and were well below any existing regulatory guidelines with respect to human health.” For information on Electromagnetic Field (EMF) produced by common household electrical devices, please refer to https://www.wapa.gov/regions/DSW/Environment/Documents/EMFbook.pdf. No change has been made to the EIS.

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08.RB-3	Where is the Fish & Wildlife study results found.	A US Fish and Wildlife Service study will not be conducting a study independent of the Biological Assessment prepared by the BLM. The US Fish and Wildlife Service will review and render their opinion on the Biological Assessment (BA) for the proposed wind project. The BA will be provided on the project ePlanning website (https://go.usa.gov/xyFmh).
09.WM-1	I had a few questions related to size and capacities which will aid me in my calculations to determine water requirements, total cubic yards of cement required, safety concerns, potential impact on local private wells, public roads, environment, air quality, our quality of life, etc., What will be the dimensions of the bases to support the wind turbines, i.e., shape and size in feet-inches, including depth of cement bases. What will be the cement composition of the bases including ratio of water per cubic yard. Will the cement be produced and mixed on site or will it be trucked in and how, including volumes of dry components and gallons of water. Will wells be drilled to provide water for cement bases, cleaning, washing, and how will the dust be suppressed on the many miles of dirt roads that will be required to access the sites? What is the construction schedule when and if approval is granted? Noise levels during construction and upon completion, the noise levels of the operating turbines, (presently, I can hear vehicle and traffic noises on Route 60 and County Road 005 from several miles away). Will construction crews, management, and security live in trailers and buildings on site during construction and will these areas be fenced in during the construction to prevent cattle, horses and wildlife from entering these potentially dangerous areas. What type of barriers, fences, gates, etc., will be employed during and after project completion including height of fences. What will the setback areas be for fencing surrounding these giant machines should one fail, fall, catch fire and/or disintegrate.	The BLM provided an email response to the commenter on October 30, 2019. The comment has been noted and will be included in the administrative record for the EIS. Here are the responses to the questions asked: Based on the information currently available from Borderlands Wind, LLC, please see the responses to your questions: 1. What will be the dimensions of the bases to support the wind turbines, i.e., shape and size in feet-inches ,including depth of cement bases? *The foundations would be octagonal in shape; the 32 turbine foundations would be approximately 58 feet in diameter and 6 feet thick and the remaining 4 foundations would be approximately 52.5 feet in diameter and 5.5 feet thick.* 2. What will be the cement composition of the bases including ratio of water per cubic yard? *The cement mix design would be finalized just prior to construction; this information is not currently available from Borderlands Wind, LLC.* 3. Will the cement be produced and mixed on site or will it be trucked in and how, including volumes of dry components and gallons of water? *An onsite batch plant would be utilized for the concrete. Approximately 30 gallons of water would be used per cubic year of concrete used in construction.* 4. Will wells be drilled to provide water for cement bases, cleaning, washing, and how will the dust be suppressed on the many miles of dirt roads that will be required to access the sites? *Dust suppressant for the access roads would be leased from a private landowner who owns an existing, onsite well.*

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		Approximately 26,000,000 gallons of water would be used during construction. 5. What is the construction schedule when and if approval is granted? *Construction would take approximately up to 11 months to complete.* 6. Noise levels during construction and upon completion, the noise levels of the operating turbines, (presently, I can hear vehicle and traffic noises on Route 60 and County Road 005 from several miles away). *Answer: The exact level of construction noise is difficult to simulate based on the site and atmospheric conditions as well as the duration of use and type of construction equipment. The nearest residence is approximately 2.6 miles away and noise levels would be short-term, intermittent, and localized at this distance. Current research documents that operating wind turbines are inaudible at a distance of 2.6 miles* 7. Will construction crews, management, and security live in trailers and buildings on site during construction and will these areas be fenced in during the construction to prevent cattle, horses and wildlife from entering these potentially dangerous areas? *No, all workers would stay offsite and travel to and from the jobsite daily. Construction trailers would be within the laydown yard that would be fenced and guarded for protection of materials and equipment.* 8. What type of barriers, fences, gates, etc., will be employed during and after project completion including height of fences? *The substation/switchyard and the operation and maintenance (O&M) facility are the only areas that would be permanently fenced. The substation/switchyard fence would consist of an 8-foot-tall chain-link structure with 1 foot of three-strand barbed wire on top, resulting in a total height of 9 feet. The O&M facility would be fenced with a 6 foot-tall chain-link fence with 1 foot of three-strand barbed wire on top, for a total height of 7 feet.* F*acility fence gates would be locked when the facility is unattended.*

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		9. What will the setback areas be for fencing surrounding these giant machines should one fail, fall, catch fire and/or disintegrate? *There would be no fencing around the turbine structures.*
10.DM-1	With thousands of BLM acres available, this farm could be located further away from residential areas so as not to negatively affect local residents. Yes, that might cost the developer a little more money because of the distance off the highway, etc., but that is just the cost of doing business in the free enterprise system in our great nation.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
10.DM-2	Your EIS itself, states that 12% of the market value of the property is generally lost when a wind farm is built within 9 miles of residential properties. It goes on to state that this lose "would be specific to the individual property at the time of the sale". In this, however, you are terribly mistaken. Ask any appraiser that has worked in this county and you will discover that there are so few real-estate comparisons available that when one property drops in value it negatively effects the whole county's property values. By allowing this project to proceed at this close proximity to Red Hill, you are not only saying that this deep-pocketed developer is more important than the 50 residents in the Cimarron Ranch Subdivision, you are saying NextEra Energy's profit is more important than all of the residents in Catron County. I do not understand why you would approve this project at it's intended location. If you were a Catron County land owner, you would not allow this project to continue so close to a residential area when there are so many other places where it could function.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The potential impacts to property values is discussed in Section 3.3.1.2 of the EIS.
10.DM-3	Furthermore, by accepting NextEra's voluntary proposal of the Aircraft Detection Lighting System, rather than putting it as a necessary stipulation in the contract, you are giving them the potential to back out of that option which would then disrupt our county's dark sky ordinance.	The approval from the FAA for the ADLS system will not be known before the publishing of the FEIS and, as such, the effects of turbine lighting without the ADLS system (i.e., nighttime red flashing, strobe, or pulsed wind turbine obstruction lighting) have been analyzed in the EIS; refer to Section 3.9 Visual Resources. The terms and conditions for the ROW grant will be determined if the ROW is granted."

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11.JF-1	In the same vein, the conclusion that Project-related mortality would constitute localized and regional, short- and long-term, major impacts on bald eagle populations has no basis. There is no justification for this determination in the document, and in fact, the DEIS admits the lack of available information on page 3-75: " The USFWS does not have sufficient data in the form of onsite bald eagle observations for the Proposed Action area, and as a result, it is currently not possible to generate a fatality estimate for bald eagles". Because the species would occur infrequently and sporadically in the Borderlands Wind Project area and because of a lack of suitable foraging and nesting conditions, it is more reasonable to conclude that impacts to bald eagles would be negligible.	While the USFWS was not able to quantify the level of potential take for bald eagles based on the lack of sufficient data (i.e., observations) in the BLWP area, the USFWS has identified that there is the potential for take of bald eagles as a result of the build alternative. The potential take of bald eagles is considered here to be a major impact due to the population-level effect that may result if the take to bald eagles is not offset by compensatory mitigation. Without an eagle take permit in place, there is no mechanism by which the BLM or USFWS can require compensatory mitigation if the take of one or more bald eagles were to occur during operation of the proposed wind facility. No change has been made to the EIS.
11.JF-2	Section 3.2 - Land Use. Please clarify the issues analyzed in detail in this section vs. those dismissed in Table 3-1. Section 3.2 discusses Areas of Critical Environmental Concern (ACECs) and other special management areas, grazing, and recreation impacts in detail. However, those issues are dismissed in Section 3.1 and in Table 3-1.	The identification of the special management designations in Section 3.2.1.3 of the EIS provides a description of the land uses within the BLWP area as well as the region to provide context. The ACECs and other special management designations are not analyzed in the detail because there would be no direct impacts to the management or use of these areas with the exceptions noted in Table 3-1 of the EIS for cultural and visual resources by the alternatives. No change has been made to the EIS.
11.JF-3	Also, the conclusion that mortality of golden eagles resulting from the Project would constitute localized and regional, short- and long-term, major impacts on golden eagle populations is also without factual support. As detailed in Exhibit A, the expected impact on the local area population of 0.78 percent is a minor impact, not a major impact. This conclusion is supported by the Programmatic Environmental Impact Statement for the Eagle Rule Revision, U.S. Fish and Wildlife Service, December 2016 ("Eagle Rule PEIS"), in which USFWS analyzed the effects of authorizing take of up to 5% of the local-area population (LAP), determining that it is compatible with the preservation of eagles. The Project's fatality estimate of 0.307 is well below the 1 % (6 eagles per year) and local area population benchmark and is very close to the Eagle Conservation Plan Guidance Category 3 (minimal risk to eagles; <0.03) threshold. In short, the appropriate impact categorization under NEPA should be a minor impact on golden eagles.	The Proposed Action is considered a Category 2 project under the USFWS's *Eagle Conservation Plan Guidance*, indicating that there is a high or moderate risk to eagles with the opportunity to avoid or mitigate impacts. This is due to: 1) the presence of important eagle use areas, and 2) an annual fatality estimates between 0.03 percent and 5 percent of the estimated local area population size. The take of golden eagles is considered here to be a major impact due to the population-level effect that may result if the take to golden eagles is not entirely offset by the proposed voluntary compensatory mitigation. Without an eagle take permit in place, there is no mechanism by which BLM or USFWS can require additional compensatory mitigation if the take of more than 0.307 eagles per year were to occur

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		during operation of the proposed wind facility. No change has been made to the EIS.
11.JF-4	Section 3.3 - Social and Economic Conditions. Page 3-31: Regarding the suggestion the presence of wind turbines would have a long-term major impact on nonmarket values, the conclusion that these impacts would be "major" seems overstated. Why would the impacts not be minor to moderate because relatively few people use the area?	The rationale for a 'major' impact was determined because the presence of the wind turbines would severely alter the existing character of the landscape, lower the scenic quality, and create strong visual contrast in the setting over a large area. No change has been made to the EIS.
11.JF-5	Section 3.4 - Transportation and Travel Management. Page 3-36: Based on the available research on wind-big game interactions, the statement that "the presence of wind turbines would negatively impact the public's opportunity for watching wildlife and harvesting game species" is not supported by the literature. Please provide a citation or the science to support this conclusion.	The potential impacts as stated in the EIS identified that the presence of the wind turbines and associated increase in sustained human activity over the life of the project would negatively impact the public's opportunity for watching wildlife and harvesting game species. According to the BLM's Wind Energy PEIS, Section 5.9.3 Site Operations page 5-49, it states that ..."During operation, adverse ecological effects could occur from (1) disturbance of wildlife by turbine noise and human activity..." Also, on page 5-54 of the PEIS in Table 5.9.3-2, it states that the potential effect and likely wildlife affected is "disturbance of nearby wildlife and bird and mammal behavior; habitat avoidance" from workforce presence. These potential adverse impacts on wildlife and their behavior would therefore have an effect on the public's opportunity for watching wildlife and hunting if the animals are not present or if they avoid the area. No change has been made to the EIS.

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11.JF-6	Section 3.7 - Special Status Plant and Wildlife Species. Page 3-57: In the last paragraph, in reference to prairie dogs, we suggest that context regarding prairie dogs in the region be provided (they are not unique to the project area).	The BLM's approach is to disclose impacts to wildlife species regardless as to whether one might consider a particular species "unique" to a project area, and in this case the Gunnison's prairie dog is a BLM-designated sensitive species with special management considerations under the Socorro RMP consistent with BLM Manual 6840. It is also identified as a Species of Greatest Conservation Need (Immediate Priority species) in the New Mexico State Wildlife Action Plan, where it is described as a keystone species that is vulnerable and declining. The intent of Chapter 3 is to adequately describe the affected environment in an unbiased manner such that impacts can be disclosed. No change has been made to the EIS.
11.JF-7	Section 3.7 - Special Status Plant and Wildlife Species.• Page 3-58: In reference to playas "vegetated with the same species as the surrounding areas," we suggest "that are devoid of vegetation or vegetated ... "	The BLM appreciates the suggested editorial changes regarding the presentation of information in the DEIS. Where the BLM agrees with the suggestions, your comments have been incorporated.
11.JF-8	Section 3.7 - Special Status Plant and Wildlife Species.• Page 3-58: "A Gunnison's prairie dog colony may contain 15-26 family groups." Is this the maximum? on average? We observed smaller groups (1-3 individuals) in some of the colonies; please clarify the source of these data.	This statement was provided to provide a general characterization of Gunnison's prairie dog colonies. The referenced text in the EIS has been updated and now reads: *A Gunnison's prairie dog colony may contain several hundred individuals comprised of many family groups, though colonies with as few as 1-3 individuals were documented within the BLWP area during onsite surveys.*
11.JF-9	Section 3.7 - Special Status Plant and Wildlife Species.• Page 3-61: "Special status bat species that are known to occur in the BLWP area based on this monitoring are noted in Table E-1." The list provided is not based on the monitoring completed by SWCA; it is based on species range requirements. Spotted bat, for example, would not have been detected by the bat acoustic monitoring equipment. Please update the citation and referenced information.	The referenced text in the EIS has been updated and now reads: *Special status bat species that are known to occur in the BLWP area based on this monitoring or could potentially occur based on the species' known ranges and habitat requirements are noted in Table E-1 in Appendix E.* Appropriate updates have also been made for each species in Appendix E.
11.JF-10	Section 3.7 - Special Status Plant and Wildlife Species. • Page 3-61: "Avian surveys were conducted to characterize bird populations .... " The surveys do not provide population assessments. Suggest replacing "bird populations" with "species composition."	The referenced text in the EIS has been updated and now reads: *Avian surveys were conducted to characterize species composition and patterns of use in the BLWP area in*

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		accordance with the USFWS's Land-Based Wind Energy Guidelines (USFWS 2012).
11.JF-11	Section 3.7 - Special Status Plant and Wildlife Species. • Page 3-61: In reference to the avian surveys, the document states, "The resulting information has been used to inform siting decisions such as ultimate placement of wind turbines and other infrastructure." The avian use surveys did not inform project design. Identification of a possible eagle nest, ferruginous hawk nests, prairie dog colonies, and playas informed design.	The referenced text in the EIS has been updated and now reads: *The resulting information, along with findings from other surveys and studies including the locations of a possible golden eagle nest, a ferruginous hawk nest, prairie dog colonies, and playas, have been used to inform siting decisions such as the ultimate placement of wind turbines and other infrastructure.*
11.JF-12	Section 3.7 - Special Status Plant and Wildlife Species.• Page 3-61: "108 nests." This is a bit misleading in that the language above it states that SWCA conducted eagle-focused nest surveys within 10 miles and raptor nest surveys within 1 mile. The 108 nests were non-eagle nests within 10 miles; our surveys only found 16 nests within 1 mile.	The referenced text in the EIS has been updated and now reads: *A total of 108 nests associated with non-eagle species (e.g., common raven, great horned owl, red-tailed hawk) were recorded within 10 miles of the BLWP area during aerial nest surveys and ground-based surveys (point counts) in 2017 and 2018; 16 of those nests were located within 1 mile of the BLWP area.*
11.JF-13	Section 3.7 - Special Status Plant and Wildlife Species. • Page 3-66: In the first paragraph in the discussion of prairie dogs, we suggest providing context regarding existing hunting activity and noting that they are considered a nuisance species for ranching activities.	This specific section of the EIS is the environmental consequences of the project itself not other non-project related activities. No change has been made to the EIS.
11.JF-14	Section 3.7 - Special Status Plant and Wildlife Species. • Page 3-66: There is a statement that the four Species of Economic and Recreational Importance (SERI) species would not be expected to occupy the Proposed Action area for a long period of time due to lack of cover. There is plenty of cover for elk and mountain lion; we observed elk repeatedly during the pre-construction surveys and suspected a mountain lion (observed with 2 cubs) denned in the project area.	The referenced text of the EIS has been updated and now reads: *There is suitable habitat for the four SERI identified in the New Mexico Crucial Habitat Assessment Tool for this area (i.e., black bear, cougar, elk, and mule deer). Elk have been observed at various times during site resource investigations, and a cougar was also suspected to be denning in the BLWP area. Mule deer and black bears may also incidentally occur in the BLWP area. Habitat use in the BLWP area may be variable for each of these species depending on their life history and seasonal habitat needs.*
11.JF-15	Section 3.7 - Special Status Plant and Wildlife Species. • Page 3-67: Regarding the conclusion that the Proposed Action would result in localized short-and long-term, moderate impacts on prairie dogs, the impacts would actually be minor because of implementation of BMPs.	Even with implementation of the prairie dog BMPs, impacts are still expected to be detectable during construction, which could result in mortality or injury and/or habitat loss/fragmentation. No change has been made to the EIS.

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11.JF-16	Section 3.7 - Special Status Plant and Wildlife Species. • Page 3-67: Concern is raised regarding fragmentation of prairie dog habitats during construction. Some background should be provided regarding whether this is a species of habitat fragmentation concern.	Refer to response to Comment 11.JF-6. An additional statement was added to the discussion of impacts on Gunnison's prairie dog in Section 3.7 of the EIS: *Fragmentation of prairie dog populations is listed as a primary threat to the species in the Draft Conservation Plan for Gunnison's Prairie Dog in New Mexico (NM Department of Game and Fish 2008).*
11.JF-17	Section 3.7 - Special Status Plant and Wildlife Species. • Page 3-68: It is inaccurate to state, "Larger soaring birds, such as ferruginous hawks and other raptors, are more prone to being hit in the rotor-swept area than smaller birds that fly closer to the ground." Research indicates that passerines constitute the majority (57%) of collision fatalities. Diurnal raptors may be particularly vulnerable to collision (8% of reported fatalities is more than expected, given their population size), or they may simply be easier to detect.	The referenced text in the EIS has been updated and now reads: *Passerines (small birds) are most commonly reported as collision fatalities, followed by diurnal raptors; although fatality rates for raptors may be lower compared to passerines, raptors are especially vulnerable to collisions due to their flight behaviors (USFWS 2020)*.
11.JF-18	Section 3.7 - Special Status Plant and Wildlife Species. • Page 3-68: Regarding the conclusion that the project would have a long-term, minor to moderate impact on special-status birds and bats based on the collision threat, an impact characterization of "negligible to minor" is more appropriate, given that special-status species fatalities, including the species listed for the project, are rarely discovered. Population-level impacts would not be expected, given the low rate of occurrence and non-unique habitats in the project area.	Special status species are generally species with smaller populations and/or species exposed to threats. Just because these species are "rarely" discovered/documented during post construction fatality surveys, it does not mean that impacts are not occurring. It could mean that species with lower population numbers are rare to begin with and when such impacts occur, the probability of detection is also reduced. The range presented is reasonable due to the uncertainty that exists. Impacts to birds and bats associated with wind farms largely occur to migratory populations, not necessarily residents. Consequently, impacts to special status birds and bats are not centered on the project location and/or whether or not the habitats in the project are unique or not. No change has been made to the EIS.

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11.JF-19	Section 3.7 - Special Status Plant and Wildlife Species. • Pages 3-61 and 3-72: When describing the prairie dog survey effort, the document states that the surveys were only conducted near areas that would be disturbed by project infrastructure, so the total number of mapped colonies does not account for the total number of colonies present within the project area. That is misleading and does not follow the methods that we employed, including mapping all colonies based on incidental observations that were recorded throughout the project area over the course of 2 years. See Figure 8-3 of the report.	The referenced text in the EIS has been updated and now reads: *In July 2018, targeted surveys were conducted to locate and delineate Gunnison's prairie dog colonies 1) in the vicinity of incidental observations collected over two years of site resource investigations and 2) within 0.5 mile of project facilities (i.e., wind turbines, access roads, collection lines, and substation). Thirty-one distinct, occupied prairie dog colonies containing up to 192 individuals in each colony were documented within the Proposed Action area (Figure 3-10). The total acreage of mapped prairie dog colonies at the time of the survey was 2,284 acres (SWCA Environmental Consultants 2018b); however, a 100 percent survey of the BLWP area was not conducted, so this total does not account for the total number of colonies that may be present within the Proposed Action or Alternatives 1 and 2 areas.*It is still appropriate to acknowledge that additional prairie dog colonies may exist in the BLWP area because a 100 percent survey of the BLWP area has not been conducted.
11.JF-20	Section 3.8 - Bald and Golden Eagles. • Please clarify in this section how the existing conditions vs. the project have had or could have an impact on bald and golden eagles. • The possible eagle nest (page 3-72) is characterized in the text as "one potential golden eagle breeding area (i.e. Luna Tank) and its associated nest are located .... " Please note that this nest has not been determined to have been used by eagles.	The referenced text in the EIS has been updated and now reads: *The Luna Tank nest has not been observed to be active or confirmed as being used by golden eagles during project surveys (i.e., no eggs or young were observed in the nest); however, a golden eagle was observed in the vicinity of the nest in March 2017.*

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11.JF-21	Section 3.8 - Bald and Golden Eagles. • The "Luna Tank breeding area" referenced on page 3-73 should be characterized as "Luna Tank potential breeding area." • Also of note: o The nest is far from project construction activities and proposed turbines. o The prairie dogs within the project area are not unique to the surrounding landscape. The level of impacts described are not consistent with the survey findings (see Eagle Management Plan), project conditions, and qualitative analysis provided in the document.	The referenced text in the EIS has been updated and now reads: *The disturbance footprint and location of various infrastructure (e.g., wind turbines, access roads, and collection lines) have been sited to minimize impacts on eagle use areas including the Luna Tank potential breeding area and within a 0.25 mile buffer around active Gunnison's prairie dog colonies that are hunting grounds for golden eagles.* As is currently noted in Section 3.8.2.1 of the EIS, *"Disturbance from human activities and noise during construction could alter the patterns of eagle use across the site, including the areas used for foraging, roosting, and nesting. The primary access road (Bill Knight Gap Road) would be located approximately 3,500 feet from the Luna Tank nest. While this is greater than the 0.5-mile buffer distance that is typically recommended by the USFWS, disturbance to nesting golden eagles during construction activities or vehicle/equipment access along Bill Knight Gap Road could potentially occur."* Also refer to the responses to Comments 11.JF-6, 11.JF-16, and 11.JF-20.
11.JF-22	Section 3.8- Bald and Golden Eages. Although the Draft EIS text states that "Take is likely," in fact "take" is not at all likely during the construction and decommission phases of the project as characterized on page 3-73.	The definition of take under the Bald and Golden Eagle Protection Act includes "pursue, shoot, shoot at, poison, wound, kill capture, trap, collect, molest or disturb" (16 USC 668c; 50 CFR 22.2). Disturb means to "agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3). No change has been made to the EIS.

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11.JF-23	Construction (pages 3-73 and 3-74) Page 3-73: Language to the effect that the Eagle Management Plan is not the same as an Eagle Conservation Plan is a bit misleading to the reader. An Eagle Conservation Plan outlines the U.S. Fish and Wildlife Service (USFWS) approved compensatory mitigation and 5-year evaluation procedure. However, the Eagle Management Plan identifies the same tiered decision-making approach, avoidance, minimization, and mitigation measures, informed by survey findings, that would be found in an Eagle Conservation Plan in support of a "take" permit.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
11.JF-24	• Page 3-73: There is a statement regarding the lack of roosting habitats for bald eagles. This characterization should also state that the project area and surrounding area also lack aquatic foraging areas (see the description of roosting habitats in the Birds of North America species account).	Potential foraging habitats for bald eagles in the BLWP area are described in Section 3.8.1.2 of the EIS. According to the USFWS's published *National Bald Eagle Management Guidelines*, the definition of a foraging area is "An area where eagles feed, typically near open water such as rivers, lakes, reservoirs, and bays where fish and waterfowl are abundant, or in areas with little or no water (i.e., rangelands, barren land, tundra, suburban areas, etc.) where other prey species (e.g., rabbit, rodents) or carrion (such as at landfills) are abundant." No change has been made to the EIS.
11.JF-25	Regarding the conclusion (Construction, page 3-74) that "given the number of prairie dog colonies in the Proposed Action area and surrounding area ... there would be a moderate direct impact on golden eagles from construction-related disturbance," because the prairie dog colonies are not unique relative to the surrounding landscape and region, these impacts should be characterized as "minor to moderate."	Refer to responses to Comments 11.JF-6 and 11.JF-15.
11.JF-26	• Eagle use is relatively low on-site. Eagles that are present within the project area during construction would not be precluded from using foraging resources outside the disturbance area. The "minor to moderate" impact conclusion for bald eagles should be "negligible" due to the lack of bald eagle habitats, and anticipated rare occurrence of the species, in the project area and vicinity.	Refer to response to Comment 11.JF-1.
11.JF-27	• Regarding the conclusion that any reduction in golden eagle nest success resulting from the Proposed Action would be a localized and regional, short- and long-term, major impact on golden eagle populations, this is a mischaracterization. As noted above, the Luna Tank nest has not been identified as a known eagle nest. If it did become active during the construction phase of the project, disturbance is very unlikely due to the distance from construction noise and sheltered viewshed (the nest is down in a crater). If in the unlikely scenario that the nest was "disturbed" as defined by the Bald and	Refer to response to Comments 11.JF-3, 11.JF-20, and 11.JF-21.

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	Golden Eagle Protection Act, the loss would be considered a minor to moderate impact to golden eagle populations, given the local area population of 396 golden eagles.	
11.JF-28	Operations and Maintenance; Construction (pages 3-74 and 3-75) • Regarding the conclusion that mortality of golden eagles resulting from the Proposed Action would constitute localized and regional, short- and long-term, major impacts on golden eagle populations, the Draft EIS cites an annual eagle fatality rate for the project of 0.307 eagles per year. This fatality estimate is equivalent to 0.78% of the estimated local area population of 396 golden eagles. We agree that the impacts associated with operations and maintenance of the project is fairly characterized as "localized and regional, short- and long-term;" however, "major impacts" to populations is not accurate. A 0.78% impact to a population constitutes a minor impact to golden eagle populations, as defined by the impact thresholds on page 3-1 of the document. Please refer to the Programmatic EIS for the Eagle Rule Revision. 1 USFWS analyzed the effects of authorizing take of up to 5% of the local-area population (LAP), determining that up to 5% is compatible with the preservation of eagles. While take of 1 % of annual eagle production is considered a relatively benign harvest rate, the USFWS has identified take rates between 1 %and 5% of the LAP as significant. The Borderlands Wind fatality estimate of 0.307 is well below the 1 % (6 eagles per year) and 5% (31 eagle per year) LAP benchmarks and is very close to the Eagle Conservation Plan Guidance Category 3 (minimal risk to eagles; <0.03) threshold. Please reconsider and revise the impacts discussion to be consistent with the results for the Programmatic EIS for the Eagle Rule Revision in terms of impact thresholds.	Refer to response to Comment 11.JF-3. It is not appropriate for BLM to analyze impact thresholds referenced here from the Programmatic EIS for the Eagle Rule Revisions, which is a USFWS permitting process. Such impacts would be addressed through USFWS's permit process and appropriate environmental analysis associated with that if Borderlands Wind, LLC were to pursue an eagle take permit. No change has been made to the EIS.
11.JF-29	• Regarding the conclusion that the mortality of bald eagles that may result from the Proposed Action would constitute localized and regional, short- and long-term, major impacts on bald eagle populations, there is no clear justification for this determination in the document. Rather, because the species would occur infrequently and sporadically in the Borderlands Wind Project Area because of a lack of foraging and nesting conditions, impacts would be negligible.	Refer to response to Comment 11.JF-1.
11.JF-30	Decommissioning (page 3- 75). The same conclusion is provided for both eagle species with no justification. Impacts associated with decommissioning (noise, visual disturbance) would be negligible due to the distance from possible nesting individuals.	The conclusion that is provided at the end of the discussion on decommissioning is intended as a summary statement indicating that, even with the application of BMPs and other design features, there would still be impacts to bald and golden eagles from construction, O&M, and decommissioning (as opposed to this statement only applying to the decommissioning phase of the project).

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		Refer to responses to Comments 11.JF-1 and 11.JF-3. No change has been made to the EIS.
11.JF-31	Section 3.9 - Visual Resources. See the following recommended revisions to provide clarity to the reade: 3.9.1 1st paragraph, replace 'tableland' with 'plateaus' ; Add '/cliffs' after 'sidewalls' ; Replace 'relief' with 'topography'	The BLM appreciates the suggested editorial changes regarding the presentation of the information in the EIS. Where the BLM agrees with the suggestions, your comments have been incorporated.
11.JF-32	Section 3.9 - Visual Resources. Page 3-78 Recommend moving the first 5 paragraphs to the Visual Appendix due to the background/supporting nature of text.	The BLM appreciates the suggested editorial changes regarding the presentation of the information in the EIS. Where the BLM agrees with the suggestions, your comments have been incorporated.
11.JF-33	3.9.2.1 2nd paragraph, first sentence: 'depending on the viewing distance.' Identified KOPs already have an established viewing distance. Suggest clarifying this by adding 'depending on the viewing distance of a specific component (i.e., turbines) of the [insert alternative].'	The BLM appreciates the suggested editorial changes regarding the presentation of the information in the EIS. Where the BLM agrees with the suggestions, your comments have been incorporated.
11.JF-34	Page 3-87 2nd full paragraph, penultimate sentence: 'not currently available to the public'; change to 'not currently accessible by the public via motorized use.' As is, the text suggests that the public land is closed to public. It is not; if it is private land, state that.	The BLM appreciates the suggested editorial changes regarding the presentation of the information in the EIS. Where the BLM agrees with the suggestions, your comments have been incorporated.
11.JF-35	Section 3.11 - Land Use Plan Amendment. Can you clarify why the Bureau of Land Management is not proposing to change Visual Resources Management (VRM) lll to VRM IV areas for Alternatives 1 and 2 along Bill Knight Gap Road and Hooper Ranch Road, as is proposed for the Proposed Action for the Land Use Plan Amendment (Figures 3-18 and 3-19)? Borderlands Wind would have more flexibility in these areas if the amendment applied to all the action alternatives.	The Land Use Plan Amendment would be needed if the Borderlands Wind, LLC application is approved. The proposed improvements to Bill Knight Gap Road, Hooper Ranch Road and US 60 would meet VRM III objectives. There is no justification to change the objective to VRM IV based on the Borderlands Wind, LLC's application. No change has been made to the EIS.

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11.JF-36	Borderlands Wind's primary concerns with the EIS pertain to how the BLM discusses the severity of potential impacts, particularly in the discussions concerning prairie dogs, migratory birds and eagle resources. In evaluating potential impacts to these resources, it is unclear in the BLM's definition of impacts whether the "resource" being evaluated is the population of a species or individuals within a particular species. Based on the conclusions drawn for impacts to prairie dogs, migratory birds, and eagles, the DEIS appears to be basing its conclusions on impacts to individuals rather than evaluating population level impacts of these particular species. There is simply no basis under NEPA, or even under the analysis in the DEIS, to find individual-level impacts to be "major." Indeed, BLM's own definitions of impact levels in the DEIS (seep. 3-1) argues against any such conclusion: • Negligible: changes would not be detectable and/or measurable. The resource/use would be essentially unchanged or unaltered. • Minor: changes would be detectable and/or measurable and would have a slight change or alteration to the resource/use • Moderate: changes would be clearly detectable, measurable and/or have an appreciable effect on the resource/use. The resource/use would be notably changed or altered and the effect is apparent. Project activities could change the indicator over a small area or to a lesser degree. • Major: changes would be readily detectable, and/or have a severe effect on the resource. The resource/use would be substantially changed or altered over a large area or to a large degree. Given the definitions set forth by the BLM in the DEIS, there is no reasonable basis to conclude that moderate or major impacts are likely to occur to populations of prairie dogs, bats, birds, or eagles as a result of the proposed action. We believe that the conclusions reached in the EIS should be re-evaluated in light of the available scientific data. For example, as discussed in Exhibit A, the conclusion that the Project would result in localized short- and long-term, moderate impacts on prairie dogs is without basis, given that the prairie dog colonies are not unique relative to the surrounding landscape and region, and because any impacts would be minimized because of implementation of best management practices ("BMPs"). In short, it would be more accurate to characterize these impacts as "minor". Similarly, the conclusion that the Project would have a long-term, minor to moderate effect on special status birds and bats based on the threat of collision is without factual support given the low rate of occurrence and non-unique habitats in the project area, and the fact that special-status species fatalities, including the species listed for the project, are rarely discovered at other wind	Refer to responses to Comments 11.JF-1, 11.JF-3, 11.JF-6, 11.JF-15, 11-JF-16, 11.JF-17, 11.JF-18, 11.JF-20, 11.JF-21, 11.JF-22, and 11.JF-24.

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	energy facilities in the region. Thus, population-level impacts will be "negligible to minor" at most.	

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11.JF-37	Under the Decommissioning section, the same conclusion that short- and long-term, direct and indirect, major local and regional impacts are made with the justification that the extent of noise and visual disturbance during decommissioning would be similar to the construction phase. The Construction section suggests this 'major' impact level based on the potential for any reduction in golden eagle nest success. Due to the distance from decommissioning (noise, visual disturbance) activities from the potential Luna Tank eagle nest, it is more likely that impacts would be negligible. This conclusion is supported by the Final EIS for Eagle Take for the Chokecherry Sierra Madre Phase 1 Project, which established western states precedent for a ½-mile buffer when examining disturbance impacts to both eagle species' nests. The potential Luna Tank eagle nest is greater than ½-mile from planned construction and decommission activities.	The conclusion that is provided at the end of the section on decommissioning is intended as a summary statement indicating that, even with the application of BMPs and other design features, there would still be impacts to bald and golden eagles from construction, O&M, and decommissioning (as opposed to this statement only applying to the decommissioning phase of the project). The analysis in this section is not just referring to potential impacts at a nest site; it is accounting for eagle use (i.e. impacts to foraging, roosting, and nesting). Foraging and roosting occurs at much greater distances from an associated nest site; therefore, applying a 1/2 mile buffer to these other activities that are considered in this discussion to something that is primarily to protect impacts to breeding/nesting locations specifically is not appropriate. Refer to responses to Comments 11.JF-1, 11.JF-3, 11.JF.20, and 11.JF.21.
11.JF-38	It is important to note that while wind facilities can result in injuries and mortalities to individuals of various bird species, we are aware of no evidence of such impacts resulting in population-level impacts to those species at the local or regional level. As evidenced in a recently published report in the Ecological Society of America's Fall, 2019 Issues in Ecology report provides an overview of impacts to wildlife from wind energy siting and operation in the United States (Allison et al., 2019), wind facilities across the US result in approximately 234,000 individual avian fatalities per year. This number is orders of magnitude lower than impacts to birds by other anthropogenic sources of mortality. "Predation by the domestic cat is estimated to be the largest direct source of bird mortality by far, causing between 1.4 and 4.0 billion fatalities in the U.S. each year". The report also cites other anthropogenic sources of bird mortality, including buildings (599 million/year), vehicles (200 million/yr). and agricultural chemicals (2.7 million/year). With the exception of domestic cats, none of these impacts - and most notably wind projects - are known to have resulted in significant population level declines to bird species.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
11.JF-39	In light of the comments above, and the expert technical comments provided by SWCA in Exhibit A, We respectfully suggest that the DEIS be revised to contain a more detailed discussion focused on population-level impacts discussing impacts to eagles, migratory birds, bats prairie dogs, and other species.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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11.JF-40	Table 3-1 (pages 3-2-3-9). Please include references to the compliance plans, not just Appendix B, to clarify for the reader the project documents where best management practices (BMPs) and design features were developed.	The BLM appreciates the suggested editorial changes regarding the presentation of the information in the EIS. Where the BLM agrees with the suggestions, your comments have been incorporated.
11.JF-41	Table 3-1 (pages 3-2-3-9). • Noise: Please clarify that the short-term noise levels would be below the U.S. Environmental Protection Agency thresholds for the nearby sensitive receptor.	As noted in Table 3-1 in the DEIS, the nearest sensitive receptor (seasonal recreation use) would be approximately 0.8 mile away from the nearest turbine in the BLWP area. At this distance, noise impacts generated from construction and decommissioning (e.g., heavy equipment use), would be negligible to minor and short-term depending on the activities. Noise impacts during O&M would be below the noise thresholds recommended in the U.S. EPA guidelines and below the level of the background noise because of the distance to the nearest receptor. No change has been made to the EIS.
13.DL-1	I am a resident of New York State and also own property in the eastern part of Catron County. What drew me to purchase land in New Mexico was the grandeur, raw beauty and open vistas of the area.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
13.DL-2	I oppose the wind turbine project proposed by Borderlands Winds LLC of Florida because it is not in the best interest of New Mexico. The project is too big- it will be too disturbing and will hold zero benefit for residents.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 of the EIS for a discussion of the potential beneficial and adverse impacts.
13.DL-3	I certainly would never have bought land in this area had I known about the project, but residents will lose so much more. It will scar the landscape for miles and miles, generate noise 24 hours a day and alter wildlife patterns. The character of the land and the quality of life will be permanently impacted.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Chapter 3 of the EIS for a discussion on the potential impacts to the landscape, visual impacts to the character of the lands, and wildlife.
13.DL-4	More horrifying, is that all these impacts will come without any benefit to New Mexico. The state will not even see any improvement in electricity! This seems essentially un-American- all burden placed on residents/all financial and energy shipped outside the state.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 for the social and economic impacts to the project area and local community.
13.DL-5	Please call it what it is- ceding 43,528 acres of New Mexican land to Borderland Winds, its shareholders and customers.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 for the social and economic impacts to the project area and local community.

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13.DL-6	The BLM must see that the price of this turbine project proposed by Borderlands Winds is too high. It is a lose/lose for Catron County, its residents and the entire State of New Mexico.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 for the social and economic impacts to the project area and local community.
13.DL-7	For these reasons I urge the BLM not to approve this project. Thank you for your consideration	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
14.DM-1	Thank you for the opportunity to submit comments in response to the Bureau of Land Management ("BLM") notice of availability ("NOA") titled "Draft Environmental Impact Statement and Land USe Plan Amendment for Borderlands Wind Project in Catron County, New Mexico" to detail my opinions on the project. I am a 2L at the University of Missouri School of Law. I am an active member of the University of Missouri chapters of the American Constitution Society and Phi Alpha Delta. I will be spending the summer of 2020 working with Earthjustice in their Oceans Program. I am addressing this issue due to my concerns over climate, wildlife conservation, and the protection of culture.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
14.DM-2	**The project will decrease dependency on fossil fuels.** *Climate Change:* We are currently in the middle of a climate crisis. At the moment, and in the coming decades, we face shifting weather patterns, catastrophic flooding, threatened food supplies, and many other catastrophic consequences of climate change(1) In time the consequences will become more dire as we see rising sea levels decimate populated areas, and changes to ecosystems cause mass migrations from equatorial areas(2) Science has shown that the rising global temperatures causing these shifts are caused by human activity(3) Modern human society causes the emission of massive amounts of greenhouse gasses which trap heat, causing global temperatures to rise(4) Many of those greenhouse gasses come from the burning of fossil fuels like petroleum and coal(5) While we are past the point of stopping climate change, we still have the opportunity to avoid the most disastrous effects(6) One of the most effective ways to do this is to increase investment in renewable energy(7) This will help us reach zero CO2 emissions within the next 15 years, which scientists say will give us the best chance of avoiding catastrophe(8). Wind energy is a viable alternative to fossil fuel generated electricity. The proposed facility would generate 100 Megawatts of energy(9) Comparable wind farms produce enough electricity for 28,000 average sized residential homes(10) This may be slightly different due to the increased air conditioning needs of the southwest compared to the northeast, but the installation of this wind farm could drastically reduce the amount of fossil fuel needed to generate electricity for the surrounding area. This would mean a reduction in the carbon footprint of the energy grid. While this would mean only a dent in the problem, it is still a step in the right direction. As people see the	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	benefits of renewable energy, hopefully it will increase their demand for alternative sources of electricity and further reduce our carbon output. Investment in the future is the key to progress. We know, from the majority of the scientific community that climate change is real and that the effects are catastrophic. We stand at a fork in the road. One path is the status quo, and while it may seem like the easier path to trek it will inevitably lead to our demise. The other path may be more difficult to traverse at the beginning, but will lead us to a brighter future. The building of this and other wind farms is a step down the path leading toward that bright future. The Bureau of Land Management's mission statement states that they work to "sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations."(11) The catastrophic consequences of climate change will undoubtedly affect the "health, diversity, and productivity" of lands across the globe including the public lands here in the United States. Therefore, the approval of this project is directly within the purview of the Bureau of Land Management's mission.	

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14.DM-3	*Economic Issues.* While climate change is a grave threat to the continuation of society as we know it, economic progress is also a pressing issue on the minds of many. The dependence on fossil fuels for the generation of electricity is not a sustainable model for the economy of the future. The future of energy production is going to be renewable. In this economic shift the United States can either be a leader or a follower. The building of wind farms would show the United States' intention to be a leader in this field and would give a boost to our current and future economic outlooks. One reason the change to renewable energy is a good economic move is the dying of the coal industry. New Mexico, where the wind farm is set to be built, gets the plurality of its electricity from coal fired power plants(12) There are six active coal mines in New Mexico, operated by four separate companies(13) Much of the coal is done using a process called strip mining(14) This is a significantly dangerous form of mining which present risks to the ecosystem, the miners, and those living in surrounding areas(15) The reality for these mines though is that coal is dying(16) Production and demand are decreasing(17) This means that inevitably these mines will be shut down and those working and depending on them will be negatively affected. Beginning the switch to renewable energy now will allow the process of changing the economies of these areas less jarring. It would also allow for the cost of energy to not be affected in a drastic fashion by the end of the coal industry. While the coal industry is dying, the green energy industry is growing. More jobs in green energy generation are created every year(18) Renewable energy accounted for 4.2% of all new jobs created in 2018(19) The building and the maintaining of the wind farm will create both temporary and permanent jobs for New Mexico. Based off the job creation estimates for other wind farm projects, this project would create more than a thousand temporary jobs, and close to 100 permanent operations jobs(20) This would add millions of dollars into the economy of New Mexico every year. With the coal industry dying and the renewable energy industry booming, it only seems rationale for BLM to take steps to allow New Mexico to take advantage(21)	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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14.DM-4	**The project's impact on local wildlife. W**henever a large construction project takes place it is likely to displace and disrupt local wildlife. Several species may be present near the wind farm, including 41 different species designated as "species of great conservation need"(22) These species are considered indicative of the health of their ecosystem. There are also 14 different endangered species located near this proposed project(23) There has been a lot made of the effect that wind turbines may have on bird and bat populations in the areas they are placed. Developments in the understanding of these affects though has allowed for the, already minimal, impact on the avian community to be greatly reduced(24) The effect on ground animals, including the all important mexican wolf, will likely be minimal as these animals can simply traverse around the turbines. Sound may present an issue for certain animal populations, but there is no evidence that there is an effect, let alone a detrimental effect(25) As stated earlier, any construction project is going to affect the ecosystems where it is located. Another reality is that society is not going to stop using electricity any time soon. While the wind farm may cause some inconvenience to local wildlife, that inconvenience pales in comparison to the consequences of climate change, which will be exasperated by the burning of fossil fuels, like coal, to generate the electricity we use. Therefore, the best option for the wildlife in New Mexico, in the long term, is to build the wind farm and generate clean electricity.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
14.DM-5	**The project's impact on cultural sites.** When building a large scale project, the developers should be conscientious of the effects that it may have on local culture, including the people and any important landmarks. It is important during construction activities to be prepared for how to complete the project and maintain the integrity of the culture near it. The Borderlands Wind project does just that. One way of maintaining the integrity of the local cultures is to allow them to collaborate on the project. This wind farm project does just that(26) This will allow planners to better understand the needs and concerns for the cultural groups in the area and address them in such a way to make sure everyone is satisfied. Sometimes the locals may not be aware of the exact location of cultural artifacts or sites, and the construction may inadvertently discover them. The Borderlands project is putting a plan in place to deal with just this situation(27) Assuming this plan respects the cultural integrity of the area, Borderlands should have no problems in this area. While there are always risks to any construction project, we can mitigate many of them. The Borderlands Wind Farm project poses minimal risk to the cultural and natural ecosystem of the surrounding area due to the well laid out plans by the developer. Additionally, any risks still inherent in the project are outweighed by the benefits, both economic and environmental, which will come from	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	this project. It is for these reasons that I urge BLM to approve this project and move forward with the promotion of clean energy.	
15.LS-1	This is a request for extension of the 90 day comment period for the DEIS and RMP Amendment, which now ends on 07 November, 2019. The reason for my request is that the DEIS and support documents are huge, totaling well over two thousand pages (estimated, based on the documents I was able to download -- I could not download all of them). While BLM and other federal and state agency employees are paid to spend days and weeks creating and examining the many documents that are the DEIS, the RMP Amendment, and the support documents, it is absolutely unfair to expect the public to be able to do the same. We who live in the Red Hill area will be most directly impacted by the proposed project and so it is imperative that we comment. However, unlike those who are paid to be familiar with the DEIS, we have jobs, ranches, volunteer work, and other obligations which are our primary focus, and which limit the amount of time we can spend studying and commenting on the thousands of pages of DEIS and associated documents. We do not all have access to fast or unlimited broadband; BLM has only provided documents in PDF form which require huge bandwidth-consumptive downloads. Additionally, navigation of the BLM project website is confusing to many. Documents are not labeled in plain English, nor are they summarized, so in order to even know if documents need to be downloaded… they must be downloaded. These issues alone make it difficult for the public to assess the DEIS within the time period currently allotted.	The BLM considered the request for extension of the 90-day comment period on the DEIS. The decision was made not extend the DEIS comment period because the comment period was for 3 months, there were no issues identified with the notification of the availability of the DEIS, and the relative low number of comments received did not suggest additional time being needed for public comment.
15.LS-2	I'm sure that although Borderlands LLC and its parent, NextEra, would love to rush this project through with minimal (or no) public input, Council on Environmental Quality's NEPA regulations exist to ensure that the public is given the opportunity to participate in decisions that impact their lives. Government agencies are required to consider more than the non-human environmental impacts. Impacts of proposed actions on public	Refer to responses to Comments 08.RB-2 and 22.RJF-7. The public have been provided the opportunity to voice their concerns both during public scoping period (November 9, 2018 to December 3, 2018) and during the public comment period on the DEIS (August 9, 2019 to November 7, 2019).

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	health and welfare must be seriously and fairly considered as a basis for making informed decisions.	
15.LS-3	How can the public participate meaningfully to provide the information needed by BLM to assess the impacts of the proposed actions when there is simply not enough time for the public to read and understand the DEIS documents? While Section 1503 of the Council on Environmental Quality (CEQ) regulations requires that the BLM provide opportunity for public comment on the DEIS, those regulations do not establish a maximum time period. A Citizen's Guide to NEPA [1], found on BLM's own website, states that "…the draft EIS that an agency prepares may be extremely long. In such cases, an agency may grant, requests to extend the comment period to ensure enough time for the public and other agencies to review and comment [sic]."This letter is a formal request that BLM grant a significant extension of the public comment period for the Borderland LCC in order to allow for robust and meaningful public engagement as per the National Environmental Policy Act.	Refer to response to Comment 15.LS-1.

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16.LS-1	Issue: The DEIS does not meet the Plain Writing Act of 2010[1] requirements or Executive Orders E.O. 12866 and E.O. 12988. Recommendation: The DEIS should be rewritten in plain English, streamlined for readability, and resubmitted for public input. Discussion: Educated adults who are considered good readers usually read at about 200 to 400 wpm[2]. The biggest obstacle is the reader's ability to recognize words and to process how the words combine to make meaningful sentences. Readers cannot reasonably expect to understand text if they do not know what the words mean. Unfamiliar words and concepts result in slower reading if the reader is to understand what is being read. The first four pages of text of the DEIS is composed of 2149 words. Analysis of the text using seven different formulas for text readability[3] reveals that the text ranges from "difficult to read" to "college graduate level reading and above". It is reasonable to assume that educated adults who are not familiar with DEIS documents might read at the lower 200 wpm rate or slower. While I have not counted the total number of pages of the DEIS and the associated documents, and I have not counted the total number of pages of text vs non-text, it is reasonable to assume that since pages of maps, tables, and graphs must be used as references, at least the same amount of time would be spent on non-text pages as text pages. This means that at over 2000 document pages, it would take an educated reader who is not familiar with the material in the DEIS a minimum of 66 hours to read it all. Most readers not in the employ of BLM would necessarily take much longer, as reading time would be interrupted by all the other obligations of daily life. The very first bullet on the Plain Language website[4] is "Less is more!". Obviously BLM has not attempted to comply. In fact, one must wonder if the idea is to overwhelm the public in order to minimize response to the DEIS. The Plain Language website bullet points go on to list organization of documents, which BLM has failed to do in this DEIS. There is no index to help the reader by providing search words, and that, along with the table of contents referring to sections rather than page numbers, makes finding information in the DEIS an unnecessary time-consuming challenge. As an example, at the public meeting held in Quemado on 18 September 2019 I asked a BLM employee to help me find information in the print copy of the DEIS that was on display. She was unable to find the proper appendix in the 1 ½" thick document, much less find the specific information I was seeking to ask a question about. How can a non-employee reader find anything if a BLM employee, presumably familiar with the DEIS, can't? An additional Plain Language website bullet point is "Don't assume your readers have knowledge of the subject or have read related pages on your site. Clearly explain things so each page can stand on its own." The DEIS does not comply with this point. The question I asked of the BLM employee was to help me find pertinent laws and regulations that would apply to decommissioning, since no reference was made to such	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The EIS covers a technical topic of a proposed wind generating facility and its potential impacts on the environment. The document complies with Secretarial Order 3355 for streamlining and page length. The document was written concisely - words were deliberately and precisely chosen. The EIS itself is only 146 pages, including maps, tables, and graphs and excluding cover, Table of Contents, references, and appendices. The entire EIS document including cover, Table of Contents, references, and appendices is 944 pages. The document organization has easy to follow headings and subheadings. Footnotes are included in the text to explain terms not commonly used. Hard and electronic copies of the document were offered at the public comment meeting in addition to the EIS being listed on the BLM website to allow for the public to review the draft document at their convenience. The comment period was 90-days.

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	in DEIS section 2.2.7. Decommissioning (p 24). A "Decommissioning Plan in the BLWP POD" was referred to, but where was I to find that? As it turns out, there is no decommissioning plan, which is supposed to be in an Appendix L. Furthermore, the BLM employee told me that the relevant decommissioning laws and regulations could be found on the Fish and Wildlife Service, which may or may not be at https://www.fws.gov/midwest/es/wind/guidance.html -- I don't have the time to look for it much less to read even more. I do not believe BLM has made any attempt in the DEIS to use plain language, to properly organize the document, to include all information necessary to understand the issues fully, or to clearly explain anything. I believe this has been done is on purpose to discourage public participation and/or disguise information that the public would oppose.	

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17.LS-1	Issue: Because BLM has strayed from its mandate, the DEIS's stated purpose and need, which is supposed to be used to formulate a reasonable range of alternatives, results in essentially three alternatives that vary in detail but that have the same impacts.Recommendation: The No Action Alternative is the only reasonable decision.	The National Environmental Policy Act (NEPA) directs the BLM to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources" (NEPA § 102(2)(E)). As explained in BLM Instruction Memorandum 2011-59, "the BLM must explore alternative means of meeting the purpose and need for the action. For a renewable energy right-of-way application, alternatives will include denying the application (the No Action Alternative) and granting the application as submitted by the applicant following the pre-application process (the Proposed Action). The BLM must consider other reasonable alternatives through the NEPA process, including modifications to the right-of-way application as submitted, that meet the purpose and need for the action and provide a clear basis for choice among options (40 CFR 1502.14)." A discussion of alternatives need not be exhaustive. What is required is information sufficient to permit the BLM to make a "reasoned choice" among alternatives so far as environmental aspects are concerned (40 CFR 1502.14; see also, BLM NEPA Handbook H-1790-1 § 6.6), BLM NEPA Handbook H-1790-1 § 6.6.1, and BLM Instruction Memorandum 2011-59). The three alternatives analyzed in detail in Chapter 3 do not have the same impacts (refer to Table 2.2 Comparison of Proposed Action, Alternative 1, and Alternative 2). As noted in Section 2.5 of the EIS, Alternative 2 would consist of 34 constructed turbines and would ultimately have less impacts when constructed as compared to the Proposed Action and Alternative 1. No change has been made to the EIS.

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17.LS-2	Discussion: In the comments to the NOI submitted by me online and copied via email to Mr. Jim Stobaugh, National Project Manager, Bureau of Land Management on 09 December, 2018 (Submission ID BLWP-1-338039) I discussed the inappropriateness of an industrial complex on BLM managed lands in Catron County, as well as that the proposed project will not create economic benefit to Catron County, and will degrade the natural and human environment, and noted that there is no pressing need for the project in this location. The DEIS claims in Section 1.1 (pg 11) that "The BLM's purpose and need for the proposed BLWP is established by regulatory obligations and directives and current energy development trends." This claim notwithstanding, it is not BLM's purpose to aid corporations in their quest to make a profit for stockholders or to help public utilities to meet their own goals, but rather to meet the long-range goals of the American public for lands managed by BLM. It is disturbing to find that BLM has apparently decided that the obligations, directives, and trends stated on page 11 supersede BLM's primary purpose as a management agency of public property. The actual mission, as found on the BLM website, is "to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations." BLM was established on July 16, 1946 to "…manage public lands to maximize opportunities for commercial, recreational, and conservation activities. This promotes healthy and productive public lands that create jobs in local communities while supporting traditional land uses such as responsible energy development, timber harvesting, grazing, and recreation, including hunting and fishing."[1] BLM's website further states that the agency manages public lands "for the benefit of current and future generations, supporting conservation through partnerships and respect for communities" and yet it is evident from the wording of the DEIS that respect for the community of Red Hill, which will be most impacted by the project, is nil. This project has been rubber stamped as approved from the moment it was dreamed up[2], and no respect for the community near the project or for conservation of environment that the project will ruin, is evident. There is absolutely no way that an industrial complex that encompasses nearly 30 square miles is appropriate use of BLM lands in a traditionally rural agricultural county. It has apparently become some kind of BLM policy to equate managing public lands with making money at the expense of the environment and the human community and the other values stated in its mission statement and elsewhere.	The BLM acknowledges your comment and would like to make note that FLPMA directs the BLM to "manage lands for opportunities for commercial, and recreational, and conservation activities," which includes renewable resources. No decision on the application for the development of the Borderlands wind energy facility has been made. The public, including those residents of Red Hill, have been provided the opportunity to voice their concerns both during public scoping period (November 9, 2018 to December 3, 2018) and during the public comment period on the DEIS (August 9, 2019 to November 7, 2019). Each comment on the DEIS is being individually addressed. No change has been made to the EIS.

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17.LS-3	Let me say this in another way: The BLM's purpose in managing public lands is not simply to make money off the land. The Federal Land Policy and Management Act (FLPMA), which governs the way in which the public lands administered by the Bureau of Land Management are managed, establishes a multiple use mandate for management of Federal lands. BLM is not supposed to sacrifice one objective at the expense of all other values but rather to manage lands for opportunities for commercial, and recreational, and conservation activities. Multiple Use as defined by FLPMA Sec. 103. [43 U.S.C. 1702][3] (c) The term "multiple use" means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output." [my emphasis] "(1) The term "principal or major uses" includes, and is limited to, domestic livestock grazing, fish and wildlife development and utilization, mineral exploration and production, rights-of-way, outdoor recreation, and timber production. This, of course, means that energy production from wind is not a principal or major use. It also means that giving over 30 square miles of BLM land in Catron County for this proposed industrial complex cannot be considered multiple use – or best practices -- just because the DEIS dismisses any objections to the complex as unimportant or irrelevant.	The BLM acknowledges your comment and agrees as you have stated that FLPMA instructs the BLM to manage multiple uses of Federal lands under its administration. The BLM points to the portion of your comment that states that the agency is supposed to "manage lands for opportunities for commercial, and recreational, and conservation activities". FLPMA, as you also noted, directs the BLM to manage a "combination of balance and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources" with other values not limited to "recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values". These "values" such as public access, grazing, and recreation would continue with any of the alternatives and the potential impacts to these "values" have been disclosed in Chapter 3 of the EIS. The 30-square-mile project area associated with Alternatives 1 and 2 would not be fenced off, and the lands administered by the BLM within the project area would continue to be managed for multiple uses currently taking place now and for other uses in the future. No change has been made to the EIS.
17.LS-4	The DEIS reflects an apparent assumption that a renewable energy project that satisfies the increasingly craving for energy in another state is more important than the direct hit to the custom and tradition of Catron County residents and to the values of the small community of the Red Hill area, and is so important that the destruction of the environment and the ruining of a viewscape into perpetuity doesn't even matter. DEIS Section 1.4 Land Use Planning (p 12) mentions the 2007 Catron County CIP/Comprehensive Plan, which I took part in writing and am therefore quite familiar with. "The general land use goals identified in Catron County's … plan include 1) encouraging local and sustainable growth in the County; 2) protecting existing land	The BLM acknowledges your comment. The DEIS does not state that the proposed renewable energy project is more important than other values. This NEPA document does disclose the potential impacts to the social, physical, natural, and cultural elements of the environment from the three build alternatives. The 2007 Catron County CIP/Comprehensive Plan also does not prohibit the development of a wind generating facility within the County. No change has been made to the EIS.

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	uses, natural resources, and related economic activities; and 3) protecting the County's natural beauty." There is nothing in those words or anywhere in the County's Plan that encourage the development of a 30 square mile industrial complex.	
17.LS-5	The No Action Alternative for this DEIS is the only reasonable decision for BLM. Note that DEIS Section 1.7 provides a summary of issues that were raised most frequently during the public scoping period. All were negative. The public comments at the last community meeting held in Quemado were also all negative. It is troublesome that BLM did not even mention the No Action Alternative during that meeting.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. There were two comments that were in support of the proposed wind generating facility.
18.LB-1	When I worked for the Federal Government we received strict guidelines for writing in plain English. The requirements included active voice verbs rather than passive, avoidance of jargon, avoidance or minimal use of acronyms, and vocabulary and sentence structure that didn't require a college degree to comprehend, among other points. This draft document fails to meet those guidelines. I understand the tendency for specialists to write for other specialists. However, a document that the public is supposed read and comment on should be a document that the general public can read and understand. Of particular concern, at least to me, is the use of passive voice when discussing required or at least expected actions with no statement of who will actually be responsible for taking those actions. That evasion or wishy-washy-ness is the prime problem with passive voice and makes it difficult to hold accountable those who fail to take required or promised actions.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
18.LB-2	Recommendation: BLM should re-write and re-issue this document with a new 90-day comment period.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
19.CR-1	First, there appears to be a lot of disruption in the area slated for Borderlands wind farm, for an energy source that has been proven to be ineffective. The community surrounding this area; homeowners and ranchers, not only have to put up with the inconvenience of the construction, but also will not reap any of the benefits from this company, as the electricity that would be generated is going out of state. Most of these wind companies like to dangle a carrot in front of small rural communities that thet will contribute monies to schools, the community, etc., only later to renege on their promises. They may even renege on paying BLM, in the long run.	The electricity that would be generated by the proposed BLWP would be used by Tucson Electric Power for distribution to the electrical transmission grid, which includes the Socorro Electrical Cooperative. The distribution of the sales tax that would be paid to Catron County during construction would be determined by the County and not by the BLM. The annual payment by Borderlands Wind, LLC would be made over 30 years as part of the Industrial Revenue Bond structure and its distribution is also at the

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		discretion of the County and not the BLM (refer to EIS Section 3.3.2).
19.CR-2	Let's look at what will actually go on regarding the land and community: Since ranchers are losing usable land that they have been paying a lease on, will that lease amount be lowered to compensate for less land for their cattle to graze on?	The allotment fees will not be changed, as the loss of forage acres is negligible. No change has been made to the EIS.
19.CR-3	It's stated in the BLM proposal that water from an existing private well will be used for construction, and later a well for the O&M building would be drilled. I'm sure that the construction of the wind turbine farm, roads, bulidings, etc., will use copious amounts of water. This is water that private well owners covet for their homes and livestock. Saying that the groundwater aquifer will be replenished by rainfall is fairytale thinking, since this area has been in a drought for a number of years.	Refer to response to Comment 03.EI-3 and POD Section 2.15.2 Water Usage, Amounts, Sources in the EIS.
19.CR-4	We have abundant wildlife in this area. If this wind farm is allowed to build in this area, we are looking at loss of elk, antelope, deer, ground burrowing animals, and birds.	Refer to Table 3-1, which discusses potential impacts to "general wildlife", and Section 3.7, which identifies the anticipated impacts on a variety of special status species. No change has been made to the EIS.
19.CR-5	People who use this area for hunting or making their livelihood through guiding hunters, would be hurt immensely. Many people travel to this area for camping in the Gila Forest. I can't imagine wanting to set up camp in sight of a wind turbine. Loss of travelers and vacationeers would hurt the businesses in the communities of Quemado, NM and Springerville, AZ	Comment acknowledged. There is currently no data available to support that the BLWP is an area that supports substantial hunter days. Within the Game Management Units (GMUs) 12 and 15, a substantial number of hunters' days are associated with hunts on the Gila National Forest. Hunting on public lands would not be restricted except during construction and decommissioning activities. No change has been made to the EIS.
19.CR-6	These wind turbines have been known to catch on fire. If this fire spreads to private land, who would be responsible for compensation to the private land owner? BLM or Borderland?	The determination of responsibility for compensation for property damage in case of fire would be on a case-by-case basis. No change has been made to the EIS.
19.CR-7	In looking over BLM's proposal for the ROW for Borderland's wind farm, there didn't seem to be much mention of Air Force flights over the area: just that they fly under 10,000'. We have seen on many occasion, jet fighters and C130s, flying well below Cimarron Mesa, which is 7705'. If it's approximatelty 500' from the base of the mesa to the top, wouldn't these planes be flying at the height of these turbines?	Refer to Section 3.2.1.9 and Section 3.2.2 of the EIS for a discussion on the aviation use in the BLWP area. The U.S. Air Force is a cooperating agency and has been in close coordination with the BLM on the potential impacts from the BLWP. No change has been made to the EIS.

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19.CR-8	We insist that BLM, NOT give Borderlands the ROW for this project, and to rethink and look more clearly at the repercussions of this project, by removing the dollar signs out of your eyes.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
20.LB-1	Even if we had started the first day the document was posted online the comment period wouldn't have been long enough. BLM took a year to write a huge document using paid specialists (none of whom are affected whatsoever by the project) and government data resources. They didn't start from scratch but followed a well-developed formula so that much of it was simply filling in the blanks. It was, for them, not a difficult task. We -- who are not specialists and who are affected by the project -- got 90 days to examine a huge document that many wouldn't be able to make heads or tails of (see my comment BLWP-1-500049989 on that issue), research it using documents we have to Google to obtain because we don't have easy access to all that government data, and to write our comments in our own "spare" time. It is absolutely unfair to the public to limit the comment period to 90 days, especially as BLM does have the authority to extend it as much as it wants. They are pushing hard to get this through for NextEra's benefit, not the public's. Recommendation: BLM should extend the comment period by at least six months	Refer to response to Comment 15.LS-1.
21.LS-1	Issue: There is no valid justification for a Resource Management Plan amendment change.Recommendation: The No Action Alternative is the only reasonable decision.Discussion: Public land is land owned by the public. Land management agencies manage, but do not own, the land or the resources on and under it. Resource Management Plans (RMPs) are described in FLPMA and apply to BLM. Among other things, RMPs identify which lands will be available for development and in what manner, and which lands will be managed to emphasize resource protection, as well as the management requirements needed to balance the agency's multiple use and sustained yield mandates across the federal landscape, and more.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
21.LS-2	Section 3-11 Land Use Plan Amendment (page 3-99, real world page 129). The DEIS clearly states that "…the construction and operation of the BLWP wind turbines over the 35-year life of the proposed project would create strong visual contrast in terms of scale, line, form, color, and texture in the characteristic landscape." The citizens of Catron County have always vigorously defended a traditional rural and agricultural way of life. In its nearly 7000 square miles there is one (1) traffic light (a blinking light, not a stop light). No public building in any town and few, if any, private buildings are more than two stories tall, i.e. less than or around the average height of surrounding trees. We have no huge industrial complexes, nor do the few semi-industrial sites that we do have take up more than a few acres of land. They are not visible from any distance over about a	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	quarter mile or so. The only man-made structures that stand out are the high power transmission lines that run basically north/south through the western part of the county, and which provide the only source of visual pollution in the whole county.	
21.LS-3	Many of the comments protesting this project have specifically been about the negative impact of an industrial complex on the enjoyment of the incredibly beautiful landscape, which includes Fox Mountain and rolling hills and grasslands, as well as the edge of the Gila National Forest. Real estate agents emphasized the untouched beauty of the public lands surrounding the deeded land they offered for sale. Many local residents purchased the land intending to live there for the rest of their lives; others purchased it so they could escape the cities they live in and vacation in beautiful surroundings. Not only would property values be lowered, but the personal values (aesthetic, spiritual values; and emotional and physical health benefits of living in and near open rural lands) of the residents of the area in the vicinity of the wind turbine industrial complex would be destroyed.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The potential impacts to property values is discussed in Section 3.3.1.2 of the EIS.
21.LS-4	The New Mexico border on US Highway 60 is often the first view tourists have of the "Land of Enchantment". How is it a benefit to New Mexico tourism to have an industrial complex be practically the first thing they see?	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The BLM considered potential impacts to visual resources and specifically to views from US 60 in the EIS; refer to Section 3.9 and Appendix F of the EIS
21.LS-5	The DEIS justifies changing the VRM class to allow for the construction of the proposed wind turbine project by stating that "the change is being considered because of the lack of any rationale supporting the original allocation", as if somehow the VRM class assignments were magically put into the RMP by other than human hands, and as if the RMP decision had not in fact been valid at the time it was made, and unchallenged since.	The changes to VRM classes were made with consideration of the Visual Resource Inventory conducted as part of the analysis for the BLWP EIS. The Socorro RMP 2010 did not address the 37-mile VRM Class II designated corridor specifically and with any definition. The Socorro RMP Land Use Amendment aligns the VRM Class III Highway 60 corridor with the surrounding area visual resource management objectives. No change has been made to the EIS."
21.LS-6	Any argument claiming lack of supporting rationale for the original allocation should be dismissed as irrelevant in the face of the public support of the existing classes. If BLM is intent on enabling the construction of an ugly industrial complex on the public land that	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The BLM

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	the agency manages, then BLM should find a location with a VRM class somewhere else that already would accommodate it. A wind turbine industrial complex in Catron County is totally inappropriate use of public lands.	considered potential impacts to visual resources in the EIS; refer to Section 3.9 and Appendix F of the EIS
22.RJF-1	We are opposed to the proposed action and alternatives 1 and 2 and feel that the no action alternative is the preferred alternative based on BLM's failure to provide oversight of Borderlands in the development of the DEIS. Borderlands disregarded or minimized negative effects while intentionally inflating perceived positive effects. The BLM has not demonstrated the purpose for amending the RMP or the review of data provided by Borderlands, who has a vested interest in biasing the data for their own personal financial gain.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
22.RJF-2	Borderlands has taken liberties with inserting themselves into the responsibilities reserved for the action agency thru the NEPA process and made decisions that are not within their rights as an applicant.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
22.RJF-3	The agency has been pre-decisional in disregarding the no action alternative and has failed to demonstrate that alternative locations that are appropriate to conduct these activities without an amendment to the RMP have even been considered. They have failed to consider locations that would minimize the impacts to resources and the personal and financial wellbeing of the local residents. The BLM and Borderlands have chosen to place an extreme economic burden on the residents of Northern Catron County and disregarded many subdivisions located in the effects area. The BLM has disregarded its own data regarding the economics of the region to justify their desired outcome as indicated in our comments below. By willfully disregarding and minimizing the financial burden placed on local residents to justify this proposed decision, it is grounds for selecting the no action alternative.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
22.RJF-4	The structure of the two public meetings established by the BLM discouraged input and feedback from affected parties and created the appearance that the decision had already been made and objections by affected parties was futile. Outreach for meeting notices was limited and short notification timeframes discouraged attendance. The meetings were also designed to be a one-way flow of information with the BLM and Borderlands taking the opportunity to defend their position while discouraging opposing comments. The BLM and Borderlands were allotted ample time to convey their objectives, but public commenters were allotted 3 minutes each at the second meeting with no follow-up response or discussion of any kind. The BLM did not create the opportunity to have discussions on alternatives that could reduce or minimize impacts on affected parties. Every credible disagreement was challenged by BLM or Borderlands and comments were not recorded during these discussions for further review or	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	clarification. Many participants in the meeting felt this way and left confused and discouraged.	
22.RJF-5	This project is in conflict with the Multiple Use Act as the project has only one benefit and that is the profit of Borderlands with disregard to the significant irreversible and irretrievable affects to all other uses and local residents.	Refer to response to Comment 17.LS-3. No change has been made to the EIS.
22.RJF-6	There were no efforts made to interact or have meaningful, collaborative discussions with local subdivisions or their elected board members.	Thank you for your comment. The BLM contacted Catron County for information regarding Cimarron Ranch Subdivision and that information is included in Section 3.3 of the EIS. No comments have been provided to the BLM from the Cimarron Ranch Board during the public scoping or comment periods on the BLWP. No change has been made to the EIS.
22.RJF-7	This analysis disregards health effects due to prolonged exposure to wind turbines on local residents.	Refer to response to Comment 08.RB-2. Potential health concerns for those living adjacent to wind turbines include audible sound (noise we hear), shadow flicker (a moving shadow casted by the blades of a wind turbine from the sun), and infrasound (sound we do not hear). The closest residence to a potential wind turbine location would be approximately 2.3 miles to the west of the project, and the closest residence in Red Hill would be approximately 4.2 miles to the north of the BLWP area. At these distances wind turbine sound would not be audible. There are no residences within the reachable distance of a shadow flicker from a potential wind turbine location. In addition, there are no health issues with regard to infrasound even at distances much closer to residences than is the case for this proposed project. The evidence provided in over 80 peer-reviewed scientific publications indicate that there would not be any health impacts to local residents over the life of the BLWP. No change has been made to the EIS.

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22.RJF-8	Our comments throughout this document apply to all action alternatives unless otherwise stated.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
22.RJF-9	Chapter 1: Introduction. -The statement regarding the BLM's obligations to promoting energy development are not pre-decisional and do not supersede the NEPA process.- There is also a statement that refers to two project areas that were evaluated. This is not a sufficient number of alternative locations to defend the proposed current project location and support a change to the RMP. No alternative sites in the Visual Resource Management (VRM) class IV were considered within the Socorro District according to the DEIS. The BLM and Borderlands have not considered other alternative locations that could have less affects while still meeting the energy demands that Borderlands is requesting. The BLM and Borderlands are transferring the economic burden of this project away from Borderlands and onto the local residents.	Comment acknowledged. The BLM must consider other reasonable alternatives through the NEPA process, including modifications to the right-of-way application as submitted, that meet the purpose and need for the action and provide a clear basis for choice among options (40 CFR 1502.14)." A discussion of alternatives need not be exhaustive. What is required is information sufficient to permit the BLM to make a "reasoned choice" among alternatives so far as environmental aspects are concerned (40 CFR 1502.14; see also, BLM NEPA Handbook H-1790-1 § 6.6), BLM NEPA Handbook H-1790-1 § 6.6.1, and BLM Instruction Memorandum 2011-59). No change has been made to the EIS.
22.RJF-10	Chapter 2: Proposed Action and Alternatives: 2.2.6. -The statement that "Occasional blade cleaning may be necessary if debris reduces the turbine's aerodynamic performance. Water would be used to spray wash the blades using a high-pressure sprayer." Is this included in the 80 acre feet proposed in table 2-2? It has not been disclosed what the water demands will be for construction vs. maintenance and operation. How much water are we talking about for this action?	Cleaning of blades using high pressure sprayers with water is not common Borderlands Wind, LLC practice. The gains in aerodynamic performance are small and not worth the risk of seriously damaging the blade with this practice. If the blade has a small crack (which is very common) you could actually do more harm by saturating the balsa core of the blade. Table 2-2 in the EIS describes both construction and O&M water use. Also as stated in the text, "Construction activities would require approximately 26 million gallons of water and would be pumped from an existing private well and conveyed through aboveground piping. Water rights would remain with the private well owner." No change has been made to the EIS.
22.RJF-11	Chapter 2: Proposed Action and Alternatives: 2.2.7. -What is the bond requirement for decommissioning? Is there a bond requirement or is Borderlands given a free pass to abandon the project at any time without rehabbing and decommissioning? There is a considerable amount of information not provided in the DEIS regarding decommissioning.	The bond requirement will be commensurate with the estimated cost of decommissioning the proposed project. Borderlands Wind, LLC must supply a plan and a cost, and the BLM will bond accordingly. No change has been made to the EIS.

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22.RJF-12	Chapter 2: Proposed Action and Alternatives: 2.7. -Regarding the statement "The following alternatives were considered by Borderlands LLC but not analyzed in detail in this EIS." Analysis of alternatives is the responsibility of the action agency, in this case, BLM. Borderlands has no role in determining alternatives for consideration. They can provide input, but should not be the decision makers regarding what should and should not be considered. This privilege is not granted by BLM in other cases such as a grazing analysis or other special use permits. This raises the question of who is making the final decision, Borderlands or the BLM?	Comment Acknowledged. The BLM makes final decision; refer to Section 1.3 Decisions to be Made in the EIS.
22.RJF-13	Chapter 3: Affected Environment and Environmental Consequences. 3.1. Table 3-1. -The analysis, determination and rationale is limited to the project area and disregards effects for the analysis area. The effects to the surrounding areas are significant and throughout the document boundaries have been created along sociopolitical lines for the purposes of effects analysis, disregarding that effects are felt across these lines, to include the New Mexico/Arizona state line and Forest Service/BLM boundaries. The effect analysis weakens as these boundaries are crossed.	The analysis area is dependent on the resource/use being evaluated. For example, the area of potential effect for visual resources extends out 30 miles. The social and economic condition analysis includes the entire Catron County and as well the communities of Springerville and Eagar in Arizona. No change has been made to the EIS.
22.RJF-14	Environmental justice: -Age was disregarded in the demographics of the region. According to the 2010 U.S. Census Bureau, persons 65 years and over constitute 41.5% of the population of Catron County.	Thank you for your comment. Per Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994) and the BLM Land Use Planning Handbook (H1601-1), Environmental Justice takes into account minority and low-income populations, not elderly or any other age-related statistic. That being said, the 2010 age distribution of the Catron and Apache Counties, Quemado and Escudilla-Bonita CDPs, and the respective census tracts and block groups associated with Springerville and Eagar have been added to the EIS in Section 3.2 Social and Economic Conditions, Table 3-7. The 2010 Census data indicate a 27.9% elderly (age 65 and over) population for Catron County.
22.RJF-15	Recreation: - Effects were disregarded outside the project area to include wilderness areas, national scenic trails, Forest Service and BLM lands and private property.	Refer to response to Comment 22.RJF-13.
22.RJF-16	The DEIS disregards The potential impacts of unauthorized off-road travel encouraged by The creation of new roads on BLM, Forest Service and private lands. The demands that this will place on The limited BLM, Forest Service and local law enforcement to address these issues will be significant. these issues are not likely to be addressed and would lead to excessive resource damage.	Refer to Section 3.4 Transportation and Travel Management for a discussion of unauthorized off-road travel. No change has been made to the EIS.

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22.RJF-17	Vegetation: Companies such as Borderlands have sought out similar ecological systems (shortgrass prairie, midgrass prairies and other grass lands) across the United States for the construction of wind farms. No analysis has been completed to determine the impacts or cumulative impacts of repeated use of these systems across the United States for the development of wind energy and what it means to their associated species status nationally in regards to habitat fragmentation and recovery of species.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Table 3-1 in the EIS for a discussion of potential impacts to vegetation.
22.RJF-18	Water Quality (Surface/Ground): The rationale presented disregards and minimizes the impacts of the removal of 26 million gallons of water from local aquafers and the impacts to public and private users. This water demand is significant. The BLM attempts to quantify this as .09% of the water use by the county, however fails to identify the aquafer that will be used, the capacity, recharge and/or demand on that individual aquafer. Therefore, the BLM is unable to make a determination of significance without a detailed ground water analysis. The proposed 26 million gallons is equivalent to 80 acre feet of water to be withdrawn from a single source (aquafer) over the period of six months. The state of New Mexico typically issues private domestic water rights no greater than 1 acre foot per year and users typically do not exceed these demands. The BLM has failed to recognize the significance of this amount of water and its impacts on others needing this resource to survive. Secondly, the BLM has failed to disclose a clear description of how and when demands on the local water supply will occur. For example, it is confusing throughout the DEIS as to whether different statements of need for water are included in the number of 26 million and if they will be a single use or continuous use. The BLM is legally responsible to conduct this analysis regardless of where the water right will occur as it is part of a connected action and the demand would not be placed on the resource if the BLM was not participating. Application for water rights with the State Engineer does not constitute a ground water analysis as the Office of the State Engineer does not conduct a ground water analysis when issuing water rights for ground water. Statements made referring to “negligible” and “minor” are incorrect. The short term demand of 26 million gallons disregards the question of what type of aquafer is being utilized. For example, a closed aquafer has no recharge capability and has a finite capacity. The BLM does not know the status of the aquafer, capacity of the aquafer, recharge rate or demand. It can take millions of years for some aquafers to recover, therefore, the statements of insignificance on the part of the BLM is negligent as they have no way of knowing whether these effects are irreversible and irretrievable without a ground water analysis. - The BLM statements of “negligible impacts” and “no additional analysis for surface water or ground water is warranted in this EIS” is incorrect and could have catastrophic effects on local water users as water is a necessity of life. -	Refer to response to Comment 03.EI-3.

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	Many wells in this area have recently failed and are not producing water. - We are unable to comment on water quality as data has not been completed regarding this concern.	
22.RJF-19	Wetlands/Riparian Zones: -The statement regarding playas being generally vegetated with the same species as the surrounding area fails to recognize that the region has been in a long term drought and local precipitation over the past several years has not supported the function of these playas and the impacts of the drought on playa vegetation. These wetlands are important components of the ecosystem that do have unique ecological characteristics. Activities such as roads and stock tanks have jeopardized these systems across the analysis area and region making them a critical consideration for their ecological importance.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
22.RJF-20	3.2.1. Table 3.2.1. - The BLM has avoided affected parties throughout this process and utilized personal communication with County officials regarding the population of Cimarron Ranch subdivision and disregarded property owners as affected individuals. This information can be obtained by contacting a Cimarron Ranch Board member to collect appropriate numbers for the analysis. County officials have a vested interest in minimizing impacts to property owners based on potential payments from Borderlands. The estimation of 50 individuals living in Cimarron Ranch is incorrect and the number of property owners affected is disregarded. - Communities disregarded in this analysis include Antelope Run, Spring Canyon, Starfire subdivision, Omega and Indian Springs.	The U.S. Census Bureau designated one census tract (9674) that encompasses the entire Catron County and identified Quemado and Escudilla Bonita as Census Designated Places (CDPs) (refer to Figure 3- 7 in the EIS). There is no demographic data available for the Cimarron Ranch area from the County (refer to Section 3.3.1.1 of the EIS). The communities mentioned in the comment are not CDPs, and there is no data available. The BLM did not receive any comments from a Cimarron Ranch Board either during the

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		public scoping period or during the public comment period on the DEIS. No change has been made to the EIS.
22.RJF-21	3.2.1. - A statement regarding the Gila National Forest indicates that "it is considered one of the more remote and least developed national forests." Why is the BLM proposing activities that disregard this significant characteristic? - The Wilderness Study Area located next to Escudilla Wilderness Area, as identified in the Apache-Sitgreaves Forest Plan, is disregarded in this analysis. The Wilderness character of Escudilla Wilderness and its associated Wilderness Study Area have been disregarded in this analysis and this project will have significant impacts. Statements made at the first public meeting by BLM employees regarding the impacts to the visual characteristics of the Wilderness Area were that they do not matter based on the fact that the activities are outside of the Wilderness. This is incorrect because if applied in reverse, these areas would not have been considered as wilderness because their wilderness character would have been reduced by the presence of wind turbines. Federal land management agencies have an obligation to protect wilderness and wilderness character.	There are no viewshed restrictions placed by the Forest Service from the Escudilla Wilderness Area or the three wilderness study areas (referred to as the northeast, southeast, and west additions) that are currently under evaluation by the Apache-Sitgreaves National Forest Alpine Ranger District that would be added to the Escudilla Wilderness Area. The minimum criteria for the designation of wilderness according to the Wilderness Act of 1964 are size, natural condition, and opportunities for solitude or primitive recreation. These are criteria placed on the landscape under consideration for designation; they do not include criteria for what can be seen (views) from the wilderness area or wilderness study area. The closest turbine in any alternative would be approximately 14 miles away and would not attract attention of the casual observer. No change has been made to the EIS.
22.RJF-22	3.2.1.2. - There is no mention of helispots or helicopter traffic. Helispots and helicopter traffic in this region are important because it is a significant mode of emergency medical transportation for all of Catron County due to the travel distance to local hospitals. There has been no consideration for how the project will impact response times in medical emergencies due to the inability to access the area by emergency aircraft or the delays caused as aircraft may no longer take a direct route to incidents and medical facilities.	Flight hazard maps are available to all aviation groups and updated bi-annually. This information can be retrieved online. Emergency medical, fire, and police operations would not be affected by the presence of wind turbines. Besides landing and takeoff, the flight elevations above ground are higher than the turbines. Flight operations are briefed to local hazards and would not restrict operations from occurring. Information regarding emergency helicopter flights have been added to the EIS in Sections 3.2.1.2 and 3.2.2.

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22.RJF-23	There is no consideration for fire aviation needs. While The fire risk within The project area may be minimal, this project area does not consider The direct proximity to The Gila National Forest and The needs of fire management aviation activities in direct relation to The project. With this project, private properties in or near The project area would be placed at greater risk as aviation resources may not be able to access them in emergency situations, for both medical and wildland fire fighting needs.	Refer to Response to Comment 22.RJF-22.
22.RJF-24	3.2.1.3. Table 3-3. - Continental Divide NST: this trail system is National in scope and incudes all land designations throughout the nation. The trail is not exclusive to the BLM. One spur route, often utilized by recreationalists in the area, is the road to the top of Mangas Mountain. Users of the Continental Divide NST choose to do this because of the ability to view the surrounding undeveloped landscapes. Due to the fact that this mountain is a dominant landform, with the ability to view the surrounding landscapes, the Forest Service has placed a fire lookout. Does the BLM not have a legal obligation to protect the scenic values of the trail system outside of its management as well? This is an example of the BLM disregarding effects along sociopolitical boundaries.	The spur route is not part of the designated route of the Continental Divide NST. A visibility analysis was done from designated trails and any impacts have been discussed in the EIS. No change has been made to the EIS.
22.RJF-25	3.2.1.3. Table 3-3. This table fails to recognize the Wilderness Study Area located next to Escudilla Wilderness in the Apache-Sitgreaves Forest plan.	The BLM appreciates your comment. There are four potential Wilderness Areas within the Apache-Sitgreaves National Forest Alpine Ranger District. The four study areas have been added to Table 3-3 in the EIS.
22.RJF-26	3.2.1.6 -Socorro Field Office Resource Mgmt. Plan: This document provides no justification for amending this plan. Misleading statements were made regarding the RMP right-of-way amendments during the initial public meeting held in Quemado to lead individuals to believe that the only purpose for amendment was to widen U.S. 60 so trucks hauling materials could access the project area. The VRM classification was put in place to protect the economic drivers of Catron County as stated within the BLM's funded research on The Economy of the Gila Region (The Economy of the Gila Region, July 2008, Headwaters Economics, R. Rasker, M. Haggerty, J. Haggerty and J. van den Noort). These VRM classifications were likely established to protect the visual landscapes associated with adjoining National Forests and nearby Wilderness Areas as well.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The justification for amending the RMP is provided in Section 3.11 of the EIS.

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22.RJF-27	3.2.2.1. -The statement that "…with the issuance of the ROW grant, the Proposed Action would be in compliance with FLPMA and would not conflict with the 2007 Catron County CIP/Comprehensive Plan" is false. On page 1-4, the statement regarding the general land goals identified in Catron County's (County) plan include, "1) encouraging local and sustainable growth in the County, 2) protecting existing land uses, natural resources, and related economic activities, and 3) protecting the County's natural beauty." This project is in direct disregard to all of these goals: Goal 1 for encouraging local and sustainable growth in the County - The project disregards this goal as indicated in The Economy of the Gila Region (R. Rasker, et al, 2008). According to the information found in The Economy of the Gila Region, this project is in direct conflict with Catron County's goal of encouraging local and sustainable growth as it disregards the importance of non-labor income sources and the importance of protected landscapes on the economic growth of Catron County. This document also indicates that industry development such as the proposed action are a deterrent to economic growth in this region. Goal 2 for protecting existing land uses, natural resources, and related economic activities – This project again disregards the importance of protected landscapes on Catron County's economy. Goal 3 for protecting the County's natural beauty – This proposal is in direct disregard of this goal.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.2 of the EIS for a discussion on the compatibility with existing local land use plans.
22.RJF-28	Construction: Regarding grazing allotments, the DEIS fails to recognize the effects of a depleted water system on grazing activities both within and outside the project area. In the absence of water, grazing cannot occur.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.2 for a discussion on potential grazing allotment impacts.
22.RJF-29	Operations and Maintenance: Statements were made regarding improved forage resources for livestock grazing under the revegetation plan. How does Borderlands intend to accomplish this management objective? Revegetation practices generally take several years to revegetate with local native vegetation. A Borderlands representative indicated that restoration objectives would be achieved within one year. This statement is unrealistic and impossible.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.2 for a discussion on potential grazing allotment impacts.

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22.RJF-30	3.3 -The BLM has failed to analyze the socioeconomic impacts of this project. The information provided in the DEIS is biased towards the project. For example, inferences are made without support towards the benefits of this project, yet public comment is disregarded when inferences are supported with logic. The BLM failed to incorporate their own study on The Economy of the Gila Region. This document was created for the BLM to inform the socioeconomic analysis in their RMP. This document strongly contradicts the arguments presented by Borderlands in regards to the economic impacts of this project. The arguments presented by affected parties that this project will discourage growth and reduce private property values has been disregarded by the BLM and Borderlands, however, The Economy of the Gila Region indicates that non-labor income (i.e., retirement and investment income) are almost half of the total personal income of the Gila region. This study also found that the largest source of personal income from Catron County is from non-labor sources at 59% in 2005. This study also found that the growth in non-labor sources was based on a strong positive relationship between the degree of protection of public lands and landscapes and that “the more protected the lands, the stronger their positive impact on growth.” Additionally, this study found that industry (mining, oil, gas, timber, etc.) has negative impacts to growth of total personal income.	Growth in non-labor income, in The Economy of the Gila Region, was found to be due to an aging population and their associated income derived from retirement and investments, not the relationship to public lands. The degree of “protected” lands refers to their management status (e.g., National Parks, National Monuments, Wilderness Areas), not the amount to which development is reduced on public land or “protected” from development in general. The study specifically notes that the "Variables negatively correlated with growth in personal income are: driving distance to large cities, the degree of economic specialization, dependence on agriculture, mining, wood products and other “transformative” industries, and the relative lack of newcomers in the community." Part of the economic development by the Catron County Board of Commissioners proposed that "research and generation of biofuels, biomass or renewable energy" would be supported, which is also stated in The Economy of the Gila Region. There is no analysis, discussion, or conclusion regarding property values in the Economy of the Gila Region to support any claims regarding the topic. Refer to Section 3.3 Social and Economic Conditions in the EIS. No change has been made to the EIS.

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22.RJF-31	The study sites the median age of Catron County residents in 2000 as 47.8 years of age. Recent demographics reported by www.newmexico-demographics.com/catron-county-demographics, identifies the median age of Catron County residents in 2017 as 60.2 years of age. This demonstrates the growing dependence of Catron County on non-labor income sources. This project will discourage growth and encourage outsourcing of Catron County's largest source of economic growth while contributing minimally to positive growth itself. The development of wind turbines and destruction of natural scenic beauty will have catastrophic impacts on Catron County and discourage retirees from immigrating to this area. As this document found, unimpeded landscapes are the primary driver of this growth.	Refer to the response to Comment 22.RJF-30. Catron County has already seen population decline (approximately 3% between 2010 and 2017). Page B5 of The Economy of the Gila Region states, "Catron and Sierra counties have experienced negative natural change in the population; i.e., deaths exceed births…In other words, few people are moving to these counties, and those who are, are more likely to be old." For Catron County specifically, the document noted that "Opportunities might include retirement if the county can boost health care services, affordable housing, and other social services", indicating that the County would need to provide more services to attract further retiree migration. The biggest hindrance to growth for Catron County as noted in The Economy of the Gila Region report, is its isolation. As stated on pages i and 7, "the potential is there for residents in rural areas to consider public lands amenities as an asset worth promoting. In spite of this relationship, the same study found that rural isolate places – even those surrounded by protected lands – grew least and had the lowest wages. This means more is needed – an educated workforce, for example – and that despite the presence of environmental assets, the biggest challenge for these counties is the lack of ready access to markets." Additionally, on page 30 it states, "Ideally, communities that are surrounded by Forest Service and BLM lands, by wilderness and national monuments, should be able to consider public land an economic asset; promoting quality of life stimulates the economy, which in turn increases the standard of living. In practice, this can be difficult. While amenities are a necessary condition for economic growth in today's economy, by themselves they are not enough. An educated workforce, a diverse economy and, above all, ready access to larger population centers via road and air travel also play key roles in enabling areas to maximize the benefits of public lands. For the Gila region, the degree of isolation is perhaps its biggest economic development challenge." This indicates that the presence of public land

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		alone is not enough for Catron County, and to take full advantage of the amenities the public lands could provide would require much more than simply being located near such lands, including a more diverse economy and greater access to population centers via road and air travel. The total reduction of public lands in Catron County by BLWP would be approximately 0.003 percent (133 to 140 acres of permanent disturbance, depending on the alternative), a negligible amount for which there is no analysis to support that this project alone would be an impediment to retiree migration to the County. Further, the BLM is has a multiple-use mandate under the Federal Land Policy and Management Act of 1976 which states that the resources and uses on public land must be utilized in a balanced combination that will best meet the needs of the people (current and future needs for current and future generations). Multiple uses under BLM management include renewable energy development, and as such, except in areas specifically set aside for conservation purposes, the BLM has a legal responsibility to consider projects like the BLWP. No change to the EIS has been made.
22.RJF-32	The DEIS fails to incorporate The importance of The Lightening Field art installation to this community, drawing visitors worldwide for The opportunity to experience these vast	Thank you for your comment. According to The Lightening Field website the exact location is a secret. The BLM cannot analyze potential impacts from the build alternatives without

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	unimpeded landscapes. The value of these landscapes is evident through The visitation and wait list for individuals desiring to experience this site.	the location of the installation. No change has been made to the EIS.
22.RJF-33	The DEIS fails to incorporate the Very Large Array's comments into the analysis. The VLA is a globally significant national radio astronomy observatory that is critical to Catron County's economy. Yet the BLM and Borderlands choose to disregard the significance of this site and its contributions to astronomy, the solar system and other scientific research. It is globally recognized for its selection as a backdrop in many movies and draws visitation for both its scientific and cultural significance. The indication was made that the VLA has been working towards developing additional sites to include one in direct proximity to the proposed Borderlands project area https://ngvla.nrao.edu/page/refdesign. This project should in no way impede their ability to perform at the optimal level or discourage development opportunities within the region.	The NRAO VLA was included as part of the internal scoping for cooperating agencies and were included on the DEIS NOA mailing list. The BLM did not receive comments on the DEIS from the NRAO VLA, and this is the only comment which relates to the NRAO VLA that was received. Currently, the BLM does not have any active proposals for NRAO VLA facilities near the BLWP project area and, as such, the project would not impair their activities. The BLM will coordinate further with the NRAO VLA during development of the FEIS to determine if they have any concerns regarding the project. No change has been made to the EIS.
22.RJF-34	3.3.1 -The DEIS fails to recognize impacted subdivisions including Antelope Run, Spring Canyon, Starfire subdivision, Omega and Indian Springs.	Thank you for your comment. These subdivisions are included collectively in the US Census Bureau data used in the analysis of the social and economic conditions of the BLWP area. No change has been made to the EIS.
22.RJF-35	3.3.3.1 -The BLM has failed to reach out to Cimarron Ranch Board members or Cadden Community Management for accurate demographic information on the Cimarron Ranch Subdivision. It also failed to recognize age demographics and the importance of non-labor income to the county and local communities. It fails to recognize the significance of reduced property values. The economic burden will be placed on Catron County while the benefit will be to Arizona as revenue created by jobs will likely be outsourced to Arizona due to the project's proximity to Springerville and Eager, Arizona.	Thank you for your comment. The BLM contacted Catron County for information regarding Cimarron Ranch Subdivision and that information is included in Section 3.3 of the EIS. No comments have been provided to the BLM from the Cimarron Ranch Board or the Cadden Community Management during the public scoping or comment periods on the BLWP. No change has been made to the EIS.
22.RJF-36	It fails to recognize the significance of reduced property values.	Thank you for your comment. Refer to Section 3.3.2 of the EIS for a discussion on the potential impacts to property values. No change has been made to the EIS.
22.RJF-37	The economic burden will be placed on Catron County while the benefit will be to Arizona as revenue created by jobs will likely be outsourced to Arizona due to the project's proximity to Springerville and Eager, Arizona.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 of the EIS for a discussion on the potential impacts to the local economy.

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22.RJF-38	3.3.1.2 -The DEIS indicates that 40.8% of housing units within Catron County were described as vacant due to seasonal recreational and other use. This document fails to recognize the significance of visually unimpeded landscapes on these units. The statement was made that "No housing units, occupancy data, or median house values are available for the Red Hill/Cimarron Ranch subdivision." This is due to the failure of Borderlands and the BLM to do their due diligence in reaching out to the appropriate contacts of the affected subdivision and the intentional disregard by not allowing elected representatives of Cimarron Ranch and other organized subdivisions to participate as representatives of the whole.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 of the EIS for a discussion on the potential impacts to the local economy including recreation.
22.RJF-39	3.3.1.4 -The DEIS inflates the economic benefits of the BLWP to the communities while disregarding the impacts to the major drivers of the local economy. The project harms property values and population growth as the major driver of growth is the scenic values of this rural landscape as identified in *The Economy of the Gila Region*. When combined with the remoteness of Catron County, the significance of these scenic landscapes is amplified as individuals have chosen to live in these areas with minimal amenities due to the fact that a greater value is placed on the unimpeded landscapes. This can be observed by viewing properties throughout the region, as the majority of homes are oriented to facilitate views of the predominate natural landforms. - The information provided in this section is biased and utilizes research from outside locations in direct proximity to resources and amenities that change the dynamics of their economic drivers. As indicated in The Economy of the Gila Region, the values of open space, rural viewscapes, associated lifestyles, scenic quality, landscape character, visual appreciation and wildlife are all significant drivers of the economy and growth within the region and have direct implications on market values within the region. These market drivers cannot be disregarded for the personal financial gain of Borderlands. - The BLM and Borderlands have failed to reach out to local real estate agents and appraisers to determine effects on the local real estate market and have made assumptions based on studies conducted in areas with vast amenities and resources to offset the negative economic impacts of wind turbines.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 of the EIS for a discussion on the potential impacts to the local economy and property values.
22.RJF-40	3.3.2.1 -The DEIS fails to recognize or consider the sociological impacts of inserting 50-70 workers into an area with limited resources and extremely limited law enforcement. For example, violent crime was experienced by small rural communities overrun by the oil boom in North Dakota: "But there is a dark side to the multibillion-dollar boom in the oil fields, which stretch across western North Dakota into Montana and part of Canada. The arrival of highly paid oil workers living in sprawling "man camps" with limited spending opportunities has led to a crime wave -- including murders, aggravated	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	assaults, rapes, human trafficking and robberies -- fueled by a huge market for illegal drugs, primarily heroin and methamphetamine." (Dark side of the boom, The Washington Post, Sari Harowitz, Sept. 28, 2014). This is extremely concerning to local residents as state and county law enforcement resources are extremely limited and widely dispersed leading to longer response times (up to an hour or more depending on the location of the nearest officer).	
22.RJF-41	The assumption is made by the BLM that New Mexico resident hunters all live in direct proximity to the project area and do not provide an economic benefit to the local community as they do not travel to hunt. This assumption is false and is not supported.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. In Section 3.3.2.1 of the EIS, the BLM states that the major economic drivers in the BLWP area are primarily related to recreation/hunting and ranching and the livestock industry. Based on the number of elk and deer licenses issued for the BLWP area during the 2017–2018 season, the number of affected hunters is expected to be limited to less than 200, primarily during the project construction phase according to the NM Department of Game and Fish. Since approximately two-thirds of the hunters in NM are local residents rather than non-residents, there would be negligible, if any, reduction in related expenditures, such as for lodging from non-resident hunters in the BLWP area, under any of the alternatives.
22.RJF-42	Assumptions cannot be made that increases in tax revenue will have any benefit to local residents. County discussions regarding this revenue have focused around removing the revenue from the affected portions of the county and put to use elsewhere in Catron County.	The distribution of revenue is the responsibility of Catron County and not the BLM. No change has been made to the EIS.

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22.RJF-43	The BLWP will impact adjacent property values. The research selected by Borderlands or the BLM to demonstrate the impacts on private property values is not comparable as all research has occurred in areas with a significant difference in population density. For example, research done in London, as noted in the DEIS, has absolutely no correlation with property values in Catron County. According to the 2010 U.S. Census, the population of Catron County was 3,729 people with a population density of .5 people per square mile. The population of the United Kingdom is 67,650,743 with a population density of 723 people per square mile, as of November 2, 2019, according to www.worldometers.info. The use of these studies disregards the other economic drivers occurring within communities that encourage versus discourage growth and surrounding property values in relation to local economic drivers. This section also disregards the BLM's local data regarding the economy of the region (The Economy of the Gila Region). The primary market for residential properties within Catron County are for retirement homes and recreation properties. The scenic values associated with these properties have a significant impact on property values. The analysis provided in the DEIS fails to solicit information from local real estate agents and appraisers and fails to recognize that property values throughout Catron County are interconnected and that fluctuations to an already strained real estate market could have significant impacts, especially on potential purchasers utilizing VA and FHA loans due to the additional appraisal constraints for purchasing properties thru these programs.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The potential impacts to property values is discussed in Section 3.3.1.2 of the EIS.
22.RJF-44	This section demonstrates how the BLM and Borderlands has chosen to minimize negative impacts with statements of uncertainty while touting benefits of the project without support. For example, the assumption is made that the approximately five jobs created would only live within Catron County, disregarding the projects proximity to larger communities such as Springerville, Eager and Show Low in Arizona. Does Borderlands intend to require that their employees live in no other location than Catron County to support this assumption? If not, this assumption is completely false. They have applied an economic value assuming five permanent jobs will be hired while at the same time there is uncertainty in the references used of "up to five jobs" and "approximately five jobs" throughout the DEIS which could have a far less economic impact than is presented. This also disregards the non-labor income that is likely to be displaced in the county due to the BLWP. This displacement is very likely to surpass any economic benefit that 5 positions would have. Many affected residents have already expressed their desire to leave the area if the project is approved.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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22.RJF-45	The touting of the revenue bond structure is evidence of the bias of associated parties as only proponents of the project stand to profit financially from the project while disenfranchising local residents. If the negative economic impacts of the project are so insignificant, why doesn't Borderlands and the BLM mitigate this by requiring the compensation of any future loss of value or investment?	In Section 3.3.2 of the EIS the potential economic impacts of the BLWP project are discussed. Borderlands Wind, LLC estimates that they would pay approximately $1.1 million of sales tax to the State and $115,000 to Catron County during just the construction phase of the project. This does not include the contribution of an estimated $750,000 to the local economy during construction for meals, food, and lodging. Unless a specific parcel or property has been brought forth to evaluate the effects, there is no data to provide an accurate estimate of the loss of value or investment. There is no BLM policy or statutory requirement allowing compensation for private property. No change has been made to the EIS.
22.RJF-46	3.3.2.2 - Is the water that will be utilized for dust mitigations identified within the original estimation of water use? Please clarify.	The water that would be utilized for dust control is included in the construction water use estimate. No change has been made to the EIS.
22.RJF-47	During the initial public meetings, interactive maps were utilized to quantify visual impacts to local residents before the alternatives were developed. These maps were not available at the second public meeting and the opportunity was not available to see the Alternatives displayed in the same way. The DEIS states that "some of the residents in the Red Hill/Cimarron Ranch subdivision would have unobstructed views of all of the BLWP turbines." This fails to quantify the impacts on local residents and attempts to minimize effects.	Thank you for your comment. The detailed visual resource impact analysis is provided in Appendix F of the EIS and quantifies the visual impacts from the landscape character, scenic quality, and from the views from the various sensitive viewing platforms. No change has been made to the EIS.
22.RJF-48	The analysis fails to recognize the gravity of economic impacts to the county by discouraging growth and driving residents out of their homes. How are the local economies able to sustain?	Thank you for your comment. The potential environmental consequences of the alternatives on the social and economic conditions of the BLWP area are provided in Section 3.3.2 of the EIS.

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22.RJF-49	3.4.2.2 -What mitigations would be utilized to minimize traffic delays during commuting hours? Many commuters travelling to and from the surrounding communities already have an extended commute. Excessive delays could lead to exhausted motorists, interrupted work schedules and reduction in time with families.	As stated in the EIS in Section 3.2.2, "Existing roads would be upgraded and new roads would be constructed, which could temporarily affect local transportation and public access. The main access point for the Proposed Action would be at the intersection of U.S. 60 and Bill Knight Gap Road. Improvements at the intersection would include permanent deceleration and acceleration lanes for both directions at the intersection to accommodate turning radius needs for turbine delivery." The contractor building the project will use signage to alert oncoming traffic to the construction area. Additionally, during heavy traffic periods, flaggers may be present to help direct traffic to minimize backups. No change has been made to the EIS.
22.RJF-50	3.6.2.1 -PACs are protected activity centers that are only a portion of Mexican Spotted Owl critical habitat. Critical habitat, whether occupied or not, must be considered as the importance of these habitats is for the opportunity for these species to expand. The wildlife section fails to recognize the proximity of the project area and individual wind turbines to critical habitat and associated impacts as well as the mobility of these species in regards to the impacts.	Potential impacts to federally listed species and critical habitats were identified through coordination and consultation with the USFWS. Refer to Section 3.6.2 of the EIS, the BLWP Biological Assessment, and subsequent concurrence from the USFWS. No change has been made to the EIS.
22.RJF-51	3.6.1.2 - The analysis fails to recognize the effects of wolves displaced from the project area, primarily during construction, that would create greater competition for resources and concentration of animals, leading to potential mortality. This is also likely to increase depredations on livestock as wolves are concentrated in areas away from the project.	Potential impacts to federally listed species and critical habitats were identified through coordination and consultation with the USFWS. Refer to Section 3.6.2 of the EIS, the BLWP Biological Assessment, and subsequent concurrence from the USFWS. No change has been made to the EIS.
22.RJF-52	3.7.1.2 - Please demonstrate the BLM's involvement in field review of data collected for all determinations regarding wildlife impacts. It is in the interest of Borderlands to bias all data collected as they are the primary benefactors of this multimillion dollar project. - How does a half mile buffer of nest sites and prey base mitigate effects to raptors that are highly mobile and have a foraging range much greater than 0.5 miles? Also an increased buffer should be considered as the DEIS has indicated an increased turbine mortality risk to young raptors.	The BLM reviewed Borderlands Wind, LLC's survey plans and protocols prior to their implementation. Appropriate seasonal/spatial buffers were considered based on guidance provided in the Socorro RMP and in consideration of buffers typically used for raptors and other species of concern. No change has been made to the EIS.

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22.RJF-53	The DEIS focuses on occupied habitat and disregards critical habitat and suitable habitat. The project area abuts National Forest and vegetation transitions occur quickly once you leave The project area. both Ponderosa Pine and Mixed Conifer Forests occur within two miles of The project boundaries in addition to Pinyon Juniper Woodlands and short grass prairie. The diversity of these plant communities within a small area encourages species diversity. Many bird and bat species utilize these transitions as There is desirable timber for roosting and open spaces for foraging.	Potential impacts to federally listed species and critical habitats were identified through coordination and consultation with the USFWS. Refer to Section 3.6.2 of the EIS, the BLWP Biological Assessment, and subsequent concurrence from the USFWS. No change has been made to the EIS.
22.RJF-54	3.9.1 -The viewing platforms identified are biased towards sociopolitical boundaries. No viewing platforms were considered for key observation points on the Gila National Forest or Apache-Sitgreaves National Forest (i.e., Fox Mountain, Canovas Rim and Escudilla Wilderness Area).	The rationale for the selection of the viewing platforms are provided in Table 3-20 in the EIS. Any designated viewing platforms (designated trails, campgrounds, vista points, etc.) in the 30-mile distance of the proposed turbines would either have no views of the proposed wind turbines or the turbines would not be discernible within the landscape. Visibility was modeled as if the landscape had no vegetation, which would be the most conservative approach. The potential viewing platforms evaluated included Armijo, Head of the Ditch, Jewett Gap, Quemado Lake, Alpine Divide, Diamond Rock, Elderberry Spring, Greer Lakes, Luna Lake, and South Fork Upper Blue campgrounds in addition to NMDO, ADOT, Forest Service, and BLM scenic byways, ACECs, WSAs, Wilderness Areas, SRMAs and designated trails. Visibility was evaluated from the Continental National Scenic and Escudilla National Recreation Trails. Refer to Appendix F in the EIS for the detail visual resource analysis report. No change has been made to the EIS.
22.RJF-55	3.9.2.1 -The effects of turbines without ADLS must be analyzed as it is not known if the ADLS will be approved by the FAA.	Refer to response to Comment 10.DM-3.
22.RJF-56	3.10 -The BLM has no way of determining impacts of the project on the demands placed on the local aquifer, in regards to current demands, as no ground water analysis has been conducted. It is likely that the initial draw on the ground water resource will lower the water table well below the depth of existing wells accessing this aquifer, forcing local residents and livestock producers to pay to have their wells re-drilled. This could also cause affected parties to go without water for an extended time (greater than one year) as well drillers within the region are limited and are already in high demand.	Refer to response to Comment 03.EI-3.

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22.RJF-57	3.10.3 -The cumulative effects analysis disregards the Apache-Sitgreaves Forest Plan and Gila National Forest Plan Revision. This also disregards the Escudilla EIS, Apache-Sitgreaves National Forest.	The Schedule of Potential Actions of the Gila and Apache-Sitgreaves National Forests were used to determine the list of reasonably foreseeable future actions in the cumulative impact analysis. No change has been made to the EIS.
22.RJF-58	3.10.4.5 -The cumulative impacts to visual resources would be increased as the Escudilla, 4FRI and Luna EIS's are all restoration projects with timber and fuel reductions for the purposes of restoration of these systems. Removal of timber would alter the locations from which the turbines would be visible, increasing the locations from which the project area can be seen.	A visibility analysis was performed using ArcView Spatial Analyst to identify all areas that would have visibility of the BLWP within the analysis area. The analysis identified where the BLWP components would be visible if there were no vegetation or structures to screen the project components. This analysis based on "bare earth" visibility reflects the worst-case scenario in determining the potential visual impacts. Existing vegetation may help to minimize the impacts by screening views to and from the BLWP. However, since vegetation is subject to fire and disease, it cannot be considered as a permanent measure to reduce impacts. Refer to Appendix F of the EIS from the visual resource analysis documentation. No change has been made to the EIS.
22.RJF-59	3.11 -The proposed plan amendment disregards the obligation to protect wilderness character, the values placed on adjacent National Forest Lands and the economic importance of these landscapes to the local economy.	The Socorro Field Office RMP does not required to the BLM to address potential impacts to wilderness character of areas that are not affected. No change has been made to the EIS.
22.RJF-60	3.11.1 -The statement "This is beyond the scope for what is immediately necessary for the project but is being considered because of the lack of any rational supporting the original allocation" as a justification for changes to the VRM classifications in the RMP lacks evidence. The omission of documentation supporting the RMP such as The Economy of the Gila Region leads the reader to question the amount of effort placed on reviewing the RMP. The Economy of the Gila Region supports the original RMP's designation as it protects these landscapes and the economy's they support. The BLM has failed to support their justification of this amendment or consider other locations with a VRM classification of IV that could support these activities without an amendment to the existing plan and minimizes impacts to local residents, wildlife and visual resources.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The Economy of the Gila Region mentions BLM-administered lands but does not specifically mention the RMP or VRM classification. No change has been made to the EIS.
22.RJF-61	Table 3-28. Consultation did not occur with the Arizona State Historical Preservation office. The State of Arizona places a greater value on culturally significant landscapes.	Currently there is no requirement to consult with the Arizona SHPO as no project components are proposed within the Arizona SHPO jurisdiction. Consultation will continue with

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	This project will directly affect these landscapes, yet continues to utilize sociopolitical lines to minimize responsibility and effects.	the New Mexico SHPO to address impacts to cultural resources and development of Historic Properties Treatment Plan.
22.RJF-62	3.13. The BLM has repeatedly disregarded the significance of ground water in the effects analysis. There is no ground water analysis to support the BLM's assumptions within this DEIS. The implications of this disregard would be catastrophic to surrounding residents. The New Mexico State Engineer does not conduct an analysis when issuing water rights, this typically occurs when users have already experienced the effects of overdraw on a system and then the system is adjudicated. It is negligent of the BLM to proceed without a ground water analysis. All water rights used in this process must be commercial water rights. It is a violation of New Mexico water law for Borderlands to use domestic or livestock water rights for the purposes of this project. It is also inappropriate for Borderlands to hold a water right on BLM as this privilege is not afforded to other users equally.	Refer to response to Comment 03.EI-3. A private landowner has been issued a drilling permit for commercial use by the New Mexico Office of the State Engineer. No change has been made to the EIS.
22.RJF-63	Conclusion: The State of New Mexico is known as the Land of Enchantment because of the awe inspiring landscapes found throughout the state. At current rates, future generations will have no concept of a Western landscape without the presence of wind turbines. This is an example of the Tragedy of the Commons, a race to devour local resources at any cost without regard to the cost of future generations. Research demonstrates that the impacts of wind turbines on birds and flying mammals is not understood, with mortality rates greatly exceeding reproduction rates, yet these projects continue to press on as if in a race to outrun the true understanding of their effects.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Potential impacts to avian and bat species are addressed in Section 3.7 of the EIS.
22.RJF-64	We reserve our right to comment in the objection process on any materials not provided with the DEIS.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
23.LB-1	First, this is not a "wind farm". There is nothing nurturing or agricultural about it. It is, plain and simple, an industrial complex which is proposed for the midst of a very rural and agricultural area. This is not a wilderness area but it is primarily undisturbed rangeland, not suitable for an industrial complex. The DEIS does not use the term wind farm but many people in casual usage do, including those in BLM who will presumably be involved in making decisions in this case.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
23.LB-2	Second, when discussing impacts of various options, please remember that "minor" means something that happens to someone else. If the impact is not something that you personally are willing to live with every day, it is not minor. And related to that point, none of the people involved in this project and the decision-making, whether in BLM or	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	Borderlands, will have to live in and with the effects of this turbine complex. Those of us who do and will should have more say in the decision.	
23.LB-3	Water use. Borderlands says it expects to use 140,800 gallons of water per year during Operations and Maintenance and states that this is less than a 4-person household (pg 3-9). According to the EPA, the average US household uses 109,500, which is significantly less than what Borderlands expects to use. I don't question Borderlands' estimate of their use, just their reliability. And this is in addition to the estimated 26 million gallons used during the construction phase. We just don't have that kind of water to spare! In addition, the amount of ground surface made partly or wholly impenetrable to water – roads, concrete bases, roofs, etc – reduces the recharge of the water table and increases runoff and erosion. Recommendation: BLM should approve the No Action Alternative	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The EIS provides an analysis of the potential impact on ground water in Table 3-1 and Appendix H.
24.LB-1	Construction time requirement. Construction phase is estimated to last five to six months, as is stated numerous times throughout the DEIS. As anyone who has every built anything out here knows, that is unreasonably optimistic. At one point (pg 3-52), construction is given as "less than one year", which is probably still optimistic. So everything that is given as an impact from construction activities must be extended – probably twice as long, perhaps more. Recommendation: BLM should re-evaluate the adverse affects of the construction phase and make a new determination based on that.	Borderlands Wind, LLC has been in contact with an engineering contractor who would manage the build of this project. The construction is estimated to take up to 12 months. No change has been made to the EIS.
25.LB-1	Environmental justice. DEIS states "There are no minority or low-income populations identified within or adjacent to the BLWP area. Consequently, there are no disproportionate impacts to environmental justice populations." (pg 3-3) In Catron County, 21.5% of the population is below the federal poverty line; in Quemado, 25 miles away and the nearest "town", the figure is 31.4%. The community of Red Hill, less than five miles from the proposed turbine complex site, does not have official published data on its residents' income but it is composed primarily of retirees on fixed incomes. The EPA states, "Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income… [and] equal access to the decision-making process to have a healthy environment in which to live, learn, and work." The money and power of a large corporation, such as NextEra/Borderlands, has apparently gained it greater influence in the decision-making in this project than the people who will have to live with the results of that decision-making. Recommendation: BLM should re-evaluate the above-quoted statement and give greater weight to public input in the decision-making process.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. There are no known statistics to support that the community of Red Hill has minority or low-income populations. Quemado is not considered an adjacent community since it is over 25 miles away. Regardless, the BLWP would not result in any disproportionate impacts to any minority or low-income populations within the County. These populations were provided the same opportunity to provide input during the NEPA process as any other member of the community. No change to the EIS has been made.

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26.LB-1	Purpose and need. "The BLM's purpose and need for the proposed BLWP is established by regulatory obligations and direction and current energy development trends. The BLM's purpose is to respond to a ROW application submitted by Borderlands Wind, LLC. ... The need for the BLM's proposed action arises from […] which established a multiple use mandate for management of Federal lands…" (pg 1-3) BLM has a responsibility to manage the public lands it controls in the public interest. It has no responsibility to enrich the commercial corporations that wish to make money from those lands by despoiling them. And to ask the people of Catron County, and particularly of the Red Hill area, to put up with the numerous adverse effects of a wind turbine complex that won't even provide any electricity or other benefit to them (see below) is not the best use of this land. (In addition, Tucson Electric Power does not need this wind turbine complex. It already has plenty, including in New Mexico, and can make its required 15% of renewable energy without this one.) Recommendation: BLM should approve the No Action Alternative	Refer to response to Comment 17.LS-3. No change has been made to the EIS.
27.LB-1	Note: for purposes of my points, there is little difference in effect among the Proposed Action, Alternative 1, and Alternative 2. Thus for simplicity's sake I will use the term "project" in my comments and also insert it into quotes from the DEIS. Social and economic. "If major utility-, energy-, or transportation-related projects were to be constructed in the U.S. 60 ROW avoidance area, Catron County and surrounding communities could experience job creation and tax revenues during construction ... because new populations would temporarily relocate for work." (3-104). There will be little economic benefit to local residents/economy, despite protestations to the contrary. Alternative 1, the BLM's preferred option, uses no private land so there will be no lease payment. There may well be local residents hired during the construction phase, although I expect Borderlands will bring in many of its own people, but that is a temporary phase (though not as short as projected in the DEIS). In addition, Catron County has no sales tax or lodging tax, the only ones likely to be paid by temporary residents. Realistically, the 3 – 5 permanent jobs during the Operations and Maintenance phase will not only be hired from away but will also most likely live outside Catron County. Springerville/Eagar, after all, has supermarkets, movies, fast food, and other attractions not to be found anywhere in Catron County. Hunters provide a, if not the, major source of cash income for many local ranching households as well as income to lodging, restaurant, and other businesses. It may be true that 2/3 of the state's hunting licenses are issued to New Mexico residents, but a resident of New Mexico is not necessarily a resident of Catron County. Someone who comes from as close as Albuquerque is as much a visitor using guide service, lodging, food, etc, as one who comes from the East Coast. Any degradation of the environment and subsequent	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Refer to Section 3.3 of the EIS for a discussion on the potential impacts to the local economy

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	decrease in population of elk and other game animals will result in a significant loss of local income. Borderlands has indicated that it will make an annual payment to the Catron County School District for 30 years (expected life of the wind turbine complex is 35 years – why cut the payments short?) but there is no reason to believe that that payment will compensate for the other losses of income and quality of life due to the turbine complex. "Short-term minor to negligible impacts to quality of life, particularly during the construction and decommissioning phases, may result from impact related to frequency and quantity of vehicular traffic in the area, noise, air quality, water quality, scenic quality, and recreation. Long-term minor to major impacts to scenic values would be created by the [project]." (3-109) Let me repeat that "minor" is what happens to someone else. There is no reason to ask local residents to have to experience adverse effects to their quality of life for someone else's benefit. Recommendation: BLM should approve the No Action Alternative	
28.LB-1	Note: for purposes of my points, there is little difference in effect among the Proposed Action, Alternative 1, and Alternative 2. Thus for simplicity's sake I will use the term "project" in my comments and also insert it into quotes from the DEIS. Wildlife/ Prairie dogs. National Park Service cites prairie dogs as a "keystone species" (https://www.nps.gov)because their colonies create islands of habitat that benefit approximately 150 other species. They are also a food source for many animals. Prairie dogs help aerate and fertilize the soil, allowing a greater diversity of plants to thrive. Gunnison's prairie dog, which has colonies in the project area, is a Special Status animal. Construction will devastate several of those colonies since the access to the project will require that the main access road pass right through those colonies. But even during Operations and Maintenance phase, the prairie dogs will be adversely affected by the noise and vibration of the turbines and the increased vehicle traffic and human presence in the project area: *BLM acknowledges "[project] could result in a downward trend and/or contribute to the loss of viability of the local Gunnison's prairie dog population." (3-67) *"Even with the implementation of BMPs and species specific mitigation measures/design features, the [project] would result in localized short- and long-term moderate impacts on prairie dogs." (Impact means "ongoing injury or mortality of prairie dogs and fragmentation of prairie dog colonies; increased access could also lead to an increase in recreational shooting of prairie dogs.") (3-110)	Consideration of the potential impacts to prairie dogs has resulted in the development of project-specific Best Management Practices and Design Features for the protection of prairie dogs and their habitat during construction, O&M, and decommissioning of the BLWP. Refer to Section 3.7 and Appendix B of the EIS. No change has been made to the EIS.

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28.LB-2	Birds and bats. Golden eagles, and to a lesser extent bald eagles, would also be adversely affected by the project. Bats may be even more adversely affected. "Impacts on special status bird and bat species, including fatalities resulting from the operation of wind turbine, would be not avoidable under the [project]." (3-68) US Fish and Wildlife Service estimates 2 golden eagles killed at the project over five-year period, which amounts to "localized and regional, short- and long-term, major impacts on golden … eagle populations."(3-74, 3-75). "Any reduction in golden eagle nest success resulting from the [project] would be a localized and regional, short- and long-term, major impact on golden eagle populations." (3-74) In connection with that, I am confused by the apparent contradiction between "The primary access road (Bill Knight Gap Road) would be located approx 3500 feet from the Luna Tank nest." But two paragraphs later: "Wind turbines have been sited outside of a 3.9-mile buffer around the Luna Tank nest to minimize impact on nesting golden eagles." (3-74) Since the road runs through the area, I found this hard to understand. Bald eagles are less likely to be adversely affected by the project, since they are less in evidence in the area. One means to ensure they are not encouraged to frequent the area would be "ongoing removal of large animal carcasses (eg, dead cattle) and roadkills within the [project] area to avoid attracting eagles". (3-73) Do we have any confidence that this will be done on a timely and consistent basis? "Bat fatalities associated with wind turbines can be higher than the bird fatalities" (3-68), and the bird fatalities (not just eagles) would be expected to be 3 to 6 bird deaths, and up to 15, annually per turbine-generated MW. That comes to 300 to 1500 bird deaths per year for up to the 35 years of the project. "Raising cut-in speeds (ie, the lowest wind speeds at which turbine rotors begin rotating) at night can be an effective way of minimizing bat mortality." (3-68) Do we have any confidence that this would be done, if it were found to, for example, decrease the efficiency and therefore profitability of the wind turbine? Borderlands is in business to make money, not to save wildlife.	The siting of wind turbines away from the nest associated with the Luna Tank potential breeding area was implemented according to the siting process described in the USFWS's Eagle Conservation Plan Guidance. Under that process, nest surveys are conducted within a 10 mile radius of a proposed wind facility and, based on the survey results a "1/2 Mean Inter-Nest Distance" is identified for golden eagles nesting in the project vicinity. Based on the 1/2 Mean Inter-Nest Distance that was calculated for the Project, a 3.9 mile buffer was identified for placement of wind turbines. It was determined to not be desirable or feasible to re-locate primary access along Bill Knight Gap Road, so it was simply acknowledged that the nest is located approximately 3,500 feet from the existing roadway. This is greater than the 0.5 mile buffer distance that is typically recommended by the USFWS, but there could still be potential disturbance to nesting eagles during construction activities or vehicle/equipment access. Refer to the Best Management Practices and Design Features in Appendix B of the EIS for the various project requirements that would be enforced by the BLM during construction, O&M, and decommissioning of the BLWP.
28.LB-3	The long-term and major adverse effects – ie, death – to wildlife in the area are unavoidable if the project is approved. And entirely unnecessary, as it is not BLM's responsibility to increase the profits of either NextEra/Borderlands or Tuscon Electric at the cost of our environment. Recommendation: BLM should approve the No Action Alternative.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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29.LB-1	Note: for purposes of my points, there is little difference in effect among the Proposed Action, Alternative 1, and Alternative 2. Thus for simplicity's sake I will use the term "project" in my comments and also insert it into quotes from the DEIS. Visual resources/VRM amendment/ROW avoidance area. Downgrading the protection of our views would have a deleterious effect on the scenic beauty of this area. Catron County glories in its natural beauty and relies on that for the tourism and recreation which is a major part of the local economy. Any adverse effect on that beauty could be a real hardship. And there is no doubt that if this project is approved, that adverse effect will indeed occur: "The magnitude of change in landscape character associated with the [project] would be major due to the dominant scale and form of the wind turbines in comparison to the undulating and sloping landforms, low stature vegetation, and minimal built features found in the existing landscape. ... Therefore, there would be long-term, major impacts on the existing scenic quality and landscape character resulting from operation and maintenance activities." (3-87). "Long-term minor to major impacts to scenic values would be created by the [project]." … Long-term minor to major impacts to nonmarket scenic values would be created by the [project]." (3-109). "The [project] would attract attention, create a severe change in the landscape character, and result in a strong visual contrast within the foreground area of the U.S. 60, Cimarron Ranch Subdivision, and the Bill Knight Gap Road KOPs. Therefore the [project] would not be in conformance with the VRM Class III management objectives." (3-91). The VRM classification of the project area is reason enough to disapprove the project. An industrial complex simply does not belong in this natural setting, which presumably was part of the reason for the original classification. Amending that classification to allow the project is not in the best interest of the area in any way. It benefits only an outside corporation which desires to make more money at our expense, to no benefit here since that money would accrue almost entirely to corporate headquarters.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. If the project is approved, an amendment would be needed to allow for construction of the project.
29.LB-2	Modifying the ROW avoidance area to expand the intersection of US 60 and Bill Knight Gap Road would not in itself damage the scenic beauty of the area, but it could encourage other actions which would: "As noted in the RMP EIS, on page 4-32, removal of the ROW avoidance area could open the area to exploration and development. These types of activities would remove vegetation, modify landforms, and may add structural elements to the landscape. And ground-disturbing activities associated with construction and operation of facilities would generate fugitive dust, increase traffic on access roads, and potentially use nighttime flying." (3-103) This is neither necessary or desirable.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. Any future actions within the ROW avoidance area would have to go through the NEPA process and disclose any potential impacts. No change has been made to the EIS.

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29.LB-3	As another matter, Catron County is justifiably proud of its "dark skies" status. The lights on the turbines and whatever "security" lights that would be set up on the buildings and yards within the project would degrade that. The turbine lights would be visible for more than 20 miles, in addition to the greater lights that would be temporarily activated by any nearby aircraft. How far the ground lights would be visible would depend on several factors, but they would not be invisible. Recommendation: BLM should approve the No Action Alternative.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. A discussion of the potential impact to night skies is provided in Section 3.9.2 of the EIS. The lights on any buildings would be similar to lighting around residential/farm buildings.
30.MB-1	We support responsible, well-planned and sited renewable energy development, including on appropriate public lands, as part of a strategy for addressing climate change. This strategy also includes aggressive efforts to increase energy efficiency, build distributed generation such as rooftop solar, and reduce demand with demand-side management. We also recognize other important benefits of renewable energy development, including helping to maintain clean air and water and providing economic development that benefits local communities. We believe that areas with important and sensitive resources and values are inappropriate for development of any kind, and disturbed and degraded lands, including both public and private lands, will best serve as areas for focusing renewable energy development. All energy development should follow the mitigation hierarchy of avoiding, minimizing and mitigating impacts through compensatory, off-site mitigation. We support the guided development approach established in the BLM Solar and Wind Energy Rule, including the focus on development in appropriate areas within Designated Leasing Areas (DLAs). The BLM has demonstrated the value of this approach for reducing impacts and increasing permitting efficiency; at the Dry Lake solar DLA in southern Nevada, the zone-based approach resulted in low- conflict development, projects permitted in half the average time, and commitments to offset unavoidable impacts through compensatory off-site mitigation. BLM should continue to focus its efforts on designation of new DLAs in appropriate areas and advancing development in DLAs, as directed by the Solar and Wind Energy Rule. As interest in wind energy development on public lands in New Mexico increases, BLM should prioritize designation of wind DLAs in appropriate areas and protection of areas of high conservation value through land use planning in the state.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
30.MB-2	I. NEPA Framework. a. Impact Analysis. As detailed in our scoping comments, the EIS for the proposed Project must analyze all direct, indirect, and cumulative environmental impacts, and include a discussion of the means to mitigate adverse environmental impacts. See 40 C.F.R. §§ 1502.14 and 1502.16. The DEIS does include analysis of direct, indirect and cumulative impacts. However, the arbitrary page limits for EISs under BLM's current guidance limits the depth of the analysis. BLM should provide additional	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	details in the FEIS, including in the sections addressed in more detail later in these comments. In addition, as detailed below, the discussion of means to mitigate adverse impacts is inadequate, and BLM must improve it in the FEIS.	

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30.MB-3	b. Range of Alternatives and mitigation hierarchy. As detailed in our scoping comments, BLM must develop a robust range of alternatives in this EIS. NEPA generally requires the lead agency for a given project to conduct an alternatives analysis for "any proposal which involves unresolved conflicts concerning alternative uses of available resources." See 42 U.S.C. § 4332(2)(E). The regulations further specify that the agency must "rigorously explore and objectively evaluation all reasonable alternatives" including those "reasonable alternatives not within the jurisdiction of the lead agency," so as to "provid[e] a clear basis for choice among options..." See 40 C.F.R. § 1502.14. FLPMA also requires BLM to manage for multiple use and sustained yield, and to avoid unnecessary or undue degradation of resources and values. See 43 C.F.R. §§ 1701, 1732(b). NEPA and associated Council on Environmental Quality (CEQ) regulations require BLM to analyze potential impacts and consider ways to avoid, minimize and mitigate impacts – in accordance with the mitigation hierarchy. See 40 C.F.R. §§ 1508.8, 1502.14, 1502.16. The mitigation hierarchy aims to minimize environmental harms associated with agency actions, and BLM must apply the mitigation hierarchy to the evaluation of the proposed Project. We appreciate that BLM analyzed two action alternatives in addition to the Proposed Action and the no action alternative, and that this analysis included alternatives with fewer numbers of turbines and a smaller footprint to reduce environmental impacts, as recommended by our scoping comments. These alternatives would avoid and minimize at least some impacts. Alternative 1 is different from the Proposed Action in that it "would slightly shift the locations of some of the project infrastructure (turbines, roads, collection lines) as compared to the Proposed Action to minimize impacts to sensitive environmental resources where feasible." Alternative 1 "would reduce the total project boundary acreage by 24,621 acres, including 14,501 acres of BLM-administered public lands, 4,525 acres of NMSLO-managed lands, and 5,595 acres of privately owned lands" although the "number and type of turbines" is the same as the Proposed Action. See Draft EIS p. 2-14. Alternative 1 is BLM's preferred alternative. See Draft EIS 2-15. Alternative 2 is different from the Proposed Action in that it includes fewer turbines (34 vs 40) of higher MW (Proposed Action/Alternative 1: 36 GE 2.5MW & 4 GE 2.3 MW vs Alternative 2: 30 GE 3.0 MW & 4 GE 2.5 MW). Like Alternative 1, it reduces the total project boundary acreage by 24,621 acres. See Draft EIS p. 2-14. There are several other small differences between Proposed Action, Alternative 1, and Alternative 2, although it is unclear what the significance of those differences is. We recommend that BLM select the alternative that results in the least environmental and other impacts. One clear benefit of Alternatives 1 and 2 vs. the Proposed Action is that the ROW footprint is shrunk down to only include the area where infrastructure will be developed. Although changing the ROW footprint doesn't change	The analysis for 34 versus 40 turbines is not a feasible at this time because of the uncertainty of the locations of the turbines that would actually be constructed. The differences between the three alternatives when it comes to impacts on specific resources such as wildlife would depend to some degree on the specific permitted locations where turbines would actually be constructed. Some of the turbines that are permitted (six under the Proposed Action, four under Alternative 1, and 10 under Alternative 2) would ultimately not be constructed. The final turbine array layout would not be determined until final design and potentially during construction, which means the associated components such as the alignment of the collection system would also not be decided until final design. It is therefore not possible to state the specific differences in potential impacts between the alternatives in more detail than is currently provided in the EIS. No change has been made to the EIS.

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	the on the ground impacts, we recommend that BLM select an alternative with the minimum feasible ROW footprint to avoid encumbering land outside of the project area unnecessarily. Based on the analysis provided in the DEIS, Alternative 2 appears to have less on-the ground impact given its reduced size and number of turbines. However, we recognize that although Alternative 2 uses fewer turbines, they are larger capacity, which could result in tradeoffs regarding impacts – i.e., though the on the ground footprint of the development would be smaller, the larger turbines would be taller and have larger rotor-swept areas, so visual impacts would be different. Impacts to avian and bat species could also be different. We note that the DEIS states that the U.S. Fish and Wildlife Service (USFWS) estimates that golden eagle fatality is predicted to occur at an annual rate of 0.307 golden eagles per year for the Proposed Action and Alternative 1, and at a slightly higher rate of 0.315 golden eagles per year for Alternative 2. See Draft EIS 3-105. We do not have enough information to say whether Alternative 1 or Alternative 2 would have lower impacts overall; again, we recommend that BLM select the alternative that results in the least impacts. Section 3.4.2 provides tables that display environmental consequences according to the 45 potential turbine locations, but the analysis does not reflect the actual constructed turbines and their respective MW. See Draft EIS 3-37. This gap in the analysis may be reasonable, since the final subset of potential locations of the turbines will not be determined until fieldwork has begun. However, we recommend that BLM complete an analysis for the FEIS that reflects the potential effect that 34 turbines vs. 40 with different MW capacities may have on specific resources.	

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30.MB-4	In addition, we recommend that BLM carry forward the Visual Resource Management IV Turbine Array Layout Alternative for full analysis in the FEIS. The DEIS states that this alternative would locate all turbines in the allocated Visual Resource Management Class IV area in the southern end of the project area, which would be in compliance with the RMP's visual resource management requirements. See Draft EIS 2-14. It would also minimize potential impacts to an eagle nest in the northwest corner of the project area. The DEIS states that this alternative, "would not provide the standard amount of land and spacing required for commercial energy projects of this size. Fewer wind turbines would be used for the project and the project would not be able to meet the 100 MW required to satisfy the Power Purchase Agreement between TEP and NextEra Energy Resources, LLC. This alternative was eliminated from further analysis in the EIS because it would be economically infeasible." See Draft EIS 2-14. We disagree that BLM can only analyze project alternatives that meet pre-determined megawatt capacity goals set by the project proponent. BLM must analyze a robust range of alternatives, including alternatives that may include a smaller megawatt capacity to ensure that environmental and other impacts remain within acceptable and appropriate levels. In fact, BLM's own NEPA guidance instructs the agency to analyze the range of alternatives that meet the purpose and the need for action. See BLM NEPA HANDBOOK Language, pages 50-51. Sec 6.6.1. Reasonable Alternatives. There is nothing in the Purpose and Need section that prohibits BLM from further analyzing the "Visual Resource Management IV Turbine Array Layout Alternative." Furthermore the guidance states that "[I]n determining the alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of implementing an alternative." See BLM NEPA HANDBOOK Language, pages 50-51. Sec 6.6.1. Reasonable Alternatives. In this case, the applicant may not like the alternative that reduces the installed capacity of the project because its Power Purchase Agreement with Tucson Electric Power (TEP) could be impacted but the BLM should analyze the alternative because the alternative meets the purpose and need for action. Furthermore, the conclusion that the alternative is economically unfeasible without full analysis is premature and arbitrary. The alternative with a reduced capacity could very well be economically feasible for a different developer. Summary of recommendations on range of alternatives: BLM should select the alternative that causes the lowest impacts overall. BLM should complete an analysis for the FEIS that reflects the potential effect that 34 turbines vs. 40 with different MW capacities may have on specific resources. BLM should carry forward the Visual Resource Management IV Turbine Array Layout Alternative for full analysis in the FEIS.	Comment acknowledged. The BLM must consider other reasonable alternatives through the NEPA process, including modifications to the right-of-way application as submitted, that meet the purpose and need for the action and provide a clear basis for choice among options (40 CFR 1502.14)." A discussion of alternatives need not be exhaustive. What is required is information sufficient to permit the BLM to make a "reasoned choice" among alternatives so far as environmental aspects are concerned (40 CFR 1502.14; see also, BLM NEPA Handbook H-1790-1 § 6.6), BLM NEPA Handbook H-1790-1 § 6.6.1, and BLM Instruction Memorandum 2011-59). The BLM NEPA Handbook on page 51 states that "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant." According to CEQ, the "agency's preferred alternative" is the alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors (see Question 6a, CEQ, Forty Most Asked Questions Concerning CEQ's NEPA Regulations, March 23, 1981). There is no requirement for the agency to select the alternative that causes the lowest impacts overall. If that were true, the No Action Alternative would be the most likely be the selected alternative in any situation where ground disturbing activities/project are being proposed. The discussion of the Visual Resource Management IV Turbine Array Layout Alternative would not be practical from the technical and economic standpoint - not meeting the 100 MW requirement- and was therefore eliminated from further evaluation. No change has been made to the EIS.

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30.MB-5	c. BLM must add appropriate requirements for compensatory mitigation to offset environmental impacts to the FEIS. As detailed in our scoping comments, despite recent guidance from BLM in Instruction Memorandum 2019-018 instructing agency staff not to require compensatory mitigation to offset impacts from development on public lands, there is a strong legal framework supporting the authority of BLM to require mitigation and in some cases compelling it to do so. FLPMA provides for the administration of the public lands by the Secretary of the Interior through the BLM. See 43 U.S.C. § I 702(e). BLM has broad authority and obligations under FLPMA to require mitigation when exercising its authority to engage in land use planning, approve site-specific projects, or engage in other management activities. See 40 C.F.R. § 1508.20. In accordance with FLPMA, the Administrative Procedure Act, other laws and case-law, BLM's decisions regarding mitigation must not be arbitrary or capricious. The DEIS does not include any BLM-required compensatory mitigation measures to offset environmental impacts from the Project. BLM should include appropriate requirements for compensatory mitigation in the FEIS.	Compensatory mitigation cannot be required unless by law or unless the proponent voluntarily offers it. The BLM will follow Instruction Memorandum 2019-18.
30.MB-6	II. The Borderlands Wind Project developer should commit to voluntary measures to avoid, minimize and offset impacts through compensatory mitigation. To ensure that all impacts to important resources and values are addressed appropriately, the Project developer should commit to voluntary measures to avoid and minimize impacts and to offset unavoidable impacts through compensatory mitigation. Such voluntary commitments are an important way that the Project developer can demonstrate their commitment to responsible use of our public lands. The DEIS includes a commitment from Borderlands Wind, LLC for voluntary compensatory mitigation for eagle impacts: "Borderlands Wind, LLC has included a commitment in their draft Eagle Management Plan to provide voluntary compensatory mitigation to offset the anticipated impacts on eagles. The voluntary compensatory mitigation that is currently proposed by Borderlands Wind, LLC would take the form of $165,000 in funding that would be contributed to the National Fish and Wildlife Foundation's Eagle Mitigation Account or to a mitigation banking or in-lieu fee credit program." See Draft EIS 3-76. We appreciate and strongly support this commitment. BLM should work with the USFWS to ensure that this commitment is adequate to fully offset anticipated impacts on eagles. The applicant should also make appropriate voluntary commitments to offset other unavoidable impacts from the project.	Compensatory mitigation cannot be required unless by law or unless the proponent voluntarily offers it. The BLM will follow Instruction Memorandum 2019-18.

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30.MB-7	III. BLM should improve its inventory process for future inventory of lands with wilderness characteristics. Lands with wilderness characteristics (LWC) are areas on our public lands that provide backcountry recreation opportunities and safeguard important wildlife habitat. As detailed in our scoping comments, LWC are one of the resources of the public lands that must be inventoried under the Federal Land Policy and Management Act (FLPMA). See 43 U.S.C. § 1711(a); see also Ore. Natural Desert Ass'n v. BLM, 625 F.3d 1092, 1122 (9th Cir. 2008) (holding that "wilderness characteristics are among the 'resource and other values' of the public lands to be inventoried under § 1711"). BLM's guidance for implementing this requirement of FLPMA is currently set forth in BLM Manual 6310. BLM must ensure that all LWC inventories are conducted compliant with this manual, including the documentation of the inventory findings. Manual 6310 reiterates that, "[r]egardless of past inventory, the BLM must maintain and update as necessary, its inventory of wilderness resources on public lands." See BLM Manual 6310 at .06(A). We appreciate that BLM conducted an LWC inventory for the DEIS. Based on the inventory, BLM found that LWC are not present in the Project area; we do not dispute this finding. Based on this finding, we are not including further discussion in these comments regarding the need to avoid, minimize or offset impacts to LWC. However, we recommend that BLM improve its inventory process for future LWC inventories to ensure that the agency is following its guidance for LWC inventory. We will reach out to BLM separately for further discussion on this important issue.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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30.MB-8	IV. Avian and Bat Species. The DEIS acknowledges that wind energy facilities have impacts on avian and bat species, including through direct mortality from collisions. Compensatory mitigation for impacts to eagles is addressed in Sections I and II of these comments. We note that the DEIS states that, "The BLWP would not be permitted for the take of eagles under an incidental take permit, so the process for ongoing re-evaluation of eagle take and adjustment of the compensatory mitigation that is needed to achieve no net loss of eagles would not be available to the BLM. It is therefore uncertain whether the amount of funding that is provided for voluntary compensatory mitigation by Borderlands Wind, LLC would be sufficient to result in no net loss of eagles." See Draft EIS 3-76. Instruction Memorandum No. 20917-040 of January 19, 2017 states that, "take of an eagle by a BLM ROW grant holder without a take permit is, however, a violation of the Eagle Act and a violation of the terms and conditions of the BLM ROW grant. The definition of "take" includes lethal take as well as "disturbance" as defined in 50 CFR 22.3. The FWS has enforcement authority under the Eagle Act. The BLM has the authority to determine, on the basis of its review, and consistent with its multiple use and sustained yield mandate, whether to approve, approve with modifications, or deny a ROW application. The BLM also has the authority to administer ROW grants for approved projects. For example, under 43 CFR 2807.16 through 2807.20, the BLM may amend, suspend, or terminate ROW grants for violations of applicable terms and conditions, such as the requirement to comply with all applicable laws (43 CFR 2805.12), including the Eagle Act." Since the applicant has chosen not to apply for an Eagle permit under the Bald and Golden Eagle Protection Act nor to prepare an Eagle Conservation Plan (ECP) as part of that application, BLM must incorporate the terms and language from this IM in the FEIS and ROD and state that, "under 43 CFR 2807.16 through 2807.20, the BLM may amend, suspend, or terminate ROW grants for violations of applicable terms and conditions, such as the requirement to comply with all applicable laws (43 CFR 2805.12), including the Eagle Act," and that, "The authority to enforce the terms and conditions of the ROW grant exists separate and apart from whether FWS pursues an enforcement action against a project operator for any violations of law, such as taking eagles." The applicant and the public should be fully informed of the consequences of take of an Eagle without a permit at a wind project on public lands. We recommend that the applicant consider pursuing an eagle take permit given BLM can shut the project down should the facility take an eagle without a permit.	It is the intent of the BLM to follow the requirements outlined in Instruction Memorandum (IM) 2017-040 during consideration of Borderlands Wind, LLC's ROW application and during subsequent administration of any ROW grant. Per IM 2017-040, the BLM requested for surveys to be conducted to generate data related to eagle presence in, or use of the BLWP area, and for Borderlands Wind, LLC to submit an eagle risk assessment to determine the potential effects to eagles from the proposed project, including any avoidance, minimization, and compensation measures. Since the USFWS has determined that take of eagles is likely for the BLWP, the BLM would include stipulations in the ROW grant, requiring Borderlands Wind, LLC to monitor the project for eagle fatalities using USFWS-approved standards throughout the life of the grant. Monitoring requirements and other Best Management Practices and Design Features that were developed for this project are included in Appendix B of the EIS. No change has been made to the EIS.

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30.MB-9	Additionally, within the Plan of Development, there is mention of development of a Bird and Bat Conservation Strategy (See Appendix C), but the referenced Appendix M of the POD is currently blank. Appendix M states that the BBCS will be submitted with the final POD, however, the absence of both the BBCS and the Eagle Management Plan in the Draft EIS makes it impossible for the public to understand and provide comments on these details at the appropriate stage in the EIS process, during the comment period on the Draft EIS. These plans are valuable information for the public to inform thorough analyses and comments. BLM should work with the proponent to finalize the plans as soon as possible and provide them for public review and comment before the publication of the FEIS so that any issues identified can be addressed in the FEIS. With regards to addressing some impacts from transmission lines from the project, the DEIS states that, "Distribution lines and other project facilities would be designed to discourage their use as perching or nesting substrates by birds, and to minimize collisions and electrocutions (e.g., by constructing power lines to Avian Power Line Interaction Committee standards). Two permanent MET towers would be needed during operations. The MET towers would be no more than 361 feet high with side guy wires extending from each tower on two sides. Bird flight diverters or high visibility marking devices would be used to reduce the potential for collision with the guy wires, though they would not entirely eliminate the potential impacts on birds. Impacts on special status bird and bat species, including fatalities resulting from the operation of wind turbines, would not be avoidable under the Proposed Action." See Draft EIS 3-53. The FEIS should explore the environmentally superior alternative of siting distribution and collection lines underground to insure protection from wildfire, terrorism, and with radically reduced impact on birds. Additionally, the FEIS should analyze the environmentally superior alternative of using LIDAR or unguyed met towers rather than bird flight diverters if feasible.	The Bird and Bat Conservation Strategy was in review at the time the DEIS was published - it is now included in the POD that is part of the FEIS. As described in Section 2.2 of the EIS, the collector lines that carry electricity from the turbines to the BLWP substation would be installed underground. Approximately 1.8 miles of above-ground distribution line would be required to connect to an existing regional transmission line to deliver BLWP power to TEP. It is noted in Appendix B in the EIS that the use of self-supported MET towers is preferred, if feasible. The structures would be painted so that they stand out from the surrounding environment to provide optimum visibility for birds and, if guy wires are necessary, bird flight diverters would be used following the BLM protocols that are also identified in Appendix B.
30.MB-10	V. Big game and habitat fragmentation. As detailed in our scoping comments, the proposed Project would contribute to habitat fragmentation in the region, through placement of long-term infrastructure that impedes the movement of wildlife across the landscape and through upgrading and construction of roads. Additionally, transmission line development associated with the proposed Project would further exacerbate habitat fragmentation. BLM must analyze the proposed Project's direct and cumulative impacts on habitat fragmentation, including conducting spatial analysis. BLM must consider alternatives to minimize and mitigate impacts to wildlife, including elk, caused by habitat fragmentation. After outlining the impacts on big game and wildlife, the DEIS states that, "Therefore, the Proposed Action and Alternatives 1 and 2 would result in short- and long-term, minor impacts to general wildlife. No additional analysis in this EIS is warranted."	A specific evaluation of Species of Economic and Recreational (SERI) in New Mexico was provided in Section 3.7.2.1 of the EIS to give context for potential impacts to representative big game species identified in the New Mexico Crucial Habitat Assessment Tool for this area (i.e., black bear, cougar, elk, and mule deer). Potential impacts including disturbance and habitat fragmentation are discussed in Section 3.7.2.1 of the EIS, which also references the more detailed discussion in the Wind Energy PEIS. Refer to Appendix B in the EIS for the various Best Management Practices and Design Features that would be

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	See Draft EIS 3-5. The analysis of impacts to big game in the DEIS is inadequate and should be strengthened in the FEIS. BLM should include appropriate requirements to avoid, minimize and offset impacts to big game in the FEIS.	implemented to reduce the potential impacts of the project on wildlife, including big game species. No change has been made to the EIS.
30.MB-11	VI. Recreation. As detailed in our scoping comments, outdoor recreation is a resource to be managed under FLPMA. See 43 U.S.C. § 1711(a). BLM must analyze impacts to various recreation experiences from having industrial wind energy development on the landscape and look for ways to avoid and minimize impacts. The EIS must analyze impacts to primitive recreation experiences in LWC as well as other recreation uses in the area. BLM must further analyze where current recreation uses would be displaced to and how BLM would ensure those areas endure for that use. The DEIS states that "There are no designated recreation facilities, such as trails, known to occur on the BLWP area. However, there are opportunities for dispersed recreation activities, such as motorized and nonmotorized activities, wildlife viewing, hunting, camping, hiking, and OHV use. During construction and decommissioning, construction activities and traffic may reduce the appeal for dispersed recreational activities, resulting in a direct and indirect, short-term, negligible effect." See Draft EIS 3-7.	Comment acknowledged. There is no data from the BLM to support that there is an abundance of recreation within the project area. Recreation activities in the project area would be impacted during construction and decommissioning but impacts are negligible and temporary. Refer to Table 3-1 Determination and Rational for detailed Analysis by Resource/Use in the EIS. No change has been made to the EIS.
30.MB-12	As stated in our scoping comments, BLM should conduct outreach to the non-motorized, mechanized and motorized recreation communities to find out how the proposed Project would impact their user experiences. BLM should include this analysis and appropriate requirements to avoid, minimize and offset impacts in the FEIS.	Comment acknowledges. There is no data from the BLM to support that there is an abundance of recreation within the project area. No recreation groups commented on the DEIS or provided comments during public scoping. No change has been made to the EIS.

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30.MB-13	VII. Natural Soundscapes. As detailed in our scoping comments, soundscape is a public land resource affected by agency-authorized uses such as energy development, with corresponding impacts on other resources including wildlife, wilderness, and recreation. Noise can affect the physiology, behavior, and spatial distribution of wildlife. Anthropogenic noise also has significant impacts on recreationists who visit natural areas like the proposed Project area and vicinity to escape non-natural noises and attain a sense of solitude and tranquility. Studies have found that anthropogenic noise interferes with the quality of the visitor experience and even impacts the perceived visual and aesthetic qualities of the landscape. E.g., Mace 1999. Non-natural noise degrades wilderness characteristics, including apparent naturalness and opportunities for solitude. See 16 U.S.C. § 1131(c). BLM must take a hard look at these and other reasonably foreseeable noise impacts of the proposed Project, which may be primarily caused by increased motorized traffic associated with the Project but may also be caused by wind turbines themselves. BLM Manual 7300.06D requires the agency to consider noise and its potential impacts on public lands during planning and project authorizations. The DEIS does not include a project-specific analysis of the impacts of sound from the Project and continues to defer to analysis from the 2005 BLM Wind PEIS: "The Final Wind Energy PEIS (BLM 2005:pp. 5-20 through 5-27) provides a detailed analysis of potential noise impacts associated with the construction, O&M, and decommissioning of a wind facility." See Draft EIS 3-7. The DEIS states that, "Because noise levels would be below U.S. EPA guidelines and there is no potential for new or modified impacts that have not been disclosed in prior environmental documentation; noise is not further discussed in this EIS." See Draft EIS 3-7. In the FEIS, BLM should include a project-specific analysis of sound impacts as well as including appropriate requirements for avoiding, minimizing, and mitigating adverse impacts to natural soundscapes.	As noted, the PEIS already provides a detailed analysis of potential noise impact associated with the construction, operation, maintenance, and decommissioning. The closest sensitive receptor is seasonal recreation use that would be approximately 0.8 miles away from the nearest turbine. For reasons provide in Table 3-1. Determination and Rationale for Detailed Analysis by Resource/Use for additional information. Your comments have been noted and will be included in the administrative record for this EIS.
30.MB-14	VIII. Conformance with provisions of BLM's Wind Programmatic EIS. The Wind PEIS included Best Management Practices (BMPs) that would be required components of a wind project proposal and application process. Wind PEIS Attachment A pp. A1-A20. If BLM decides to proceed with environmental review and permitting of the proposed Project, the agency should include the Wind PEIS BMPs in the NEPA analysis explain how the proposed Project would conform each. Our scoping comments included examples of BMPs that would likely be most relevant for the proposed Project. Our scoping comments recommended that BLM should include the Wind PEIS BMPs in the EIS analysis and explain how the proposed Project would conform each. While the Wind PEIS BMPs are mentioned in several locations in the DEIS, the DEIS generally does not	Appendix B of the EIS provides the list of appropriate BMPs and Design Elements, which were compiled from the Wind Programmatic EIS as well as other BLM wind EISs considered to minimize adverse impacts. The environmental consequences in Chapter 3 of the EIS is based on the assumption that those BMPs and Design Elements have been implemented. No change has been made to the EIS.

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	explain how the proposed Project conforms to key BMPs. BLM should include these details in the FEIS.	
30.MB-15	IX. Landscape-scale planning for wind energy development. Landscape-scale planning for energy development offers benefits such as increased permitting efficiency and predictability and decreased impacts to natural, cultural and other resources and values on public lands. BLM's Solar and Wind Energy Rule, finalized in 2016, established a process for designation of DLAs for wind energy. In general, we strongly support the designation of wind DLAs in appropriate locations, and we recommend that going forward BLM should focus wind development on public lands across the west in appropriate DLAs. To date, there has not been much interest in renewable energy development on public lands in New Mexico. However, increasing demand for renewable energy in New Mexico and other western states will likely drive increased interest. Transmission capacity has been the biggest deterrent for developers in New Mexico, but as transmission capacity is added, there will be an increased demand in renewable energy development on New Mexico's public lands, where there are strong wind and solar resources. We recommend that in ongoing and future RMP revisions and amendments, BLM should designate new wind and solar DLAs and refine of the solar variance lands and wind open and avoidance areas. When designating new DLAs, BLM should follow an approach like the four-step process in the Western Solar Plan and ensure consistency with guidance in the Solar and Wind Energy Rule.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
32.LS-1	Issue 1: The DEIS is fatally flawed by its superficiality and its presentation is deceptive. Recommendation: The No Action Alternative should be the final decision chosen for this project. Barring that, the BLM should rewrite the DEIS with full disclosure of actual on-the-ground impacts to the human and natural environment, and provide realistic analysis of those impacts. Discussion: An EIS is meant to disclose and analyze the impacts on the environment (including the human environment) as per the National Environmental Protection Act (NEPA). Unfortunately, the Borderlands Wind Project DEIS so fundamentally biased in favor of the Preferred Alternative that it amounts to an infomercial. The document is written as if the EIS were merely a formality and the Preferred Alternative is the only alternative. The DEIS refers to various BLM directives	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	that lead to the impression that any wind generation is good wind generation. The fatal flaw with this approach, however, is that in doing so BLM has negated the whole point of an EIS and has not complied with the spirit of NEPA. The environmental data provided is not specific to the site or even to the realities of northeastern Catron County. The negative impacts are minimized and are unsupported by on-the-ground truths. Problems are either masked by data that has been gleaned from decades-old documents and that may not be pertinent today or are simply ignored. There is no interest in realistic alternatives even when problems are documented. The DEIS gives the impression that the project has no environmental impact when the very fact that an EIS is required means that the impact is significant. The burden of proof is on the BLM and Borderlands LLC to clearly demonstrate that the proposed project's environmental impact is low compared to the social and economic benefits to be gained, however such proof means that full and honest disclosure of all data, and all short-, long-, and cumulative impacts must be fully and clearly presented within the DEIS. It is not enough to make simple statements about low impact and reassurances that after decommissioning all will be just like it was in the human environment as well as natural environment. Since the data is inadequate and have no relationship to the realities of the actual impacts of this project, then the public presumption of significant environmental impact has not been disproven but rather has been shown to be more than enough to make the No Action Alternative the only possible alternative.	
32.LS-2	Issue 2: The DEIS failed to provide a cost-benefit analysis for this project Recommendation: The No Action Alternative should be the final decision chosen for this project. Barring that, the BLM should rewrite the DEIS and include cost-benefit analysis. Discussion: There is no cost-benefit analysis in the DEIS and therefore no way for the public to know whether costs outweigh the supposed benefits. Presidential Executive Order 12866 states that "each agency shall … propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs."(1) References to benefits are scattered throughout the DEIS, however BLM does not directly address the bottom-line question: "Are the social and environmental benefits of the project greater than the costs?" We do not know the answer to this because there is no clear-cut cost-benefit analysis. The most likely situation is that while the project benefits the developer (Borderlands LLC and NextEra) through subsidies for each kWh produced, federal Investment Tax Credits, depreciation allowances, and a possible federal and state Production Tax Credits, the source is US Taxpayers rather than from any genuine profit. The economic costs exceed the economic benefits to the public, and this does not even include the aesthetic or environmental costs.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	Issue: The DEIS is fatally flawed due to omissions of fact and failure to base analysis on actual local environmental conditions., resulting in a fatally flawed cost-benefit analysis of both economic and environmental nature. Recommendation: The No Action Alternative should be the decision.	

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32.LS-3	Issue 3: the DEIS fails to realistically, truthfully, and/or fully disclose actual negative impacts on the human and natural environment; and the DEIS fails to realistically, truthfully, and/or fully disclose the permanent damage to the human and natural environment that will exist because of the construction, maintenance, and decommissioning of the project.Recommendation: The No Action Alternative should be the final decision chosen for this project. Barring that, the BLM should rewrite the DEIS and fully disclose the actual negative impacts and permanent damage to the human and natural environment.Discussion: If we are to accept that there is a global problem that exists for all living beings i.e. climate change, and if we agree that – regardless of the cause – it is up to humans to mitigate the impacts of this problem, then logically the solutions that are applied must not worsen the situation but rather contribute to mitigating the problem. Furthermore, because climate change is a serious and potentially life-threatening global issue, any solutions that are implemented must rise above political and economic pressures. Anything less simply makes the problem worse, or, to quote Eldridge Cleaver: "If you are not a part of the solution, you are a part of the problem." Energy generated by the wind through industrial complexes that use fossil fuel derived components, installed by fossil fuel powered construction, and which at the end of a useful life (which is, in spite of NextEra's claim, less than 35 years) is no solution to any climate change problem. BLM should not encourage the development of wind power on public lands because everything about it is toxic to the environment. Cement is not kind to the environment, either in its manufacture, its impacts on topsoil. Cement manufacture is the third largest industrial source of pollution, emitting more than 500,000 tons per year of sulfur dioxide, nitrogen oxide, and carbon monoxide, according to the EPA(2). The blades, which are resin and fiberglass, are non-organic material and will not decompose in our lifetimes. The blades are made for strength and durability, so recycling and options for reuse/recycling are severely limited. Researchers estimate that in the United States alone more than 720,000 tons of blade material will need to be disposed of over the next 20 years(3). This does not include new installations. Given that the life span of wind power is short, discovering new technologies for recycling of the parts is imperative. However, it appears that Borderlands LLC plans to simply refurbish (replace or upgrade outdated or worn facility components to keep the project operational) (Appendix C, Borderlands' Plan of Development, section 4.0 Project Decommissioning), which would be a fine thing if it wasn't for the fact that no one wants the project in the first place. This also means the project would need to be recapitalized 2 to 3 times compared to power from conventional generation technologies, an economic burden to taxpayers, no doubt, if not simply passed on to consumers – or both. And, of course, the parts that would be	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	replaced would still have to be disposed of. Not to mention that much of the underground installation would remain in place to pollute the soil and the planet for eternity. Aside from the generally terrible idea of wind turbine industrial complexes as a clean source of "green" energy, BLM has failed to adequately, fairly, and accurately discuss the negative impacts on the specific site proposed. There is no local data to support the idea that ground disturbances can be minimized (that the land will "heal") in spite of ample evidence that ground disturbance is visible for literally decades because of the thin topsoil and low rainfall. The overlaying problem is that wind energy is not a good solution for energy production when there is no attempt at energy conservation. There is absolutely no compelling reason to cover the planet with energy production complexes – regardless of what kind of generation it is – if this simply encourages people to use more. Borderlands LLC is one of over 400 subsidiaries of NextEra. The proposed project cannot be considered in isolation. Killing our planet in tiny increments is still killing our planet, because all those increments add up. There is no reason to expect that Borderlands LLC will not apply for an additional project, since the original ROW application was for more than just the 30 square miles of the current project. Therefore, the best response to this proposal is to stop it now before it metastasizes.	

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32.LS-4	Issue 4: It is not clear in the DEIS that appropriate state and federal oversight and permitting has taken place Discussion: I have been in communication with the New Mexico State Land Office (SLO) to request information on their rules and regulations regarding public participation in the proposed project. I was told that the SLO was not aware of the project, which is odd since SLO is listed on the cover page as a Cooperating Agency. In that the DEIS seems to take it for granted that the SLO will bless this proposal with lease of state trust lands, this appears to be another indication that Borderlands LLC/NextEra gets what it wants no matter what the public thinks, and that the DEIS is a sham process.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The NMSLO is a cooperating agency on the EIS and has a signed Memorandum of Agreement with the BLM. As such the NMSLO has had opportunities to comment on the document. The BLM has not received any communication to date from the NMSLO that they have any concerns regarding the implementation of the BLWP. No change to the EIS has been made.
32.LS-5	Issue 5: The DEIS failed to address the issues of concern expressed in the scoping comments Recommendation: The No Action Alternative should be the final decision chosen for this project. Barring that, the BLM should rewrite the DEIS and actually address the issues brought up by the public.Discussion: Although the DEIS disclosed that public comments received, and summarized them in section 1.7 Issues to Address in the EIS, many of the issues were not addressed, were inadequately addressed, or were handled as if the issues were of no significance.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
32.LS-6	Environmental justice. On page 3.3 (page 33 of the document) DEIS states “There are no minority or low-income populations identified within or adjacent to the BLWP area. Consequently, there are no disproportionate impacts to environmental justice populations.” Apparently the BLM is not aware that environmental justice actually means “… the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies”(4). Given that there is no way that BLM could know the racial, skin color, national origin, or income of the property owners of the Red Hill area, as there is no such published data available, there is no possible way to have arrived at any conclusion regarding disproportionate impacts. In fact, a significant percentage of Catron County residents are below the federal population line, and many of the residents of the Red Hill area are retirees on fixed incomes. Environmental justice, as per the DEIS, is only concerned with disproportionate impacts on a segment of the population, and the Red Hill area residents and property owners qualify for that segment. We are already disproportionately impacted. We can see that work is already going on: Tucson Electric Power employees and contractors are upgrading the transmission lines and are constructing substations on their right of way. How much more disproportionately impacted can a segment of the population be when whatever they have to say about a DEIS makes no difference?	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. There are no known statistics to support that the community of Red Hill has minority or low-income populations. Regardless, the BLWP would not result in any disproportionate impacts to any minority or low-income populations within the County. No change to the EIS has been made.

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32.LS-7	Water. Construction activities are stated as requiring an appalling 26 million gallons of water, to be pumped from an existing nearby well. On page 39 of the DEIS it is stated that "Based on 2015 Catron County water use data, the amount of water anticipated for use during construction represents 0.09 percent of the water the County uses in a year (USGS 2015)." This is a meaningless point of data. Catron County is nearly 7000 square miles in size, approximately the size of the state of Connecticut. Underground water is found in vastly different depths and volume across the county, and there is even less water available in the northern part of the county. In other words, the project area has less water than much of the whole county. Therefore, consumption of 0.09% would have a much greater impact on underground water of the project area and likely would have a tremendous negative impact on local wells. How would Borderlands "make right" any groundwater depletion that impacts senior well rights? The DEIS does not state, by the way, whether Borderlands has secured a permit for the 26 million gallons, nor has there been any evidence of advertisement or hearing held on the use of the water for construction. NM Statute § 72-12-7 A: The owner of a water right may change the location of his well or change the use of the water, but only upon application to the state engineer and upon showing that the change will not impair existing rights and will not be contrary to the conservation of water within the state and will not be detrimental to the public welfare of the state. The application may be granted only after such advertisement and hearing as are prescribed in the case of original applications. The DEIS states that a "new 5- to 6-gallon per minute well would be drilled for O&M water use". Successful drilling of water in this part of Catron County is not a given, and water is a precious and highly contested resource in the state of New Mexico (the Augustin Plains Ranch pipeline project, for example). Therefore, it cannot be assumed that any water right will be automatically available for the project. What would happen if Borderlands LLC was unable to dig a well, or did not dig a well that produced "5- to 6-gallon per minute", a volume of water that is fairly rare for a well to produce in the area? How would a well producing that much water impact nearby wells? Where is the information in the DEIS that discloses required the cumulative impacts of a proposed well with that capacity and analyzes the impacts of such a well on existing and reasonably foreseeable future development nearby, including natural water sources for wildlife? How does New Mexico law apply to any appropriation of a well by BLM (and does that mean simply take it over?) and to what beneficial use would BLM put the NM domestic well permit to after decommissioning? Perhaps such information exists in the DEIS but, quite frankly, I am tired of having to use the word search function of my computer to go through the document, page by page, to find out.	Refer to response to Comment 03.EI-3. A private landowner has been issued a drilling permit for commercial use by the New Mexico Office of the State Engineer. No change has been made to the EIS.

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32.LS-8	Wildlife. Thirty five years, with the possibility of extending the project, is half the lifetime of many human beings. For most animals, that length of time represents generations. The DEIS takes a very casual approach to wildlife death, as if one or two eagles, or a few badgers, or a dozen bats, or a colony of prairie dogs killed by wind turbines or the construction/decommission on the site would hardly make a difference. In 1962, the U.S. Bald and Golden Eagle Protection Act outlawed harming these birds, their eggs, and their nests. "Most recorded deaths are from collisions with vehicles, wind turbines [my emphasis], and other structures …. Urbanization, agricultural development, and changes in wildfire regimes have compromised nesting and hunting grounds in southern California and in the sagebrush steppes of the inner West."(5) While bald and golden eagles may not be endangered, neither are their populations so huge that they can sustain a consistent, cumulative loss of an eagle here and there at one wind turbine complex X hundreds of complexes. Eagles, hawks, and other species of birds, as well as bats, should not be counted as a form of acceptable collateral damage in the insatiable human quest for energy. Wind turbines are death machines, not "free" or "green" energy makers. While the DEIS acknowledges that "…eagles, prairie dogs, wolves, and other sensitive species…contribute to the non-market perceptions of the area by both local and non-local users", the DEIS fails to mention that some of these species will be run over, chopped up, or buried alive by construction. This is certainly a form of animal abuse, and should President Trump sign the Preventing Animal Cruelty and Torture Act (PACT Act) it would be possible that the BLM, and/or Borderlands LLC, and/or employees or contractors of either, could face federal felony charges, fines and up to seven years in prison for killing animals that live underground. Although such taking of life would not be a case of malicious abuse, it would, nevertheless, be an act of knowing cruelty.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The EIS provides an analysis of impacts to wildlife, refer to Sections 3.6, 3.7, and 3.8.
32.LS-9	Noise. In the Plan of Development (no telling what page reference to provide – it is either page 61 of the POD or 285 of the document) the DEIS declares that the residents of Red Hill "are not expected" to hear noise from the project. As far as I am aware, no attempt was made by BLM to ask the people who live and work in the area about what they would hear. My property, for instance, lies in a valley created by two mesas that act like megaphones when wind and atmospheric conditions are right, and when that happens I can hear traffic on US 60. I would, in fact, expect to hear and be constantly irritated by construction and/or decommissioning noise, and even the noise of the turbines themselves, given that I have been irritated by that noise when I have been near other wind turbine complexes (e.g. staying in a motel within sight of wind turbines). As the National Institute of Health says, "Obtaining a satisfactory consensus from local residents before installing wind power facilities is important as for more amenable their	Refer to Response to Comment 30.MB-13 and Comment 11.JF-41

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	attitudes towards such facilities." Any non-natural noise in quiet rural environments can be very loud noise, regardless of what decibels that noise might be. The DEIS states that operational noise would be up to 85 decibels (I may have read this incorrectly, but then the DEIS is hard to figure out). Unfortunately in quiet environments even half that level would be intrusive and loud. Wind turbine noise data of the DEIS appears to only refer to average decibels, and excludes infrasound and low frequency noise. The DEIS does not address the issue of human response or animal response to the audible noise over time, but simply "expects" it to not be an issue. This is a major quality of life concern for the people who live near the proposed site. "Environmental noise is a threat to public health, having negative impacts on human health and well-being."(6) Ample medical research literature is available about brain, lung, and heart pathology caused by long-term exposure to noise at frequencies too low to be heard. The pulsating nature of sound as vanes pass over the shaft can be particularly irritating.	
32.LS-10	Visual impact. I have commented on the Resource Management Plan Amendment in a separately submitted comment, however I wish to add here a few points on the destruction of beauty, and what it means to the human species to cavalierly destroy what is natural and beautiful in the name of economic gain. In my Issue 3 comments I stated that solutions that are applied to the problems of climate change must not worsen the situation but rather contribute to mitigating the problem. I wish to add here that the rural nature of Catron County, the dark skies, and the vast views are all part and parcel of the solution to global climate change, not disposables that get in the way of making money. The visual desecration of open space caused by wind energy projects has been a subject of lawsuits in the recent past brought by American Indian tribes because of concern about adverse impact on landscape views, and rightly so. American Indian people are not the only ones who have spiritual connection with the land. Because of their intangible nature, visual impact concerns seem to be particularly vulnerable to being ignored or considered unimportant by BLM and other government entities. We who value open spaces and wild beauty can never be compensated for the irrevocable loss brought about by wind energy projects, especially knowing that others enjoy the benefits without having to give up anything. I have been photographing my corner of Catron County for twenty-five years. I share my photos with hundreds of people online. My love for the land is well documented, and I believe my work fully conveys the spiritual beauty of where I live. This project will destroy all that. A 2015 Stanford University study suggested that "accessible natural areas may be vital for mental health in our rapidly urbanizing world,"(7) Disconnection from nature has grown dramatically, as have mental disorders such as depression. Perhaps there is a connection between disconnection from nature and mass shootings, global warfare, and climate change	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS. The EIS provides a detail visual analysis in Appendix F as well as a summary discussion of potential impacts to landscape character, scenic quality, night skies, and views from key observation points in Section 3.9.

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	itself. The natural world not only provides us with food and resources to make human lives comfortable, but it also keeps us sane. Can we really afford to cover the planet with the heavy footprint of wind turbines?	
32.LS-11	Conclusion . The project is located in a military training flight zone, and is close to a fire station with a helipad. At the September public meeting in Quemado a BLM employee explained that a system could be set up so that at night lights would only come on when triggered by aircraft. So not only would Red Hill area residents have to hear bombers flying overhead and jets screaming through the sky, but we would have to see lights that would suddenly go on when planes are in the vicinity. Too bad for anyone taking long exposure night photographs.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
32.LS-12	The fundamental problem with the DEIS is the casual disregard of the value of that which is wild, the complicity in the erosion of open spaces by projects for human gain, the willing sacrifice of wildlife, plants, rivers, mesas and mountains to the false gods of human need. This inexorable crushing of the natural by mankind is exactly what has gotten us where we are today. This DEIS seems to be about promotion of a project that has already been decided on. This is clearly a rubber-stamped deal sweetened by NextEra's bribery of the Catron County Commission. My urgent recommendation is for BLM to change its path, to get on board with mitigating climate change and to manage public land for the public, not for huge energy conglomerates with big lobby dollars, that is, to decide for the No Action Alternative.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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33.RB-1	Previously I have stated my opposition to Nextera building a wind farm in this scenic locale of Catron County decimating the beauty of our mountain region and in this case majestic wild lands. Greed is a cancer that will never stop and Borderlands, another spin off of Nextera and its affiliates will never cease to expand and place their obtrusive monolithic wind farms every place they can cram it down the objections of the public and their protests. Let us hear no more of scientific solutions for climate change and biodiversity while making excuses for clean energy via wind farms inhibits the biological life forms that live at the surface of our planet from natural uninhibited sunlight and noise and mechanical interference while under the canopies of permanent 500' tall turbine generators that are rapidly expanding to cover every conceivable place of public owned lands that such corporations wish to file a petition. It has been said that the current BLM administrator has made the statement that all BLM lands should be sold? Sold to whom the rich and wealthy. How generous of this person whom is supposed to manage the public's land by permanently dispensing with it? So this is what we see happening now. I suppose people who own thousands of acres of private land that pose no threat to small ranches or residential areas who wish to lease their land to such companies have a right to do so even if I disagree with it but the BLM may call it leasing but they may as well sell it out right when colossal cement bunkers need to be poured for each wind turbine. How does this fit in with long term land conservation and usage when it's nothing but a total destruction of that land, the public land. No one is listening to us.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
33.RB-2	I would like to bring up the fact that the BLM did not properly notify all the landowners via USPS mail notification for which in my opinion they have a duty to do. I have ran into countless people in grocery stores and other public places who live in our portion of the county who have known nothing about the proposed wind farm or were under the impression it was being erected in a another vicinity. In fact I only learned of it through word of mouth myself and the BLM knows that all residents were not individually notified by mail. Newspapers are a thing of the past for most people so that would be ineffective besides there is no newspaper I know of in our area. I don't have much faith in the Fish & Wildlife agencies anymore they are all too young and to political to serve the real interests of that which that are supposed to serve; the fauna and wildlife itself which has no voice. They have become the rubber stamp army of their salary masters.	The BLM notified those individuals who attended the public scoping meeting, those who provided scoping comments, sent out press releases (an article on the project was printed in the Catron Courier); flyers were posted in the Datil Post Office, Datil Public Billboard (next to the Post Office), Pie Town Post Office, Quemado Ranger District Office, Quemado Post Office, Rito Quemado Convenience Store, The County Store in Quemado, Cimmaron Ranch Convenience Station Billboard in Red Hill, Red Hill Mailboxes, Springerville Post Office, and the Escudilla Bonita Subdivision; included on the BLM's ePlanning's website for the project; and also published in the Federal Register. No change has been made to the EIS.
33.RB-3	Vacationers who travel from or to New Mexico either for summer camp trips in our mountainous area where the farm is planned will not be getting the experience they	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

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	hoped for traveling through such an eyesore that extends for miles, even if their final destination is an hour away: ' Welcome to New Mexico – Land of Enchantment'.	
33.RB-4	Yes I'm writing this letter the last day available for submission because I have a very busy life. I have a 92 year old mother that needs attention on on top of work. I have not had time to read anywhere near the entirety of the planning or amendments to the wind farm proposal. I will not repeat all the objections and reasons here I made clear in July's submission to the BLM. I have little time now to write this but such greedy corporations should not be allowed to place their horrific visual atrocities anywhere for the sake of another dollar. This farm may in fact go in here, but if it does then that means they will go in everywhere and anywhere and when BLM runs out there's always the national parks.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
34.MAW-1	Thank you for the opportunity to express my comments/concerns for the wind tubine project proposed by NextEra. The DEIS is a daunting document - and I have been dedicating as much time as possible to grasping its full implications. I would like to have more time time allocated by BLM to fully understand it to more accurately provide comments, but that is to your discretion. We met at the September Meeting this year and you were very amicable and helpful. I hope that the attached comments will be of some use in cementing this proposal. Thanks very much for your consideration, feel free to contact me for any questions regarding the attachment, either by phone or email.	The BLM considered the request for extension of the 90-day comment period on the DEIS. The decision was made not extend the DEIS comment period because the comment period was for 3 months, there were no issues identified with the notification of the availability of the DEIS, and the relative low number of comments received did not suggest additional time being needed for public comment.
34.MAW-2	After scrutizing the content of the DEIS to the best of my ability, I realize that there are many subtopics that require a longer evaluation period, and I request that this be done in mine and the public interest. It seems imperative for all participants that additional time is required to fully understand the entirety of the document in order to submit valid and poignant comments. I am trying to grasp the totality of material in the DEIS, but it is challenging for a layman. I appreciate your consideration to extend the comment period. I submit the following suggestions, based on what I have tried to gleen, in order that the proposed project may continue with all possible obstacles considered and mitigated.	Refer to response to Comment 34.MAW-1
34.MAW-3	1. Approximate water usage at batch plant is estimated at 26 million gallons (US - Liquid) ~ 80 Acre feet. This is to be be obtained from a private well. There is a great concern by Cimarron Ranch residents that this water will be extracted from the same aquifer they use. Please substantiate this and provide reaonable affirmation that there will be no adverse affect from this water withdrawal in order to alleviate their concerns that they will be restricted or without water. Presumeably the private well to be used is on public record and can be provided to the community. NextEra has not asserted that contruction water usage may be a problem to local residents – at least within the DEIS. Please affirm that the aquifer can accomodate this. There is mention of a new O&M well	Refer to response to Comment 03.EI-3.

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	to provide 141KGal/Year – for kitchen and restroom use adding an additonal 300K gallons if the construction phase is around two years – again adding to the public concern of excessive initial water usage.	
34.MAW-4	2. It is my personal opinion that the Alternative 2 proposition be adopted with fewer turbines to reduce their footprint – though admittedly more visual exposure because of their height. Please provide a more detailed comparison of the pros and cons between the two alternatives as relevant to residents, the environment, and the contractors obligation to both plus their investors.	Comment acknowledged. Table 2.2 Comparison of Proposed Action, Alternative 1, and Alternative 2 provides a detailed comparison among the alternatives. A more detailed analysis for 34 versus 40 turbines, i.e., Alternative 1 versus Alternative 2 is not a feasible at this time because the locations of the turbines that would actually be constructed, for any alternative, would not be determined until construction begins due to site specific conditions. No change has been made to the EIS.
34.MAW-5	3. There is mention of a No Action Alternative and Visual Resource Management IV Turbine Array Layout Alternative. While having been addressed in the DEIS, the former has been deemed void and in the interest of NextEras concerns the latter would impact profitability and feasibillity. The latter alternative was apparently dismissed since once in place, additional facilities would be required to satisfy the energy agreement with TEP and the cost become prohibitive – thus the current alternative. As the apparent mandatory output to TEP is 100MW (per annum?) – according to NextEra, the average output will be considerably less than that due to local wind variations. If that is the case, please provide any possible action/acquisition by the contractor to satisfy the TEP requirements to include additional BLM properties in this immediate vicinity for further wind turbine development. There was an initial proposal to include property north of HWY 60. Please verify that the current land offering/acquisition will satisfy the energy requirements of NextEras most important consumers – the residents of Tucson, Arizona.	Under the Power Purchase Agreement between NextEra and TEP, NextEra is obligated to provide 100MW of power to TEP. Based on this contractual obligation, NextEra has determined that the proposed project footprints and wind turbine machines disclosed in the DEIS are able to provide this 100MW of power to TEP and satisfy the terms of the Power Purchase Agreement. The plant nameplate capacity is 100MW (power). Those 100MW of Wind Turbines will have the ability to generate ~250,000 MWh per year (energy).At no point in time will more than 100MW flow to the Point of Delivery. Energy is looked at on an annual basis and plant capacity (nameplate) is looked at as a fixed number that cannot increase without installing more WTGs. In order to install more WTG, NextEra would need to procure more land, obtain new permits, file for new Transmission Capacity and follow the entire development and permitting process from start to finish. This project has 2 agreements with TEP - one for the number of MWh we can push to the grid and the second is the Transmission agreement that secures the same MWhs of grid capacity. Neither agreement allows us

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		to increase nameplate or energy production without securing new agreements for the increases. No change has been made to the EIS.
34.MAW-6	4. Presumeably, there is some responsibility for the contractor to post bond for possible irreversible liabilities, e.g. the depletion of water resources and the average stability of property vaules before vs after project construction for the residents of adjoining areas, especially those low-income residents. Please provide what, if any, liability the contractor and/or the BLM might assume under these circumstances.	Comment acknowledged. There would be no bond requirement for the contractor, as the BLM has no control over the contractor. The contractor would have to abide by their applicable permits and contracts and would have their own liability insurance.
34.MAW-7	5. While the current disposition of Gunnison Prairie Dog colonies is delineated as of the survey period, it should be noted that they are a migrating species and the asserted AOI (after construction) will determine their final disposition in adjoining site areas. The contractor understands that the proposed environment is fragile – please offer a mitigation plan in more detail than that stated in the DEIS.	Consideration of the potential impacts to prairie dogs has resulted in the development of project-specific Best Management Practices and Design Features for the protection of prairie dogs and their habitat during construction, O&M, and decommissioning of the BLWP. Refer to Appendix B of the EIS. No change has been made to the EIS.
34.MAW-8	6. Turbine concrete bases and collection lines, road, and fencing excavations will considerably increase the amount of surface caliche. Caliche is a lime-based subsurface strata that when escavated renders the exposed surface depleted of nutrients even for the hardiest of natural plantlife. Please detail how the surface Caliche waste deposit visual/soil health impact will be mitigated. Photographs of both subteraneum and surface deposits are presented (Figs 1 and 2).	Refer to response to Comment 06.SD-3.

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34.MAW-9	7. As a volunteer firefighter, I am also concerned about traffic control on HWY 60 during construction hours to avoid accidents affecting Catron County resources. Please return a comment regarding this.	The Contractor building the project would place signage along U.S. 60 and Bill Knight Gap Road, alerting vehicles to the construction. Additionally, during periods of large equipment deliveries, there will likely be escorts or flagging personnel directing traffic to prevent traffic backups.
34.MAW-10	8. Total turbine rotor diameter ~ (465 ft x 0.5)^2 x pi x 32 = 5.8 million sq ft – not including the wash area). The mortality rate in the close vicinity of the AOI is not clear in the DEIS, please provide bird kill statistics (all applicable species) per sq ft of total rotor coverage from international resources to the affected locale. This may already be available – and would be an important statistic both to the contractor and any participating government agencies.	Refer to Section 3.7.2.1 of the EIS. The potential mortality rate is provided in the statement, "For birds, the adjusted fatality rates from most studies range from three to six birds per turbine-generated MW per year for all species combined, and no publicly available data has reported more than 15 bird fatalities per turbine-generated MW per year (American Wind Wildlife Institute [AWWA] 2018)." No change has been made to the EIS.
34.MAW-11	9. Viewing platforms in Cimarron Ranch Subdivision at September 2019 Meeting only include those views located in the lower, southern quadrants. A fair evaluation would include simulated views from the upper northeast residents perspective also. Though farther from the proposed project, a larger visual impact occurs. This is the concern of residents facing possible reduced property values - as mentioned, most of whom are considered low income. In fairness, we urge NextEra to also evaluate the visual impact afforded to residents living higher in the subdivision with an extended view of the proposed site. Please contact me if I can be of service.	Thank you for your comment. The Cimarron Ranch Subdivision sensitive viewing platform was selected due to the potential views from residences in the Subdivision and is located approximately 4.5 miles north of the nearest visible turbine. All of the proposed turbines, in varying degrees (views of some turbines may be only the blades) would be visible from this platform location. Therefore, the results of the analysis of the visual impacts would be the same or potentially less from any other location in the Subdivision. Refer to Section 3.9.2 and Appendix F of the EIS for the potential visual impacts.
34.MAW-12	10. Noise pollution: While the asserted estimate of a 10 dB addition (40 vs 30 dB) to ambient noise levels is not discernible outside of rural environments, the 10db increase within a rural environment is. There must be some impact on both residents and indigenous wildlife by this 12% increase in noise level – please add extended clarification to the current statement in the DEIS.	Refer to Response to Comment 30.MB-13 and Comment 11.JF-41

Comment ID	Comment on the Draft EIS	Response to Comment
34.MAW-13	11. There is mention of a sum/settlement to be awarded Catron County in lieu of taxing – it sounds like it may be to the benifit of Catron County residents – please explain what this means. I will contact the County to further clarify the implication of this extra income.	Refer to Section 3.3.2.1 of the EIS for a description of the sales tax and Industrial Revenue Bond dollars that would be paid to Catron County by Borderlands Winds, LLC. The distribution of those dollars would be the responsibility of the County. No change has been made to the EIS. Please see this source for a description of Industrial Revenue Bonds. https://www.nmlegis.gov/handouts/RSTP%20072111%20Item%200%20IRB%20SUMMARY%207-20-11.pdf
34.MAW-14	To document my concern about water quality and land value depreciation, I will have a water anaysis done just prior to construction and after. Likewise, I'll do a photographic compilation to compare with the artists visual concepts presented by NextEra at the September 2019 Meeting (please refer to my comment regarding no photo perspective from the NE portion of the community being considered to date by NextEra). I've lived here for a number of years and really value the pristine environment and labor I've put into being a resident. I realize that this project is in the name of progress but still want to the best of my ability to understand all ramifications and provide the most salient input to its conpletion.	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
35.KA-1	Failing to ever locate a public comment form for this project via the Borderlands Project web addresses/links, I went by the Socorro Field office earlier today, 11/7/19, at 4:47 pm, to pick up a form. At that point, I realized the office closes at 4:30 pm weekdays. So now, I will attempt to comment on the DEIS for the wind energy generation in western Socorro County, New Mexico, [having completed my day's work for 11/7/19]. I believe BLM should approve and proceed with permitting the largest generation station feasible at the present proposed location. The most effectively powerful turbines should be employed and the largest proposed number of them installed. I trust the Bureau to site the standards in the most environmentally sound configuration possible, considering the birds and bats which need to move safely through the area. I say please go ahead with focus on this hoped-for project!	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.
36.SP-1	I'm writing to tell you that there are many people in Catron County who very much support the Borderlands Wind Farm Project. As it should be ovbious, the people who show up at public meetings regrding such projects are much more likely to be opposed to it than supportive of it. In my role as a public servant in North Catron County, I hear from a much wider group of	Thank you for your comment. It has been noted and will be included in the administrative record for this EIS.

Comment ID	Comment on the Draft EIS	Response to Comment
	people, and I can tell you that there are far more supporters of wind-power farm project, and energy independence in general, than those who are opposed to it.	

APPENDIX H: BUREAU OF LAND MANAGEMENT NEW MEXICO STATE OFFICE GROUNDWATER IMPACT ANALYSIS

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Borderlands Wind Project Regional Geology and Estimated Aquifer Drawdown

J. Burgess-Conforti[1], C. Durr[2], D. Herrell[1]
1. Bureau of Land Management – New Mexico State Office
2. Bureau of Land Management – Las Cruces District Office

Location of Permitted Wells

Borderlands Wind, LLC (a subsidiary of NextEra Energy Resources, LLC) is proposing development of an up to 100-megawatt (MW) wind-powered electrical generation facility in western Catron County, New Mexico (NM). The Borderlands Wind Project (BLWP) would be built near the Arizona (AZ)–NM border south of U.S. Highway 60 (U.S. 60). Wind turbines and ancillary facilities, such as access roads, underground collection lines, and substation/switchyard areas, would be located on lands administered by the Bureau of Land Management (BLM) Socorro Field Office (SFO), New Mexico State Land Office (NMSLO)-owned lands, and privately owned lands.

Construction activities would require approximately 26 million gallons of water and would be pumped from an existing private well and conveyed through aboveground piping. Water rights would remain with the private well owner. A new 5- to 6- gal min^{-1} well would be drilled for operation and maintenance (O&M) water use with an estimated withdrawal at 140,800 gal yr^{-1}. These wells would be located at SE1/4, of Section 9, Township 2 South, Range 19W and NW1/4 of Section 4, Township 2 South, Range 19W. Figure 1 illustrates the approximate well locations and surface geology (Scholle, 2003).

Regional Geology and Aquifer Characteristics

Surface outcrops in the area are primarily Quaternary alluvium, Quaternary basalts, and Tertiary volcaniclastic sedimentary units of the Mongollan-Datil Section in the Carrizo Wash Basin within Catron County. The Mogollon-Datil Section (Osburn, 1983), previously referred to as the Datil Section (Fenneman, 1931), represents a transitional structural zone situated between the Colorado Plateaus physiographic province and the Basin and Range physiographic province, located south of Catron County. The Mogollon-Datil Section is characterized by volcanic rocks and features, such as necks, plugs, maars, dikes, cauldrons, and ash-flow tuffs and basalts (Basabilvazo, 1997). The geologic units of regional hydrologic interest, in ascending order, are

sedimentary rocks of Permian, Triassic, and Cretaceous age; sedimentary, igneous, and volcanic rocks of Tertiary age; bolson-fill and sedimentary rocks of Tertiary and Quaternary age; and Quaternary alluvial deposits. Jurassic rocks, Paleozoic rocks older than Permian age, and Precambrian rocks are not known to be of hydrologic interest in the county. Basabilvazo (1997) identifies well and spring records, as well as water-quality and chemical analysis records, for selected wells and springs in Tables 4 and 5 for Catron County. Aquifers in Catron County are present in the following units: (1) Quaternary alluvium, (2) Quaternary bolson fill, (3) Quaternary and Tertiary Gila Conglomerate, (4) Tertiary Bearwallow Mountain Andesite, (5) Tertiary Datil Group, (6) Tertiary Baca Formation, (7) Cretaceous Mesaverde Group, (8) Cretaceous Crevasse Canyon Formation, (9) Cretaceous Mancos Shale, (10) Cretaceous Dakota Sandstone, (11) Triassic Chinle Formation, and (12) undifferentiated Permian rocks. Ground water is not withdrawn from Jurassic, Pennsylvanian, or Precambrian units in the county (Basabilvazo, 1997).

Alluvial deposits in most of the Carrizo Wash Basin are underlain by Mesozoic sedimentary rocks or Tertiary volcaniclastic rocks (Basabilvaso, 1997). The thickness of alluvium in the valleys and canyons in this drainage basin probably does not exceed 100 feet (Galloway, 1968). However, the Salt River Project (1983) indicated that Quaternary alluvium may be as thick as 200 ft approximately 12 miles north of Quemado.

Alluvium is found in arroyos, washes, and stream channels. This alluvium is often terraced and consists of unconsolidated deposits of clay, silt, sand, and conglomerates. The texture of alluvium varies from clay and silt to conglomerates composed of gravel and boulders. New Mexico Office of the State Engineer (NMOSE) database contains well depth and water column thickness for 25 wells completed within approximately 5 miles of the permitted well locations. Data for these wells show an average well depth of 320 ft and average depth to water table of 105 ft below the surface. Some wells with deeper water levels may be completed in both the alluvial and underlying aquifer. Water levels in the alluvium can fluctuate seasonally depending on the volume of runoff and recharge. Sources of recharge to the alluvium include infiltration from perennial and ephemeral streams, precipitation, storm runoff, and possibly interaquifer movement. Alluvial aquifers probably recharge underlying bedrock aquifers. In general, ground water in the alluvial deposits in Catron County moves in the same direction as surface streams. Yields of ground water from the Quaternary alluvium in the county range from

1 to 375 gal min^{-1}. Water quality and water type are generalized in this section because data are insufficient to indicate ground-water quality in many of the localities that have alluvial deposits.

Ground water in the alluvium in the Carrizo Wash Basin typically is unconfined (Basabilvazo, 1997). However, confined conditions may exist at depth. Insufficient water-level data in the Carrizo Wash Basin do not allow determination of water-level trends. Many of the wells completed in the alluvium in the Carrizo Wash Basin are used for stock and domestic purposes. No community water-supply systems are known to derive water from the aquifer in the alluvium in this drainage basin (Basabilvazo, 1997). However, self-supplied domestic systems probably derive water from the alluvium.

The Salt River Project (1983) found that the alluvium could yield as much as 250 gal min^{-1} of water in the area around 4N.16W.30.240 for short periods of time. A 26-hour aquifer test was conducted in the alluvium near Frenchs Arroyo by the Salt River Project (1983) October 7 and 8,1983. The production well was cased to a depth of 177 ft below land surface and screened from 137 to 177 ft below land surface. Average transmissivity of the aquifer was determined to be 1,290 $ft^2\ d^{-1}$ (9,640 gal $d^{-1}\ ft^{-1}$), and the storage coefficient was 2.5×10^{-4}, indicating that the alluvial aquifer in the vicinity of 4N.16W.30.240 is probably confined.

Model Selection and Parameters

There are several models used for estimating aquifer drawdown from wells depending on the geologic conditions of the region. For unconfined aquifers, Theis (1935), Cooper-Jacob (1946), and Neuman (1974) are typically used for estimations of aquifer drawdown. For this project, Neuman (1974) was chosen due to the model's ability to account for delayed gravity responses. AQTESOLV was used to run the model which also incorporated computational enhancements from Moench (1993; 1996) which assisted with type curve calculations.

Neuman's model for unconfined aquifer drawdown estimation requires knowledge of aquifer transmissivity (T), elastic storage coefficient (S), specific yield (Sy), and the hydraulic conductivity anisotropy ratio (β). To date, there have been minimal aquifer tests performed in the region of the permitted wells which makes quantifying aquifer properties difficult. Data used in this model were retrieved from Basabilvazo (1997) who reported T values for three wells installed in Catron County alluvium, and Gallup aquifer tests recorded by the NMOSE. Aquifer drawdown for the permitted wells was calculated using five scenarios ranging from minimal

potential impact to maximum potential impact. The parameter estimates for each scenario are presented in Table 1. In the draft environmental impact statement, it was estimated that 26 million gallons of water would be used during 5 to 6 months of construction. For the purpose of estimating maximum impact, it was assumed that the 26 million gallons would be used during a 5 months period (equivalent to 173,333 gal d^{-1}).

Estimated Drawdown

At the well (0 ft), drawdown ranged from 8.96 to 45.65 ft for the minimum and maximum impact scenario, respectively (Figure 2). The impact of pumping is quickly reduced as evidenced by the reduction in drawdown from 8.96 to 45.65 ft at the well to 3.29 to 14.43 ft at 150 ft from the well. At 500 ft from the well, estimated aquifer drawdown ranged from 1.8 to 6.6 ft for the minimum and maximum impact scenario, respectively. One mile from the well, estimated aquifer drawdown is less than 0.001 ft for both minimum and maximum impact scenarios. There are two populated places adjacent to the permitted wells, Manuelito Place (2.6 miles away), and Red Hill (5.9 miles away). The results of these calculations indicate that there would be minimal impact on the aquifer in the vicinity of these populated places (Figure 3).

Table 1. Aquifer parameters for the Neuman (1974) solution for unconfined aquifers used in calculation of aquifer drawdown (T: transmissivity; S: storage coefficient; Sy: specific yield; β: hydraulic conductivity anisotropy ratio).

Drawdown Scenario		T (ft^2 d^{-1})[a]	S[b]	Sy[c]	β[d]
1	Highest Draw	563	0.0038	0.2	0.1
2		1290	0.0104	0.225	0.2
3		1765	0.017	0.25	0.3
4		1949	0.0235	0.275	0.4
5	Lowest Draw	2941	0.03	0.3	0.5

[a] T values acquired from NMOSE and Basbilvazo (1997)
[b] S values acquired from NMOSE
[c] Sy values acquired from Morris and Johnson (1967)
[d] Anisotropy values acquired from Todd (1980)

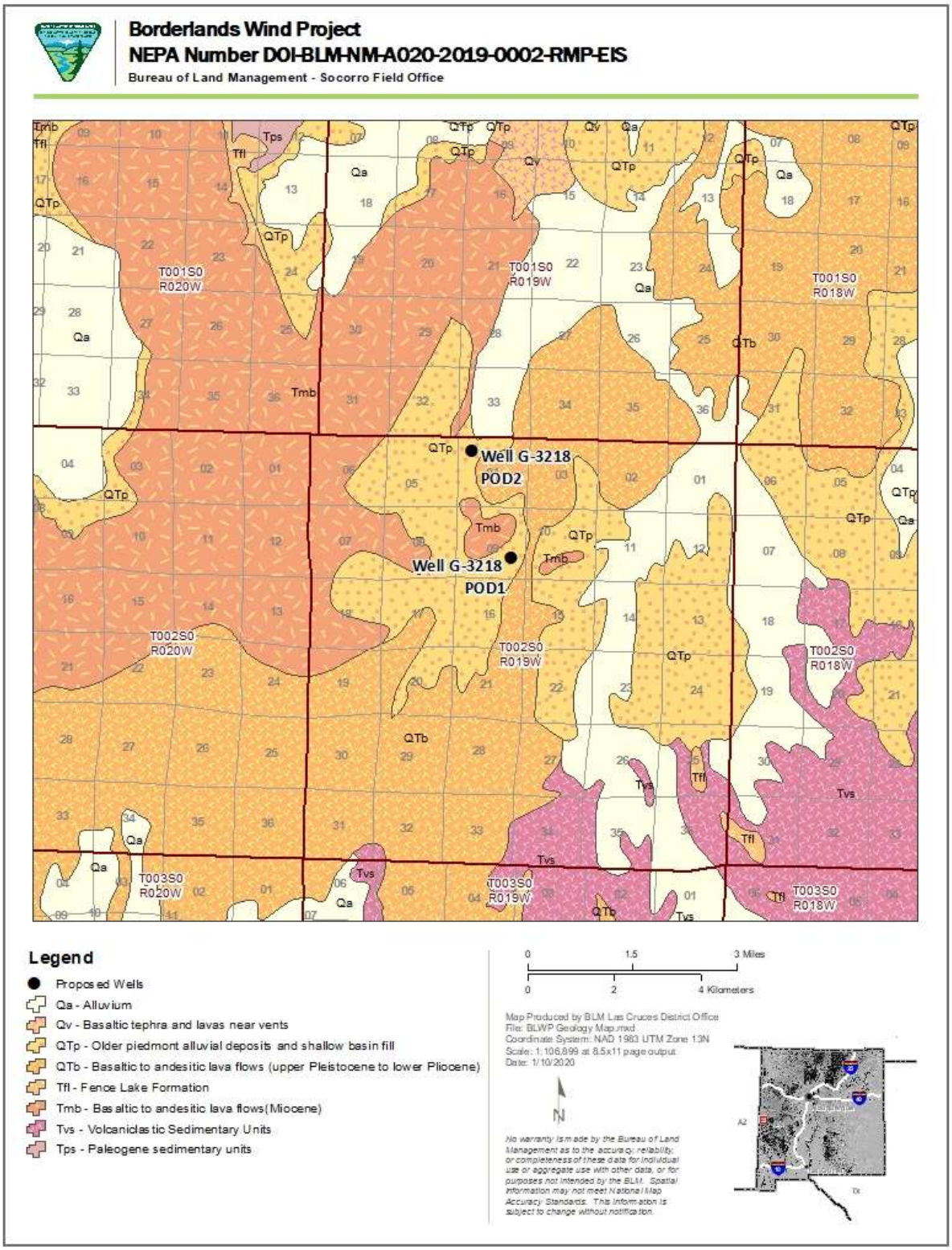

Figure 1. Map of permitted Borderlands Wind Project wells and surface geology in Catron County, NM.

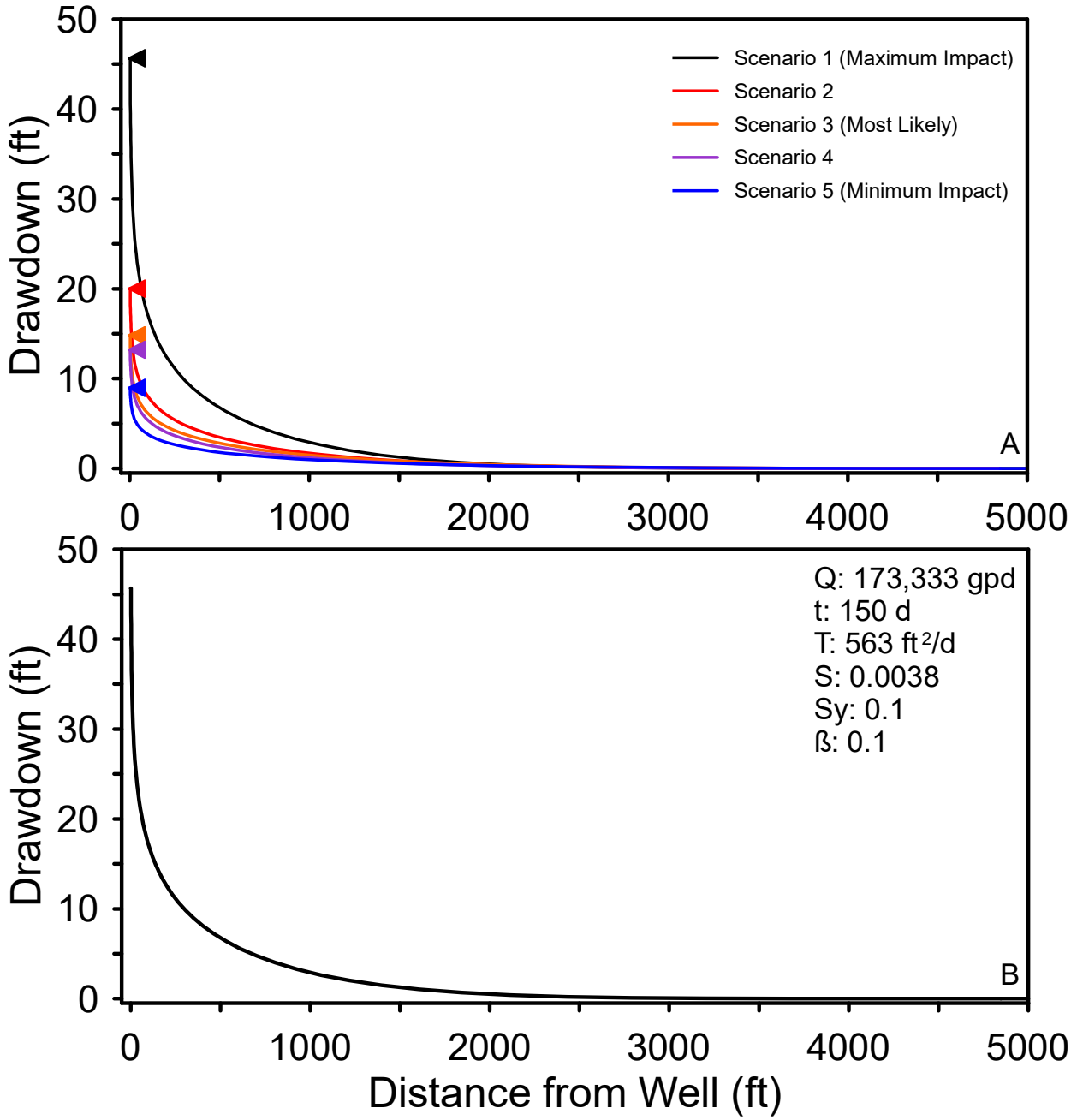

Figure 2. A) Five scenarios of aquifer drawdown for the permitted Borderlands Wind Project wells using the Neuman (1974) solution for unconfined aquifers. B) Estimated maximum impact of permitted wells.

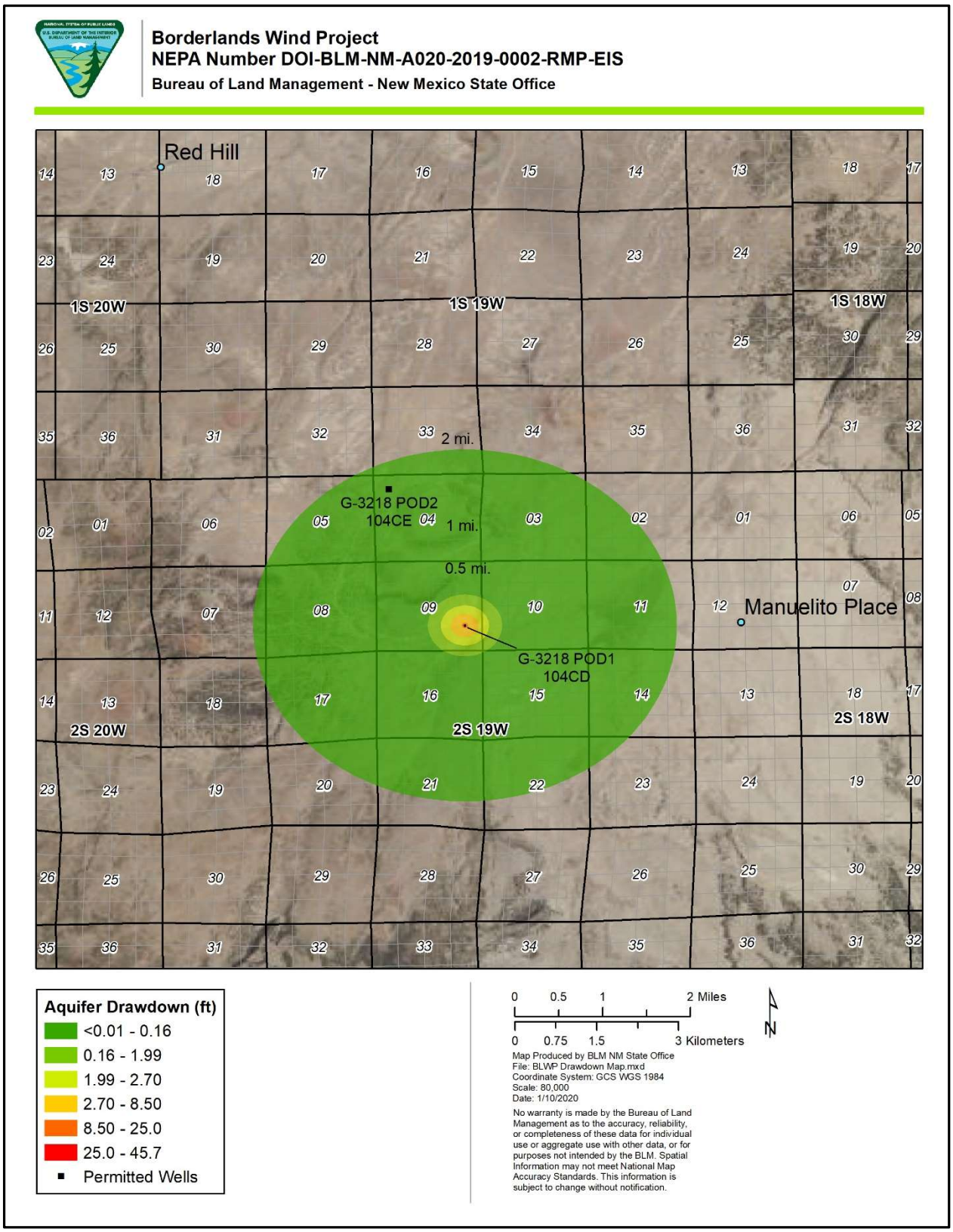

Figure 3. Estimated aquifer drawdown for well G-3218 POD1 (NMOSE #104CD) in Catron County, NM.

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