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

Lava Ridge Wind Project

Draft Environmental Impact Statement

January 2023

VOLUME 2b

Appendix 1. Plan of Development Appendices N through V (2 of 2)

Prepared by:

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

In Cooperation with:

National Park Service
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
State of Idaho
Jerome County
Lincoln County
Minidoka County

Mission

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

U.S. Department of the Interior
Bureau of Land Management
400 West F Street
Shoshone, Idaho 83352

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Lava Ridge Wind Project

Draft Appendix N: Historic Properties Treatment Plan

Magic Valley Energy, LLC

October 2022

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N-1 Purpose and Objectives

As described in Section 5.1.4 of the POD, MVE, its contractors, and all Project personnel must comply with federal and state laws and regulations. To ensure the Project complies with applicable rules and regulations, a Historic Properties Treatment Plan ("HPTP") will be developed and will incorporate applicable mitigation and monitoring actions as agreed upon and described in the Programmatic Agreement when it is complete.

N-2 Timeline and Best Management Practices

The fully developed HPTP will be prepared prior to construction. Until the full HPTP is developed, BMPs in consideration to inform the HPTP are listed below:

- MVE will coordinate with the BLM and/or tribes to avoid cultural resources to the extent practicable.
- Qualified archeologists with trained assistants will perform all work.
- Unexpected discovery of cultural or paleontological resources during construction shall be brought to the attention of the responsible BLM authorized officer immediately. Work will be halted in the vicinity of the find to avoid further disturbance to the resources while they are being evaluated and appropriate next steps are being developed.
- Avoidance areas will be marked prior to construction activities. Markings will be removed once construction is completed in an area.
- To minimize unauthorized collecting of archaeological material or vandalism to known archaeological sites, all workers will attend mandatory training on the significance of cultural resources and the relevant federal regulations intended to protect them.
- If human remains are discovered, construction will be halted and local law enforcement will be notified.

Lava Ridge Wind Project

Draft Appendix O: Dust and Emissions Control Plan

Magic Valley Energy, LLC

October 2022

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O-1 Introduction

The Dust and Emissions Control Plan ("DECP") provides an overview of methods to prevent, reduce, or mitigate the amount of fugitive dust in the ambient air as a result of Project activities. The DECP provides general information on the overall expectations for the Project. This plan will be approved by the appropriate state or federal agency and BLM prior to the BLM signing the Notice to Proceed ("NTP"). More specific fugitive dust control plans and mitigation measures may be developed should the NEPA analysis identify a potential significant resource impact.

O-2 Potential Dust Sources

The following on-site activities have been identified as having the potential for generating fugitive dust:

- Site grading
- Excavation
- Rock crushing
- Blasting
- Materials handling, conveyance, and transport within site boundaries
- Concrete batch plant operations and storage piles
- Vehicles and equipment driving on unpaved roads
- Roadway maintenance activities

O-3 Dust and Emissions Control

Construction of the Project facilities will cause a temporary and minimal increase in fugitive dust and air emissions from heavy construction equipment. Air quality control measures are intended to minimize fugitive dust and air emissions and to maintain conditions as free from air pollution as is practical. All requirements of those entities having jurisdiction over air quality matters will be adhered to and any permits needed for construction activities will be obtained by MVE/construction contractor. The construction contractor(s) will not proceed with any construction activities without taking reasonable precautions to prevent excessive particulate matter from becoming airborne and creating nuisance conditions.

O-3.1 Water

Where necessary, water will be used as a dust control method during the life of the Project and will be applied on unpaved roads, material stockpiles, and other surfaces that can create airborne dust. Water trucks will be the primary means of dust abatement during all phases of construction. Roads will be watered at intervals sufficient to control dust. Water spray will be controlled so that pooling will be avoided to the extent possible.

Construction water and water used for dust control will come from water sources permitted as part of the Project or other commercial sources identified by the construction contractor.

O-3.2 Timeline and Best Management Practices

The fully developed DECP will be prepared prior to construction. Until the full DECP is developed, BMPs in consideration to inform the DECP are listed below:

- Excessive exhaust emissions will be prevented by proper maintenance of vehicles and heavy equipment. Additionally, vehicles and heavy equipment will be shut off when not in direct use.
- Speed limit signs will be posted along access roads as necessary to reduce airborne fugitive dust. Controlling the vehicle speed limits throughout the Project will reduce dust emissions from loads and dust from the road. Construction activities will be monitored and if dust levels exceed acceptable standards, adaptive management will be employed, which could include watering travel surfaces and/or lowering the speed limit until dust is reduced.
- Tarps may be used as necessary on trucks and small stockpiles as temporary covering on high wind days. These coverings will be anchored down to prevent wind from removing them.
- Project roads that are subject to frequent use or are particularly susceptible to dust erosion may be improved through the application of gravel or aggregate mixtures, or may be treated with a chemical dust palliative such as magnesium chloride or other suitable compounds.
- Dust suppression techniques will be applied as necessary to prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas, along major highways and interstates, and near cultural and historic resources where required.

Lava Ridge Wind Project

Draft Appendix P: Construction Monitoring Plan

Magic Valley Energy, LLC

October 2022

Construction Monitoring Plan
for Sensitive Species
Lava Ridge Wind Project
Lincoln, Jerome, and Minidoka Counties, Idaho

Prepared for:

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October 2022

WEST

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INTRODUCTION

Magic Valley Energy (MVE) has proposed the development of the Lava Ridge Wind Project (Project) in Jerome, Lincoln, and Minidoka counties, Idaho. The Bureau of Land Management (BLM) has identified a number of plant and animal species listed as sensitive species in the BLM Shoshone Field Office that could be affected by the construction and operation of the Project. Numerous pre-construction surveys have occurred at the Project to identify occurrence of these species or their habitats. This Wildlife Construction Monitoring Plan will serve as a guide to avoid and minimize impacts to BLM-sensitive plant and wildlife resources identified during the baseline environmental surveys. Measures to avoid and minimize impacts to other wildlife species of concern are provided in the Bird and Bat Conservation Strategy and Eagle Conservation Plan developed for the Project.

An inventory of various resources has been conducted at the Project and infrastructure has been sited to avoid or minimize impacts accordingly. However, some situations may arise during construction that warrant additional minimization measures be implemented during construction activities to minimize impacts to sensitive species. Various species can be impacted differently and the extent or magnitude of impacts will depend on when, where, and what type of construction activity is expected to occur. Construction activities on BLM-managed lands are not expected to impact greater sage-grouse because these activities will occur outside of 3.1 miles of known leks (BLM 2015). In addition, construction activities are not expected to impact bats because no bat colonies (i.e., hibernacula, or maternity colonies) were identified within the Project during pre-construction studies. However, based on the pre-construction inventory (baseline) surveys, MVE proposes to conduct pre-construction surveys for the following sensitive species that could be impacted by construction activities: pygmy rabbits, nesting birds, nesting raptors, and BLM-listed sensitive plant species.

Prior to the BLM issuing a Notice to Proceed for the Project, this Wildlife Construction Monitoring Plan may be revised in coordination with the BLM and will be approved by the appropriate state or federal agency.

SENSITIVE SPECIES

The extent and magnitude to which each sensitive species may be affected by construction activities on BLM-managed lands will vary. Because of this variability, prior to construction, all potential habitat for sensitive species will be identified relative to planned disturbances. For some species, only a portion of potential habitat has been surveyed for presence or absence. Areas of potential habitat where absence has not been confirmed and areas previously un-surveyed will be targeted for construction clearance surveys. Surveys will be conducted using species-specific protocols agreed upon by the BLM to determine presence/absence, and will be conducted within the appropriate survey window for each species to the extent practicable based on the timing of issuance of the BLM right-of-way (ROW) grant for the Project and construction schedules. If

modifications to construction occur outside the species-specific windows, MVE will work with BLM to develop alternatives to minimize impacts to sensitive species.

Pygmy Rabbit

Pygmy rabbits are a sagebrush obligate species that could potentially occur within the Project. Historical records are limited to two confirmed observations, and no pygmy rabbits were observed during pre-construction studies for the Project (Idaho Department of Fish and Game [IDFG] 2020, McCormack and Rintz 2021). However, a desktop analysis of soil depth and vegetation cover identified portions of the Project as potential habitat (McCormack and Rintz 2021).

Trigger: Ground disturbing construction activities (i.e., trenching, blading, mowing) in areas of potential pygmy rabbit habitat not previously determined to be unoccupied (McCormack and Rintz 2021).

Action: Conduct presence/absence surveys within all proposed areas of disturbance that were not previously surveyed. Surveys may be conducted any time of year, with a preference for surveying in fresh snow conditions to the extent compatible with the construction schedule. Surveys will only be conducted within potential habitat as identified using the methods outlined in McCormack and Rintz (2021). The biologist(s) will walk meandering transects within proposed disturbance corridors to search for pygmy rabbit sign. Measurements of tracks, scat, and burrows will be used to confirm species presence. If signs are inconclusive, motion-activated cameras will be used to confirm species. If presence of pygmy rabbit is confirmed, the location of burrows and/or observed individuals recorded will be provided to MVE immediately.

Response: Avoid surface disturbance at identified burrows. If MVE determines avoidance is not feasible, taking into account project design considerations and construction schedule, construction will be allowed to proceed after coordination with and approval from the Authorized Officer, and flushing of individuals from burrows or relocation of individuals to suitable habitat will be considered and coordinated with the BLM.

Nesting Birds (Non-raptors)

Twenty-one bird species listed as BLM Sensitive Species in the Shoshone Field Office region have the potential to occur within in the Project, ten of which were recorded during baseline surveys for the Project. In addition, the Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, import and export of migratory birds, their eggs, parts, and nests. The definition of “take” has had various interpretations over the years; however, removal or disturbance of a nest that results in a failed breeding attempt has generally been considered take as prohibited by the MBTA. Vegetation clearing at the Project could potentially destroy bird nests during the nesting season, and construction activities near a nest can cause nest abandonment or failure. The provisions below are applicable only to BLM Sensitive Species and species protected by the MBTA.

Trigger: Ground disturbing construction activities conducted during the nesting season.

Action: Conduct clearance surveys in areas of proposed disturbance if disturbance of vegetated ground surface areas will commence between April 1 and July 31. Clearance surveys will be conducted by a biologist 2–4 weeks prior to planned construction activities. The biologist will survey the disturbance corridor prior to construction by walking and visually scanning for nests or sign of nesting birds. Songbird nests are typically more inconspicuous than raptor and large corvid nests, and are not as easily located by visual scans. However, songbirds exhibit certain behaviors that indicate they are nesting or feeding young. Winter et al. (2003) and Martin and Geupel (1993) discuss the cues and behaviors that indicate if a songbird is nesting, such as chirping; flushing but remaining close-by; or carrying nesting material, food, or fecal sacs in their bills. Biologists will use these behavioral clues to determine if an active nest is present in the vicinity, defined as recently built or tended nest with a defined cup, eggs, or young. When a bird is observed exhibiting these behaviors, the biologist will closely watch the individual in an attempt to locate the nest.

Care will be taken to avoid excessive disturbance and trampling of vegetation, stepping on the nest, and/or creating a path to the nest. If a suspected nest cannot be located within 10 minutes, the area will be marked and visited later that day or the next day. A nest should be left as soon as possible after data is collected. The species of bird will be identified using bird size, coloration, and/or vocalizations heard when the bird is flushed and from egg size, shape, and color, or from feathers left at the nest.

When an active nest is located, the nest will be mapped, a GPS point taken, and details of the nest (e.g., species, status) recorded on a data sheet. A marker (stick, lath, or flagging) will be left in the field to facilitate further monitoring of the nest. Nest markers will be placed 10 feet directly north of the nest, and nest markers will be as unobtrusive as possible to avoid attracting predators. Also, consideration needs to be given to land use of the Project (e.g., grazing) before deciding what type of marker to use. Once a nest has been located, a buffer zone will be established to protect the nest from disturbance due to construction. The buffer zone is an area around and including a nest where no construction traffic by humans or machinery will be allowed. The species and/or bird type will determine what size buffer is placed around the nest following buffer distances outlined in Appendix P-a. A buffer zone will be staked off or flagged such that it can be easily identified by construction personnel as a no-disturbance area. A minimal number of stakes will be used to decrease the perching opportunity for predatory birds.

Marked nests will be avoided during construction while the nest is active. Nests will be checked up to once per week to determine if they are still active. In some cases, nests can be checked from a distance by observing if a bird is present on a nest or if a bird is bringing food items to nestlings. Care will be taken to not flush the bird if at all possible. In other cases, nests may need to be checked at the nest and flushing of a bird may occur. Nests will not be approached if there are birds such as corvids in the vicinity (Martin and Geupel 1993); predatory birds will watch for cues as to where nests are located. When a nest is no longer active, nest marking sticks or flagging will be removed and the construction company notified that activities can resume within the nest buffer.

Response: Active nests will be marked/staked with the appropriate buffer and construction activities will not occur within the buffer until a biologist determines the nest is no longer active.

Breeding Raptors

Raptor nest surveys were conducted prior to construction, providing a baseline of species nesting within the Project. Four raptor species were confirmed nesting within the Project: red-tailed hawk, ferruginous hawk, great-horned owl, and burrowing owl, and five additional raptor species could potentially nest within the Project (McCormack et al. 2020a). Construction activities have the potential to disturb nesting raptors and limiting potential disturbance activities within certain distances of nests could minimize impacts. The nesting period and disturbance-free buffer varies for each species and is dependent on nest status (e.g., nesting activity present or absent). Buffers and nesting dates, developed based on regional BLM guidance, are provided in Appendix P-a. If MVE identifies a nest for which the listed buffer is not feasible, taking into account project design considerations and construction schedule, alternatives will be discussed and coordinated with BLM.

Trigger: Construction activities expected to occur within the recommended disturbance-free buffer of a known nest during the nesting season (as defined for each species).

Action: Survey known raptor nests where construction activities are planned within the species-specific buffer during the nesting season to determine occupancy. During nesting season within the buffers listed in Appendix P-a, nest surveys of known raptor nests will commence at least two weeks prior to the start of construction. Follow-up surveys will be conducted every two weeks during the nesting season to determine nest occupancy until nests are unoccupied or until construction activities are completed. All nests identified during pre-construction surveys that fall within the species-specific buffer of planned construction will be surveyed. The biologist will spend up to two hours at each nest as needed to make a determination of occupancy. A nest will be considered occupied if a pair of adults is observed near the nest, an adult is observed tending to or sitting on the nest, or young are observed. All nests will be surveyed from a distance using a spotting scope to minimize disturbance. MVE will be notified immediately of any occupied nests.

Response: Occupied nests will be flagged with the appropriate buffer and construction activities will only occur within the disturbance buffer under the following circumstances:

1) A biologist confirms the nest is no longer occupied (i.e., the nest has failed or young have fledged).

2) If construction cannot be avoided within these buffers, a biologist with stop work authority will be present during construction activities to monitor the nest for signs of agitated behaviors (i.e. emitting alarm calls, repeated flushing from the nest). If such behavior is observed, work will be stopped to avoid nest abandonment. Work will resume when the nest is determined to no longer be occupied.

Sensitive Plants

WEST reviewed public data records, including data from the Idaho Fish and Wildlife Information System (IFWIS), and consulted with a botanist at the BLM Shoshone Field Office (S. Seabrook-Sturgis) to identify plants listed as BLM sensitive plant species with the potential to occur in the Project Area (Flaig and McCormack 2020). Based on these resources, 11 BLM-listed sensitive plant species were identified to potentially occur within the Project:

- mourning milkvetch (*Astralagus atratus var. inseptus*)
- Picabo milkvetch (*Astralagus oniciformis*)
- Snake river milkvetch (*Astralagus purshii var. opiogenes)*
- ventana stickleaf (*Mentezelia congesta*)
- Booth's suncup (*Eremothera boothii*)
- hot springs phacelia (*Phacelia thermalis*)
- Bacigalup's downingia (*Downingia bacigalupii*)
- dwarf rush (*Juncus hemiendytus var. abjectus*)
- moss rush (*Juncus bryoides*)
- slender woolly-heads (*Psilocarphus tenellus*)
- water-thread pondweed (*Potamogeton diversifolius*)

None of the above species were confirmed within the Project area during the baseline sensitive plant surveys conducted for the Project in 2020, which sampled 10% of the proposed infrastructure area and included survey areas outside the Project area (Flaig and McCormack 2020). Picabo milkvetch (*Astragalus oniciformis)* was observed on two of the 23 transects surveyed, both of which were outside (north of) the Project area. Although no Picabo milkvetch populations were observed within the Project area, potential habitat for this species was observed within the Project during baseline botany surveys.

Trigger: Ground disturbing construction activities including driving, crushing, and blading in areas identified as potential habitat for BLM-listed sensitive plant species (Flaig and McCormack 2020).

Action: Pre-construction clearance surveys will occur for BLM-listed sensitive plant species where ground disturbance is planned within suitable habitat for BLM-listed sensitive plant species. . Any portion of the Project's footprint of disturbance that has already been surveyed for plants would not be re-surveyed for BLM-listed sensitive plant species. Surveys will consist of meandering transects conducted by qualified botanists capable of identifying plants listed as BLM Sensitive Species, at the time of survey and their habitats, within the appropriate buffers and distance between meandering transects required by the current BLM protocol at the time of survey. The timing of surveys will be determined in coordination with the BLM, with up to two rounds of surveys conducted to encompass the flowering and/or fruiting period for the BLM Sensitive Species that have the potential to occur in the Project area. If timing of the BLM ROW grant and the scheduled start of construction prevents clearance surveys from occurring within the appropriate window, MVE will consult with BLM to determine whether a habitat assessment or other survey methods may be applicable alternatives to presence/absence surveys.

Response: Avoid disturbance to known locations of BLM-listed sensitive plant species to avoid direct impacts. If MVE determines avoidance is not feasible, taking into account project design considerations and construction schedule, construction will be allowed to proceed after coordination with and approval from the Authorized Officer, and MVE will consider relocation of individuals per the direction of the BLM.

Saint Anthony Sand Dune Tiger Beetle

The St. Anthony sand dune tiger beetle is endemic to Idaho, and an isolated population is known to occur within the Dietrich Dunes along Highway 24, which bisects the Project (IDFG 2020). The species occupies sand dunes with sparse vegetation (<20% cover) and a surface sand layer of at least one meter thick (Bauer 1991). A habitat assessment conducted by WEST for the Project identified nine sand dunes within the Project area with suitable/good habitat (<20% vegetation cover), and 99 additional sand dunes with potential (poor to marginal) habitat (vegetation cover >20%) (McCormack et al. 2020b). Baseline surveys conducted for the Project in 2020 identified 18 St. Anthony sand dune tiger beetles and associated burrows, all of which were within 0.5 mile of historical observations from a 2011 survey (McCormack et al. 2020b). These results indicate the historically identified population remains. Project infrastructure was sited outside of historically occupied habitat.

Trigger: Project construction activities within 0.6 mile of occupied habitat and good habitat (as identified in McCormack et al. 2020b) for St. Anthony sand dune tiger beetle, where avoidance is infeasible.

Response: Occupied and good habitat (as identified in McCormack et al. 2020b) will be marked for avoidance. Where avoidance is not possible, field surveys would be conducted to determine if the habitat is occupied. Project construction would avoid any newly identified occupied habitat to the extent feasible. For construction activities located within 0.6 mile of occupied habitat and good habitat, silt fencing will be installed and maintained at the limits of ground disturbance to minimize the risk of dispersing beetles entering the work area. Existing roads located within 0.6 mile of occupied habitat and/or good habitat may be used and/or improved for construction activities if silt fencing is installed and maintained at the limits of disturbance associated with the segment of road located within the 0.6-mile buffer. New roads may be constructed and used within 0.6 mile of occupied habitat and/or good habitat if silt fencing is installed and maintained at the limits of disturbance associated with the segment of road located within the 0.6-mile buffer.

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Appendix P-a. Buffer Distances and Dates for Nesting Avian Species

Table A1. Species-specific buffer distances and nesting dates for avian species that may nest within the Lava Ridge Wind Project.*

Species	Active-Nest Buffer Distance [1]	Seasonal Buffer [1]
American Kestrel[2]	0.25 mile	April 1 – August 15
Burrowing Owl	0.25 mile	March 7 – August 7
Ferruginous Hawk	1.0 mile	March 15 – August 1
Golden Eagle	0.5 mile	January 1 to August 31
Great Horned Owl[2]	0.25 mile	December 1 – September 31
Red-tailed Hawk[2]	0.33 mile	March 15 – August 15
Short-eared Owl	300 ft	March 15 – July 15
Swainson's Hawk	0.25 mile	March 1 – August 31
Northern harrier[2]	0.5 mile	April 1 – August 15
Greater sage-grouse	300 feet	April 1 – June 30
Brewer's sparrow	75 ft	May 1 – Aug 7
Grasshopper sparrow	75 ft	May 1 – July 31
Loggerhead shrike	75 ft	April 23 – July 31
Long-billed curlew	75 ft	April 1 – July 15
Sage thrasher	75 ft	April 15 – August 5
Non-raptor, non-sensitive species[3]	30 ft	April 1 – July 31

[1] Nest buffer distances and nesting dates based on guidelines in BLM 2010 and BLM 2020, unless otherwise noted; seasonal buffer dates are estimates of nesting windows, activity restrictions will be placed around active nests regardless of date, until birds have fledged.

[2] Nesting dates for non-BLM sensitive species of raptor adopted from the U.S. Fish and Wildlife Service's Utah Field Office Guidelines for Raptor Protection (2002).

* Nest buffers may be adjusted in coordination with BLM or USFWS as applicable; for species not listed in this table, MVE will coordinate with BLM or USFWS, as applicable, to determine adequately protective buffer distances based on field conditions.

Lava Ridge Wind Project

Draft Appendix Q: Paleontological Resources Treatment Plan

Magic Valley Energy, LLC

October 2022

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Q-1 Introduction

This plan will be approved by the appropriate state or federal agency and BLM prior to the BLM signing the Notice to Proceed ("NTP"). As described in Section 5.1.4 of the POD, a review of the state geological map shows that the entirety of the Project area falls within the Quaternary to Eocene Continental Volcanic and Intrusive Rocks ("QTb") geological unit, comprised of flows and cinder cones of olivine tholeiite basalt and shallow basalt intrusives. These types of deposits are typically rated as Class 1 in BLM's Potential Fossil Classification ("PFYC") rating, suggesting that while possible, the potential for fossils to be present is very low.

Q-2 Purpose and Objectives

To ensure the Project complies with applicable rules and regulations, a Paleontological Resources Treatment Plan ("PRTP") will be developed and will include BMPs intended to control impacts to paleontological resources. The PRTP is expected to:

- Address the education of construction and operation staff and the public on unauthorized collection (or impact) to fossils on public land
- Provide a monitoring plan of Project ground-disturbing activities in areas of Quaternary-age alluvial and lacustrine (or playa) deposits
- Outline guidelines for the avoidance, assessment, and notification of discovered fossils during ground disturbing activities
- Outline guidelines for the preparation, identification, analysis, and curation of fossils that may be collected during monitoring
- Provide a framework for the final agency required paleontological monitoring report

Q-3 Timeline and Best Management Practices

The complete PRTP will be developed prior to construction. Until the full PRTP is developed, BMPs in consideration to inform the PRTP are listed below:

- MVE will avoid significant paleontological resources where micrositing provides opportunities for avoidance.
- If significant fossil materials are discovered during Project construction, all surface disturbing activities in the vicinity of the find will cease until notification to proceed is given by the authorized officer. The site will be protected to reduce the risk of damage to fossils and context. Appropriate measures to mitigate adverse effects to significant paleontological resources will be determined by the authorized officer.
- MVE will include the protocols for unanticipated discoveries and the consequences of unauthorized collection and destruction of fossils on public land in the construction worker training and operations staff training in accordance with the final PRTP.

Lava Ridge Wind Project

Draft Appendix R: Noxious Weed Management Plan

Magic Valley Energy, LLC

October 2022

Noxious Weed Management Plan for the Lava Ridge Wind Project

Jerome, Minidoka, and Lincoln Counties, Idaho

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WEST

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1.0 INTRODUCTION

Magic Valley Energy, LLC (MVE) is developing the Lava Ridge Wind Project (Project) in Jerome, Minidoka, and Lincoln counties, Idaho (Figure 1). At the request of MVE, Western EcoSystems Technology, Inc. (WEST) has prepared the following Noxious Weed Management Plan (Plan). The purpose of this Plan is to report the results of a baseline noxious weed inventory WEST conducted, provide guidance for controlling noxious weeds during Project construction, operation, and reclamation, and provide an overview of Best Management Practices (BMPs) that will be implemented for the life of the Project. Guidance and BMP's provided in this document will be incorporated into the Project's Environmental Compliance Monitoring Plan.

1.1 Study Area Location and Description

The Project will be developed on lands administered by the Bureau of Land Management (BLM) and is located approximately 20 miles (mi; 32 kilometers [km]) northeast of Twin Falls, Idaho (Figure 1). The Project area occurs in the Snake River Plain, an ecoregion primarily composed of grasslands and shrublands, with areas of exposed lava (basalt) fields. Dominant vegetation historically includes Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), Sandberg bluegrass (*Poa secunda*), Indian ricegrass (*Achnatherum hymenoides*), and bluebunch wheatgrass (*Pseudoroegneria spicata*). However, due to the multiple wildfires that have occurred throughout much of the Project area, grasslands are currently composed of a mix of native grass and forb species in addition to the introduced grasses used for post-fire soil stabilization and revegetation. Sheep (*Ovis aries*) and cattle (*Bos taurus*) grazing is the primary land use in the Project area, but irrigated cropland (center-pivot) surrounds much of the Project boundary and irrigation canals extend through portions of the Project.

2.0 NOXIOUS WEED REGULATIONS

2.1 State of Idaho

The Plants Division of the Idaho State Department of Agriculture (ISDA) has developed rules governing noxious weeds that apply to all public and private landowners and managers in Idaho (Idaho Administrative Procedures Act Section 02.06.09). The rules identify the noxious Weed species that have been officially designated by the Director as noxious weeds in the state of Idaho and prioritize management of noxious weed species by species designation.

The ISDA designates four categories of noxious weeds (Appendix R-a):

- 01. State Prohibited Genera Noxious Weeds—prohibits all plants and plant parts of the following genera (and their subtaxa): *Cytisus*, *Gensita*, *Spartium*, and *Chamaecytisus*.
- 02. Statewide Early Detection Rapid Response Noxious Weed List—any species on this list that are found to occur in Idaho shall be reported to ISDA within 10 days and shall be eradicated during the same season they are detected.

- 03. Statewide Control Noxious Weed List—a written plan shall be developed by the control authority for any weeds on this list encountered in Idaho; the plan shall specify active control methods to reduce known populations in five years or less. The plan shall be available to ISDA on request.
- 04. Statewide Containment Noxious Weed List—species identified on this list are known to occur in various populations throughout the state; efforts may be directed at reducing or eliminating new populations and managing known populations by an approved weed control methodology.

3.0 BASELINE NOXIOUS WEED INVENTORY

3.1 Methods

A baseline noxious weed inventory was conducted concurrently with BLM-sensitive plant species surveys. Three rounds of surveys were conducted, from April 15 to April 30, May 25 to June 30, and July 1 to July 30, 2022, to encompass the flowering and/or fruiting period for all sensitive species and noxious weeds that could occur within the Project. Transects were designed to cover at least 10% of the length of proposed corridors, which include turbine pads, laydown areas, maintenance buildings, buried transmission lines, and new proposed access roads or road improvements. As a practical means, 10% coverage was selected to further inform and assess the baseline ecological conditions across the Project site, as well as the probability of occurrence for those species identified herein. Transects were systematically selected using random placement of 0.9- mi (1.5-km) transects within 33 grids to ensure even distribution across the Project area. Surveys were conducted within a 200-foot (ft; 60-meter [m]) corridor centered on proposed infrastructure corridors based on the January 2021 Plan of Development (POD; Figure 1). The Project area was revised in a new POD issued in June 2021 and is included on all figures for reference.

Surveys were conducted using methods described in the Idaho BLM *Special Status Plant Survey and Clearance Protocols* (2017). Surveys were conducted using two parallel meandering transects located 50 ft (15 m) from each side of the 0.9-mi transect to survey the corridor width. All transects were surveyed twice, in April and early June. Based on the phenology of sensitive plant and weed species observed during the first two rounds of surveys, WEST and the BLM botanist determined a third round of transect surveys was not warranted and the July survey efforts were, instead, focused on aquatic resources. During the aquatic resources inventory, noxious weed populations were recorded when encountered in the Project area.

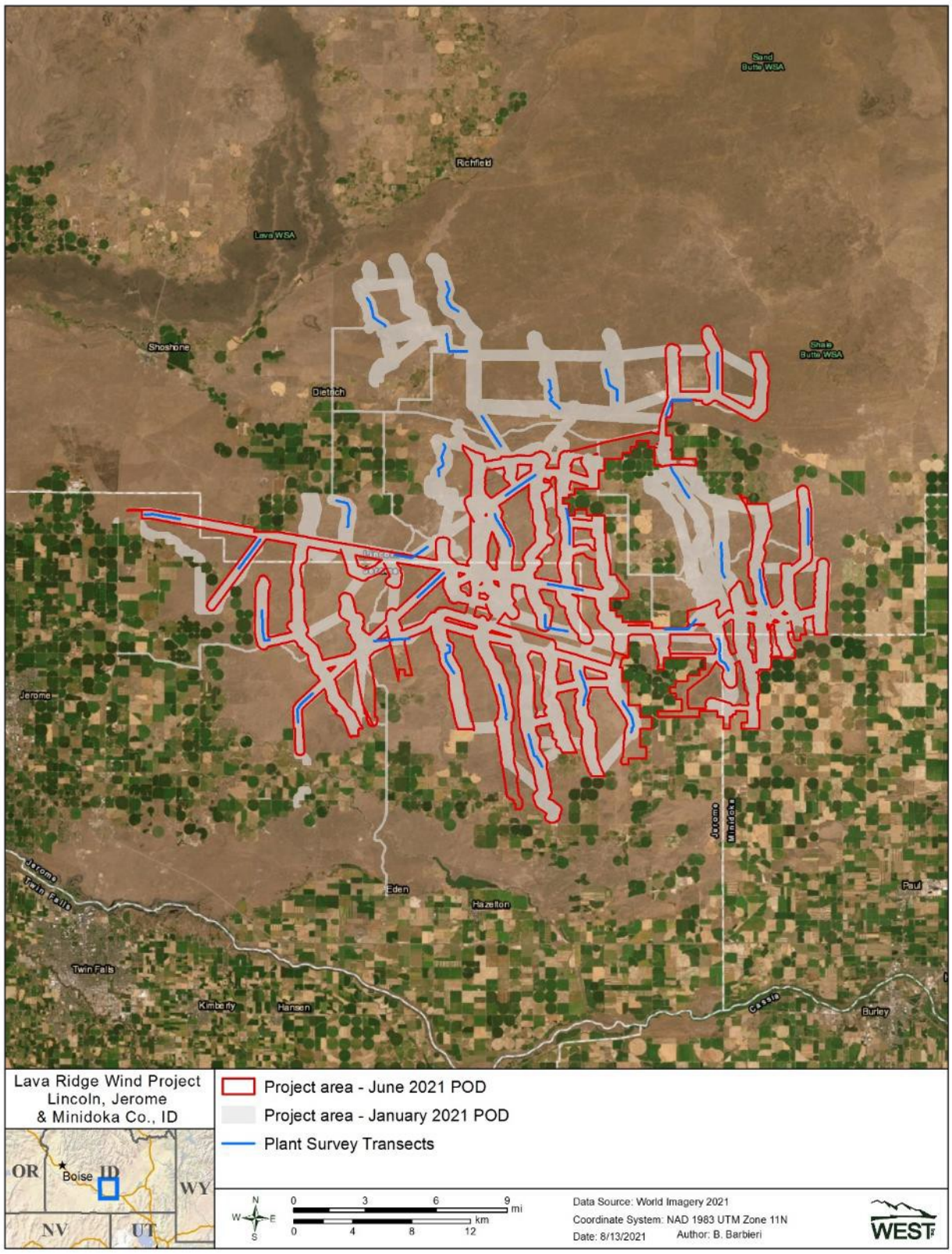

Figure 1. Location of the Lava Ridge Wind Project, Lincoln, Jerome, and Minidoka counties, Idaho.

33

Prior to conducting the field survey, WEST botanists reviewed potential habitat information, descriptions, and photographs for all Idaho noxious weed species on the ISDA and Idaho Weed Awareness Campaign (IWAC) lists. The boundaries of detected weed populations were mapped using a Global Positioning System (commonly, GPS) unit to delineate polygons, or, for larger populations, were recorded as a central point and patch size and digitized by hand on aerial imagery. Population size estimates were provided for all mapped noxious weed infestations. Representative photographs of weed populations were recorded.

3.2 Results

No noxious weed species designated as prohibited genera (ISDA 01 list) or designated for eradication (ISDA 02 list) were encountered within the Project area. Three noxious weed species designated for control (ISDA 03 list), black henbane (*Hyoscyamus niger*), musk thistle (*Carduus nutans*), and Russian knapweed (*Acroptilon repens*), were identified and mapped within the Project area (Table 1; Appendix R-b). Five noxious weed species designated for containment (ISDA 04 list) were mapped within the Project area, including Canada thistle (*Cirsium arvense*), scotch thistle (*Onopordum acanthium*), diffuse knapweed (*Centaurea diffusa*), field bindweed (*Convolvulus arvensis*), and rush skeltonweed (*Chondrilla juncea*; Table 1; Appendix R-b). All of the eight noxious weed species are included on the IWAC designated noxious weed list.

Rush skeletonweed was the most commonly encountered noxious weed species in the Project area. It was mapped along 32 of the 33 survey transects and was observed elsewhere throughout the Project area (Appendix R-b). Scotch thistle was observed along five survey transects and typically occurred in small patches less than 50 ft in diameter. The species was also mapped in six other locations within the Project area (Appendix R-b). Scotch thistle populations ranged from 30–300 individuals. Diffuse knapweed was observed along four transects and was mapped in two other locations within the Project area. Populations ranged from 25–150 individuals. Canada thistle and field bindweed were each mapped along four transects and in one other location elsewhere in the Project area. Canada thistle populations ranged between 30–200 individuals and field bindweed ranged from six to 50 individuals (Appendix R-b). Russian knapweed was mapped along two transects and in one other location in the Project area. Russian knapweed populations ranged from 75–250 individuals. Musk thistle and black henbane were each mapped in one location (off transect) in the Project area. Each population was estimated at 75 individuals.

The highest concentrations of noxious weed species were observed while traversing in or around agricultural fields bordering the Project area. The most common noxious weed species observed at these locations include Canada thistle, scotch thistle, field bindweed, rush skeletonweed, and musk thistle. These populations were not mapped as they were located outside the Project area boundary.

Maps depicting noxious weeds detected within the Project area are provided in Appendix R-b. Representative photographs of noxious weed species infestations observed within the Project area are provided in Appendix R-c.

Table 1. Noxious weed species encountered within the Lava Ridge Wind Project area.

Common Name	Scientific Name	ISDA Designation	Mapbook Page
black henbane	*Hyoscyamus niger*	03 control	18
musk thistle	*Carduus nutans*	03 control	34
Russian knapweed	*Acroptilon repens*	03 control	9,12,27
diffuse knapweed	*Centaurea diffusa*	04 containment	5,14
Canada thistle	*Cirsium arvense*	04 containment	6,11,22,34
scotch thistle	*Onopordum acanthium*	04 containment	1,2,4,7,10,14,18,30
rush skeletonweed	*Chondrilla juncea*	04 containment	1-28,30-35
field bindweed	*Convolvulus arvensis*	04 containment	6,22,28,34

ISDA = Idaho State Department of Agriculture.

4.0 GUIDANCE FOR CONTROLLING NOXIOUS WEEDS

The intent of this management plan is to assist MVE in controlling noxious weeds within the Project area while complying with state noxious weed management regulations. The primary objectives of the Plan are to prevent the introduction of new noxious weed populations during the operation of the Project and to eliminate or contain the spread of existing noxious weed populations on site through the life of the Project up to and including reclamation.

4.1 Priority Species

All of the identified noxious weeds mapped in the Project area are considered priority species within the state of Idaho. Rush skeletonweed was the most prevalent species identified within the surveyed areas, and may continue to spread into new areas prior to project construction. Preventing spread of this species into new areas as a direct result of the Project will be a primary goal of BMPs developed during construction and for the life of the Project. Priority will also be given to all noxious weed populations that occur within and adjacent to the footprint of disturbance, as the populations in these areas will have the greatest potential for spread and/or expansion. Priority areas will be identified for treatment and monitoring when a Project layout has been finalized.

4.2 Recommended Management Techniques

Effective control of noxious weeds will utilize an integrated management approach, using both mechanical and chemical treatments, as applicable and feasible. A brief description of growth and reproduction for each of the eight noxious weed species found within the Project, as well as recommended control techniques, are discussed below. In addition, Table 2 provides an overview of mechanical and/or herbicide treatments that are recommended by the IWAC for each species. All herbicides in Table 2 are approved for use on BLM lands and will be used only in accordance with their registered uses and within the limitations imposed by the Secretary of the Interior (BLM 2019). Recommendations in this section were used as a guidance for developing control techniques outlined in Section 4.4.

4.2.1 Black Henbane

Black henbane is a biennial plant (i.e., 2-year life cycle) that grows up to four feet tall. It reproduces by seed. Depending on the size of the infestation, black henbane can easily be controlled with hand-digging. Care should be taken to dig at least two inches (five centimeters [cm]) below the soil surface. Chemical control can be obtained using Telar or Escort, with a good surfactant (IWAC 2021). Recommended timing for treatment is during the early rosette to bud stage.

4.2.2 Musk Thistle

Musk thistle is a tap-rooted biennial that reproduces solely by seed. Rosettes typically form in early spring and plants bolt from March through May. An individual plant can produce up to 20,000 seeds that can remain viable for up to 10 years. Small infestations of musk thistle can be controlled by hand-digging to a soil depth of at least four inches (10 cm) to ensure the plant will not resprout. Milestone or Chaparral are very effective in controlling musk thistle. Tordon 22K, Curtail, Telar XP, and Escort XP are also effective herbicides (IWAC 2021).

4.2.3 Russian Knapweed

Russian knapweed is an introduced, long-lived, creeping perennial that can grow up to 36 inches (91 cm) tall. It reproduces primarily vegetatively from root buds, but is capable of reproducing by seed. Because Russian knapweed spreads by root shoots, mechanical control methods are not recommended. Chemical treatment is the most successful control method and recommended herbicides include Milestone, Curtail, Transline, and Telar DF (IWAC 2021).

4.2.4 Diffuse Knapweed

Diffuse knapweed is an annual (and sometimes biennial) plant with a short taproot that typically grows to about 24 inches (61 cm). It reproduces solely by seed, which can germinate in the spring or fall and can be dispersed via the plant breaking off at the root crown and tumbling across the landscape. Small infestations can be controlled with mechanical methods including pulling and digging, but continued monitoring is recommended as plants can produce a large seed bank. Recommended herbicides include any within the Pyridine family (e.g., Tordon 22K, Milestone, or Curtail; IWAC 2021). Dicamba-based herbicides can be used in the early season, but Roundup and 2,4-D are not recommended.

4.2.5 Canada thistle

Canada thistle is a deep-rooted perennial that can reproduce by seed and by its extensive underground root system. An individual plant can produce up to 1,500 seeds that can remain viable in the soil for up to 20 years. It often forms dense patches that crowd out other vegetation. Its reproductive capabilities make Canada thistle extremely difficult to control, and eradication is often not a viable option for large infestations. Mechanical control methods are not recommended as they may create root fragments and stimulate root growth. Herbicides that have been found to be successful include Tordon 22K, Curtail, and Milestone, and Transline (IWAC 2021).

Herbicides can be applied in the spring (while in rosette stage), mid-summer (during early bud stage), or in the fall after the first killing frost. Grazing by cattle, sheep, or goats can be effective in the spring when plants are young and succulent, but it is recommended that grazing be followed up with a fall herbicide treatment.

4.2.6 Scotch thistle

Scotch thistle is a biennial or short-lived perennial that can grow up to 12 ft (four m) tall. It reproduces solely by seeds, which can germinate year round. For smaller infestations (less than 0.5 acre [0.2 hectare]), tilling, hoeing, and digging are effective control methods for scotch thistle. Care should be taken to ensure removal of the root crown. Milestone is a recommended herbicide and should be applied when the plant is in the rosette to early bolt stage (spring/early summer) or on fall rosettes.

4.2.7 Rush Skeletonweed

Rush skeletonweed is an introduced, perennial plant that currently infests several million acres in Idaho (IWAC 2021). Basal leaves form a rosette and often wither as the flowering stem develops. Stem leaves are minute and inconspicuous. Mechanical control of rush skeletonweed is not recommended, as the plant has a deep root system that is difficult to remove or destroy. Recommended herbicides include Milestone, Opensight, Transline, or Tordon 22K. These are most effective when applied in the fall or early spring; however, once the plant has bolted and the basal leaves have withered there is little leaf surface area available for translocation of the chemical (IWAC 2021).

Rush skeletonweed was mapped on 32 of the 33 survey transects and was observed elsewhere throughout the Project area. Because it is ubiquitous within the Project area and surrounding region, and it occurs at fairly high densities within the Project, eradication of rush skeletonweed is not considered practicable, and only the Weed Management Practices in Section 4.4 are applicable to this species.

4.2.8 Field Bindweed

Field bindweed is a perennial plant with an extensive root system. It often climbs on other plants or forms dense tangled mats. Eradication of bindweed is difficult due to its long, deep taproot, extensive rhizomes, and seed viability extending up to 50 years. Mechanical control methods are not recommended as they typically do not remove all the root system, which can extend to depths up to 20 ft (six m). Herbicide treatments are recommended while plants are still growing and before they are drought stressed, or in the fall after the first frost. Translocating herbicides such as Method (Bayer), glyphosate, and dicamba are the most effective.

Table 2. Noxious weed species identified within the Lava Ridge Wind Project and recommended mechanical and herbicide treatments (Idaho Weed Awareness Campaign 2021).

Noxious Weed Species	Mechanical Control Methods	Recommended Herbicides
Species Designated for Control		
Black Henbane	Hand-digging to two inches below soil effective	Telar or Escort
Musk Thistle	hand-digging to four inches below soil effective for small infestations	Milestone or Chapparral best, Curtail or Telar XP also effective
Russian Knapweed	not recommended	Milestone, Curtail, Transline, or Telar DF
Species Designated for Containment		
Diffuse Knapweed	not recommended	Milestone, Curtail, or Tordon 22K
Canada Thistle	not recommended	Milestone, Curtail, Tordon 22K, or Transline
Scotch Thistle	hand-digging and tilling effective for small infestations	Milestone
Rush Skeltonweed	not recommended	Milestone, Opensight, Transline, or Tordon 22K
Field Bindweed	not recommended	Method, glyphostae, and dicamba

4.3 Revegetation Recommendations

Revegetation efforts completed during interim and final reclamation as outlined in Appendix E of the POD will help prevent establishment and spread of noxious weed infestations within areas disturbed by the Project. Additionally, revegetation may be necessary in areas where noxious weed eradication methods have been implemented. Similar to post-reclamation revegetation, post-eradication revegetation would help prevent establishment and spread of noxious weed infestations within areas affected by noxious weed eradication via methods such as digging or glyphosate application. Such revegetation methods are specified below.

4.3.1 Seeding Techniques

The success of any seeding method is largely dependent on soil temperature and soil moisture. In portions of Idaho with average annual precipitation less than 12 inches (30 cm; e.g., Lava Ridge Project area), a late fall seeding, late enough that seeds do not germinate until the following spring, is recommended (University of Idaho [UI] Extension 2007). Exceptions to fall seeding include sites that are located on heavier soils (i.e., clay to clay loams) and sites where winter annual weeds (e.g., cheatgrass [*Bromus tectorum*], medusahead rye [*Taeniatherum caput-medusae*]) are present (UI Extension 2007). Ament et al. (2014) recommend either fall or spring seeding, but emphasized that fall seedings should be late enough to preclude fall germination and spring seedings during the wet season can be problematic for accessing sites with equipment. Drill seeding is the most effective method for revegetation where slopes and soils and suitable, but may not be feasible in all areas of the Project. Descriptions for the most commonly used reseeding methods are provided below.

4.3.1.1 Drill Seeding

Benefits of drill seeding include proven high revegetation rates, good control of seeding depths and rates, and high seed to soil contact (Ament et al. 2014). Drill seeding is not recommended for slopes greater than 3:1 and for extremely rocky areas. Drill seeding also results in having rows of vegetation, which can persist for years and create a greater potential for competition between

emerging seeds within rows (Colorado Parks and Wildlife [CPW] 1995, US Department of Transportation [USDOT] 2017).

4.3.1.2 Broadcast Seeding

Broadcast seeding is often the least expensive method of seeding. Seedbed preparation is key to successful broadcast seeding. Harrowing/raking of the soil is critical both before and after seeding to create good seed to soil contact and to achieve appropriate seeding depths (CPW 1995). Broadcast seeding can be used on steep slopes, rocky areas, and inaccessible areas. Broadcast seeding typically requires double to triple the seeding rate of drill seeding (CPW 1995, USDOT 2017).

4.3.1.3 Hydroseeding

The main benefits of hydroseeding are the ease of application and the ability to reach areas that may be inaccessible to drill seeding. To maximize good germination, it is recommended to apply seeds during the initial pass over the site and cover with hydromulch on a second pass. Hydroseeding in the fall increases establishment rates, as over-wintered seeds will be ready to germinate on the first warm days of late winter or early spring (USDOT 2017). Hydroseeding results can be less satisfactory than broadcast and drill seeding because the hydroseeding slurry provides a diminished seed to soil contact, and, thus, lower seed germination.

4.3.2 Seed Mix

MVE will coordinate with the BLM botanist to develop an approved seed mix for the Project. Based on monitoring of 17 study sites throughout Idaho, Ament et al. (2014) reported that seed mixes with 10 species or less had a greater proportion of species establishment (than mixes with greater than 10 species). A Project-specific seed mix will help ensure native plants are actively growing throughout the growing season to benefit pollinator species and reduce opportunities for noxious weeds to establish and spread.

4.4 Weed Management Practices

4.4.1 Preventative Measures

Prevention measures can be one of the most cost-effective and ecologically viable methods for noxious plant species control. MVE is committed to noxious weed control within the Project area as detailed in this section. To achieve this goal, it is necessary to promote and establish a growing environment that encourages a healthy native plant community while preventing the introduction of new noxious weeds and containing the spread of existing weeds on site. In an effort to control noxious weeds, and simultaneously providing a measure of control for invasive plant species, MVE will implement the following BMPs as applicable during all phases of construction, operation, and reclamation:

- Minimize ground disturbance and revegetate as much disturbed area as possible
- Develop a weed-resistant seed mix for restoration of temporarily disturbed areas by using a combination of native grasses and forbs; incorporate pollinator plant species

- Use certified weed-free mulch
- Employees and subcontractors will be required to clean equipment, machinery and vehicles that disturb soil or vegetation prior to entry to the Project. Cleaning is defined as removal of all dirt, grease, plant parts and material that may carry seeds or plant material from tires, tracks, belly plates, undercarriages, etc. Cleaning may occur at laydown yard areas, designated cleaning station locations, or commercial car wash facilities.
- Equipment, machinery, and vehicles may be inspected prior to entry onto BLM-managed lands
- Where practicable, avoid or minimize travel through or parking in areas infested with noxious weeds to avoid spreading seeds or plant parts
- During construction and reclamation, MVE will maintain portable wash stations for vehicles and equipment, strategically placing them at staging areas or designated entrance/exit locations
- Preferentially salvage topsoil only from locations dominated by native vegetation; avoid known noxious weed infestation areas when salvaging topsoil to the maximum extent practicable
- Store salvaged topsoil in a manner to discourage weed establishment, e.g., by covering, mulching, or stabilizing with weed-free seed
- If additional topsoil is needed, locally sourced topsoil would be preferred. If imported topsoil is needed, MVE will use a BLM-approved source
- Discourage weed establishment at Project-related storage and staging yards through regular site inspections and herbicide applications, subject to the appropriate approvals
- Training of on-site staff will be conducted during Project operation to help identify noxious weed species for successful long-term vegetation management

4.4.2 Treatment Methods

MVE will implement noxious weed control measures in accordance with existing regulations and jurisdictional land management agency agreements. Before construction, only herbicides that are approved by the respective State and the BLM will be applied to any identified weed infestations on public lands to reduce the spread or proliferation of weeds. MVE will comply with applicable Federal and State Laws and regulations concerning the use of herbicides and other similar substances in all activities/operations. Prior to the use of herbicides, MVE will obtain from the BLM a written approval of a Pesticide Use Plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary. Herbicides will not be permanently stored on public lands, and applicator(s) will hold a current applicator's license or be under the direct supervision of a licensed applicator. MVE will provide an annual report to the BLM to report type and quantities of herbicides applied to public lands. In addition to control of noxious weeds, approved herbicides will also be used where bare ground is maintained to prevent overgrowth of

Project infrastructure in accordance with Appendix E of the POD. Post-construction treatment will include one or more of the following methods:

- Use of equipment to mow or disc noxious weed populations within previously disturbed areas
- Use of herbicides as listed in Table 2 as a means of reducing the size of noxious weed populations and prevent spread within and adjacent to Project roads and infrastructure
- Reseeding of treated areas with an approved seed mix to re-stabilize soils and discourage re-establishment of noxious weeds.

4.5 Post-construction Noxious Weed Monitoring

Post-construction monitoring completes the Project cycle by providing insight on noxious weed control efforts implemented during Project construction and restoration of construction areas. For three years post-construction, MVE will monitor priority areas and all areas of the Project included in the baseline survey to allow pre- and post-construction infestation levels to be compared. Annual monitoring may require two site visits by a botanist to capture noxious weed species in rosette and bolting stages (spring/early summer) and during fall regrowth. A memorandum reporting the results of the monitoring and providing management recommendations will be prepared after the annual monitoring is completed for the 3-year period. MVE will continue to implement noxious weed BMPs for Project activities through the lifetime of the Project. In addition, MVE staff will be provided training to identify and report noxious weeds.

5.0 REFERENCES

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Appendix R-a: Idaho Noxious Weed Lists

Appendix R-a-1. Statewide Eradication List (02).

Common	Scientific
Brazilian elodea	*Egeria densa*
Common frogbit	*Hydrcharis morsus-ranae*
Fanwort	*Cabomba caroliniana*
Giant salvinia	*Salvinia molesta*
Feathered mosquito fern	*Azolla pinnata*
Hydrilla	*Hydrilla verticillata*
Squarrose knapweed	*Centaurea triumfetti*
Iberian starthistle	*Centaurea iberica*
Policeman's helmet	*Impatiens glandulifera*
Syrian beancaper	*Zygophyllum fabago*
Water hyacinth	*Eichhornia crassipes*
Tall hawkweed	*Hieracium piloselloides*
Variable-leaf milfoil	*Myriophyllum heterophyllum*
Water chestnut	*Trapa natans*
Purple starthistle	*Centaurea calcitrapa*
Yellow devil hawkweed	*Hieracium glomeratum*
Giant hogweed	*Heracleum mantegazzianum*
Yellow floating heart	*Nymphoides peltata*

Appendix R-a-2. Statewide Control List (03).

Common	Scientific
Black henbane	*Hyoscyamus niger*
Bohemian knotweed	*Polygonum x bohemicum*
Buffalobur	*Solanum rostratum*
Common crupina	*Crupina vulgaris*
Common reed	*Phragmites australis*
Dyer's woad	*Isatis tinctoria*
Eurasian watermilfoil	*Myriophyllum spicatum*
Giant knotweed	*Polygonum sachalinense*
Japanese knotweed	*Polygonum cuspidatum*
Johnsongrass	*Sorghum halepense*
Matgrass	*Nardus stricta*
Meadow knapweed	*Centaurea debeauxii*
Mediterranean sage	*Salvia aethiopis*
Musk thistle	*Carduus nutans*
Orange hawkweed	*Hieracium arauntiacum*
Parrotfeather milfoil	*Myriophyllum aquaticum*
Perennial sowthistle	*Sonchus arvensis*
Russian knapweed	*Acroptilon repens*
Scotch broom	*Cytisus scoparius*
Small bugloss	*Anchusa arvensis*
Vipers bugloss	*Echium vulgare*
Yellow hawkweed	*Hieracium caespitosum*

Appendix R-a-3. Statewide Containment List (04).

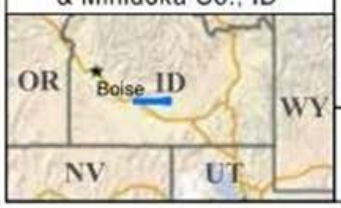
Common	Scientific
Canada thistle	*Cirsium arvense*
Curlyleaf pondweed	*Potamogeton crispus*
Dalmation toadflax	*Linaria dalmatica* ssp*. dalmatica*

Appendix R-a-3. Statewide Containment List (04).

Common	Scientific
Diffuse knapweed	*Centaurea diffusa*
Field bindweed	*Convolvulus arvensis*
Flowering rush	*Butomus umbellatus*
Perennial pepperweed	*Lepidium latifolium*
Hoary alyssum	*Berteroa incana*
Houndstongue	*Cynoglossum officinale*
Jointed goatgrass	*Aegilops cylindrica*
Leafy spurge	*Euphorbia esula*
Milium	*Milium vernale*
Oxeye daisy	*Leucanthemum vulgare*
Perennial pepperweed	*Lepidium latifolium*
Plumeless thsitle	*Carduus acanthoides*
Poison hemlock	*Conium maculatum*
Punctur evine	*Tribulus terrestris*
Purple loosestrife	*Lythrum salicaria*
Rush skeletonweed	*Chondrilla juncea*
Saltcedar	*Tamarix* spp.
Scotch thistle	*Onopordum acanthium*
Spotted knapweed	*Centaurea stoebe*
Tansy ragwort	*Senecio jacobaea*
White bryony	*Bryonia alba*
Whitetop (hoary cress)	*Cardaria draba*
Yellow flag iris	*Iris pseudacorus*
Yellow starthistle	*Centaurea solstitialis*
Yellow toadflax	*Linaria vulgaris*

Appendix R-b: Maps Depicting Locations of Noxious Weed Populations Mapped within the Lava Ridge Project Area

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



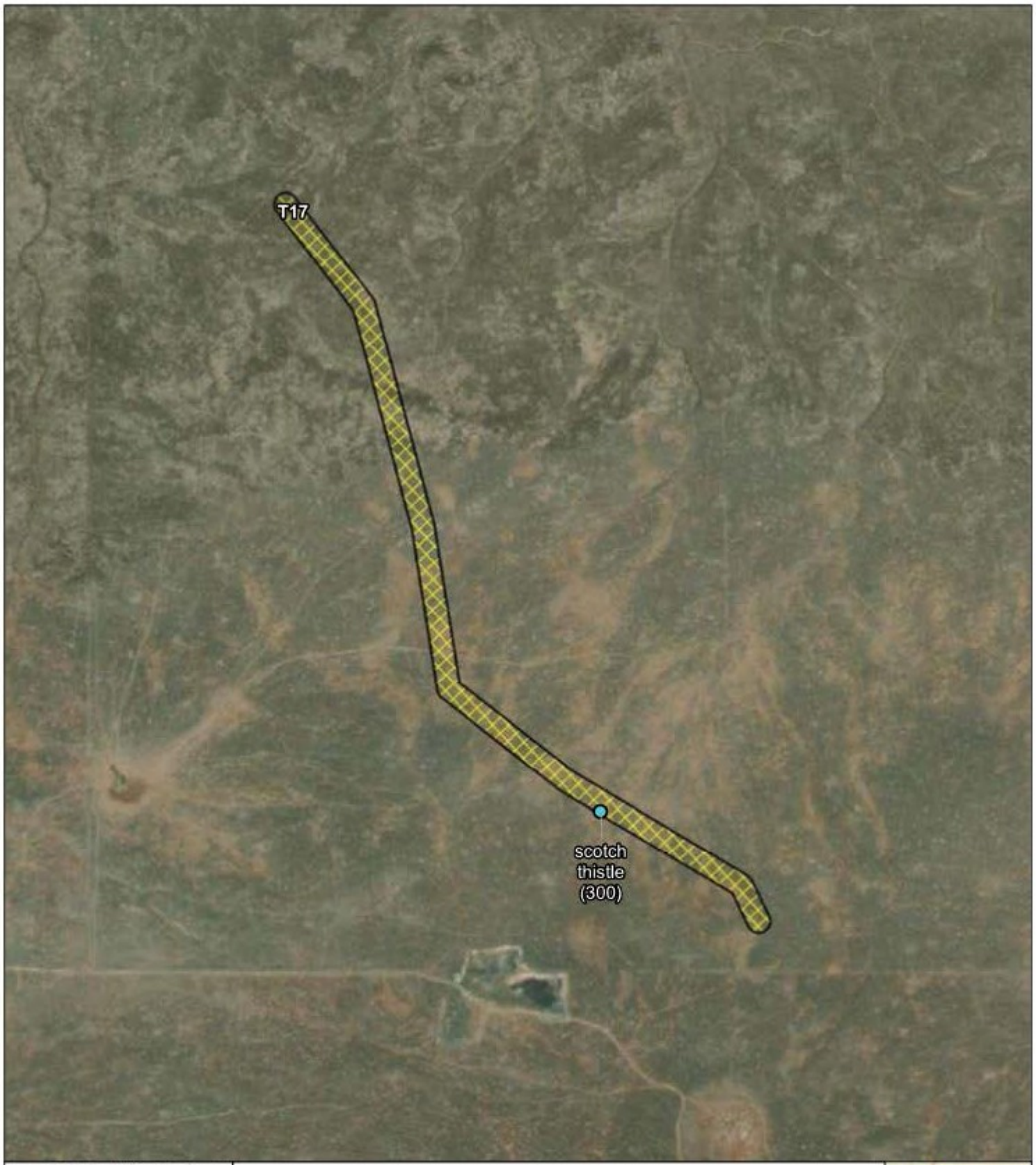
Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
scotch thistle

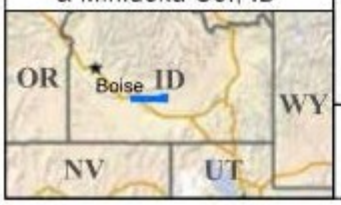
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome & Minidoka Co., ID



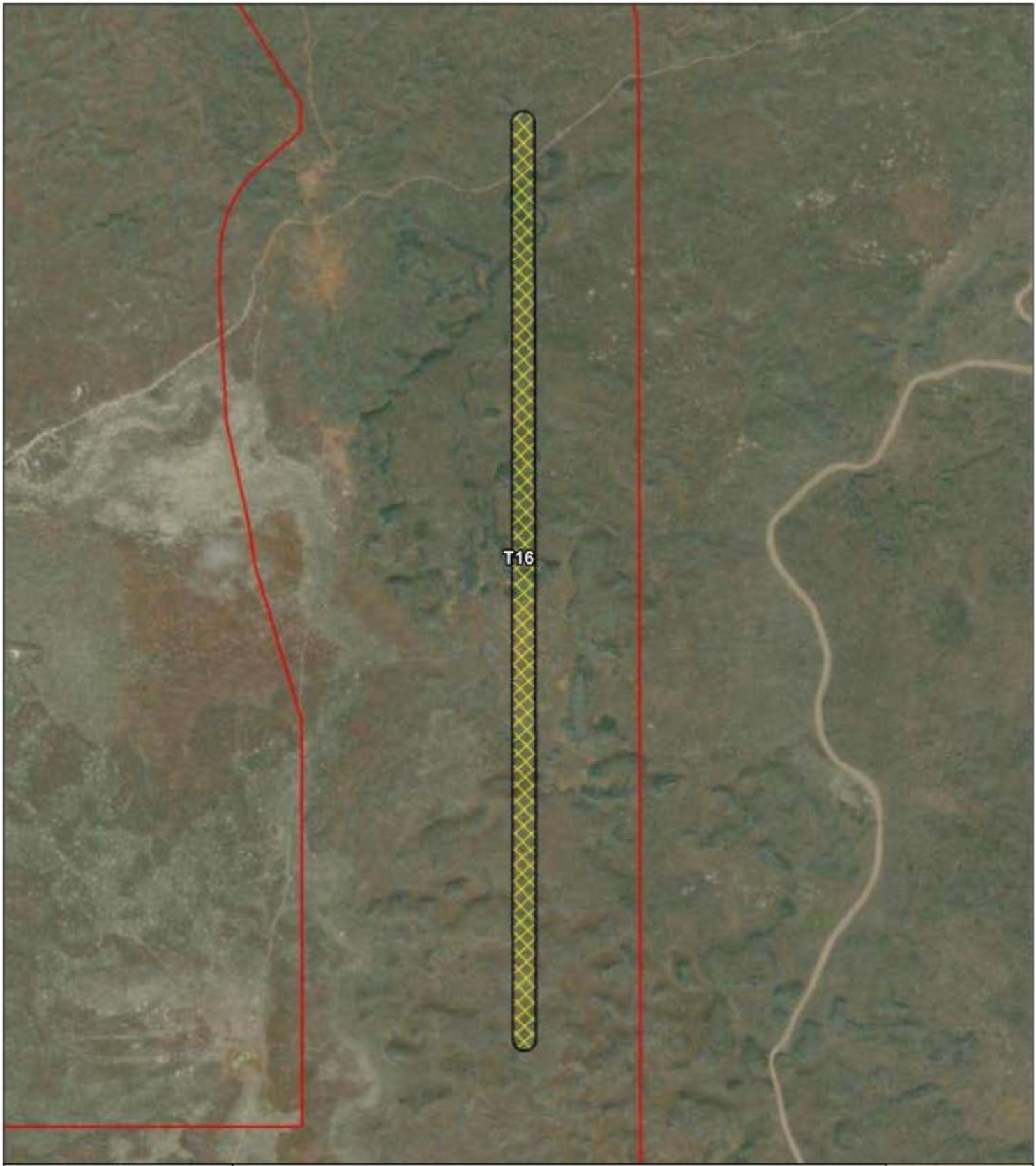
Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
scotch thistle

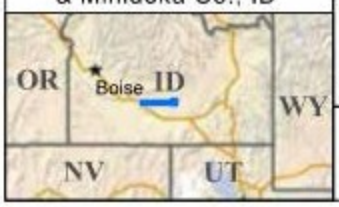
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

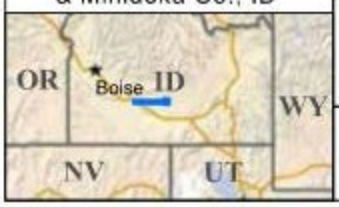
rush skeletonweed

(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

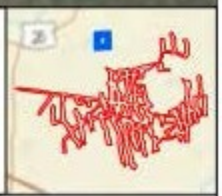
Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
scotch thistle

(parentheses indicate population size)

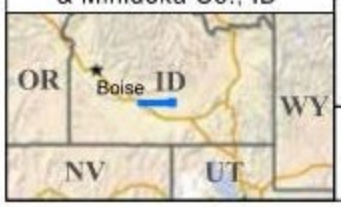


N W E S
0 0.35 mi
0 0.55 km

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

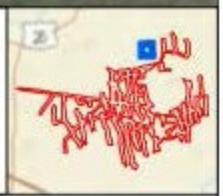
Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
diffuse knapweed

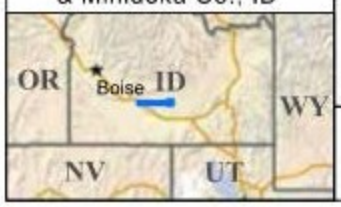
(parentheses indicate population size)



Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

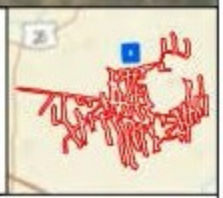
Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Transect Buffer (200-ft diameter)

Noxious Weed Survey
- rush skeletonweed
- Canada thistle
- field bindweed

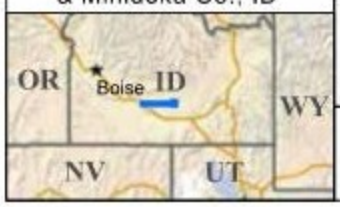
(parentheses indicate population size)



Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome & Minidoka Co., ID



Project Boundary
Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
scotch thistle

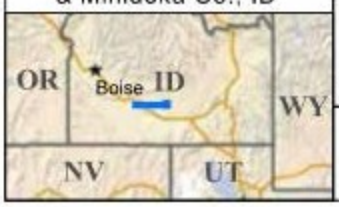
(parentheses indicate population size)

N W E S
0 0.35 mi
0 0.55 km

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID

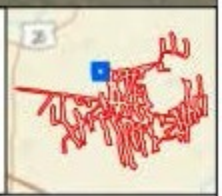


Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

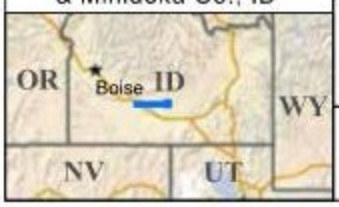
(parentheses indicate population size)



Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

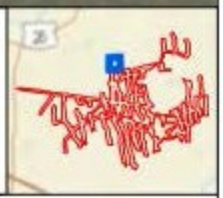
Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

Russian knapweed

(parentheses indicate population size)



N W E S

0 0.35 mi

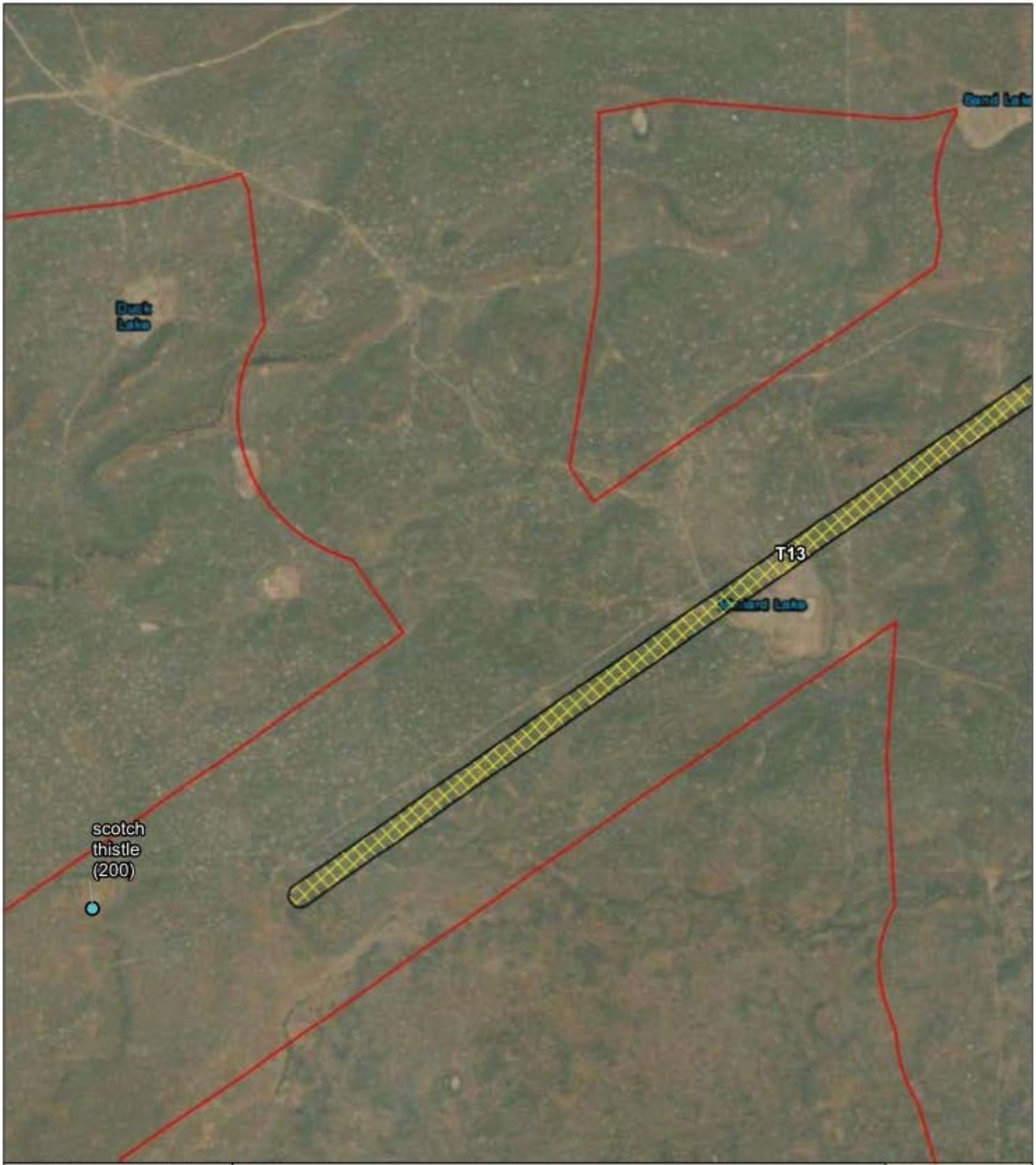
0 0.55 km

Data Source: USDA NAIP 2021

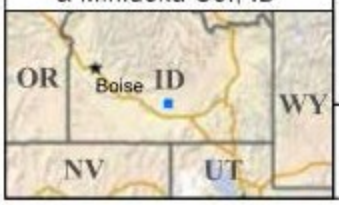
Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome & Minidoka Co., ID



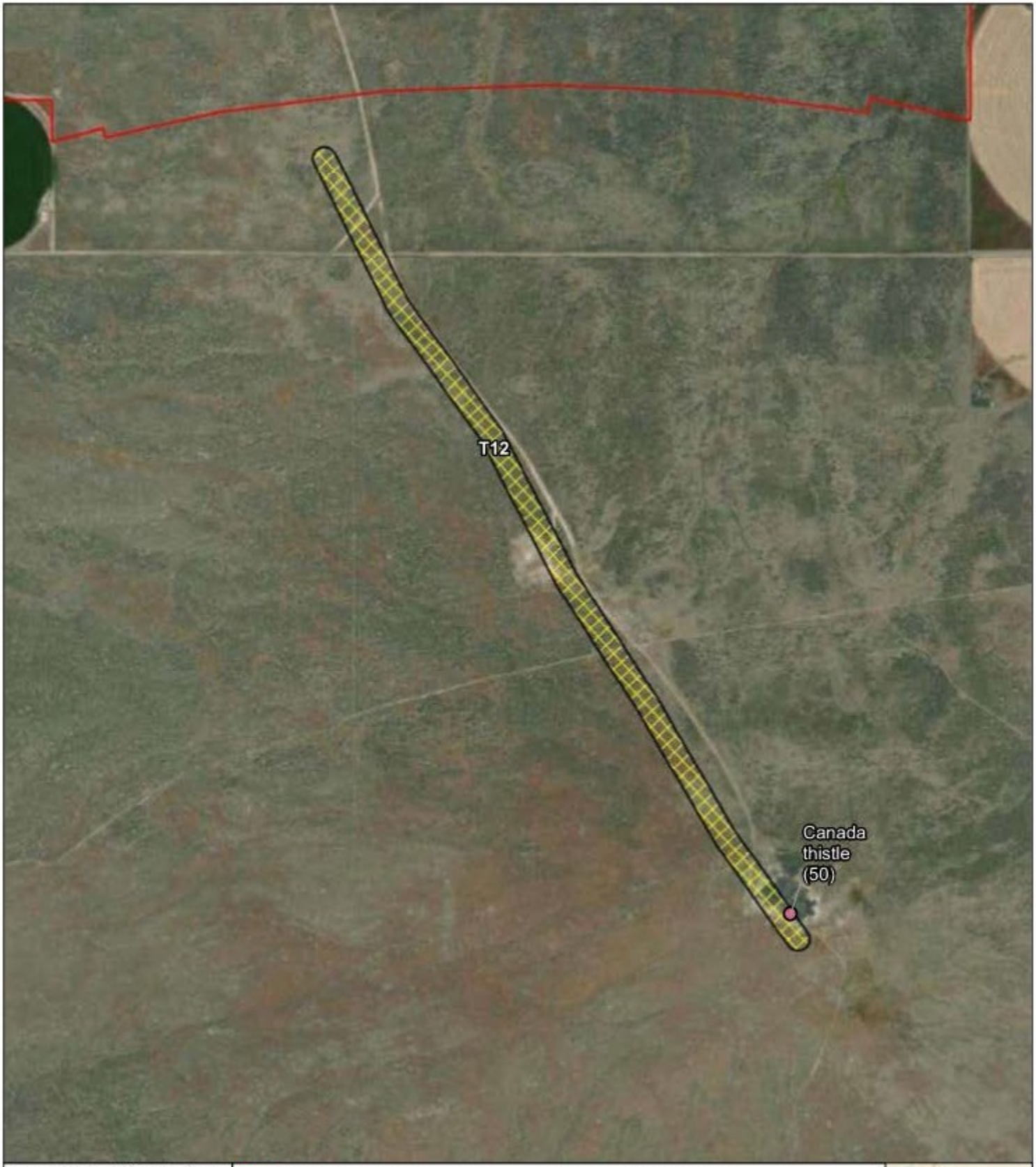
Project Boundary
Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
scotch thistle

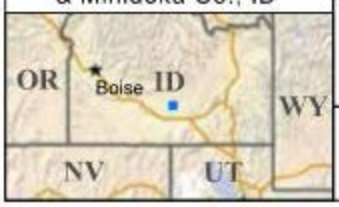
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



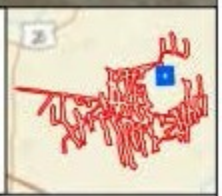
Lava Ridge Wind Project
Lincoln, Jerome & Minidoka Co., ID



Project Boundary
Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
Canada thistle

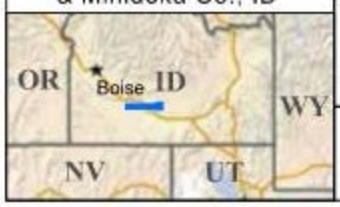
(parentheses indicate population size)



Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

Russian knapweed

(parentheses indicate population size)

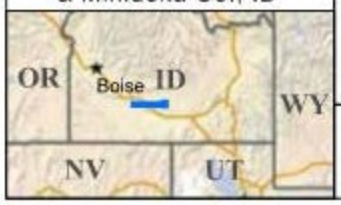
Data Source: USDA NAIP 2021

Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Transect Buffer (200-ft diameter)

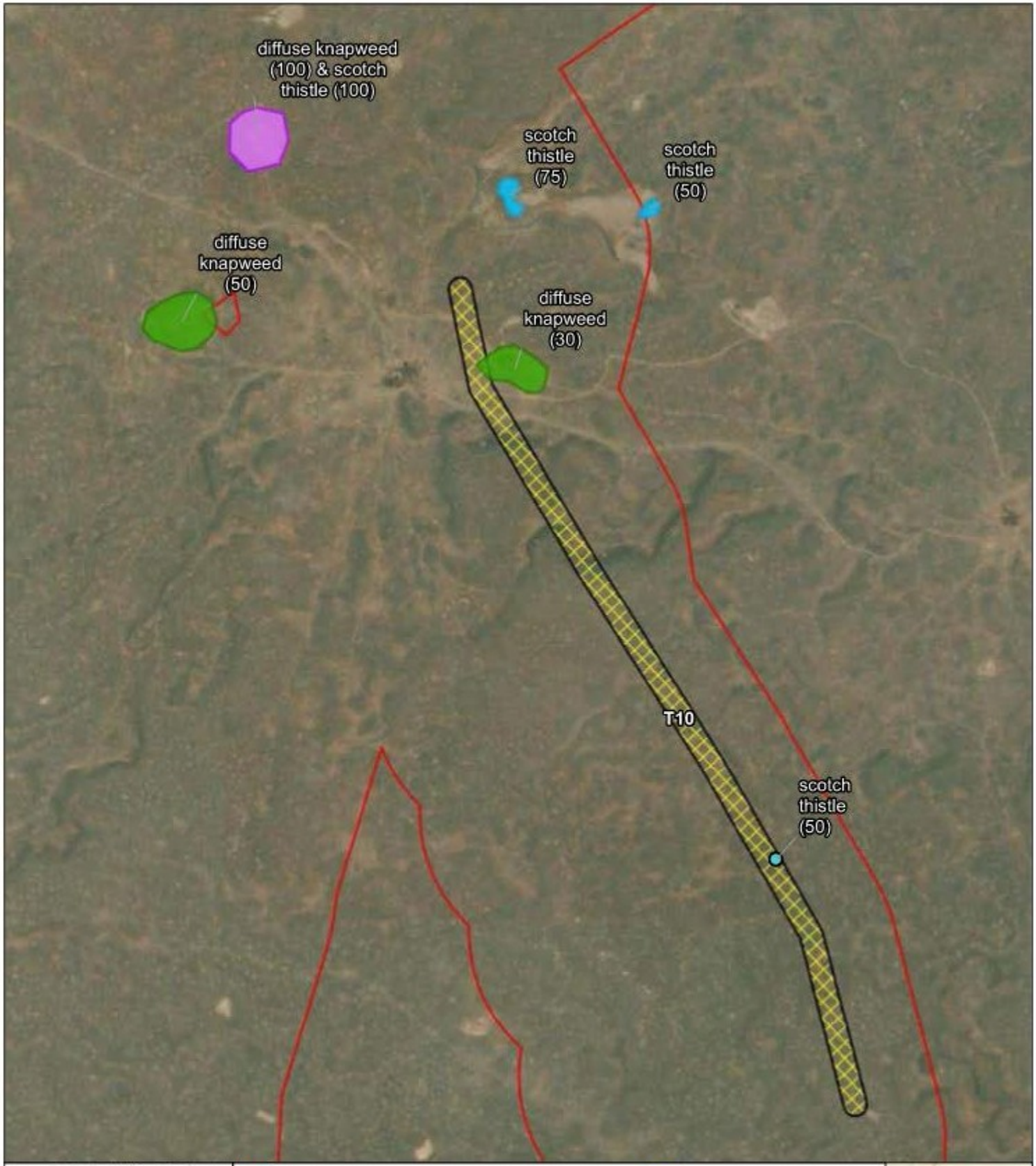
Noxious Weed Survey

rush skeletonweed

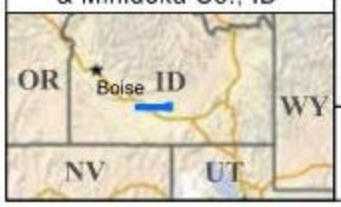
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary
Transect Buffer (200-ft diameter)

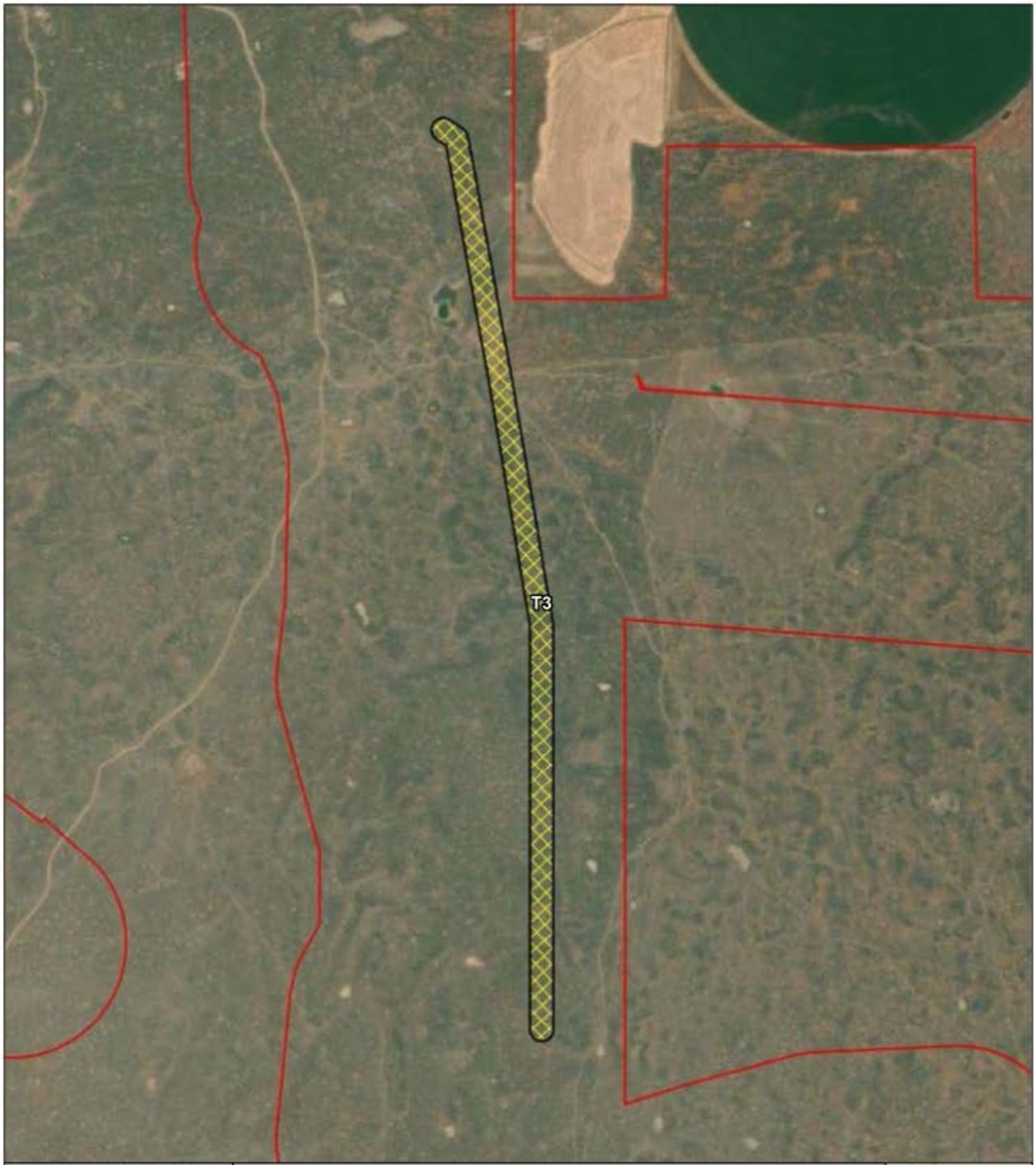
Noxious Weed Survey
rush skeletonweed
diffuse knapweed

diffuse knapweed & scotch thistle
scotch thistle
scotch thistle

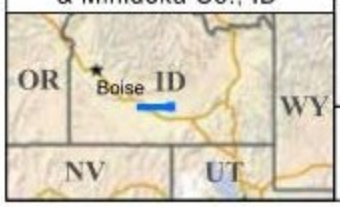
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

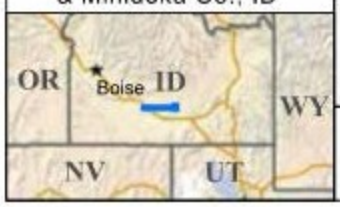
rush skeletonweed

(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



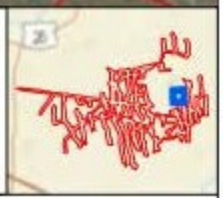
Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

(parentheses indicate population size)

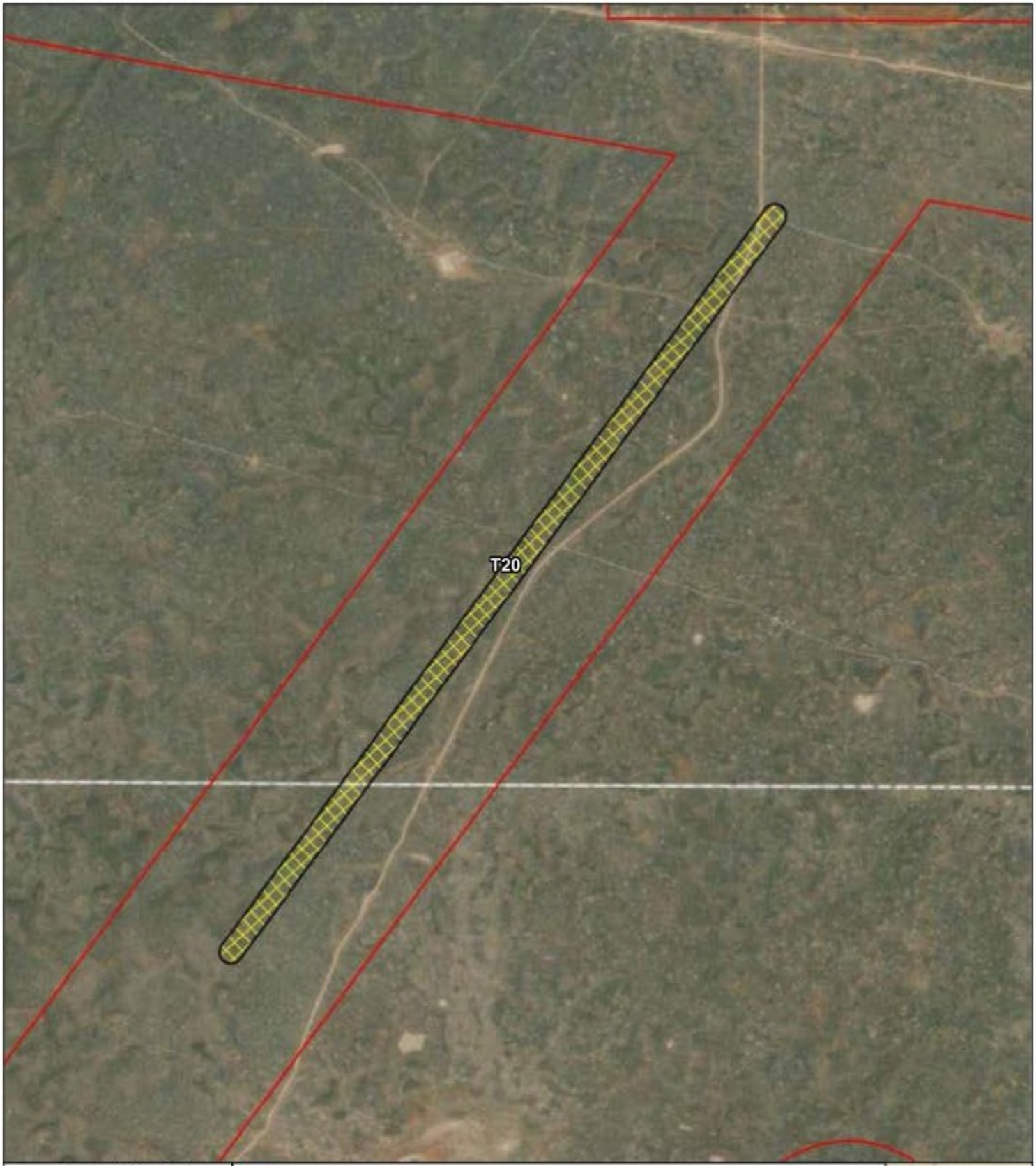


Data Source: USDA NAIP 2021

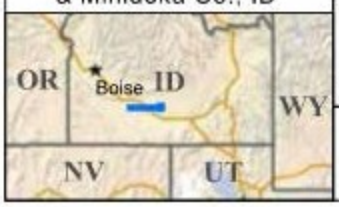
Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

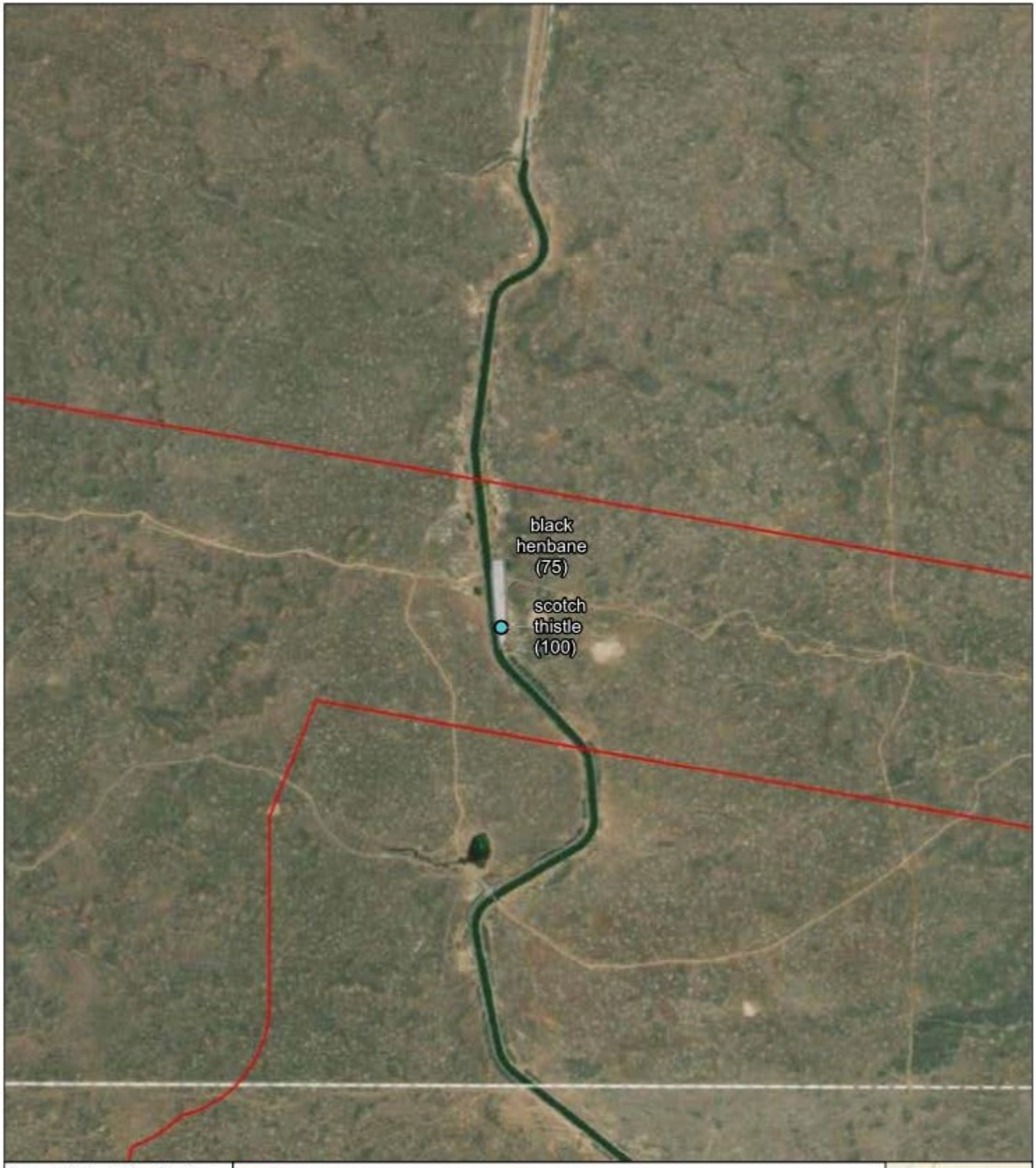
Noxious Weed Survey

rush skeletonweed

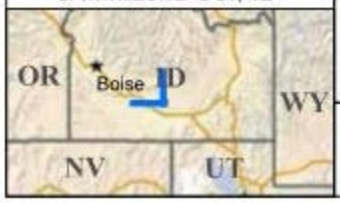
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Noxious Weed Survey

black henbane

scotch thistle

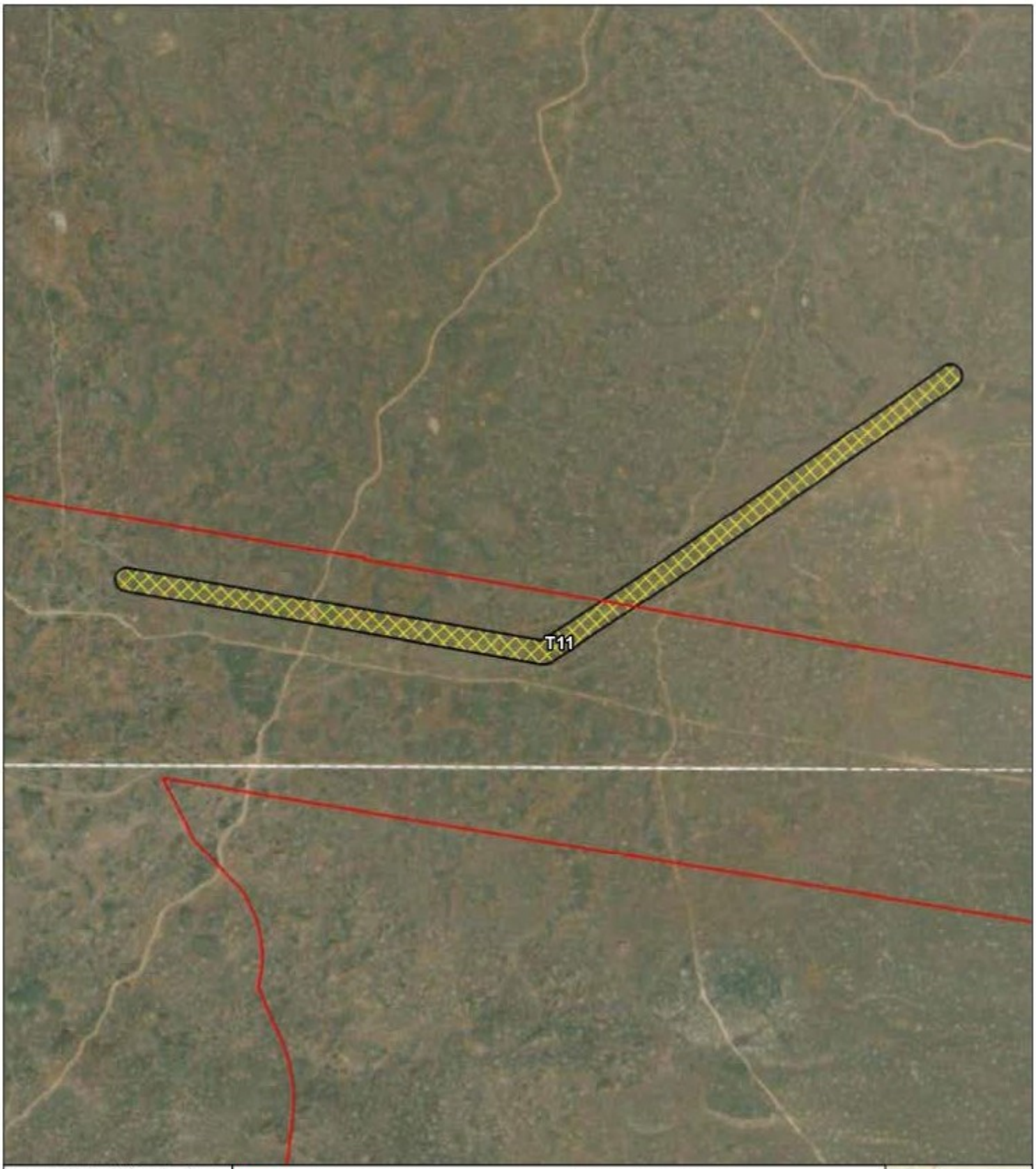
(parentheses indicate population size)

N
W E
S

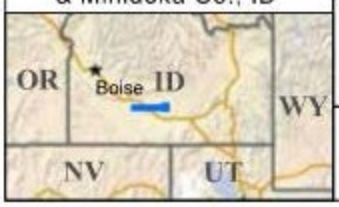
0 0.35 mi
0 0.55 km

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



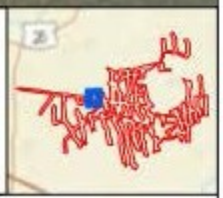
Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

(parentheses indicate population size)



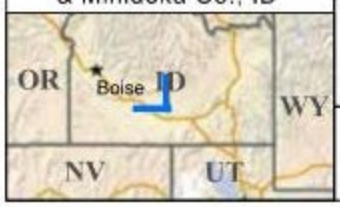
Data Source: USDA NAIP 2021

Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



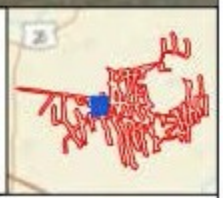
Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

(parentheses indicate population size)

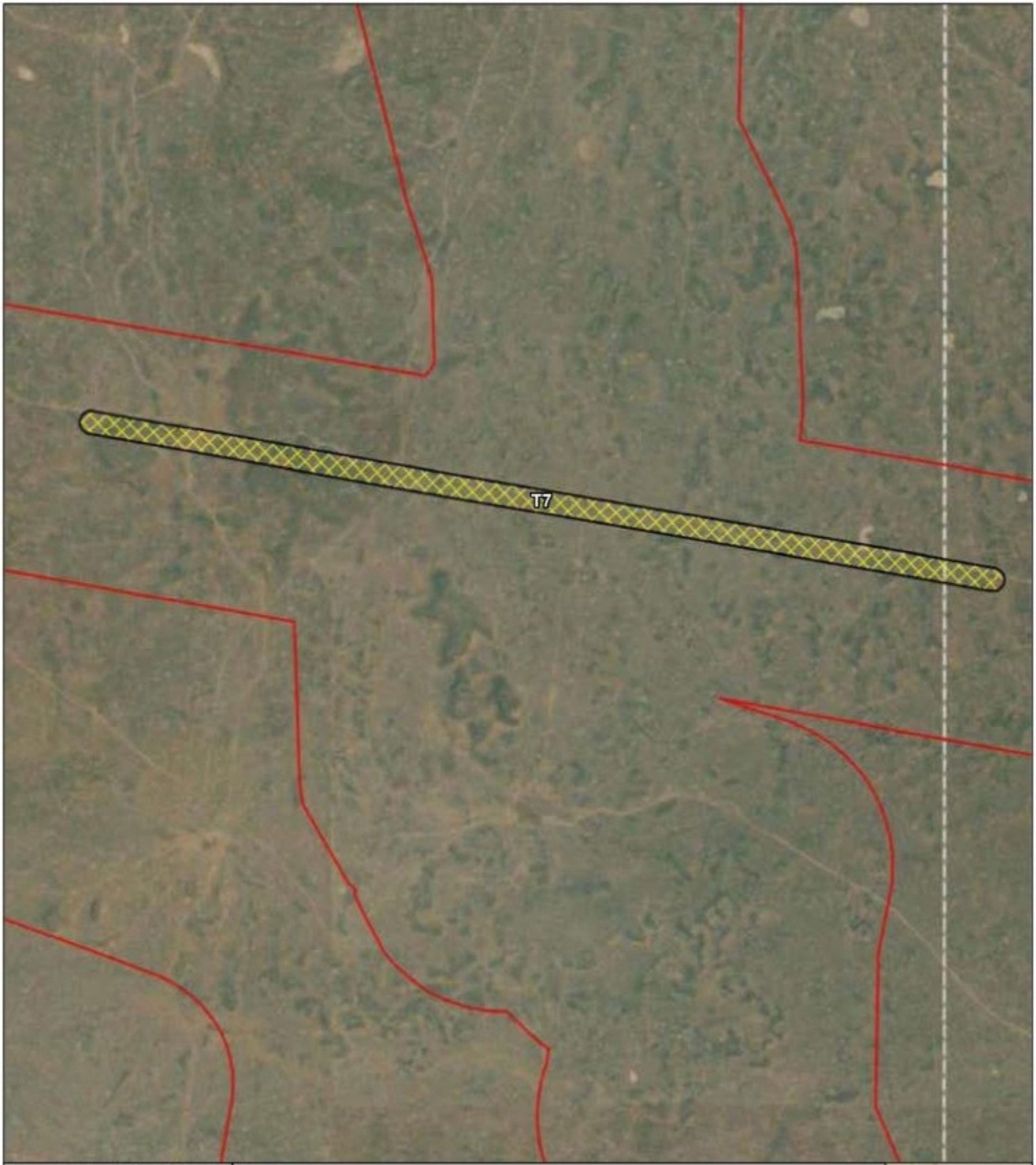


Data Source: USDA NAIP 2021

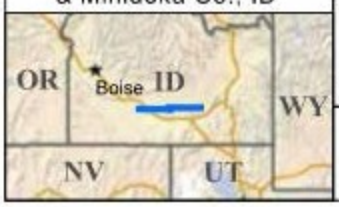
Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

(parentheses indicate population size)

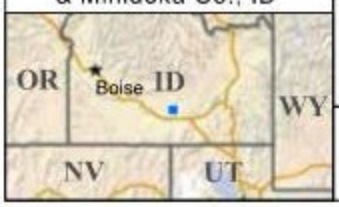
Data Source: USDA NAIP 2021

Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome & Minidoka Co., ID



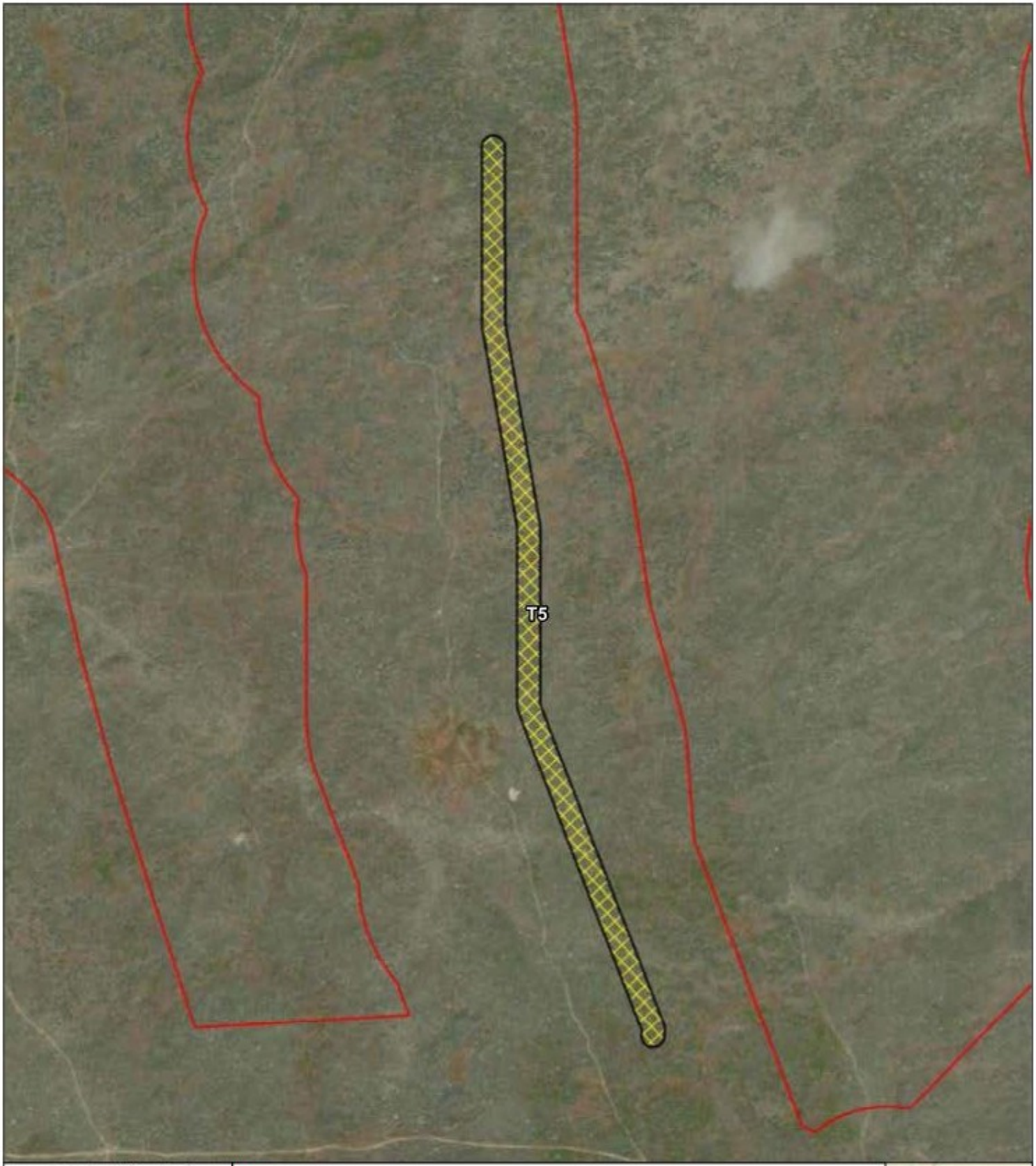
Project Boundary
Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
Canada thistle
field bindweed

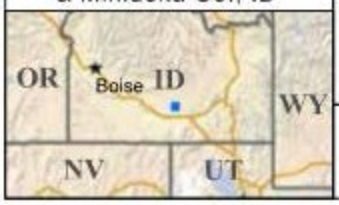
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

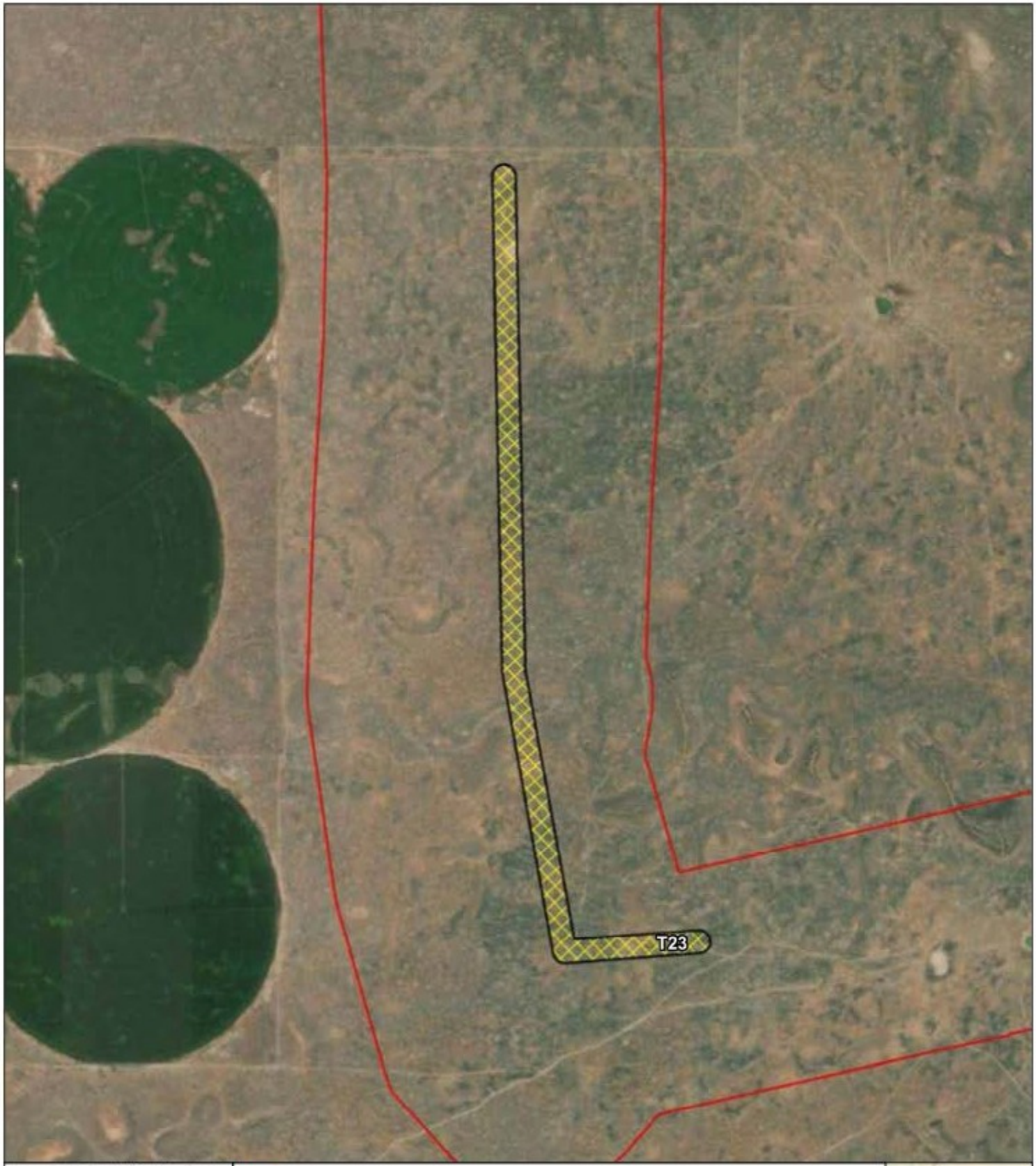
Noxious Weed Survey

rush skeletonweed

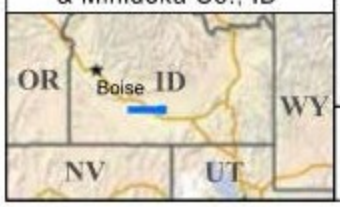
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



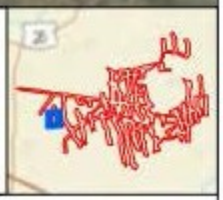
Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

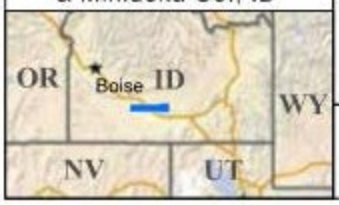
(parentheses indicate population size)



Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

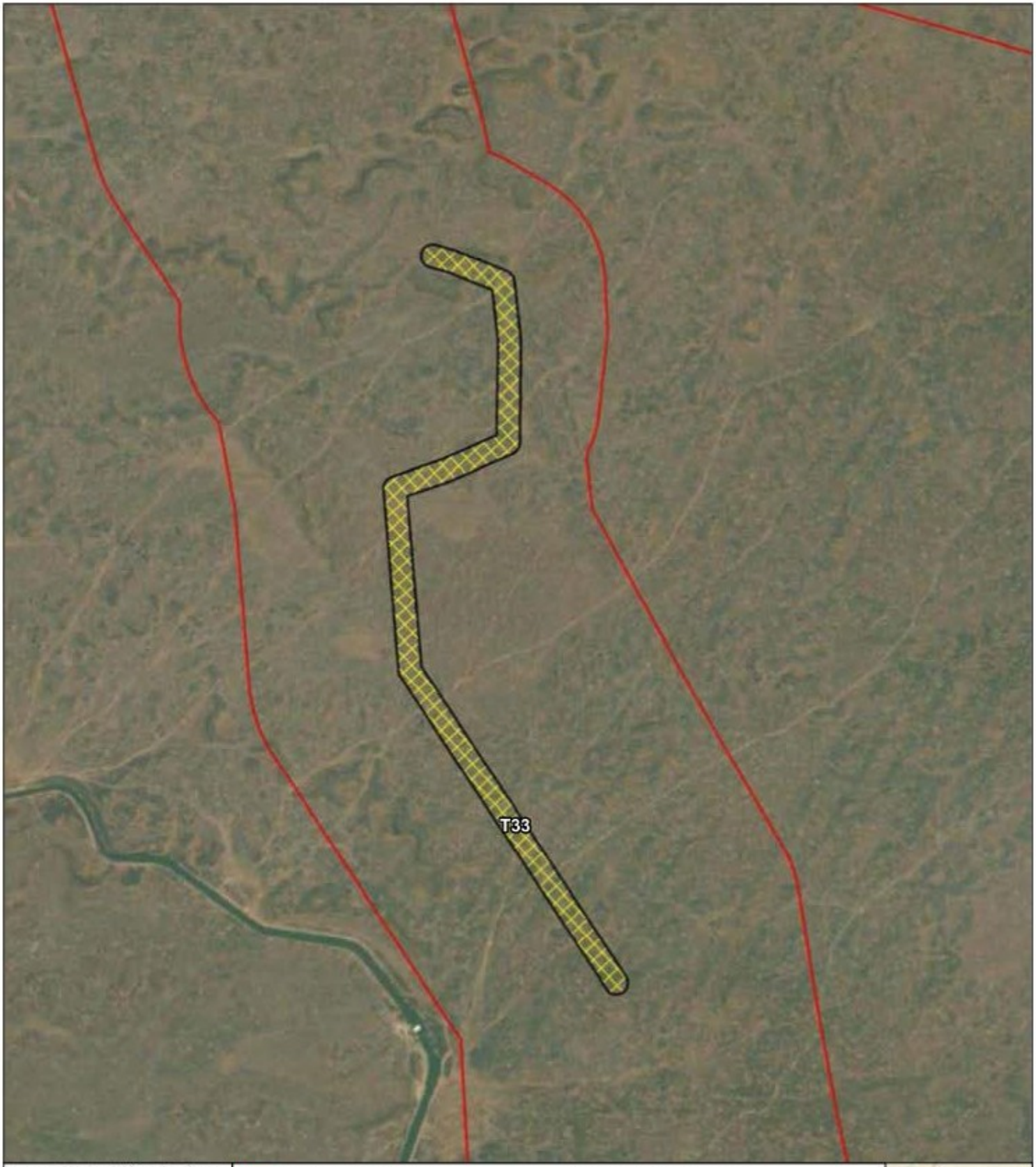
(parentheses indicate population size)

Data Source: USDA NAIP 2021

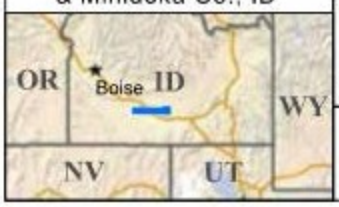
Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



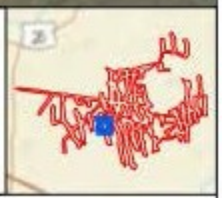
Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

(parentheses indicate population size)



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Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

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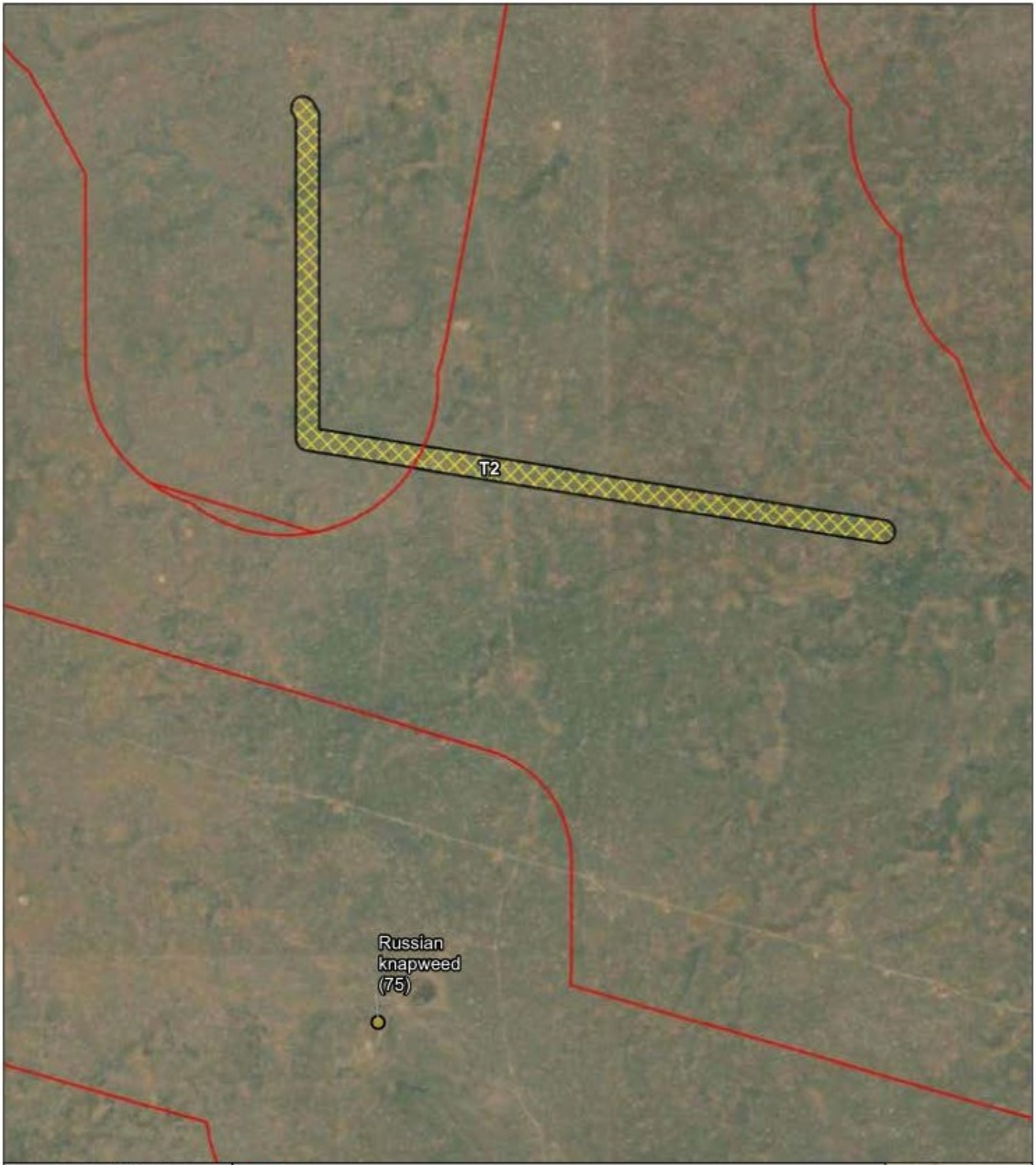
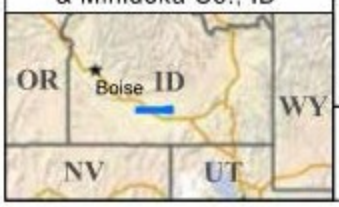


Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

Russian knapweed

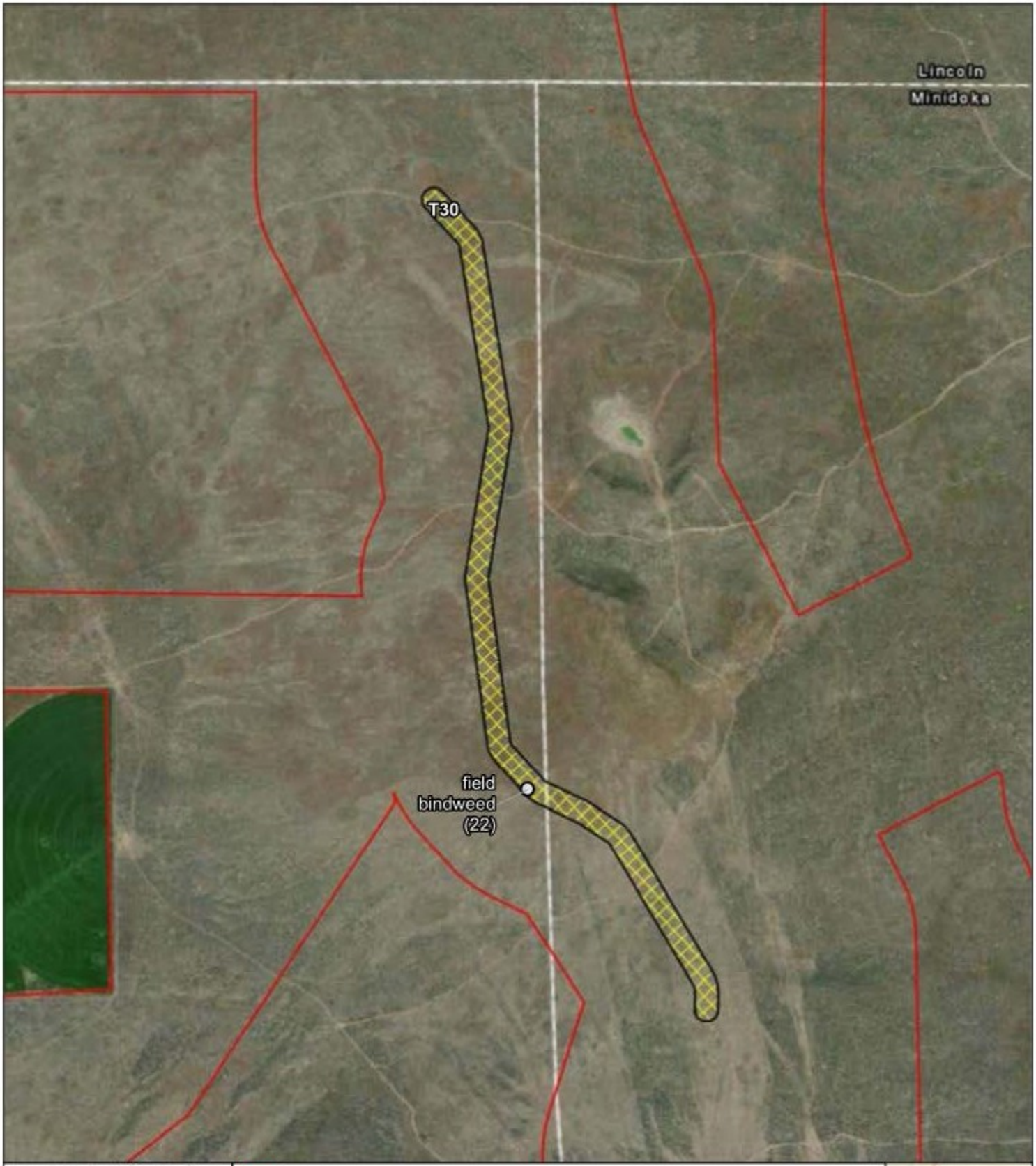
(parentheses indicate population size)

Data Source: USDA NAIP 2021

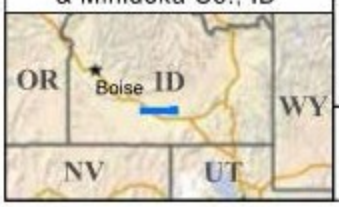
Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome & Minidoka Co., ID



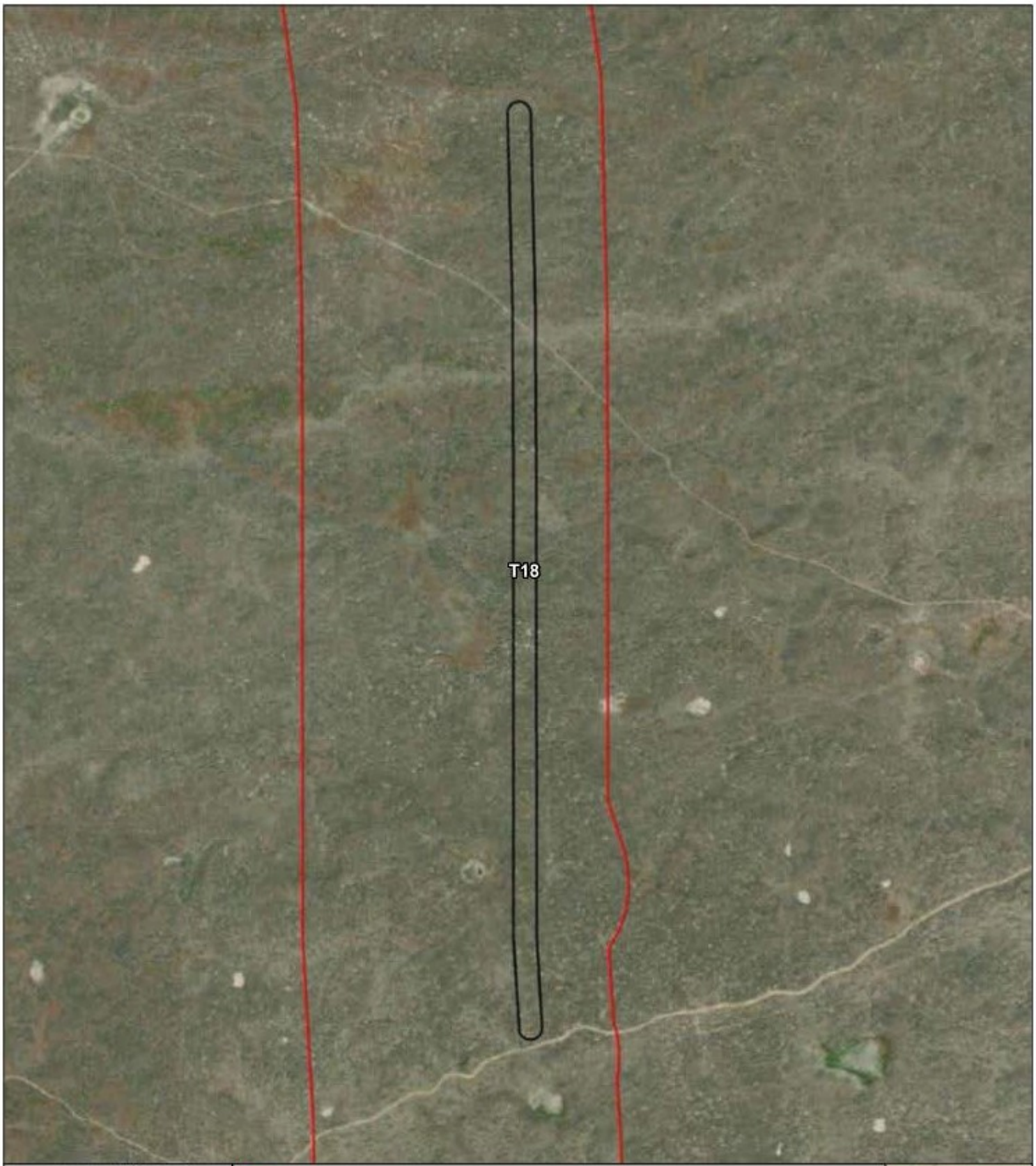
Project Boundary
Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
field bindweed

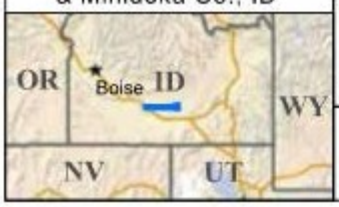
(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID

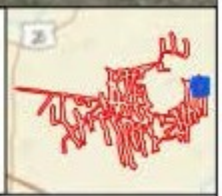


Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

(parentheses indicate population size)



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Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

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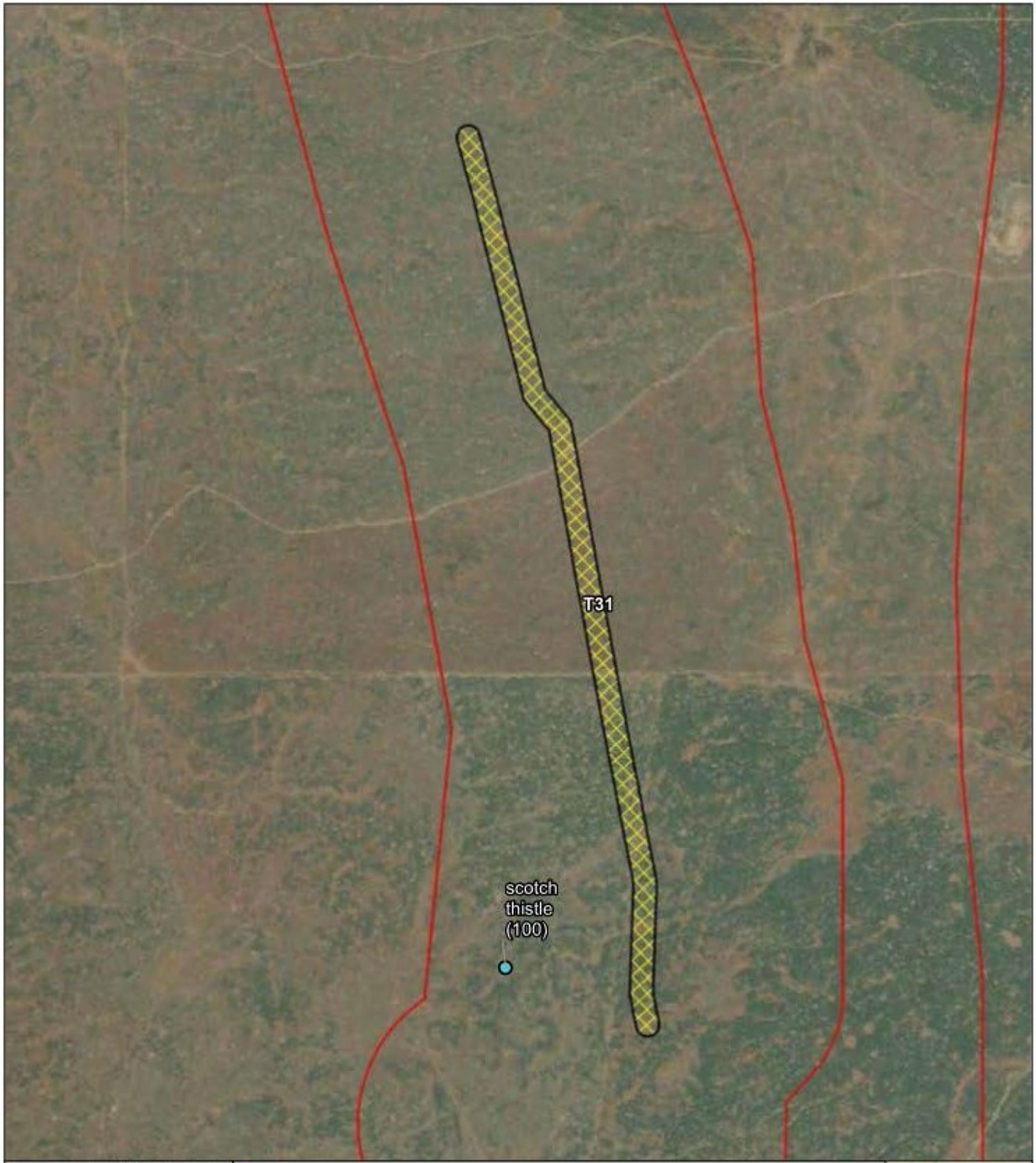
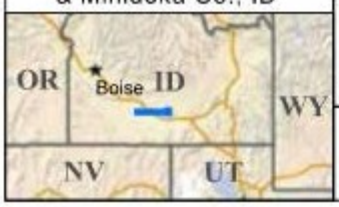


Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary
Transect Buffer (200-ft diameter)

Noxious Weed Survey
rush skeletonweed
scotch thistle

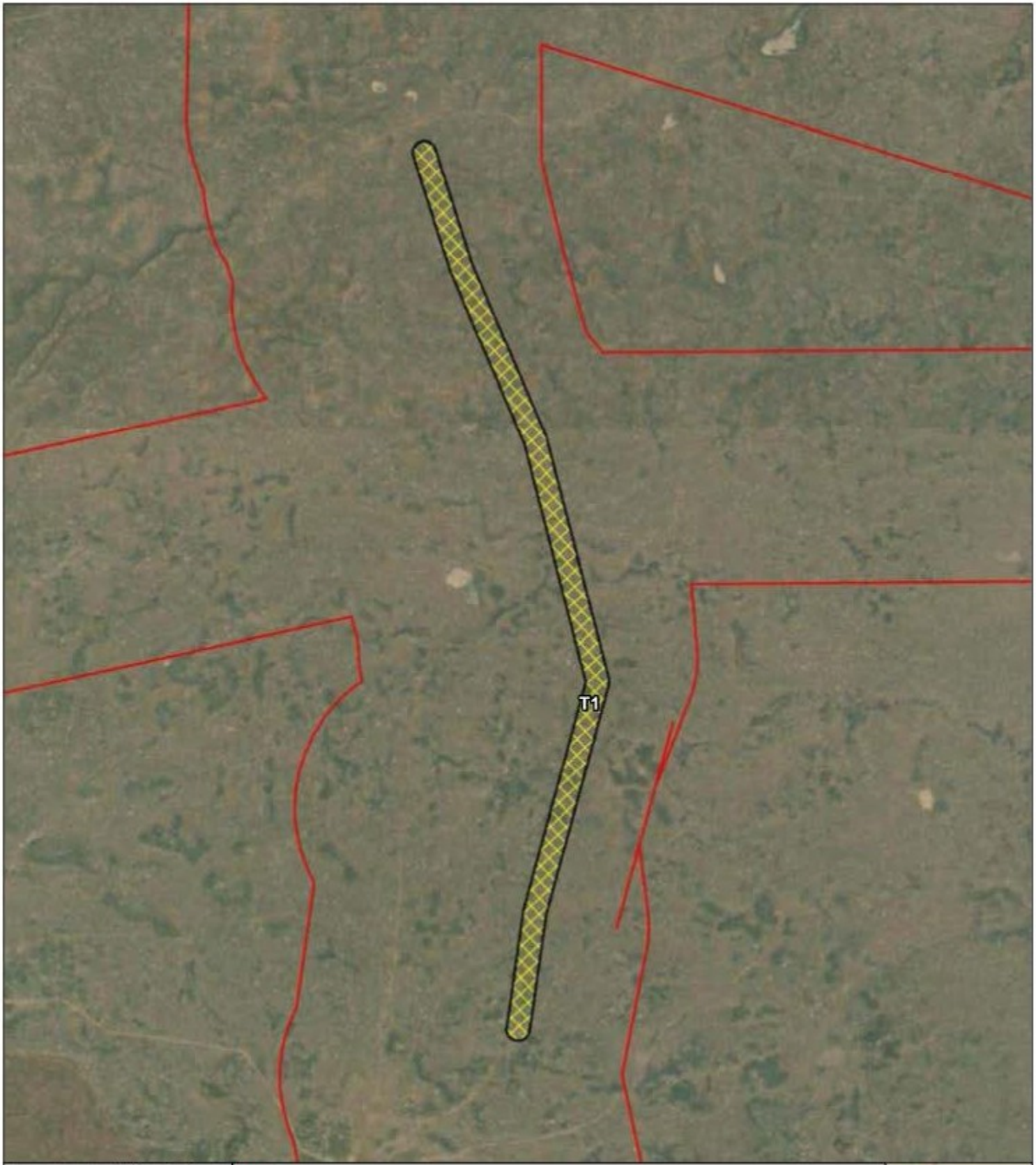
(parentheses indicate population size)

N
W E
S

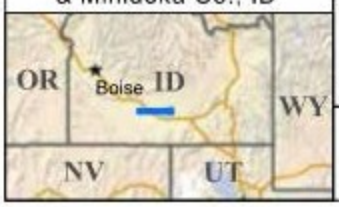
0 0.35 mi
0 0.55 km

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST



Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



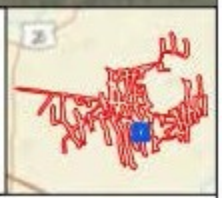
Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

(parentheses indicate population size)



Data Source: USDA NAIP 2021

Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

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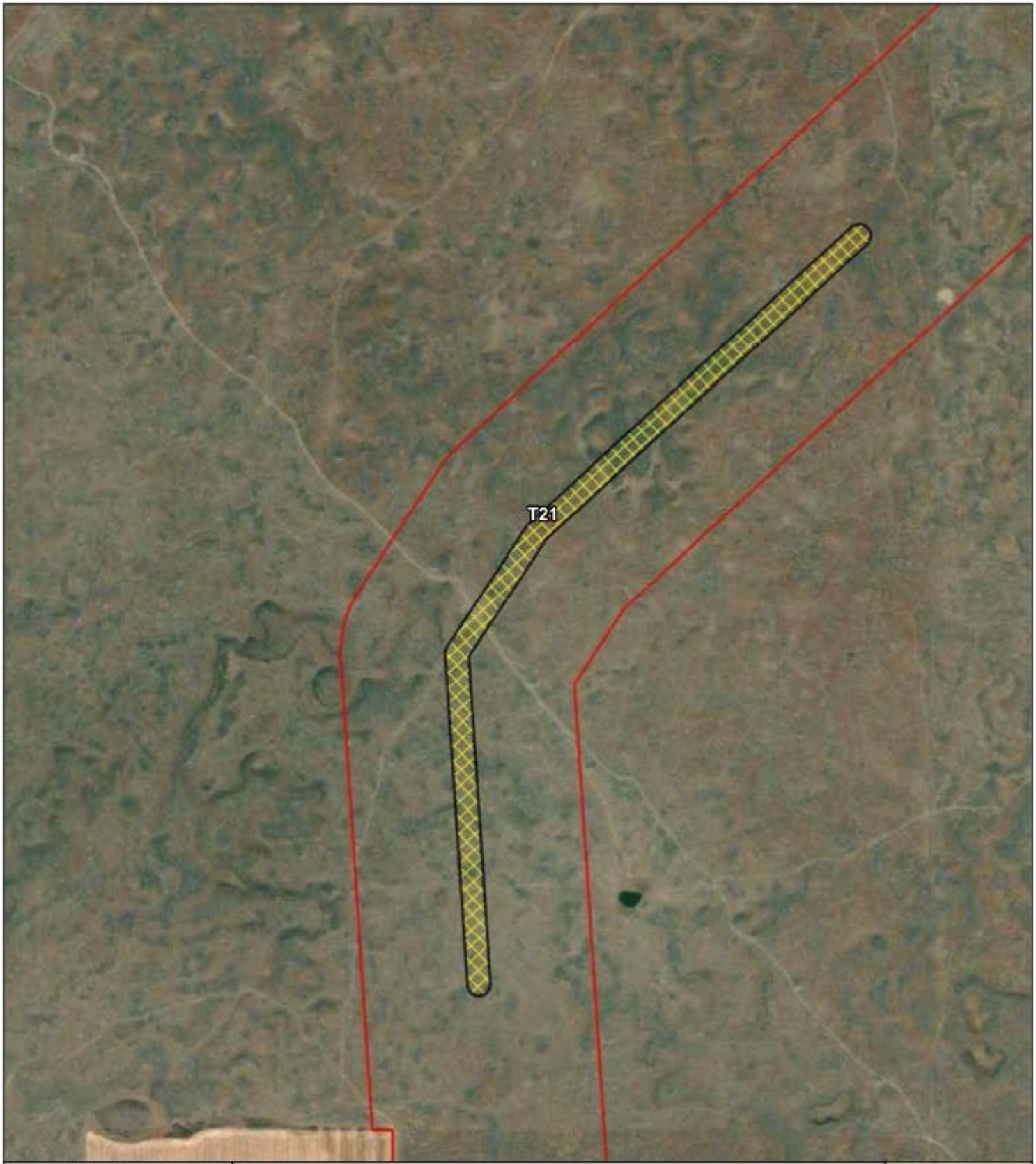
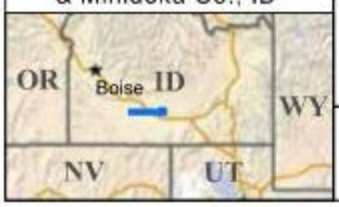


Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

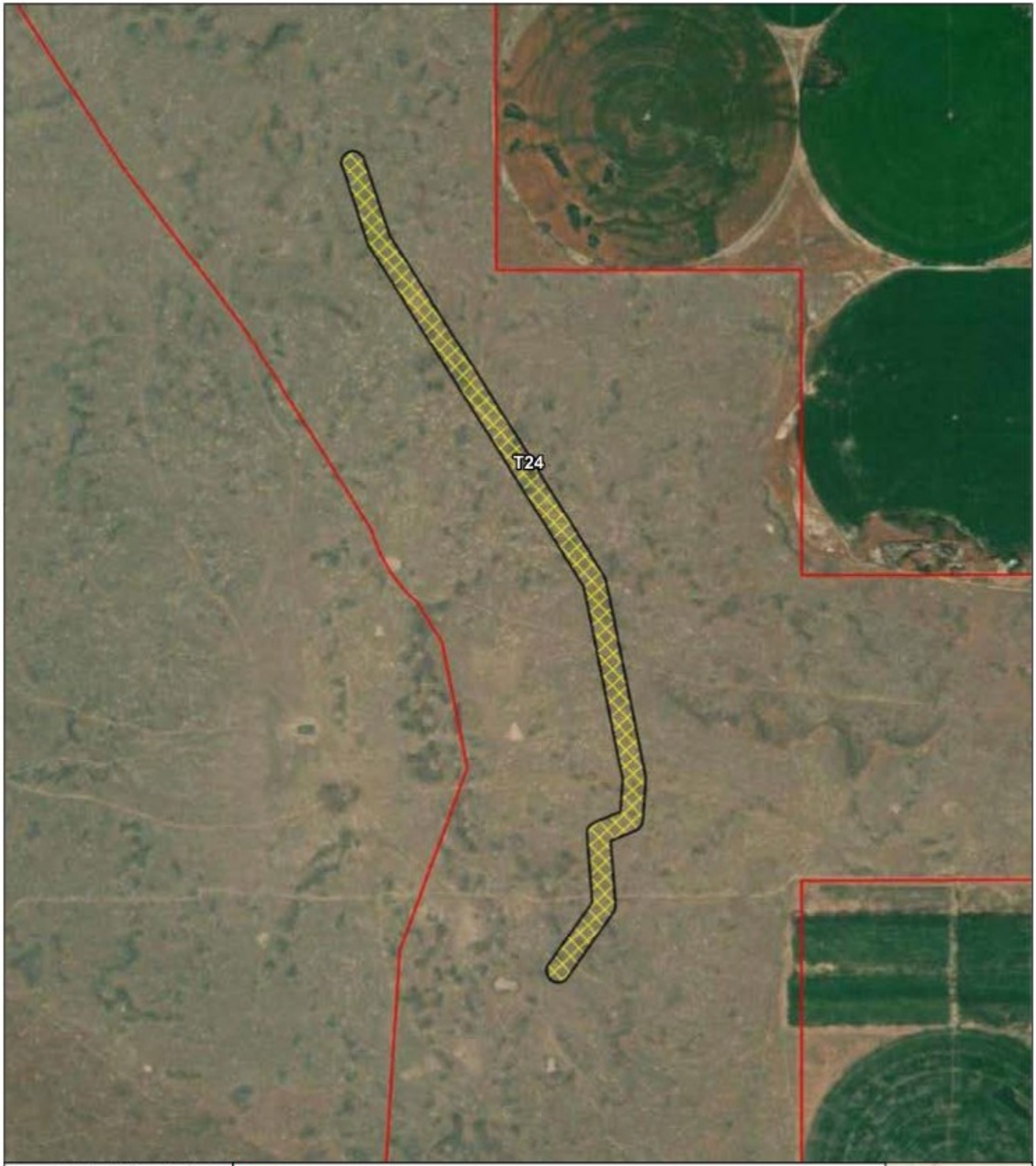
(parentheses indicate population size)

Data Source: USDA NAIP 2021

Coordinate System: NAD 1983 UTM Zone 11N

Date: 8/13/2021 Author: B. Barbieri

WEST



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Lincoln, Jerome
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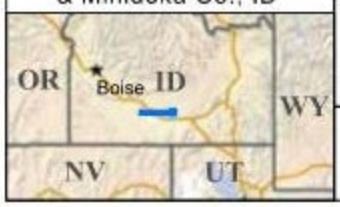


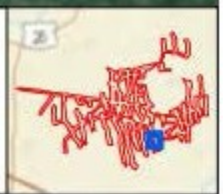
Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

(parentheses indicate population size)



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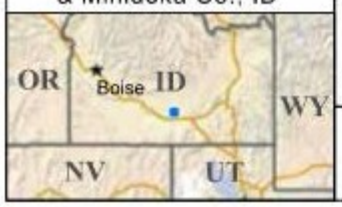
Lava Ridge Wind Project
Lincoln, Jerome & Minidoka Co., ID



Project Boundary

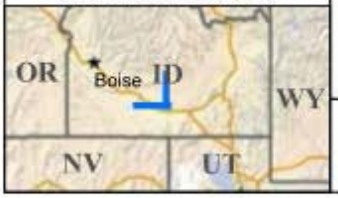
Noxious Weed Survey
- Canada thistle
- field bindweed
- musk thistle

(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

Lava Ridge Wind Project
Lincoln, Jerome
& Minidoka Co., ID



Project Boundary

Transect Buffer (200-ft diameter)

Noxious Weed Survey

rush skeletonweed

(parentheses indicate population size)

Data Source: USDA NAIP 2021
Coordinate System: NAD 1983 UTM Zone 11N
Date: 8/13/2021 Author: B. Barbieri

WEST

Appendix R-c: Photographs of Noxious Weed Populations Mapped within the Lava Ridge Project Area

Appendix R-c-1. Shows scotch thistle and rush skeletonweed in disturbed grassland.

Appendix R-c-2. Shows last year's (2020) scotch thistle plants with seed heads and this year's (2021) rosettes within large playa.

Appendix R-c-3. Shows small patch of Canada thistle in vegetative/bolting stage.

Appendix R-c-4. Shows small population of diffuse knapweed on lava mound; plants just starting to flower.

Appendix R-c-5. Shows typical distribution (i.e., scattered) of rush skeletonweed within the Project area.

Appendix R-c-6. Shows small population of field bindweed within playa; majority of plants still vegetative.

Appendix R-c-7. Shows population of musk thistle near edge of agricultural field; majority of plants in flower.

Appendix R-c-8. Shows scattered distribution of rush skeletonweed (dark green plant) within Project area.

Lava Ridge Wind Project

Draft Appendix S: Grazing Coordination Plan

Magic Valley Energy, LLC

October 2022

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LIST OF APPENDICES

S-1 Purpose and Objectives

MVE is committed to working with the local grazing permittees to minimize impacts to rangelands and grazing operations that share the public lands with the Project. This Grazing Coordination Plan ("GCP") outlines how the Project will coexist with the grazing operations and implement measures to minimize impacts from the Project.

S-2 Potential Impacts to Grazing Operations

Grazing permittees operating within the Project area have identified several potential impacts that may be experienced due to Project implementation. These impacts include:

- Death of livestock due to Project-related vehicle collisions and entrapment within active construction sites.
- Death of livestock due to general public vehicle collisions, resulting from improved access road conditions and increased vehicle speeds.
- Construction activities affecting range improvements, including water lines, stock trough sites, and fences.
- Gates not returned to their intended state (open or closed) by construction personnel and/or the public, leading to unmanaged livestock movements.
- Project disturbances and infrastructure reducing permittee AUMs.
- Logistical challenges to grazing operations due to Project-related traffic and/or activities.
- Potential for livestock health and body condition to be affected by construction-generated dust or altered grazing practices.

S-3 Actions to Avoid, Minimize, and Mitigate Impacts

MVE is proposing a suite of measures to avoid, minimize, and mitigate the potential impacts to grazing permittees. These measures will greatly reduce the potential for vehicle-livestock collisions during Project construction, operation, and decommissioning periods, maintain the function of range improvements, and provide alternative forage for AUMs that are unavailable during construction and post-construction reclamation periods.

MVE's objective has been and will continue to be close coordination with the grazing permittees. The additional range improvements proposed in this GCP are intended to accommodate a complete analysis of their deployment in the event all improvements become necessary to support grazing practices in the allotments. Should further coordination between MVE and the grazing permittees result in the identification of fewer range improvements necessary to support grazing practices, MVE would only deploy those elements necessary to meet the objectives.

S3.1 MVE Rangeland Coordinator

During the construction and reclamation periods, MVE will provide a rangeland coordinator to act as a single point of contact for grazing permittees should issues arise during these periods of the project. The rangeland coordinator will manage the resolution of any project-related damages to range improvements and livestock conflicts with project activities. The rangeland coordinator will maintain frequent communications with grazing permittees to provide advance notice of construction plans in actively grazed pastures, ensure awareness of stockwater pipeline locations and functionality, ascertain permittees' plans for livestock movement between pastures, and undertake those actions deemed reasonable to facilitate a cooperative use of the public lands by both the grazing permittees and the Project. The rangeland coordinator will also coordinate with the construction contractor to take corrective actions when dust emissions from construction activities are elevated, and to inform construction crews regarding best practices for construction tasks that occur in proximity to livestock.

S3.2 Expectations of Grazing Permittees

Grazing permittees will continue to be responsible for managing the movement of livestock in accordance with their respective permits and allotment grazing plans.

S3.3 Range Improvement Modifications

MVE is proposing additions and modifications to range improvements within each of the Star Lake, Sid Butte, North Milner, Wildhorse, and Camp I allotments. The resource surveys and installation costs associated with these range improvements will be funded by MVE. Specifics regarding each allotment are detailed in the following subsections.

MVE is proposing no new permanent fencing and no removal of existing fencing in an effort to alleviate pasture fragmentation. In general, to reduce the potential for livestock collisions with Project-related vehicles, collisions with general public traffic, reduce livestock stress and disturbance, improve livestock management, and reduce potential construction delays, MVE is proposing the installation of temporary fence (such as electric fence) during construction and reclamation periods. Temporary fencing is proposed to be installed along up to approximately 50 miles of the primary access roads that traverse the Project area to alleviate concerns about excess traffic during construction and reclamation. This may require approximately 100 miles of fence along the primary access roads in the three grazing allotments.

- Approximately 3 miles of temporary fence for primary access roads in the North Milner Allotment.
- Approximately 18 miles of temporary fence for primary access roads in the Sid Butte Allotment.
- Approximately 79 miles of temporary fence for primary access roads in the Star Lake Allotment.

In addition to the primary access roads, temporary fence may be installed along the majority of turbine array access roads and work areas to keep livestock out of active construction and reclamation areas while cattle are in the affected pasture. Temporary fence may be installed before cattle enter a pasture and removed or laid down when cattle leave a pasture. MVE will provide dedicated range improvement staff

to move temporary fence in accordance with the plan, check fence condition, and perform the necessary repairs to range improvements. Although only a fraction will be installed at any time, up to approximately 295 miles (calculated with possible overlapping fencing, which will show this number larger than the sum of individual miles noted in this plan) of temporary fence may be deployed during construction and interim and final reclamation periods of the Project, depending on how many affected pastures are grazed concurrently. It is expected that 20 to 25% of the temporary fence may be deployed at any given time. Once these conditions have been met and two growing seasons have elapsed, then grazing re-entry success criteria are deemed to have been met and fencing may be removed.

Where temporary fencing may create isolated "sub-pastures" during construction or reclamation periods, gaps for access to water or for cattle distribution will be included in fence construction. If needed, temporary water may be provided so that distance to water remains similar to the existing conditions. Additional gates or cattle guards may be installed in existing or new pasture fences to facilitate cattle distribution or access to water in isolated "sub-pastures". MVE expects that up to 50 troughs may be needed throughout Project area.

For AUMs that are unavailable during the construction and reclamation periods, MVE is committed to providing an equivalent feed source to affected grazing permittees. This may take the form of range forage at other locations, private ground forage operations, feedlot space, or other commercial arrangements that MVE may agree to with permittees.

Tables 1.1, 1.2, 1.3 and Table 2 outline the number of AUMs available per pasture for the Star Lake and Sid Butte allotments. Each allotment will continue to be managed under a rest rotation system with details coordinated between BLM and the grazing permittees.

As coordination with the grazing community continues, BMPs and mitigation measures will be continually refined. MVE anticipates the GCP will be finalized prior to construction of the Project.

Star Lake Allotment Plans

In response to feedback from several Star Lake grazing permittees and BLM, MVE is not proposing to alter the pastures within the Star Lake Allotment, which are shown in Appendix S-a: Grazing Coordination Plan Maps, as 'GCP – Star Lake [North/South/West] – 1'. In addition, MVE has structured the proposed construction plan to be phased across the Star Lake Allotment to help limit construction impacts to a concentrated area over a given timeframe.

Installation of temporary fences may require modifications to water developments. Anticipated modifications to water developments are outlined below:

- Once the project road layout is finalized, if existing troughs are separated from the grazing portion of the pastures, troughs will be moved or water gaps built to provide access to water. The location of drinking water can be a useful tool to move livestock grazing away from roads and reduce vehicle/livestock interaction.
- As much as 24 miles of pipeline and as many as 35 trough sites are expected to be built on the Star Lake allotment.

- MVE is proposing the ability to install water conveyance pipe along Project access roads where necessary to accommodate modifications to stockwater locations, as well as support Project-related water needs.
- MVE is proposing the ability to install water holding tanks at select locations within the Project corridors to accommodate water use for the Project activities, stockwater holding facilities, water sources for wildland fire vehicles, and other beneficial uses in the Project area.

A map set displaying primary and array access roads (roads that may be temporarily fenced during the construction and reclamation periods) is enclosed in Appendix S-a as 'GCP – Star Lake [North/South/West] – 2'. Where new project access roads cross existing range fence, MVE will install cattle guards to reduce impacts to livestock operations from the general public leaving gates open. Crossings will be examined on an individual basis once the final road layout is determined to identify the final number and location of cattle guards.

Overall, if construction areas are temporarily fenced, these exclusions will reduce available cattle AUMs on the Star Lake allotment by approximately 5% during the interim reclamation phase, and by approximately 2% during operations.

In response to feedback from permittees, MVE is proposing to separate the construction of Project infrastructure within the Star Lake allotment into three phases (North Phase, South Phase, and West Phase; see Appendix S-a: 'GCP – Star Lake [North/South/West]- 2' map sets for reference) so that construction occurs in approximately 1/3 of the Star Lake allotment at a time. Primary access roads to an active construction phase area will continue to be utilized through the dormant phase areas. For example, when construction is occurring in either the South Phase or the West Phase, Project traffic will need to utilize the primary access roads that cross the North Phase to allow for sufficient access from Highway 24. The precise order of the construction phasing will be determined later. Concentrating construction activities in a single phase area at a time will reduce the potential for conflicts between construction activities and livestock operations. Building the project in phases will reduce the amount of temporary fence necessary during construction. Temporary fence may be required when cattle are in the same pasture during construction and interim restoration periods. Appendix S-a map sets 'GCP – Star Lake [North/South/West] – 3' provide the proposed turbine siting corridors for each phase. The northern four pastures have limited or no project components and will not be included in the phases – Heifer, West Bull, East Bull, and Sand Blow. For clarity, construction activities associated with the high-voltage transmission facilities may occur within any of the dormant phases.

A summary of the number of AUMs available in each phase is included as Table 1-3.

Sheep permittees may need to be accommodated off-site during construction and reclamation at the discretion of the permittee.

Sid Butte Allotment Plans

Appendix S-a map 'GCP – Sid Butte – 1' shows the current state of the Sid Butte Allotment. Grazing on the Sid Butte Allotment will use a rest rotation system, with the temporary establishment of 15 pastures, which can be seen on Appendix S-a 'GCP – Sid Butte – 2' along with the proposed changes. Appendix S-a map 'GCP – Sid Butte – 3' shows the proposed changes along with the Project corridors.

The current Northeast pasture will be managed as 3 pastures:

- Northeast (currently fenced separately)
- Thrush (will be fenced in the NW corner of the Northeast pasture)
- Milt

Only 43 acres in the Northeast pasture will be temporarily impacted by construction and approximately 22 acres of permanent reductions. These 3 pastures will be available for cattle and sheep grazing.

The current Northwest pasture will be managed as 3 pastures:

- South Highway (currently fenced separately from the rest of the Northwest pasture)
- North Highway (will be a separate pasture following temporary fence construction along Highway 24)
- Sid (the remainder of the old Northwest pasture)

The South Highway pasture will be unavailable during the construction period. Portions of this pasture may be available to sheep grazing (and possibly cattle grazing) during the interim reclamation period. The other 2 pastures will be available to sheep and cattle grazing during the construction and reclamation periods.

The current Southeast pasture will be managed as 4 pastures:

- Southeast (This will be the southeastern most portion of the allotment south of the primary access road)
- McCree (surrounding the McCree reservoir – temporary fence will run south from Hawk reservoir to form the east boundary. The fence along the primary access road will form the south boundary)
- Hawk (The area north of the primary access road fence and east of the Hawk Reservoir fence)
- Kimama (The area south of the primary access road and west of the Hawk Reservoir fence)

The Southeast pasture will be scheduled primarily for cattle grazing, with sheep use at the permittee's discretion, during the construction and operations period. The other pastures are scheduled for use during the operations period. Following interim reclamation, the Southeast pasture will be scheduled for both cattle and sheep grazing. The other 3 pastures will be scheduled primarily for cattle grazing, with sheep use at the permittee's discretion.

The current Southwest pasture will be managed as 4 pastures:

- North Crater (around the Lombard reservoir. South of the primary access road)
- Munsee (around the Munsee reservoir. North of the primary access road and north of a temporary fence running east from March Reservoir)
- Southwest (currently fenced separately in the southwest most portion of the allotment)
- South Crater (South of the new March Reservoir fence)

The North Crater pasture will be available for both cattle and sheep grazing during construction and operations periods. The other 3 pastures will be scheduled primarily for cattle grazing, with sheep use at the permittee's discretion during construction and operations. Portions of the Munsee and South Crater pastures may require temporary fencing during the construction and reclamation periods.

Creating temporary new pastures and fencing the major access road will require about 18 miles of temporary fence. 69 miles of temporary fence may be required during the construction and reclamation periods.

Pastures not primarily scheduled for sheep grazing during operations will be available for sheep grazing based on the discretion of BLM and the sheep permittees.

Calculated AUMs available for grazing during construction and operations are detailed by pasture in Table 2. Sid Butte allotment is predicted to have 35% fewer AUMs during construction and 1% fewer during operations.

Potentially 15 new trough sites and approximately 27 miles of new pipeline are proposed in the Sid Butte Allotment. MVE is proposing the ability to install water conveyance pipe along Project access roads where necessary to accommodate modifications to stockwater locations, as well as support Project-related water needs. MVE is also proposing the ability to install water holding tanks at select locations within the Project corridors to accommodate water use for the Project activities, stockwater holding facilities, water sources for wildland fire vehicles, and other beneficial uses in the Project area.

North Milner Allotment Plans

Appendix S-a map 'GCP – North Milner – 1' shows the current state of the North Milner Allotment. MVE is proposing that temporary fencing will be used to separate grazing from construction. It is expected that grazing can be scheduled to avoid conflict with construction. Impacts during operations are expected to be minimal. Appendix S-a maps 'GCP – North Milner – [2, 3]' show the proposed changes that would occur within the North Milner Allotment. The primary access road crossing the northeast part of the allotment may be temporarily fenced on both sides (approximately 3 miles of temporary fence along the primary access roads and 14 miles of temporary fence for reclamation).. Temporary fence would be used only while livestock are in the pasture, which is expected to be about half of the distance at any given time.

If the array is built in the Main Canal pasture, approximately 17 miles of temporary fence will be needed while livestock are in the pasture during construction and reclamation. If all of the array is fenced during construction and reclamation, it will encompass about 172 acres (approximately 29 AUMs of forage).

Roads may be improved to facilitate construction and operation of the Project even if no turbines are built within the pasture. MVE will replace any pipelines disturbed by construction and may install new pipelines along improved roads. New troughs and water storage tanks may be installed within Project corridors to improve livestock distribution and/or keep livestock away from roads. MVE expects that up to five troughs may be needed for the North Milner Allotment. Any road improvements and pipeline updates made during the construction period are expected to benefit grazing during the operations period by improving access to range improvements.

Wildhorse Allotment Plans

Appendix S-a map 'GCP – Wildhorse – 1' shows the current state of the Wildhorse Allotment. MVE is proposing that temporary fencing will be used to separate grazing from construction. It is expected that grazing can be scheduled to avoid conflict with construction. Impacts during operations are expected to be minimal. Appendix S-a maps 'GCP – Wildhorse – [2, 3]' show the proposed changes that would occur within the Wildhorse Allotment.

Approximately 30 miles of temporary fence will be needed to fence 15 miles of access roads while livestock are in the pasture during construction and reclamation. If all of the array is fenced during construction and/or reclamation, it will encompass about 46 acres (approximately 8 AUMs of forage).

Road improvements in the Project corridors would be independently beneficial to both Project activities and grazing practices, given the rough nature of the existing roads. MVE will replace any pipelines disturbed by construction and may install new pipelines along improved roads. New troughs and water storage tanks may be installed within the Project corridors to improve livestock distribution and/or keep livestock away from roads. MVE expects that up to five troughs may be needed for the Wildhorse Allotment. Any road water system improvements made during the construction period are expected to benefit grazing during the operations period by improving access to range improvements.

Camp I Allotment Plans

Appendix S-a map 'GCP – Camp 1 – 1' shows the current state of the Camp I Allotment. MVE is proposing that temporary fencing will be used to separate grazing from construction. It is expected that grazing can be scheduled to avoid conflict with construction. Impacts during operations are expected to be minimal. Appendix S-a maps 'GCP – Camp 1 – [2, 3]' show the proposed changes that would occur within the Camp I Allotment.

Roads may be improved to facilitate construction of the Project's transmission line even if no turbines are built within the allotment. MVE will replace any pipelines disturbed by construction and may install new pipelines along improved roads. New troughs and water storage tanks may be installed within the Project corridors to improve livestock distribution and/or keep livestock away from roads. MVE expects that up to five troughs may be needed for the Camp I Allotment. Any road improvements and pipeline

updates made during the construction period are expected to benefit grazing during the operations period by improving access to range improvements.

There is potential for 1.25 miles of array access road to be improved. If this improvement requires reclamation, there is potential for approximately 2.5 miles of temporary fence to be installed while cattle are in the East pasture. This is not expected to reduce forage in a measurable amount.

Table 1-1: Star Lake Allotment Cattle AUMs

Pasture	Phase	Acres	AUMs (Current)	Remaining Cattle AUMs (Construction/Reclamation Period)	Remaining Cattle AUMs (Operations Period)
East Bull	No Phase	1495	247	247	247
Heifer	No Phase	477	79	79	79
Sand Blow	No Phase	1380	228	226	226
West Bull	No Phase	2374	393	385	385
Mallard	North	5803	960	949	958
Middle Stagebarn	North	5265	871	731	871
North Stagebarn	North	3068	508	497	500
North Wilson Ridge	North	10293	1703	1663	1676
Owinza	North	5713	945	781	928
Middle Wilson Ridge	South	3615	598	493	535
NE Cinder Butte	South	4233	700	613	700
SE Cinder Butte	South	3452	571	568	571
South Stagebarn	South	5538	916	907	916
South Wilson Ridge	South	4445	735	725	726
West Cinder Butte	South	9858	1631	1617	1622
East Star Lake	West	5519	913	902	902
NE Camp Two	West	7918	1310	1285	1289
NW Cinder Butte	West	2163	358	356	358
SE Camp Two	West	5204	861	847	855
West Camp Two	West	5531	915	910	915
West Star Lake	West	4798	794	794	794
Totals		**98143**	**16236**	**15576**	**16052**
Total Cattle AUMS to be mitigated				**661**	**184**

Table 1-2: Star Lake AUM Mitigation Summary by Livestock

Type	Construction/Reclamation Period	Operations Period
Cattle AUMs to be mitigated	**661**	**184**
% of Cattle AUMs	4%	1%
Sheep AUMs to be mitigated	**1492**	**1492**
% of Sheep AUMs	100%	100%

Table 1-3: Star Lake AUM Summary By Phase

Phase	Acres	AUMs (Current)	Remaining Cattle AUMs (Construction/Reclamation Period)	Remaining Cattle AUMs (Operations Phase)
No Phase	5726	947	937	937
North	30143	4987	4621	4932
South	31140	5152	4923	5070
West	31133	5151	5094	5113

Table 2: Sid Butte AUMs

Original Pasture Name	Area (Acres)	New Pasture	AUMs	AUMs during Construction/Reclamation Period	AUMs during Operations Period
NORTHEAST	**11336**				
Northeast	6460	Milt	1015	1015	1015
Northeast	1192	Northeast	187	187	187
Northeast	3684	Thrush	579	434	567
NORTHWEST	**11734**				
Northwest	656	North Highway	103	103	103
Northwest	9499	Sid	1492	1492	1492
Northwest	1579	South Highway	248	0	243
SOUTHEAST	**10520**				
Southeast	3288	Hawk	516	0	511
Southeast	3262	Kimama	512	0	502
Southeast	2853	McCree	448	0	435
Southeast	1118	Southeast	176	0	174
SOUTHWEST	**10920**				
Southwest	2182	Munsee	343	308	339
Southwest	3668	North Crater	576	346	559
Southwest	4189	South Crater	658	526	652
Southwest	881	Southwest	138	138	138
Totals	**44510**		**6992**	**4550**	**6918**
Reduced AUMS				**2442**	**74**
Percentage of AUMS Remaining				**65%**	**99%**
Percentage of AUM Reduction				**35%**	**1%**

Appendix S-a: Grazing Coordination Plan Maps

GCP - Star Lake North – 1
Current Conditions

- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE

Phase

- No Phase
- West
- North
- South

- Allottments
- Pastures_09_23_22

0 0.5 1 2 Miles

GCP - Star Lake North – 2
Proposed Project

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array
- Allottments
- Pastures_09_23_22

Phase

- No Phase
- West
- North
- South

0 0.5 1 2 Miles

GCP - Star Lake North – 3
Proposed Project with Corridors

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array
- Project Corridors 09_26_22

- Allottments
- Pastures_09_23_22

Phase

- No Phase
- West
- North
- South

0 0.5 1 2 Miles

North Wilson Ridge

Middle Stagebarn

Northeast Camp Two

Middle Wilson Ridge

Lincoln

Jerome

South Stagebarn

E 200 N

Southeast Camp Two

South Wilson Ridge

Star Lake

Northeast Cinder Butte

Northwest Cinder Butte

Southeast Cinder Butte

West Cinder Butte

3950 E

1900 E

Hunt Rd

E 400 S

S 2100 E

Cinder Butte Rd

E 500 S Rd

S 2400 E

E 500 S

2480 E

S 2900 E

E 600 S

Cinder Butte

GCP - Star Lake South – 1
Current Conditions

- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE

Phase

- No Phase
- West
- North
- South

- Allottments
- Pastures_09_23_22

0 0.4 0.8 1.6 Miles

North Wilson Ridge

Middle Stagebarn

Northeast Camp Two

Middle Wilson Ridge

Lincoln

Jerome

South Stagebarn

E 200 N

Southeast Camp Two

South Wilson Ridge

Star Lake

Northeast Cinder Butte

Northwest Cinder Butte

Southeast Cinder Butte

West Cinder Butte

S 1900 E

Hunt Rd

E 400 S

S 2100 E

Cinder Butte

Cinder Butte Rd

E 500 S Rd

S 2400 E

E 500 S

2480 E

S 2900 E

E 600 S

GCP - Star Lake South – 2
Proposed Project

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets

- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array

- Allottments
- Pastures_09_23_22

Phase

- No Phase
- West
- North
- South

0 0.4 0.8 1.6 Miles

North Wilson Ridge
Middle Stagebarn
Northeast Camp Two
Middle Wilson Ridge
Lincoln
Jerome
South Stagebarn
E 200 N
Southeast Camp Two
South Wilson Ridge
Star Lake
Northeast Cinder Butte
Northwest Cinder Butte
Southeast Cinder Butte
West Cinder Butte
S 3200 E
1900 E
Hunt Rd
E 400 S
S 2100 E
Cinder Butte
Cinder Butte Rd
E 500 S Rd
S 2400 E
E 500 S
2400 E
S 2900 E
E 600 S

GCP - Star Lake South – 3
Proposed Project with Corridors

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets

- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line
- OTHER
- PIPELINE

- Wind_Turbine_Array
- Project Corridors 09_26_22

- Allottments
- Pastures_09_23_22

Phase
- No Phase
- West
- North
- South

Miles
0 0.4 0.8 1.6

GCP - Star Lake West – 1
Current Conditions

- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE

Phase

- No Phase
- West
- North
- South

- Allottments
- Pastures_09_23_22

Miles
0 0.45 0.9 1.8

Mallard

West Star Lake

East Star Lake

Camp I East

Star Lake Storage Berm Rd

Lincoln
Jerome

North Wilson Ridge

Milner

West Camp Two

Star Lake

Northeast Camp Two

Middle Wilson Ridge

Southeast Camp Two

Rocky Rd

North Milner

Main Canal

Camp II

South Wilson Ridge

Northwest Cinder Butte

West Cinder Butte

N Eden Rd

East Rd

Hunt Rd

S 700 E

S 1000 E

850 Rd E Star Lake Rd

N 1700 E

1700 E

1900 E

GCP - Star Lake West – 2
Proposed Project

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array

- Allottments
- Pastures_09_23_22

Phase

- No Phase
- West
- North
- South

0 0.45 0.9 1.8 Miles

GCP - Star Lake West – 3
Proposed Project with Corridors

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array
- Project Corridors 09_26_22

Phase

- No Phase
- West
- North
- South

- Allottments
- Pastures_09_23_22

Miles: 0, 0.45, 0.9, 1.8

GCP – Sid Butte – 1
Existing Conditions

Current Roads and Streets

CATTLEGUARD
DAM
GATE
GUZZLER
OTHER
POND
RESERVOIR
SPRING
STOCK POND
TANK
TROUGH
WELL

Range Improvement Line

OTHER
PIPELINE

Allottments
Pastures_09_23_22

Miles
0 0.5 1 2

GCP – Sid Butte – 2
Proposed Project

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets

- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE

Fences As Of 9_22_22

- New
- Wind_Turbine_Array

- Allottments
- Proposed Pasture August 2022

0 0.5 1 2 Miles

GCP - Sid Butte - 3
Proposed Project with Corridors

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array
- Project Corridors 09_26_22
- Allottments
- Pastures_09_23_22

Miles
0 0.5 1 2

GCP - North Milner – 1
Current Conditions

- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE

- Allottments
- Pastures_09_23_22

0 0.5 1 2 Miles

GCP - North Milner – 2
Proposed Project

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets

- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array

- Allottments
- Proposed Pasture August 2022

Miles
0 0.5 1 2

GCP - North Milner – 3
Proposed Project with Corridors

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array
- Project Corridors 09_26_22
- Allottments
- Proposed Pasture August 2022

0 0.5 1 2 Miles

GCP – Wildhorse – 1
Current Conditions

- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE

- Allottments
- Pastures_09_23_22

Miles
0 0.425 0.85 1.7

GCP – Wildhorse – 2
Proposed Project

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array

- Allottments
- Pastures_09_23_22

0 0.425 0.85 1.7 Miles

GCP – Wildhorse – 3
Proposed Project with Corridors

- Primary_Access_Roads
- Array_Access_Roads
- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE
- Wind_Turbine_Array
- Project Corridors 09_26_22
- Allottments
- Pastures_09_23_22

0 0.425 0.85 1.7 Miles

GCP - Camp 1 -1
Current Conditions

- Current Roads and Streets
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL

Range Improvement Line

- OTHER
- PIPELINE

- Allottments
- Pastures_09_23_22

Notch Butte
Substation
Camp I
Center
North Milner
Bacon
East
Milner
West Star Lake
Star Lake
West Camp Two
Lincoln
Jerome

Miles
0 0.35 0.7 1.4

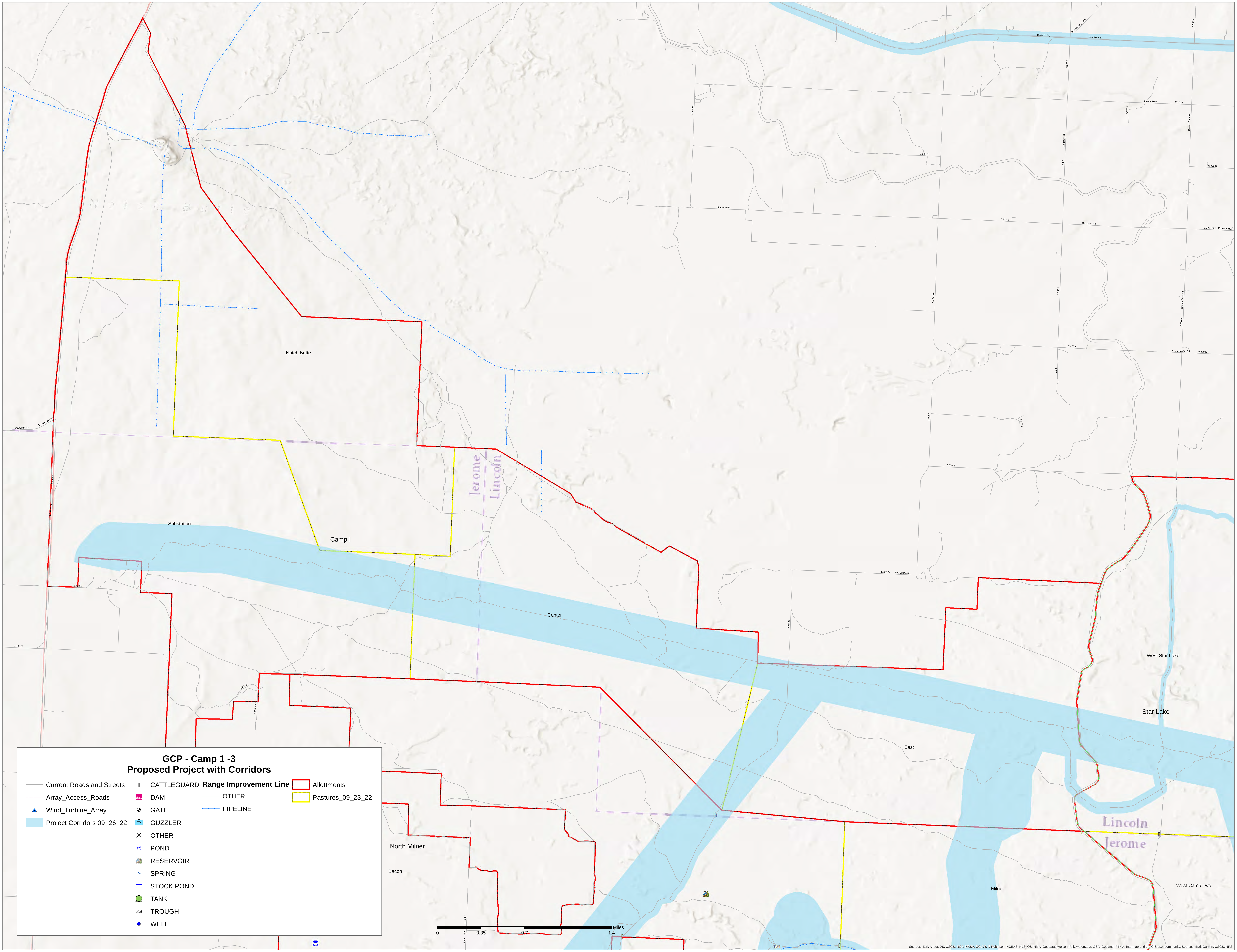
GCP - Camp 1 -2
Proposed Project

- Current Roads and Streets
- Array_Access_Roads
- Wind_Turbine_Array
- CATTLEGUARD
- DAM
- GATE
- GUZZLER
- OTHER
- POND
- RESERVOIR
- SPRING
- STOCK POND
- TANK
- TROUGH
- WELL
- **Range Improvement Line**
- OTHER
- PIPELINE
- Allottments
- Pastures_09_23_22

Notch Butte
Substation
Camp I
Center
North Milner
Bacon
East
West Star Lake
Star Lake
Milner
West Camp Two
Lincoln
Jerome

Miles
0 0.35 0.7 1.4

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: Esri, Garmin, USGS, NPS


GCP - Camp 1 -3
Proposed Project with Corridors
Current Roads and Streets
Array_Access_Roads
Wind_Turbine_Array
Project Corridors 09_26_22
CATTLEGUARD
DAM
GATE
GUZZLER
OTHER
POND
RESERVOIR
SPRING
STOCK POND
TANK
TROUGH
WELL
Range Improvement Line
OTHER
PIPELINE
Allotments
Pastures_09_23_22
Notch Butte
Substation
Camp I
Center
Jerome
Lincoln
West Star Lake
Star Lake
East
North Milner
Bacon
Milner
West Camp Two
Miles
0
0.35
0.7
1.4

Lava Ridge Wind Project

Draft Appendix T: Eagle Conservation Plan

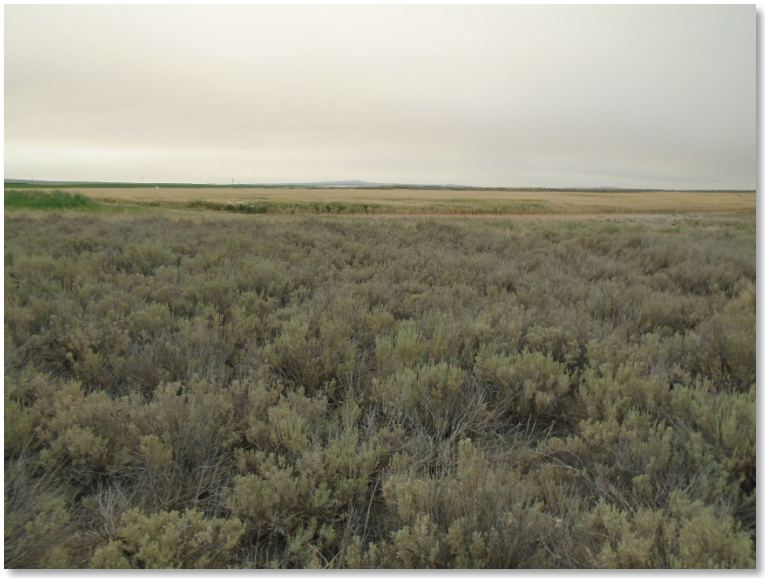
Magic Valley Energy, LLC

October 2022

Eagle Conservation Plan

Lava Ridge Wind Project

Jerome, Lincoln, and Minidoka Counties, Idaho



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October 2022

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Unit Conversions

Imperial	Metric
1.0000 foot	0.3048 meters
3.28 feet	1.00 meter
1.00 mile	1.61 kilometer
0.621 miles	1.00 kilometer
1.00 acre	0.40 hectares
2.47 acres	1.00 hectare

Common Conversions

Imperial	Metric
0.5 miles	800.0 meters
0.12 miles	200.00 meters
0.5 miles	0.8 kilometers
10.0 miles	16.1 kilometers

ACRONYMS AND ABBREVIATIONS

ac	acres
AGL	above ground level
APLIC	Avian Power Line Interaction Committee
BCR	Bird Conservation Region
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CBC	Christmas Bird Counts
CIA	Critical Issues Analysis
CFR	Code of Federal Regulations
CRM	Collision Risk Model
EA	Environmental Assessment
Eagle Rule	Eagle Permits; Revisions to Regulations for Eagle Incidental Take and Take of Eagle Nests; Final Rule; 81 FR 91494 (2016)
ECP	Eagle Conservation Plan
ECP Guidance	Eagle Conservation Plan Guidance
EIS	Environmental Impact Statement
EMU	eagle management unit
ETP	Eagle Incidental Take Permit
FR	Federal Register
ft	feet
GHMA	general habitat management area
GPS	Global Positioning System
ha	hectare(s)
IDFG	Idaho Department of Fish and Game
km	kilometer(s)
kV	kilovolt
LAP	Local Area Population
m	meter(s)
MBTA	Migratory Bird Treaty Act
MCP	minimum convex polygon
mi	mile(s)
MVE	Magic Valley Energy, LLC
NEPA	National Environmental Policy Act
NLCD	National Land Cover Database
O&M	Operations and Maintenance
POD	Plan of Development
Project	Lava Ridge Wind Project
REA	Resource Equivalency Analysis
SPUT	Special Purpose Utility Permit
USC	United States Code
USFWS	US Fish and Wildlife Service
WEG	Land-based Wind Energy Guidelines
WEST	Western EcoSystems Technology, Inc.
WIRS	Wildlife Incident Reporting System

1.0 INTRODUCTION

The proposed Lava Ridge Wind Project (Project) will be located in Jerome, Lincoln, and Minidoka Counties, Idaho. The Project will be composed of up to 400 wind turbine generators. The wind facility will include support structures and ancillary facilities, such as turbine tower sections, an on-site substation, collector lines, a gen-tie line, meteorological towers, and an operations and maintenance (O&M) building. Access to the turbines will be by existing public roads (including those improved to accommodate Project requirements) and new access roads constructed for the Project.

Magic Valley Energy, LLC (MVE) contracted Western EcoSystems Technology, Inc. (WEST) to develop this Eagle Conservation Plan (ECP) to address potential impacts to bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) resulting from operation of the Project. This ECP 1) summarizes the environmental conditions at the Project, 2) describes the avian and eagle studies conducted at the Project, 3) identifies avoidance and risk minimization measures considered in the design of the Project and to be implemented during Project operations, 4) describes eagle fatality monitoring to be conducted at the Project, and 5) provides an adaptive management plan, if needed, to respond to unavoidable impacts to eagles. MVE has coordinated with the US Fish and Wildlife Service (USFWS) throughout Project planning regarding the implementation of the Eagle Conservation Plan Guidance (ECP Guidance) and Land-based Wind Energy Guidelines (WEG). MVE developed this ECP in coordination with the USFWS and anticipates there will be modifications and refinements of the ECP throughout Project development and through further coordination and discussions with the USFWS.

1.1 Project Background

The Project will be located approximately 18 miles (mi; 29 kilometers [km]) northeast of Twin Falls, Idaho (Figure 1.1). The Project area varied over the development phase in response to a number of factors, including the results of environmental studies. Project area boundaries were presented in three different Plans of Development (POD), and the date of POD issuance is used to distinguish the various Project areas in this ECP (Figure 1.2). All environmental studies conducted near or within the current Project boundary (current leased lands) that provide relevant information on eagle use of the Project and surrounding areas were included in this ECP. MVE plans to begin construction of the Project in 2023 within the most recently proposed Project area issued in June 2021, which covers 73,131 acres (ac; 29,595 hectares [ha]; Figure 1.3). The Project will be located primarily on land managed by the Bureau of Land Management (BLM), and all infrastructure located on public land will be within the development corridors in Figure 1.3. In addition, turbines may be placed alternatively on adjacent private lands to accommodate environmental constraints and setbacks on public lands. A preliminary layout of turbines on public lands is provided in Figure 1.3.

The proposed Project components include up to 400 wind turbine generators with the potential for multiple models to be utilized with specifications as outlined below (Table 1.1). Collector lines (34.5 kilovolt [kV]) will be connected to each turbine. Up to five 34.5/230kV collector substations

will be located throughout the Project area to aggregate individual collector lines. A series of 230kV overhead transmission lines will connect to the collector substations. A single 230/500kV interconnector substation will aggregate the 230kV transmission lines from the collector substations. An overhead 500kV transmission line will connect the 230/500kV substation to the Project's point of interconnection at Midpoint Substation or an alternative location. Additional infrastructure includes up to 359 mi (578 km) of access roads, up to three O&M buildings, and up to five permanent meteorological towers.

Table 1.1. Minimum and maximum wind turbine characteristics for the Lava Ridge Wind Project.

Characteristic	Minimum	Maximum
Hub Height (ft)	260	460
Rotor Diameter (ft)	260	560
Rotor Swept Area (square ft)	53,100	246,400
Total Height (ft)	390	740

ft = feet.

1.2 Regulatory Framework

The regulatory framework for protecting eagles includes the Bald and Golden Eagle Protection Act (BGEPA; 16 United States Code [USC] 668-668d [1940] and 50 Code of Federal Regulations [CFR] 22.26 [2009]) and the Migratory Bird Treaty Act (MBTA; 16 USC 703 [1918], 50 CFR 10 [1973], 50 CFR 21 [1974]). The BGEPA provides that "unless permitted to do so as provided in the BGEPA," it is unlawful to "take, possess, sell…any bald eagle…or any golden eagle, or any part, nest, or egg thereof….". The BGEPA defines "take" to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The MBTA applies to migratory birds, which include bald and golden eagles, and provides that "unless and except as permitted by regulations…, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill…any migratory bird, any part, nest, or egg of any such bird….". The USFWS has not promulgated regulations under the MBTA providing permits for non-purposeful take. Given the lack of a permitting mechanism, and because interpretation of the MBTA's prohibition of incidental take is under review by the current administration, continued monitoring of the MBTA relative to its impact on eagle take permits is recommended.

In 2009, the USFWS promulgated a final rule on two new permit regulations that, for the first time, specifically authorized the non-purposeful (i.e., incidental) take of eagles and eagle nests to protect interests in particular localities under the BGEPA (50 CFR 22.26 [2009] & 22.27 [2009]). The 2009 regulation authorized programmatic (i.e., ongoing) take, but required that any authorized programmatic take is unavoidable after implementing advanced conservation practices. The 2009 regulation provided a mechanism whereby the USFWS may legally authorize the non-purposeful take of eagles if the "take is compatible with the preservation of each species."

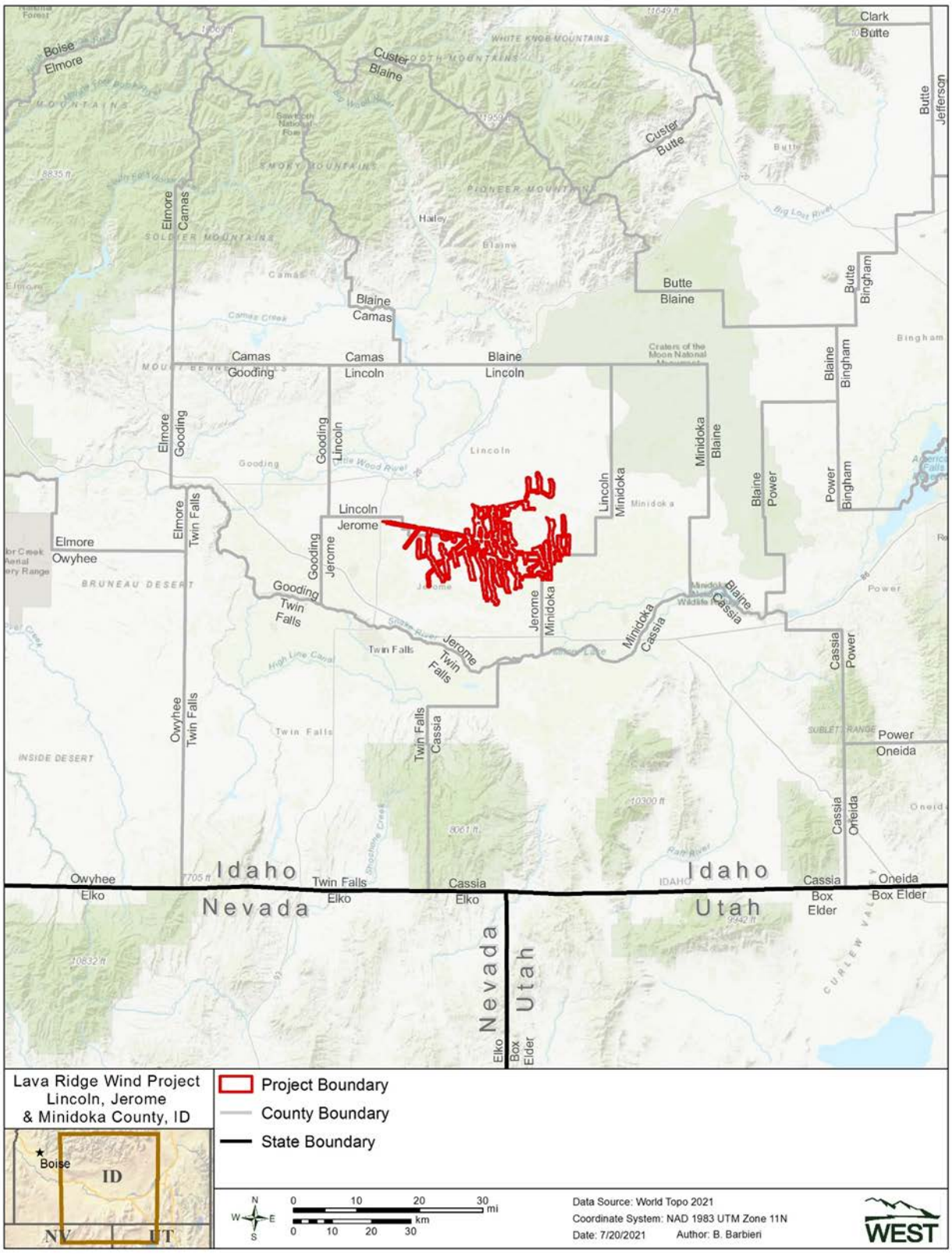

Figure 1.1. Location of the Lava Ridge Wind Project in Jerome, Lincoln, and Minidoka counties, Idaho.

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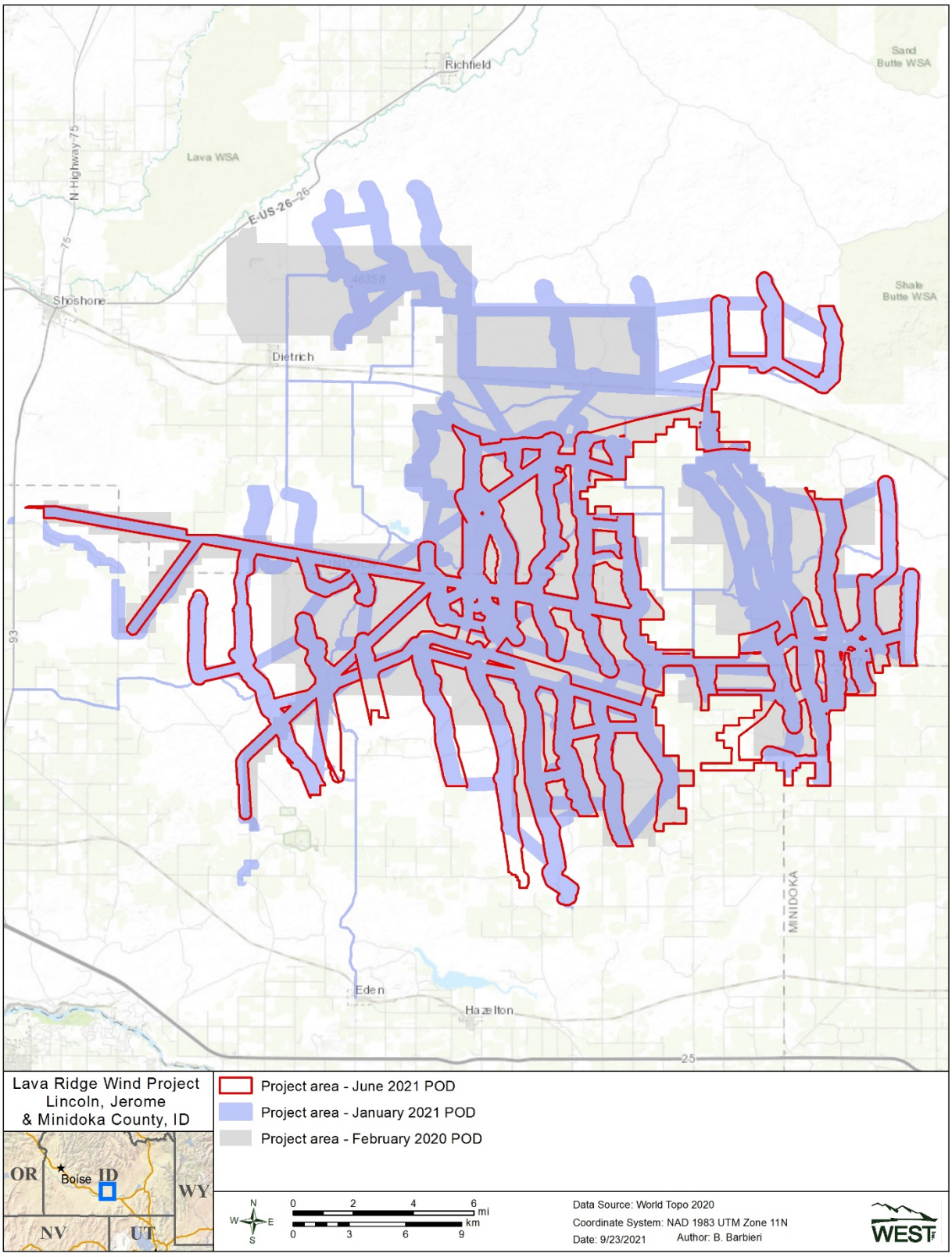

Figure 1.2. Project areas proposed over time in Plans of Development issued for the Lava Ridge Wind Project.

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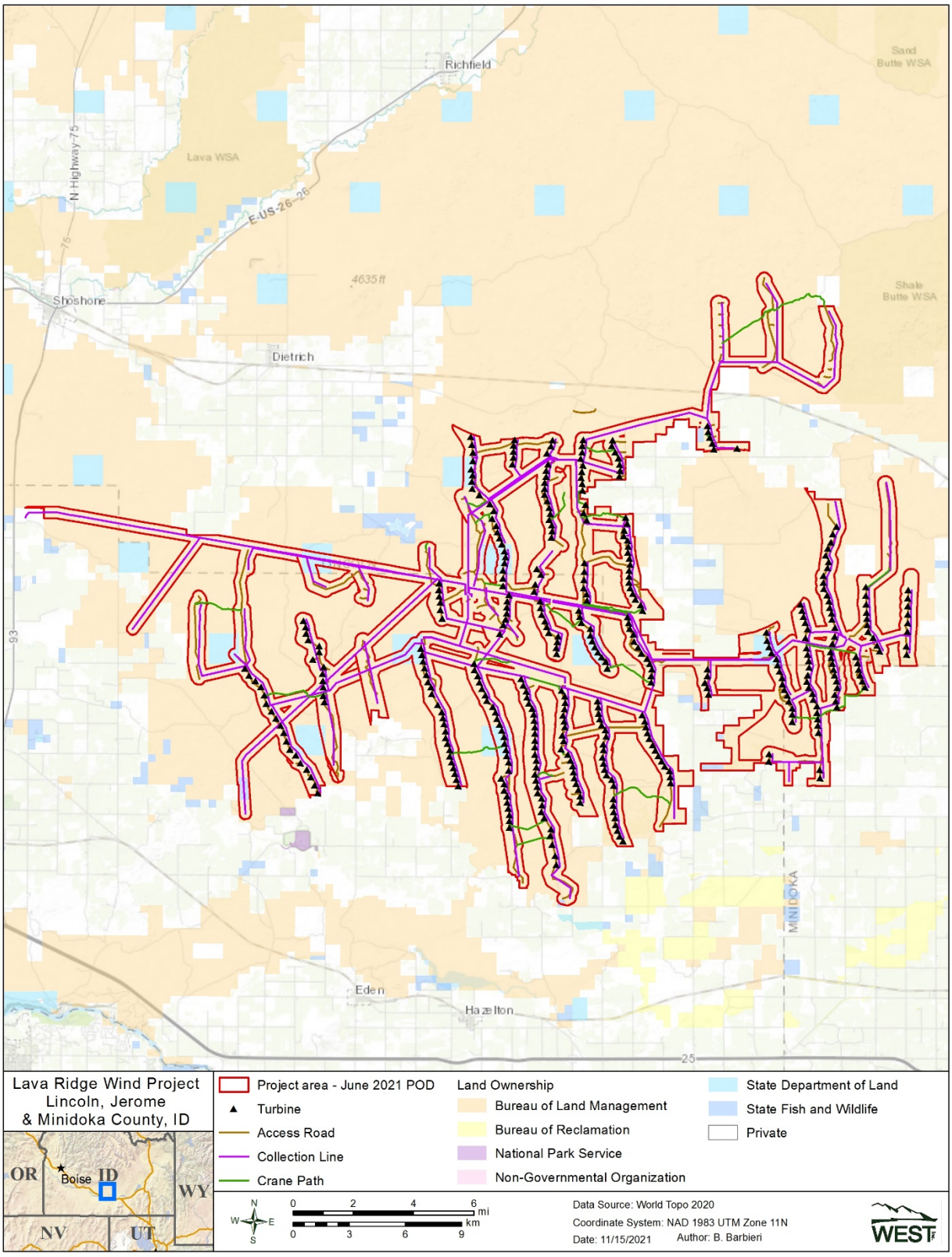

Figure 1.3. Project infrastructure proposed for the Lava Ridge Wind Project.

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In April 2013, the USFWS released its ECP Guidance, which explains its approach to issuing programmatic eagle take permits. It provides guidance to applicants and biologists for conservation practices and adaptive management necessary to meet standards required for issuance of these permits and to comply with the BGEPA.

On December 9, 2013, the USFWS issued a final rule in the Federal Register (FR; 78 FR 73704 [2013]) extending the maximum term for programmatic permits to 30 years and maintaining discretion to issue permits of shorter duration, as appropriate. The final rule went into effect on January 8, 2014, but was subsequently vacated by a federal district court (*Shearwater v. Ashe*, No. 14-CV-02830-LHK [N.D. Cal. 2015]; 81 FR 8001, Feb. 17, 2016).

On December 16, 2016, the USFWS promulgated a final rule in the FR (81 FR 91494 [2016]; Eagle Rule) revising the regulations for incidental take of eagles and take of eagle nests. The USFWS analyzed various alternative management options and rule revisions, including the final rule revision, in a programmatic environmental impact statement and record of decision published in December 2016 (USFWS 2016b). Revisions included changes to permit issuance criteria and duration, definitions, compensatory mitigation standards, criteria for eagle nest removal permits, permit application requirements, and fees.

The National Environmental Policy Act (NEPA; 42 USC § 4321 et seq. [1970]) applies to issuance of eagle take permits because issuing such a permit is a federal action (USFWS 2016b). The USFWS must complete a NEPA analysis before it can issue an Eagle Incidental Take Permit (ETP). The NEPA analysis for the ETP will be tiered to the NEPA analysis being conducted by the BLM for the Project.

1.3 Project Coordination with Resource Agencies

MVE initiated coordination with state and federal agencies early in the development process. The NEPA process was initiated in September 2020 and has resulted in frequent coordination with the BLM and cooperating agencies on preparation of the Environmental Impact Statement (EIS) for the Project. These meetings will be included in the EIS record of communication; therefore, only meetings between MVE and USFWS to specifically discuss eagle surveys and permitting are outlined below. Meetings or correspondence are listed chronologically and provide the date, location, attendees, and main discussion topics.

1.3.1 March 26, 2020

Conference Call. Attendees: USFWS (Matt Stuber), MVE (Luke Papez, Brandon Pollpeter), WEST (Melanie McCormack, Chad LeBeau, Eric Hallingstad).
Discussion: MVE introduced the Project and WEST presented the plan for eagle studies. M. Stuber recommended two years of eagle studies, and that studies include buttes and ridgelines. M. Stuber recommended MVE pursue an ETP based on the size of the Project.

1.3.2 August 31, 2020

Conference Call. Attendees: USFWS (Matt Stuber), MVE (Luke Papez, Brandon Pollpeter), WEST (Melanie McCormack, Chad LeBeau, Eric Hallingstad).

Discussion: WEST presented the results of the first six months of avian use surveys and the first year of eagle and raptor nest surveys. M. Stuber commented that avian use survey data collected to date is not concerning but cautioned that winter use is higher in the region. One golden eagle nest documented within the Project area was discussed and M. Stuber recommended no turbines within a 2.0-mi (3.2-km) buffer of the nest.

1.3.3 March 11, 2021

Conference Call. Attendees: USFWS (Matt Stuber), MVE (Luke Papez, Brandon Pollpeter), WEST (Melanie McCormack, Chad LeBeau, Eric Hallingstad).
Discussion: WEST presented updated study results for the Project and described eagle and raptor studies planned for 2021. M. Stuber acknowledged that the documented golden eagle nest had been avoided, but suggested further opportunity for siting adjustments would eliminate all overlap of Project infrastructure within 2.0 mi (3.2 km) of the nest. Timing of ETP application and the NEPA process were discussed.

1.3.4 March 25, 2021

Email to USFWS (Matt Stuber) from WEST (Melanie McCormack) on behalf of MVE.
Discussion: WEST presented the 0.6-mi (1.0-km) buffer of turbine approach for determining eagle use study effort for Year 2, and requested feedback from USFWS.

1.3.5 April 15, 2021

Phone call from USFWS (Matt Stuber) to WEST (Melanie McCormack).
Discussion: USFWS relayed that the proposed Year 2 avian use survey study design was brought to the national eagle team for discussion, and concerns were raised. M. Stuber suggested breaking the Project into 3-4 minimum convex polygons (MCP) to calculate percent coverage (and ensure the USFWS's 30% coverage recommendation is met).

1.3.6 April 22, 2021

Phone call from WEST (Eric Hallingstad) to USFWS (Matt Stuber).
Discussion: WEST and USFWS discussed the MCP approach to calculate coverage, and potential issues with less than 30% coverage of the new Project boundary using the Year 1 point locations.

1.3.7 April 28, 2021

Email from WEST (Melanie McCormack and Eric Hallingstad) on behalf of MVE to USFWS (Matt Stuber).
Discussion: WEST and MVE provided a technical memorandum describing the approaches used to design Year 1 and Year 2 eagle use studies, and requested that M. Stuber discuss the memorandum with the USFWS national eagle team.

1.3.8 May 11, 2021

Phone call from WEST (Chad LeBeau) to USFWS (Matt Stuber).

Discussion: WEST and USFWS discussed the outcome of M. Stuber's conversation with the national eagle team regarding eagle use studies at the Project. M. Stuber relayed that he was comfortable with the amount of data that would be collected, and a take prediction could be calculated. M. Stuber mentioned he would like to see an adaptive management measure in the ECP that addresses the exception granted (less than 30% coverage during Year 1).

1.3.9 July 8, 2021

Conference call. Attendees: Bureau of Land Management (Kasey Prestwich, Codie Martin, Ethan Ellsworth, Jesse Rawson, Pam Murdock, Paul Makela, Colton Baratti), USFWS (Matt Stuber and Katie Powell), MVE (Luke Papez and Brandon Pollpeter), WEST (Melanie McCormack and Eric Hallingstad).

Discussion: Purpose was to discuss coordinating the ETP application and permitting process with the Lava Ridge EIS. MVE indicated intent to submit ETP application by July 16, 2021. Discussed ETP process, timing of USFWS take estimation and the EIS timeline, Project boundary changes following the first year of studies, and mitigation options. USFWS expressed intent to work alongside the EIS process, and that it would prioritize developing take estimates for incorporation into the Draft EIS once an application and the Project data are received. A take estimate for the Draft EIS would be based on a subset of data collected in Year 1 to inform the analysis, and updated once two years of data collection is completed.

1.3.10 September 17, 2021

Letter from USFWS (Michelle McDowell) to MVE (Luke Papez)
Content: Letter received from USFWS acknowledging receipt of a long-term ETP application from MVE on July 28, 2021. Matt Stuber was listed as primary point of contact. USFWS also noted that an ECP had not yet been submitted.

1.3.11 December 10, 2021

Email from WEST (Melanie McCormack) on behalf of MVE to USFWS (Matt Stuber).
Content: WEST provided an updated spreadsheet of eagle data based on the first year of eagle use surveys.

1.3.12 December 14, 2021

Letter from USFWS (Matt Stuber) to MVE (Luke Papez)
Content: Provided preliminary estimate of incidental eagle take for the Project; outlined preliminary project-specific mitigation measures; and provided the USFWS's requirements for Avoidance and Minimization, Compensatory Mitigation, Eagle Fatality Monitoring, 5-Year Reviews, and Adaptive Management at permitted wind energy projects.

1.3.13 January 24, 2022

Letter from MVE (Luke Papez) to USFWS (Matt Stuber)
Content: Acknowledged the preliminary estimate of incidental eagle take for the Project, as provided in the USFWS letter dated December 14, 2021, as a conservative value likely to be

modified based on two years of pre-construction eagle survey data and Project details to be refined prior to construction. Informed the USFWS that MVE plans to develop a compensatory mitigation plan for the Project that will involve compensatory mitigation in five-year increments.

1.3.14 April 19, 2022

Conference Call. Attendees: USFWS (Matt Stuber), MVE (Luke Papez, David Wilson, Don Brickner), WEST (Melanie McCormack, Chad LeBeau, Eric Hallingstad).
Discussion: WEST presented updated study results for the Project and discussed timeline for updated take estimate to meet Draft EIS deadline. Revisions to proposed avoidance and minimization measures provided to MVE by USFWS were also discussed.

1.3.15 April 25, 2022

Email from USFWS (Matt Stuber) to MVE (Don Brickner).
Content: The USFWS provided a revised list of avoidance and minimization measures based on the discussion on April 19, 2022 (see above) and written comments provided by MVE on April 6, 2022.

2.0 SITE SUITABILITY AND PRE-CONSTRUCTION SURVEYS

2.1 Environmental Setting

The Project is located in the Snake River Basin Ecoregion (US Environmental Protection Agency 2017), which is comprised of alluvial flats and low hills surrounding the Snake River. Natural vegetation within this ecoregion is dominated by sagebrush, although barren lava fields also occur. According to the National Land Cover Database (NLCD 2016), the majority (79.2%) of the Project area is grassland/herbaceous. Shrub/scrubland (primarily sagebrush) cover composes 19.3% of the Project area, and remaining land cover types compose less than 2.0% (Figure 2.1). Topography within the Project is primarily flat with low rolling hills, with steeper terrain located in the northwest corner of the Project. Elevations range from approximately 1,234 meters (m; 4,050 feet [ft]) to 1,547 m (5,077 ft). Few trees or water resources are found within the Project area.

2.2 Site Suitability

Stage 1 of the ECP Guidance consists of an initial site assessment, during which a wind project developer evaluates broad geographic areas to assess the relative importance to resident breeding and non-breeding eagles, and to migrant and wintering eagles. The Project location was chosen based on the results of a Critical Issues Analysis (CIA), which indicated that sensitive resources, although present, could reasonably be avoided through careful siting of Project infrastructure. Prior to moving forward with the Project, MVE considered a number of alternative sites in Idaho for development, two of which were removed from consideration based on the results of preliminary wildlife studies that indicated sensitive resources, including nesting eagles, would be critically impacted by wind development. The site was also reviewed for eagle use by evaluating the general layout of the topography and environmental resources of the Project area and surrounding landscape.

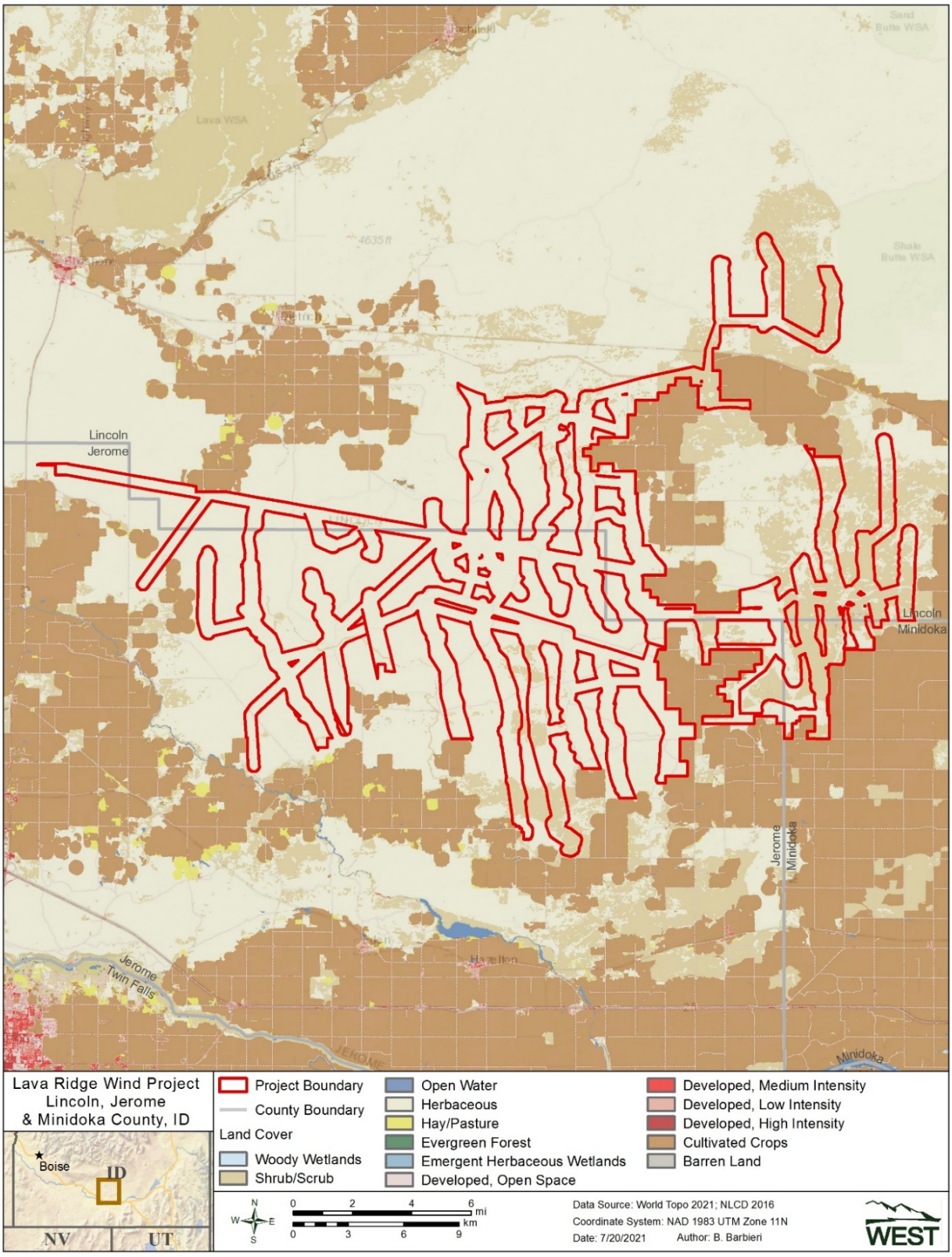

Figure 2.1. Land cover types at the Lava Ridge Wind Project.

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Bald eagles typically nest in forested areas that provide nesting and perching habitat adjacent to large bodies of water, often constructing their nests in mature, super-canopy trees (Buehler 2000). During winter, bald eagles roost in large trees adjacent to water. While the Project area is located within 10 mi (16 km) of the Snake River, no suitable nesting or roosting habitat is available within close proximity to the Project area based on aerial imagery and WEST's field reconnaissance. As no publicly available records of bald eagle nests or roosts in the vicinity of the Project area were available, the CIA included a review of publicly available observation records (e.g., eBird, Christmas Bird Counts [CBC]). There were no records of bald eagle observations within the Project area. The majority of bald eagle records were in association with the Wilson Lake Reservoir and Snake River, which are 5-10 mi (8-16 km) south of the Project, respectively.

Golden eagles in the western US generally prefer to nest in mountainous canyon and rim-rock terrain of shrub/scrub, deserts, savannahs and grasslands, because these locations provide cover as well as close proximity to open spaces and suitable foraging habitat (Kochert and Steenhof 2002). Suitable golden eagle nesting habitat is limited within the Project area, as there are no trees, cliffs, or steep ravines. Suitable foraging habitat for golden eagles includes shrub/scrub and grasslands where small mammalian prey is abundant (Kochert and Steenhof 2002). As no publicly available records of golden eagle nests in the vicinity of the Project area were available, the CIA included a review of publicly available observation records (e.g., eBird, CBC). These public records included observations of golden eagles within the Project area, the timing of which indicated use of the Project throughout the year.

2.3 Pre-construction Surveys (Stage 2/Tier 3 Studies)

Various pre-construction surveys have been conducted for the Project. Studies that provide data on eagle use of the Project area include raptor nest surveys and large bird use surveys. In addition, surveys for sensitive species that could provide a prey resource for eagles have been conducted, including surveys for sage-grouse leks, Piute ground squirrel, and pygmy rabbit (Table 2.1).

Table 2.1. List of pre-construction field survey reports with information on eagles.

Date	Study	Citation
March 2020 – July 2020	Eagle and Raptor Nest Survey – Year 1	McCormack et al. 2020a
March 2021 – July 2021	Eagle and Raptor Nest Survey – Year 2	Harrison and McCormack 2021
March 2020 – May 2020	Sage-grouse Lek Surveys	McCormack et al. 2020b
April 2020 – March 2021	Large Bird Avian Use Surveys – Year 1	McCormack and LeBeau 2021
April 2021 – March 2022	Large Bird Avian Use Surveys – Year 2	TBD (survey in progress)
April 2021 – May 2021	Piute Ground Squirrel Surveys	McCormack and Harvey 2021
February 2021	Pygmy Rabbit Surveys	Rintz and McCormack 2021

2.3.1 Fixed-point Large Bird Avian Use Surveys

Two years of fixed-point avian use surveys were initiated at the Project in April 2020. The objective of the avian use studies was to describe temporal and spatial use of the Project area by eagles and other birds. Per the ECP Guidance, eagle use studies should be designed to cover at least 30% of a MCP (or MCPs) delineating the hazardous area of proposed turbines in order to provide sufficient data to predict eagle take.

2.3.1.1 Year 1 Methods

Proposed turbine locations were unavailable when initially designing the study; therefore, Year 1 survey locations were selected to provide coverage of at least 30% of the Project area as defined in the February 2020 POD (Figure 1.2), which was issued just prior to initiating studies. The Project area was last revised in June 2021 in response to environmental constraints, following the completion of the Year 1 study (Figure 2.2). Survey points were established throughout the Project area and were centered within circular survey plots with an 800-m (2,625-ft) radius. Sixty-minute (min) surveys were conducted once per month across all seasons, as specified in the ECP Guidance and 2016 Final Eagle Rule. Surveys were conducted during daylight hours, and survey times at survey points were randomized to cover all daylight hours during a season. Surveys were conducted under all weather conditions except when visibility was less than 800 m (2,625 ft) horizontally or 240 m (787 ft) vertically (2016 Final Eagle Rule). For all eagle observations, biologists recorded age class, flight height, distance from observer, and activity at the time of initial observation. Flight height, distance, and behavior were also recorded at the start of each minute for the duration of time an eagle was in view. Minute data were used to quantify exposure minutes, defined as a minute during which an eagle was flying below 240 m (787 ft) above ground level (AGL; based on maximum blade tip height of the largest turbine model currently available) and within 800 m (2,625 ft) of the survey location at any time. Flight paths and perch locations were also recorded on topographical maps and digitized in GIS.

2.3.1.2 Year 1 Results

The first year of avian use surveys were conducted at 90 point count locations from April 3, 2020 – March 31, 2021, totaling 1,080 survey hours (Figure 2.2). Golden eagle was the only eagle species recorded during the 12-month study. Golden eagle use was 0.03 observations/800-m radius plot/60-min survey in all seasons. Golden eagles were seen during 3.3% of surveys in the spring and fall, compared with 1.9% of surveys in summer and 2.2% of surveys in winter.

During the study, 257 eagle minutes were recorded from 41 observations, which included eagle observations inside and outside the survey plot and observations of perched eagles. Of these, 61 golden eagle exposure minutes (minutes of flight within 800 m [2,625 ft] plot and at or below 240 m [787 ft] AGL) resulted from 28 eagle observations. Temporally, eagle exposure minutes per survey hour ranged from zero minutes in June to 0.167 minutes in August. Spatially, golden eagles were recorded at 19 of 90 survey points (Figure 2.3).

Of the 19 survey points where golden eagle use was recorded, five are located north and outside of the current Project area and MCPs (Figure 2.2). This includes Point 57, which had the highest number (10) of exposure minutes recorded, and Points 11, 50, 71, and 82, at which one exposure minute was recorded at each point. Collectively, 14 of the 61 exposure minutes recorded were outside the MCPs based on the June 2021 Project area. Twenty-two of the Year 1 avian use survey points were located north and outside of the June 2021 boundary. Data collected at these points and points north of the June 2021 Project area will be excluded from the USFWS Collision Risk Model (CRM; USFWS 2018b) for predicting eagle take. Removing these points would result in 47 eagle exposure minutes over 816 hours of observation.

2.3.1.3 Year 2 Methods

The second year of avian use surveys were conducted at 120 avian use points from April 1, 2021 – April 17, 2022 (Figure 2.4). The 120 points included 66 points from the Year 1 study and an additional 54 points randomly selected to provide coverage of areas added to the Project area and included in the June 2021 POD. The coverage provided by the 120 survey plots selected for the Year 2 study exceed 30% coverage of each MCP, ranging from 31.0% to 41.9% coverage. MCP's were based on preliminary turbine locations proposed on both public and private lands being considered for development, and include all proposed turbine corridors in the June 2021 POD. Survey methods regarding survey length and data collection for eagles and other large birds followed the same methods used in Year 1 (see Section 2.3.1.1).

2.3.1.4 Year 2 Results

The second year of avian use surveys were conducted at 120 point count locations from April 1, 2021 – April 17, 2022, totaling 1,430 survey hours (Figure 2.2). Both bald and golden eagles were recorded during the Year 2 study. Golden eagle use was 0.02 observations/800-m radius plot/60-min survey in spring and summer, 0.04 in fall, and highest in the winter at 0.07. Golden eagles were seen during 4.2% of surveys in the fall and winter, compared with 1.7% of surveys in summer and 1.5% of surveys in spring. Bald eagle mean use was less than 0.01 observations/800-m radius plot/60-min survey in fall and winter, and zero (not observed) in spring and summer.

During the study, 1,040 golden eagle minutes were recorded from 100 observations, which included eagle observations inside and outside the survey plot and observations of perched eagles. Of these, 149 golden eagle exposure minutes (minutes of flight within 800 m [2,625 ft] plot and at or below 240 m [787 ft] AGL) resulted from 53 eagle observations. Temporally, golden eagle exposure minutes per survey hour was highest in December at 0.24 exposure min/60-min survey. Spatially, golden eagle exposure minutes were recorded at 38 of 120 survey points, and were highest at Point 84 (0.83 exposure min/60-min survey) and Point 107 (0.63; Figure 2.4).

Bald eagles were also recorded in Year 2, with 50 bald eagle minutes recorded from three observations, 11 of which were exposure minutes. Bald eagles were observed during the months of October, February, and March, and were recorded at Points 54, 100, and 121 (Figure 2.2).

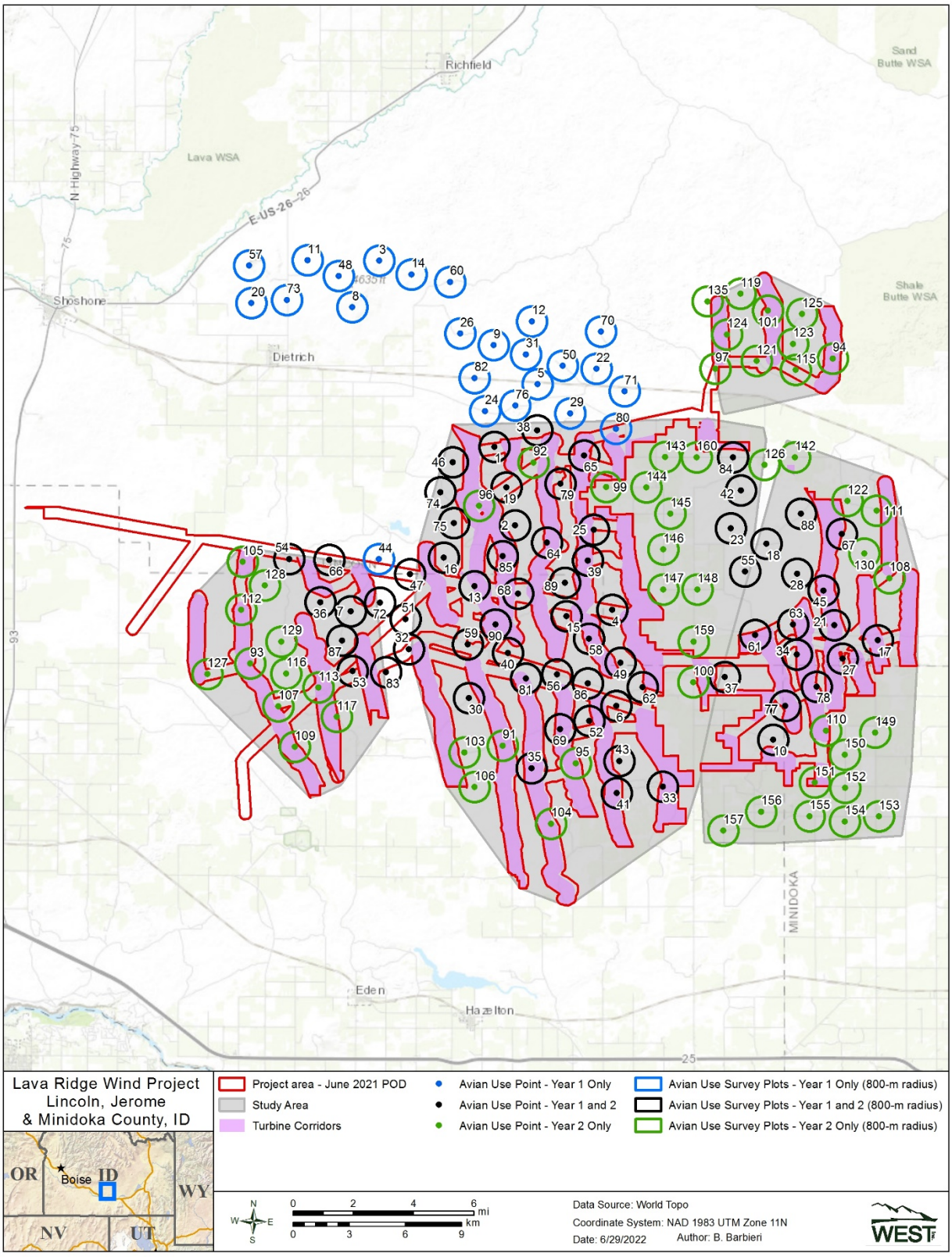

Figure 2.2. Avian use point count locations surveyed in Year 1 (April 3, 2020 – March 31, 2021) and Year 2 (April 1, 2021 – April 17, 2022) at the Lava Ridge Wind Project.

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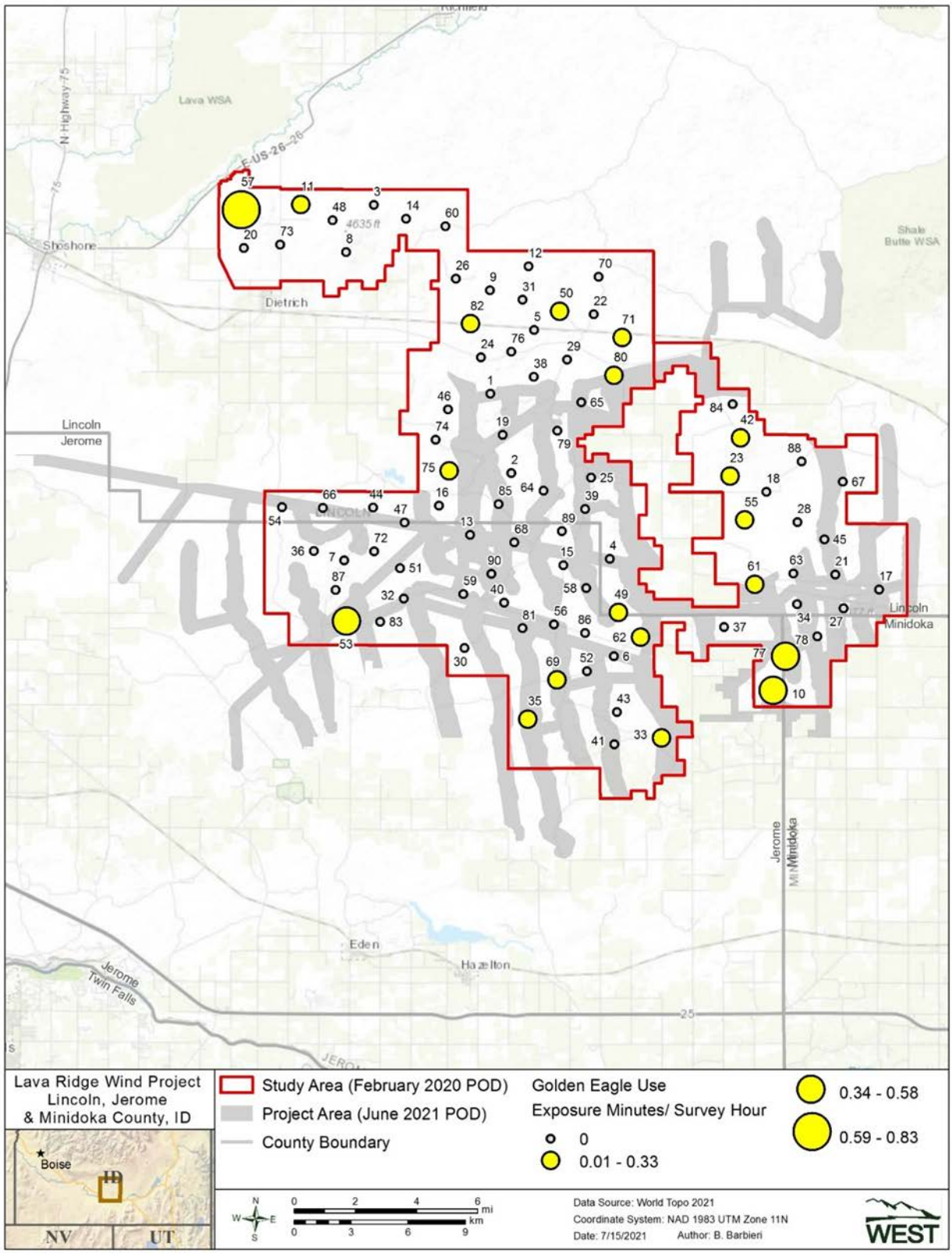

Figure 2.3. Eagle exposure minutes per survey hour recorded at the Lava Ridge Wind Project during Year 1 (April 3, 2020 – March 31, 2021) avian use studies.

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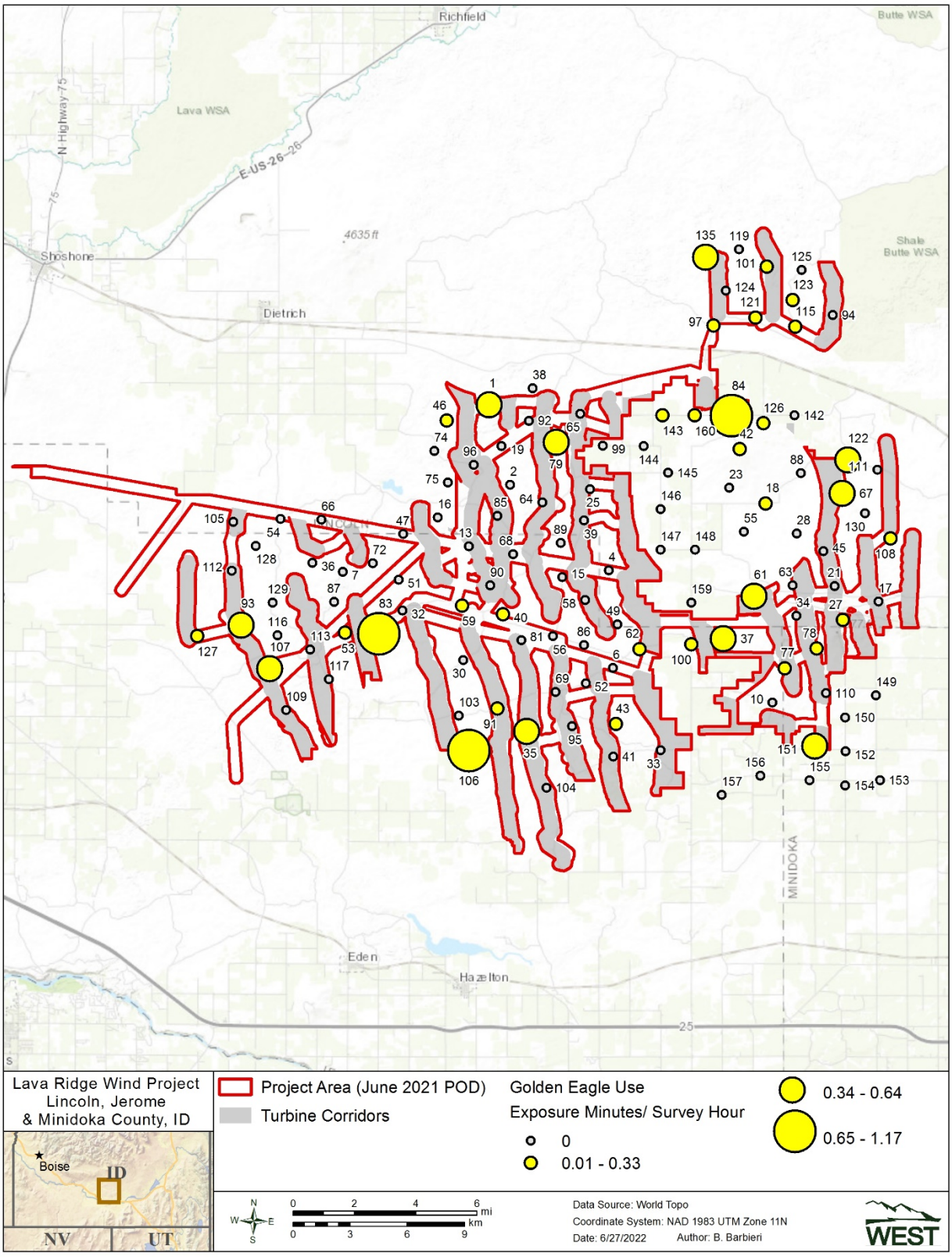

Figure 2.4. Golden eagle exposure minutes per survey hour recorded at the Lava Ridge Wind Project during Year 2 (April 1, 2021 – April 17, 2022) avian use studies.

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2.3.2 Eagle and Raptor Nest Surveys

The objective of eagle and raptor nest surveys was to characterize the raptor nesting community in the Project vicinity to provide information that can be used to predict potential impacts to nesting raptors and aid in identifying methods of avoiding and/or minimizing impacts. Nest surveys were completed over two breeding seasons in accordance with the ECP Guidance (USFWS 2013) and the Eagle Rule (USFWS 2016b). Although recent guidance from USFWS on eagle surveys recommends only surveying the area within 2.0 mi (3.2 km) of a project footprint (USFWS 2020a, 2020b), eagle nest surveys for the Project extended further out to 10 mi (16 km) in 2020 and 2.5 mi (4.0 km) in 2021. In addition, protocols used for eagle nest surveys were presented to and approved by USFWS prior to surveys. All data collected from the various surveys are presented in the summaries below, regardless of distance from the Project. Data for all raptor nests recorded included location (collected using a Global Positioning System [GPS]), species, occupancy status, and nest substrate. Occupancy was determined using the following definitions:

- Occupied nest – a nest structure at which one of the following was observed: an adult eagle in an incubating position; a pair of adult eagles perched at or near the nest during the nesting season; evidence of fresh greenery or new nest material; or the presence of eggs or nestlings.
- Unoccupied nest – a nest structure that did not qualify as occupied, as defined above.

Occupied nests were further classified as active or inactive. A nest was classified as active if a breeding attempt was made, as evidenced by an incubating adult or the presence of eggs or young in the nest. A nest where no evidence of breeding was observed was classified as inactive, as not all pairs of eagles attempt to nest or nest successfully every year.

2.3.2.1 2020 Results

During the 2020 nesting season, two rounds of aerial surveys were completed to survey all potential eagle nesting substrates within 10 mi (16 km) of the Project based on the February 2020 Project boundary (Figure 2.5). Two golden eagle nests and one bald eagle nest were identified within 10 mi (16 km) of the Project, all of which are outside the current Project boundary. Of these, one was documented within 2.0 mi (3.2 km) of the February 2020 Project boundary—an occupied-inactive golden eagle nest (Nest 3; Figure 2.5). The nest was located on the cliffs of a feature known as Crater Butte, the only cliffs present within 2.0 mi (3.2 km) of the February 2020 Project boundary and more than 8.0 mi (12.9 km) from the current Project boundary.

2.3.2.2 2021 Results

During the 2021 nesting season, two rounds of aerial surveys were completed to survey all potential eagle nesting substrates within 2.5 mi (4.0 km) of the Project based on the Project area in the January 2021 POD (Figure 2.5). Nest 3, first identified in 2020, was the only eagle nest located within 2.5 mi (4.0 km) of the January 2021 Project area. Nest 3 was occupied-active by golden eagles in 2021. The Project footprint has been revised to avoid potential impacts to the nest and other species of concern, as such the nest is more than 8.0 mi (12.9 km) from the Project area in the June 2021 POD (Figure 2.5).

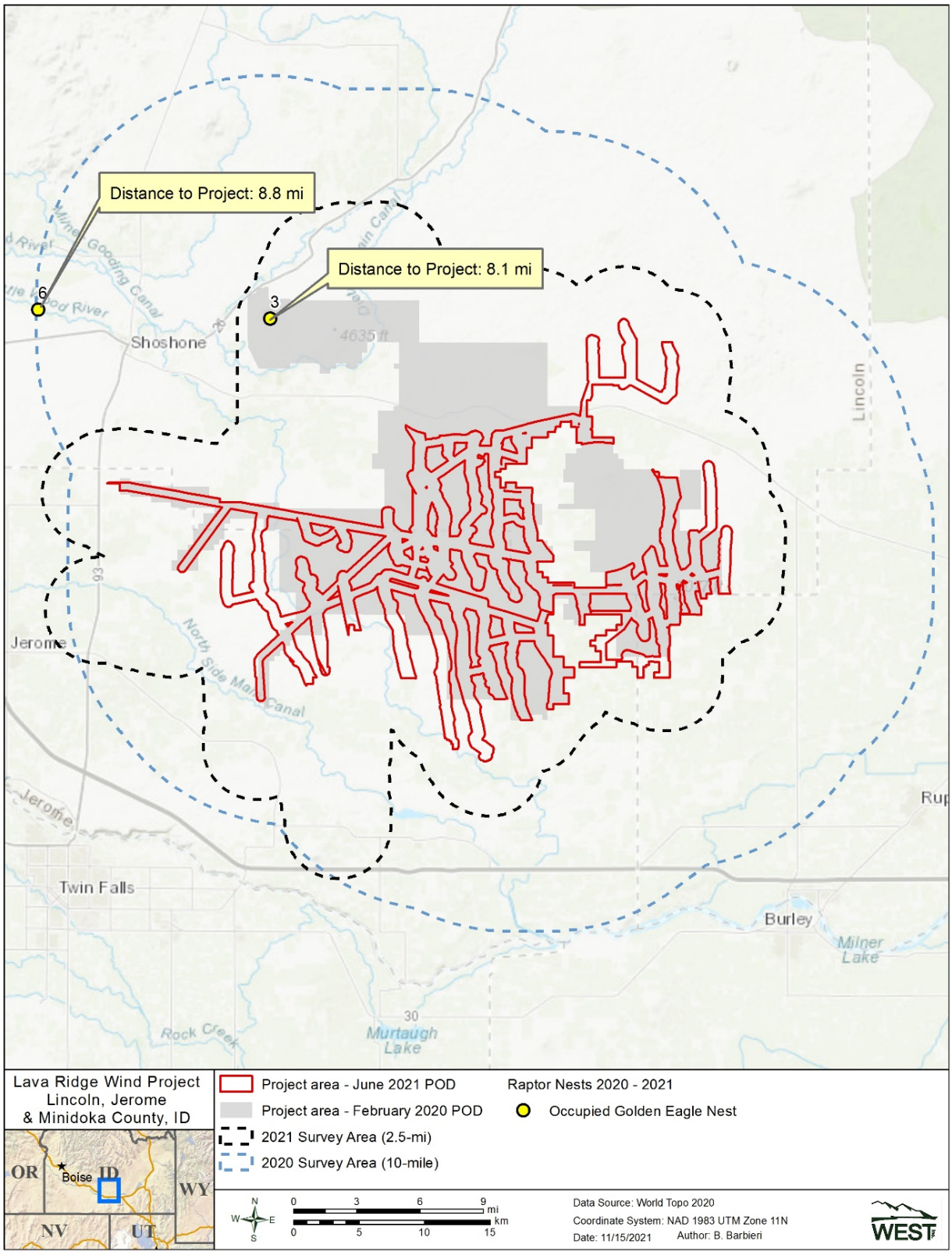

Figure 2.5. Eagle nests identified during the 2020 and 2021 nesting season (March – July) within 10 mi (16 km) of the Lava Ridge Wind Project.

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2.3.3 Eagle Prey Surveys

A number of surveys were conducted for species of concern, many of which represent potential prey resources for golden eagles, from March 2020 – May 2021. A variety of methods were used to collect data for each species, and are outlined along with the results in the following sections.

2.3.3.1 Sage-grouse lek surveys

Methods

WEST coordinated with Idaho Department of Fish and Game (IDFG) to develop study methods for greater sage-grouse during the 2020 and 2021 lekking seasons within the Project area, which is located within a general habitat management area (GHMA). In 2020, a habitat assessment was conducted to identify suitable sage-grouse habitat based on the February 2020 Project area. A single round of aerial transect searches was conducted on March 27 and 28, 2020 to search for leks in all suitable sage-grouse habitat. IDFG also provided the locations of three historical leks within the initial (2020) Project area (Figure 2.6). These leks were surveyed in both 2020 and 2021, with three rounds of surveys conducted at each lek to record the number of displaying males attending the lek. Lek surveys were conducted from one-half hour before sunrise through one hour after sunrise.

Results

The results of the habitat assessment identified suitable sage-grouse habitat in the northern and eastern portions of the February 2020 Project area, where sagebrush habitat is interspersed with herbaceous communities. Much of this northernmost sagebrush habitat is no longer within the Project area due to revisions to the Project's footprint made in the interest of avoiding impact to wildlife species of concern. Based on the June 2021 Project area, sagebrush (shrub/scrub land cover) constitutes approximately 19% of the Project area and is primarily located within the eastern half of the Project (Figure 2.1). The remainder of the Project area is dominated by herbaceous habitat (~79%; NLCD 2016).

No new leks were identified during aerial searches. Three historical leks were surveyed in 2020 (Figure 2.6). Leks 4L152 and 4L159 are located north of the June 2021 Project area and both were active in 2020, with peak counts of six and 18 males, respectively. Lek 4L160, located outside of the June 2021 Project area, was active in 2020 with a peak count of five males recorded. In 2021, leks 4L152, 4L159, and 4L160 had peak counts of 18, 23, and 10 males, respectively.

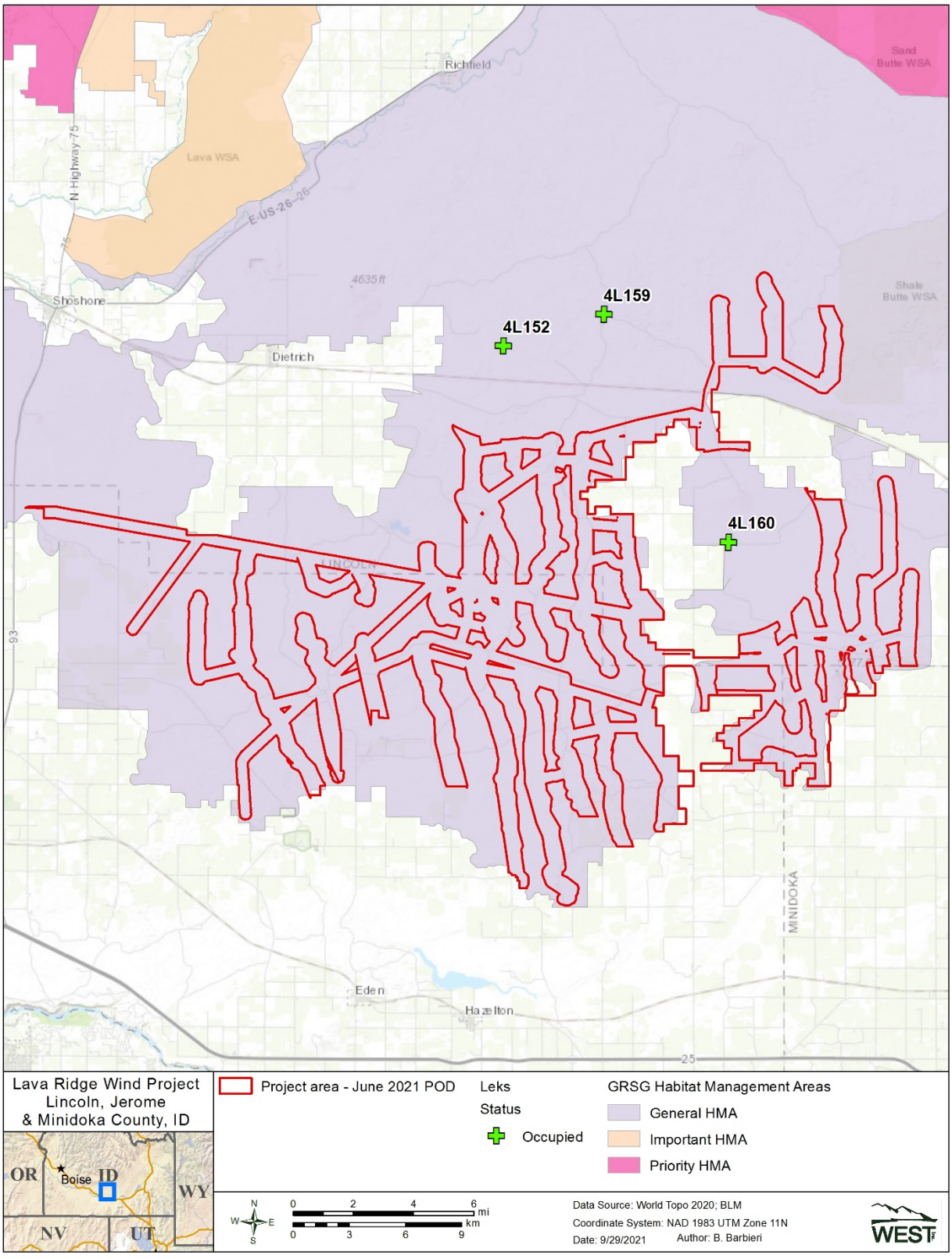

Figure 2.6. Greater sage-grouse leks surveyed during baseline studies conducted in 2020 and 2021 for the Lava Ridge Wind Project.

2.3.3.2 Pygmy rabbit surveys

Methods

Studies to evaluate pygmy rabbit occurrence within the Project area were conducted in February 2021. The objectives of the surveys were to: 1) identify areas within the Project where the species could potentially occur and 2) determine where or whether the species is present. All suitable pygmy rabbit habitat within the Project based on the January 2021 POD was surveyed in February 2021. All rabbit species observed were documented.

Results

Approximately 1,685 ac (682 ha) of suitable pygmy rabbit habitat was surveyed from February 16 – February 18, 2021. Biologists walked 116.5 mi (187.5 km) of transects within suitable habitat (Figure 2.7) during approximately 46 hours of surveys. No sign of pygmy rabbit (e.g., pellet, tracks, or visual observations) was observed during the survey. Visual signs (pellets and tracks) of jackrabbit (*Lepus* spp.) and cottontail (*Sylvilagus* spp.), two species common in golden eagle diets, were observed throughout the survey area (Figure 2.7). Cottontails were widespread and were observed within the majority of areas surveyed.

2.3.3.3 Piute ground squirrel surveys

Methods

The methods used for Piute ground squirrel surveys were designed to maximize detectability of ground squirrels using a practicable means of surveying a large area and were similar to methods used to survey for other burrowing species. Surveys to determine where the species occurs within the Project area were conducted to coincide with the peak activity period for the species. Surveys were conducted within all areas of proposed infrastructure development based on the January 2021 Project area. Survey points were placed at approximately 400-m (1,312- ft) intervals along each road segment located in an infrastructure corridor. A single survey was conducted at each location for a minimum of five minutes, during which biologists used binoculars to scan the landscape for ground squirrels or evidence of ground squirrels (e.g., burrows). If tall vegetation obscured the view of the landscape, biologists walked out to 50 m (164 ft) from the road to search for the species. Observers also listened for the high-pitched call of ground squirrels. In addition, incidental observations of Piute ground squirrels were recorded while conducting other baseline surveys for the Project.

Results

Surveys were conducted at 520 observation points from April 1, 2021 – May 4, 2021. No Piute ground squirrels were detected during surveys. Five observations of Piute ground squirrels have been recorded outside of targeted surveys since baseline surveys were initiated in April 2020; two of these are within the June 2021 Project area. All observations were recorded while en route to avian use survey locations, and were near burrow mounds in habitat adjacent to two-track roads in the southern and eastern portions of the Project (Figure 2.8). None of the observations were associated with large colonies, and would therefore not be considered a concentrated prey resource for eagles.

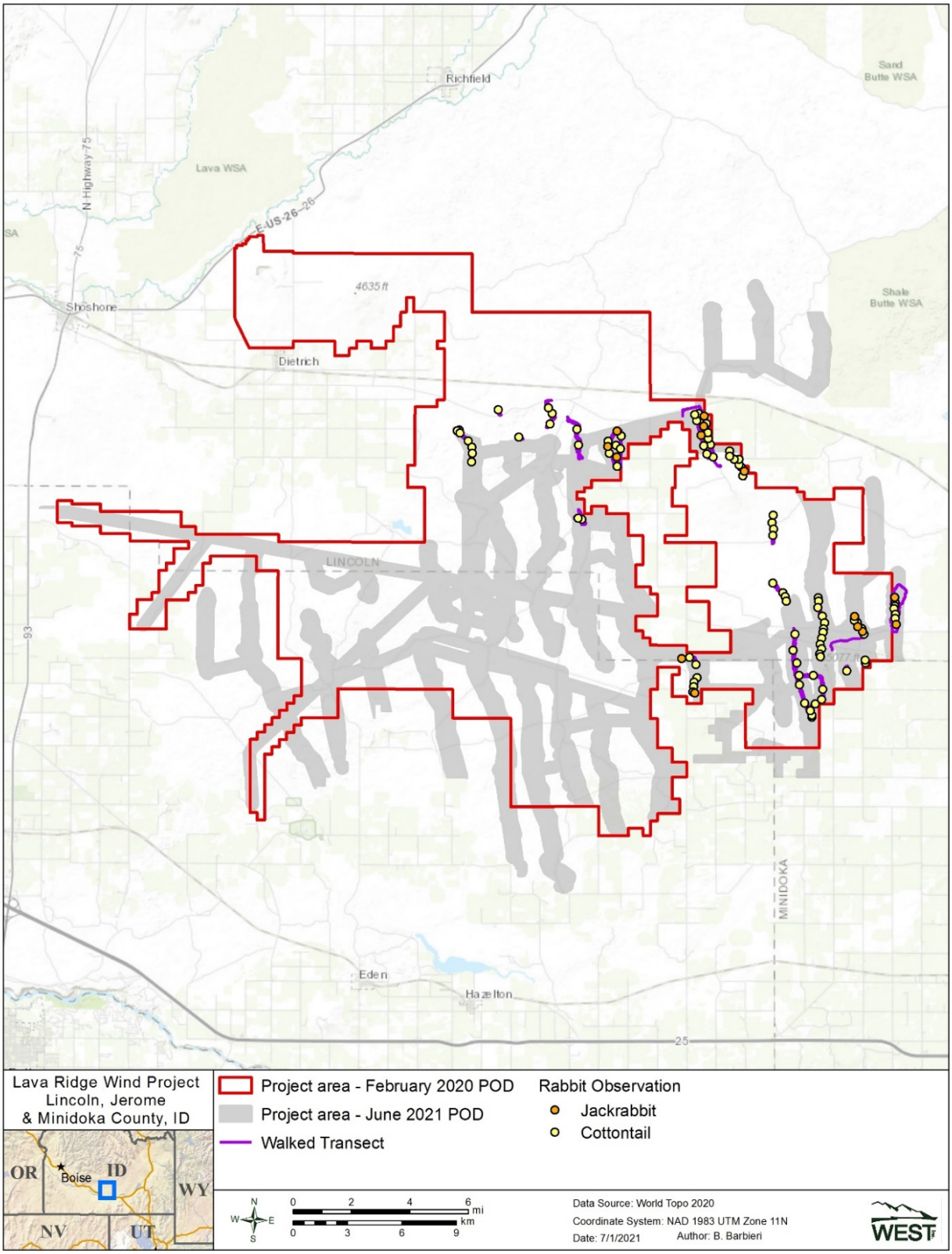

Figure 2.7. Jackrabbit and cottontail observations recorded during pygmy rabbit surveys conducted at the Lava Ridge Wind Project.

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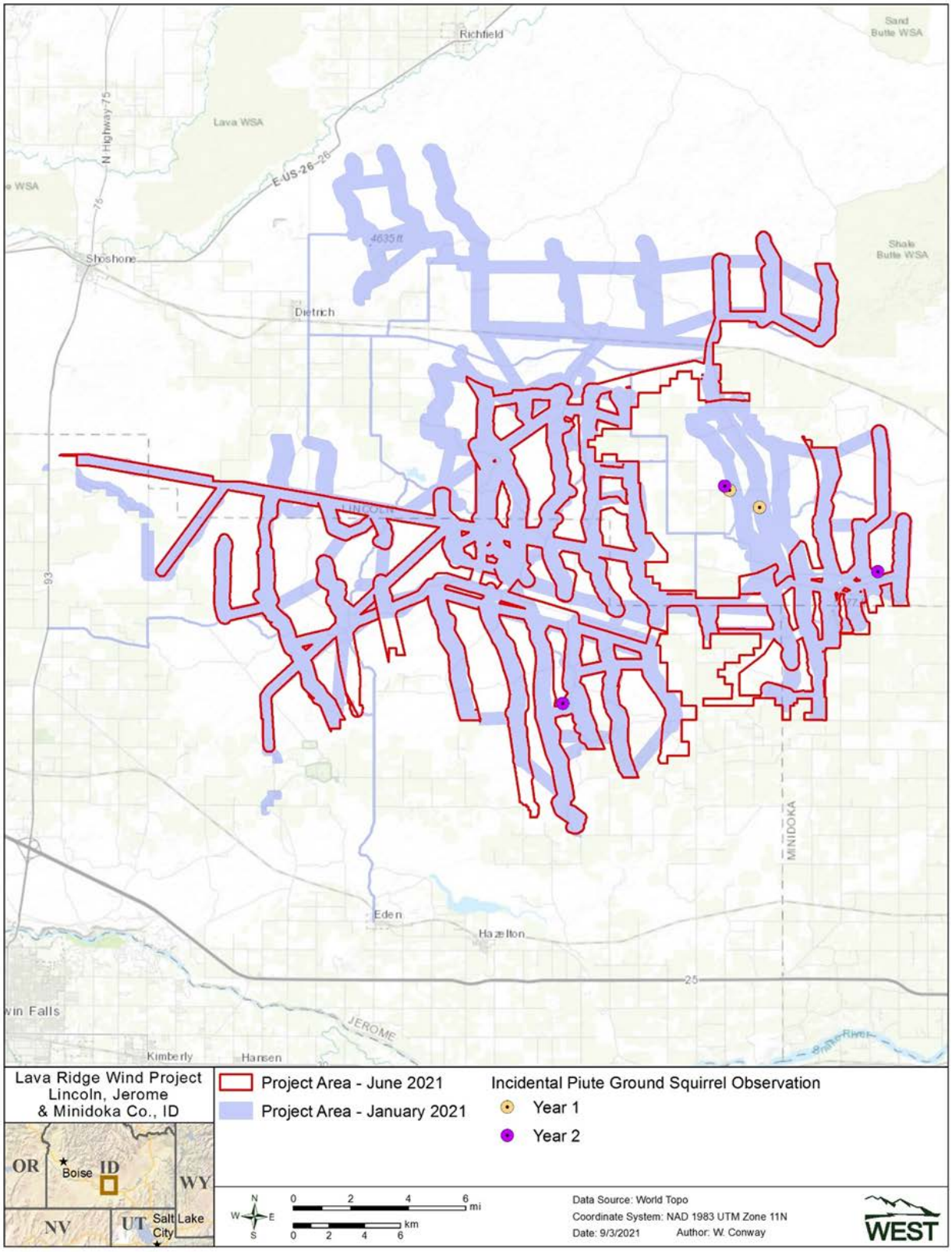

Figure 2.8. Incidental observations of Piute ground squirrels recorded during Year 1 and Year 2 baseline surveys for the Lava Ridge Wind Project.

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2.4 Summary of Site Suitability and Pre-construction Studies

Changes were made to the Project area in response to Tier 3 study results. The Project area does not contain cliffs, mature trees, or deep ravines, and therefore nesting substrate for eagles is limited. As such, no eagle nests were identified within 2.0 mi (3.2 km) of the June 2021 Project area. No large water bodies are present to provide foraging for bald eagles. Foraging opportunities for golden eagles within the current Project boundary are limited to lagomorph species, which are primarily found in shrub habitats that comprise approximately 19% of the Project. One additional prey resource not included in studies is carrion associated with cattle and sheep grazing operations. No concentrations of small mammals were observed, and the Project was sited to avoid sage-grouse leks. Further, eagle use studies did not indicate any concentrated areas of eagle use within the June 2021 Project area, as the Project was sited away from the area of highest use associated with an occupied golden eagle nest. Golden eagles were recorded in all seasons; there were no temporal patterns of higher use. Three bald eagle observations were recorded during the winter; there were no temporal or spatial patterns of use given the low number of observations.

3.0 ASSESSING EAGLE RISK AND PREDICTING FATALITIES

Using the data gathered pursuant to various site assessments and field studies, as summarized in Section 2, MVE has analyzed the potential risks presented by the Project to bald and golden eagles per the USFWS's recommendation under Stage 3 of the ECP Guidance. In addition, because recent guidance from USFWS on eagle nest surveys recommends only surveying the area within 2.0 mi (3.2 km) of the project footprint (USFWS 2020a), risk of collision from nesting eagles will only be considered at this spatial scale (i.e., 2.0 mi). Telemetry data for territorial breeding golden eagles indicates that eagles rarely traveled beyond 1.9 mi (3.0 km) from their territory centers and bald eagle ranging behavior around nests was comparable to (if not more constrained than) golden eagles (USFWS 2020a). The analysis presented in the following sections specifically addresses likely impacts of the Project in the context of collision, electrocution, disturbance/displacement, and habitat fragmentation.

3.1 Collision

Observations of bald and golden eagles during Project-specific surveys indicate a risk of collisions with turbines exists for these species. The USFWS recently released new information regarding bald eagle fatality/injury numbers at wind energy facilities from the years 2013 to 2019 (USFWS 2018a, C. Mensing, USFWS, pers. comm., 2019). The substantiated[1] fatality/injury records now equal 79 golden eagles (Pagel et al. 2013) and 57 bald eagles (Pagel et al. 2013 [six records], USFWS 2018a [49 records], C. Mensing, pers. comm., 2019 [two records]). These should be considered minimum nationwide fatality estimates for eagles because current golden eagle fatality records are not available from the USFWS, and fatality records are not always

[1] Records that occurred prior to March 1, 2013 were excluded. Records with supporting information (e.g., USFWS Office of Law Enforcement reports/records, company field forms documenting mortalities, Ecological Services Offices records) were included.

publicly available. WEST has compiled publicly available data from 482 studies across 280 US wind energy facilities (WEST 2021). Based on these data, golden eagles have been reported as fatalities at wind energy facilities, including two in Idaho and 117 in the US (Table 3.1; WEST 2021). One bald eagle has been reported as a fatality at a wind energy facility in Idaho, and 55 have been reported in the US (Table 3.1; WEST 2021). Not all bald eagle records cited by USFWS are in the WEST database at this time because of the lack of access to reports containing these fatality records.

Table 3.1 Number of eagle fatalities recorded at multiple spatial scales in the US.

Species	Idaho	BCR 9	BCR 10	USFWS Region 1	US
golden eagle	2	8	30	15	117
bald eagle	1	1	2	3	55
Total	**3**	**9**	**32**	**18**	**172**

Data represent unadjusted fatality counts. Data from the Renew database (Western EcoSystems Technology, Inc. 2019).

BCR = Bird Conservation Region; USFWS = US Fish and Wildlife Service.

3.1.1 Eagle Fatality Predictions

The estimated number of eagles predicted to collide with and be killed by the Project's turbines is not a required element of an ECP submitted to the USFWS as part of an application for an ETP. It is understood that USFWS Region 1 will independently complete the bald and golden eagle fatality predictions to determine the appropriate level of take to authorize for the Project. The USFWS approach to predicting take will likely be a multi-step process. The first step would be to run the USFWS CRM (USFWS 2018b) with the applicable "eagle exposure minute" data collected during the first year of avian use surveys. Once eagle exposure minute data from the second year of avian use surveys is available, the USFWS would then re-run the CRM to refine the fatality predictions for both species. USFWS will conduct these analyses as part of the EIS (led by the BLM) completed pursuant to the NEPA requirements related to the federal actions of permitting the Project and issuing an ETP. Hence, this ECP does not include predictions of bald and golden eagle fatalities for the Project.

3.1.2 Risk Factor Analysis

To better understand collision risk with wind turbines at the Project, bald and golden eagle use and fatality data were examined in the context of known correlates of risk from published studies (e.g., Hunt 2002, Barrios and Rodríguez 2004, Smallwood and Thelander 2004, Hoover and Morrison 2005, Smallwood et al. 2009). Risk could be higher in areas with higher activity (Hunt 2002, but see Smallwood et al. 2009). Flight behavior associated with territorial interactions may also create risk in areas prone to such interactions (Drewitt and Langston 2008). Additionally, risk factors for both bald and golden eagles may include proximity of turbines to ridgelines, and the interaction of topography with wind direction and speed (Smallwood and Thelander 2004, Hoover and Morrison 2005, de Lucas et al. 2008, Smallwood et al. 2009). In areas of low thermal updraft velocity, large soaring birds such as eagles rely on orographic (terrain-generated) updrafts (Bohrer et al. 2012). Topography and wind conditions can create areas of low orographic updrafts, near the lower threshold of lift needed by large soaring birds, thus causing them to engage in

circle soaring, a behavior that has been found to correlate strongly to the risk of collision (Barrios and Rodríguez 2004, Brandes et al. 2012).

There are no significant topographical features within the Project area that would appear to attract eagles or facilitate their movements. The topography of the Project area at a landscape scale is provided in Figure 1.1. The Project is located in the relatively flat Snake River Valley. While several small buttes are scattered throughout the Project area, turbines are located in relatively flat to gently rolling areas relative to the steeper terrain of the mountains lining the Snake River Valley to the north and south (Figure 1.1).

Assemblages of prey resources could also attract eagles to the Project area to forage and create a potential for the risk of collision. No concentrations of small mammals (e.g., colonial rodents) were observed during baseline wildlife surveys (see Section 2.3.3); however, lagomorphs appear to be widespread in areas with adequate vegetation cover. Other potential prey resources identified were carrion or lambs associated with cattle and sheep grazing operations within the Project area. These resources are variable by season and would only be present in the spring, which may be a limiting factor given the absence of nesting eagles near the Project.

Assessing potential eagle collision risk with overhead power lines encompasses comparing line voltage, configuration, and location relative to habitats, topography, eagle use, and human influences. Few studies have documented eagles and other raptors colliding with overhead power lines, but a number of anecdotal reports of raptor collisions exist. Two studies documented bald eagle collisions with distribution lines: one study reported bald eagle collisions near a fish cannery in Alaska (Harness et al. 2003) and the second study confirmed 21 bald eagle collisions over a 22-year period along approximately 932 mi (1,500 km) of three-phase distribution lines on the Aberdeen Proving Grounds in Maryland (Mojica et al. 2009). A third study found that no collisions occurred despite 622 bald eagle crossings of a transmission line spanning the Delaware River (Mojica et al. 2020). Project transmission lines and collector lines will be designed and constructed in compliance with applicable Avian Power Line Interaction Committee (APLIC) guidelines (APLIC 2006, 2012) in order to minimize electrocution risk for eagles and other avian species.

3.1.2.1 Bald Eagles

Three bald eagle observations were made in the study area during the two-year avian use study. The limited number of bald eagle observations within the Project area can likely be explained by the overall absence of desirable water features (i.e., open water and large rivers that could be used for foraging) and significant topographical features (potentially supporting migratory movements) within the Project. As one looks beyond the Project area, bald eagle sightings are more common along the Snake River and its tributaries, approximately 10.0 mi (16.0 km) to the south, and along the Little Wood River, approximately 6.0 mi (10.0 km) to the north (eBird Data 2021). An occupied bald eagle nest was recorded on Wilson Lake Reservoir, approximately 5.0 mi (8.0 km) south of the Project boundary, during raptor nest surveys in 2020. However, the lack of nesting habitat within 2.0 mi (3.2 km) of the proposed turbines indicates the Project is unlikely to impact nesting bald eagles. In addition, the lack of desirable water features or concentrated prey resources within the Project suggest prey is not attracting bald eagles to the Project area. The most likely prey resource for bald eagles within the Project area would be carrion associated

with cattle and sheep operations, although the abundance and frequency of occurrence of this resource is currently unknown.

3.1.2.2 Golden Eagles

Golden eagles were observed throughout the Project area during the two-year avian use study. There were no apparent patterns of concentrated use discernable from observations, aside from activity associated with the occupied nest located approximately 4.0 mi (6.4 km) northwest and outside of the Project area during the Year 1 studies (Figures 2.3 and 2.5). Within the June 2021 Project area, more exposure minutes occurred at points in the southeast portions of the Project. Golden eagle exposure minutes were recorded at five Year 1 survey points which are no longer within the Project MCPs; these exposure minutes (and corresponding survey effort) will no longer be included in the CRM to predict fatality rates. As a result of Project layout modifications, there are no eagle nests within 2.0 mi (3.2 km) of proposed turbines (Figure 2.5). Based on average territory size for golden eagles (USFWS 2020a), the Project modifications made by MVE to avoid the golden eagle nest at Crater Butte is anticipated to minimize collision risk for breeding eagles.

There were no concentrated prey resources for bald or golden eagles identified within the Project area. Based on the pre-construction surveys, lagomorphs are widespread in sagebrush areas (approximately 19% of the Project area) and are a primary prey resource for golden eagles. Although golden eagle use by point varied between the Year 1 and Year 2 study period, most points with higher use are located near the edges of the Project Area, where the landscape transitions to agricultural and residential land. Higher use at these points may be attributed to a higher availability of prey resources in these converted landscapes compared with grassland and shrubland habitats found within the Project.

3.2 Electrocution

Electrocution risk to birds on power line structures is directly related to a number of structural and biological variables, including voltage, structure size, and the bird species occurring in the area and likely to perch on the structures (APLIC 2006). Eagles have large wingspans and may simultaneously contact two conductors or a conductor and grounded hardware when clearances between these components are less than the wingspan, putting them at risk of electrocution. Electrocution risk for eagles due to new Project infrastructure would be limited to overhead collector lines. Aboveground lines will be designed and constructed in accordance with APLIC Guidelines (APLIC 2006). Measures to reduce electrocution risk on these overhead lines are described in Section 4.1.

3.3 Disturbance and Displacement

Disturbance to or displacement of nesting eagles is unlikely given that there are no nests within 2.0 mi (3.2 km) of the Project. Additionally, there are no eagle nests within line-of-sight of the Project. Further, no prey concentrations are known within the Project area, and the general lack of concentrated eagle use areas suggest that no areas of concentrated foraging are present.

Eagle disturbance or displacement is possible during the construction and operation phases of the Project. Project operations may impact eagles if the presence of the operational turbines

displaces eagles from the Project area. However, evidence of fatalities at other wind farms suggests that bald and golden eagles do not explicitly avoid operational facilities (e.g., Pagel et al. 2013). Eagles in the Project area may also be temporarily disturbed and displaced by turbine maintenance activities. However, due to the lack of quality nesting habitat and limited suitable prey resources within the Project, the potential for disturbance or displacement to eagles is considered low.

3.4 Habitat Fragmentation

Habitat fragmentation can exacerbate the problem of habitat loss for eagles by decreasing patch size and increasing edge habitat. Habitat fragmentation can reduce eagle productivity through increased nest predation and parasitism, and reduced territory occupancy. However, no eagle nests occur within 2.0 mi (3.2 km) of the current Project boundary, and fragmentation impacts on breeding eagles are not anticipated. Habitat fragmentation can potentially displace eagles from preferred foraging areas if prey populations are affected. While no concentrated areas of eagle use have been documented within the Project area during surveys conducted to date, observations of lagomorph species in sagebrush areas indicate these habitats might provide foraging opportunities.

The potential impacts of habitat fragmentation will be reduced through measures taken during the design and construction phases of the Project. These measures are described in Section 4 and include removing or eliminating turbines through macro- and micro-siting, burying collector lines to the extent practicable, and minimizing surface disturbance to the extent possible. Of the approximately 5,400 ac (2,185 ha) of estimated disturbance during construction, only 1,900± ac (769 ha; 35%) are proposed to be disturbed long-term, up until decommissioning (i.e., footprint of Project infrastructure), some of which includes roads and other areas that have been previously disturbed. After decommissioning and final reclamation, approximately 7,300 ac (2,954 ha) will have undergone habitat restoration by implementation of reclamation, seeding, and noxious weed BMPs. These actions are expected to minimize the Project's impact on wildlife habitat and might ultimately provide incremental improvement in vegetation conditions in the Project area when compared with current baseline conditions.

3.5 Cumulative Impacts

Cumulative impacts to eagles are based on Project impacts combined with other permitted take and additional factors (e.g., unpermitted anthropogenic take) affecting the Local Area Population (LAP). The LAP is the population of eagles within a distance from the Project footprint equal to the species' median natal-dispersal distance. The median natal-dispersal distance is known to be 109 mi (175 km) for golden eagles and 86 mi (138 km) for bald eagles (USFWS 2016a). The USFWS has identified take rates of between 1% and 5% of the estimated LAP as sustainable; with 5% being at the upper end of what might be appropriate under the BGEPA preservation standard, whether offset by compensatory mitigation or not (USFWS 2016a).

The cumulative impact analysis incorporates records of federal ETPs issued (i.e., authorized take) and unpermitted eagle mortality records (e.g., electrocution, collisions, shootings, poisonings) that are available to the USFWS. Information on unpermitted take in the USFWS's databases is

generally sensitive information. In addition, the USFWS will communicate with state wildlife agencies within the LAP to incorporate eagle mortality records they possess, which may not be included in the USFWS database. Given the sensitivity of eagle fatality records, the cumulative impacts analysis will be conducted by the USFWS and included in the EIS for the Project.

3.6 Categorizing Site According to Risk

The ECP Guidance recommends Project developers or operators use a standardized approach to categorize the likelihood a project will meet the standards for issuance of an ETP. Those categories are.

1) Category 1 − High risk to eagles/potential to avoid or mitigate impacts is low, predicted mortality >5% of the LAP.
2) Category 2 − High to moderate risk to eagles/opportunity to mitigate impacts, predicted mortality between 0.03 eagles/year and 5% of the LAP.
3) Category 3 − Minimal risk to eagles, predicted mortality <0.03 eagles/year.

It is unlikely any wind project in Region 1 would be designated a Category 3 project, as the Eagle Management Units within Region 1 support moderate to high densities of both eagle species (USFWS 2016). Most projects in Region 1, including another wind facility in Idaho, are Category 2 projects (USFWS 2019). Eagle use data collected to date from the Project site indicate that the Project poses moderate risk to eagles (Category 2), with ample opportunities to minimize or mitigate eagle impacts during Project siting and operation.

3.7 Conclusion

In summary, based on the documented use of the Project area by golden eagles, the Project poses a moderate risk of direct impacts to this species. Based on baseline studies, the current (June 2021) Project area lacks concentrated prey resources and supports lower eagle use relative to areas associated with an occupied nest (Nest 3, Figure 2.5) that, due to Project modifications, is now more than 8.0 mi (12.9 km) from the Project, all of which support a diminished risk of impacts compared to the original (2020) Project area. With the removal of the northwestern portion of the Project, which avoids impacts to the closest golden eagle nest (Nest 3, Figure 2.5), the potential for disturbance or displacement of golden eagles due to habitat fragmentation was also reduced. While few bald eagles were documented within the Project area, some degree of collision risk for this species may occur over time; however, based on the lack of preferred foraging habitat within the Project area, absence of suitable nesting habitat within the Project area, and the absence of known nests in proximity to the Project, collision risk for bald eagles is anticipated to be low.

As required for an ETP, MVE has undertaken conservation measures to avoid and minimize the risks to eagles. These measures are discussed in detail in Sections 4.1 to 4.4.

4.0 AVOIDANCE AND MINIMIZATION OF RISK IN PROJECT DESIGN

This section describes avoidance and minimization measures MVE incorporated into the planning and design of the Project to reduce impacts to eagles and their habitat during the construction and operation of the Project. MVE consulted and coordinated with the BLM, USFWS, and IDFG regarding avoidance and minimization measures during planning and design of the Project. MVE considered a number of sites in Idaho for development prior to moving forward with the Project, two of which were removed from consideration based on the results of preliminary wildlife studies that indicated sensitive resources (e.g., grouse leks, eagle nests) could not be reasonably avoided. The Project will comply with all applicable federal, state, and county environmental laws, orders, and regulations. Avoidance and minimization measures relevant to the Project's potential impacts on bald and golden eagles are described below.

4.1 Conservation Measures Prior to Construction

Utilizing information collected during the pre-construction environmental surveys, the following steps were taken to reduce the risk to wildlife as a result of development. Project siting was developed in coordination with the BLM, IDFG, and USFWS to avoid or minimize impacts to raptors, and eagles in particular. The Project footprint and locations of proposed turbines have been changed a number of times throughout Project development in response to environmental and other constraints identified during wildlife and other studies. Specific measures taken include:

- All previously proposed turbines and related infrastructure were removed from a 2.0-mi (3.2-km) radius (buffer) around an occupied golden eagle nest (Nest 3) found at Crater Butte during the 2020 nest survey for the Project. Due to additional considerations, Nest 3 is now more than 8.0 mi (12.9 km) from the Project (Figure 4.1).
- The Project layout was revised to remove all Project infrastructure from federal land within a 3.1-mi (5.0-km) buffer of three documented greater sage-grouse leks (Figure 4.1) in compliance with the BLM's Approved Resource Management Plan Amendment (BLM 2015), which will minimize the presence of a potential prey source for eagles within the Project.
- Roads, turbine pads, and other Project infrastructure elements were designed to utilize existing roads to the extent feasible to minimize habitat impacts and reduce wildlife displacement.
- Conservation easements and protected lands were avoided. Impacts to wetlands and other aquatic resources (i.e., playas) will be avoided to the greatest extent practicable.
- Where practicable, collection lines will be installed underground to minimize eagle collision and electrocution risk associated with aboveground lines. Any aboveground collector or transmission lines will be constructed in compliance with applicable APLIC (2006) guidelines.
- Avian diverters will be installed and maintained on all guy wires/lines of all existing or any new temporary meteorological (MET) towers.

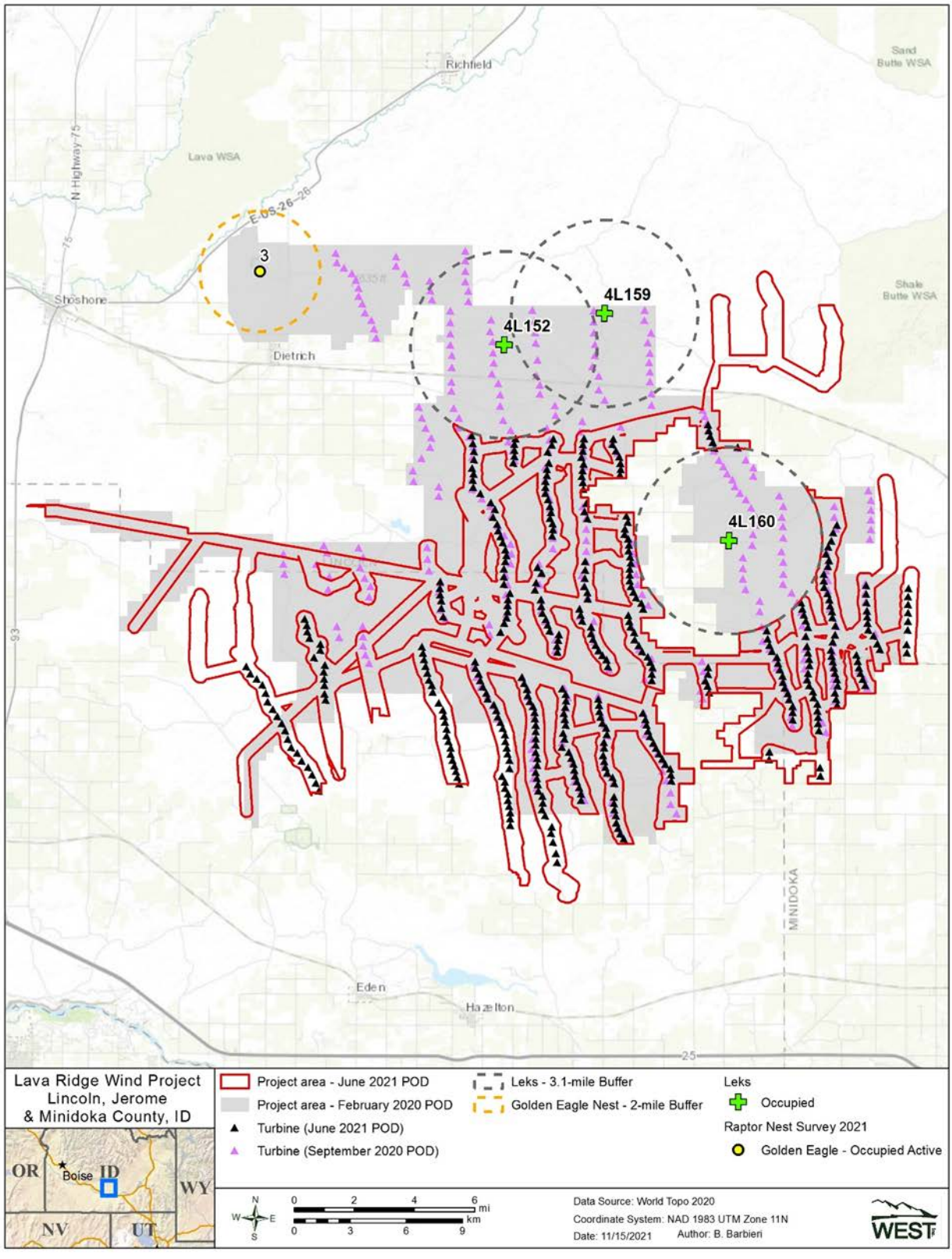

Figure 4.1. Proposed turbine locations and turbines removed to minimize impacts to greater sage-grouse and golden eagles at the Lava Ridge Wind Project.

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4.2 Conservation Measures During Construction

Conservation measures to be implemented during construction of the Project are described below.

- Contractors will participate in training on the environmental compliance measures, to include measures to avoid and minimize impacts to eagles and ensure all contractor personnel receive such training. Contractor personnel will be trained to not approach or harass wildlife, avoid all wildlife to the greatest extent possible, and minimize activities that attract wildlife.
- Contractors will be instructed to notify the designated development personnel of any injured eagles or eagle carcasses discovered on-site during construction activities.
- Existing trees, vegetation, water resources, and wildlife habitat will be protected and preserved to the extent practicable.
- Traffic will be restricted to roads and work areas associated with the Project; use of unimproved roads will be minimized to the extent possible.
- Project personnel will be required to drive 25 mph or less on non-public Project roads, be alert for wildlife, and use additional caution in low-visibility conditions when driving any vehicle.
- MVE will use spark arrestors on any power equipment (ATVs, chainsaws, and other such equipment) and will maintain fire extinguishers in all onsite service vehicles.
- Any garbage/waste observed will be collected and disposed of in an appropriate trash receptacle securely protected from wildlife.
- Best management practices will be implemented to avoid the establishment and spread of noxious weeds within the Project area.
- MVE will implement a construction monitoring program to ensure protection of environmental resources and compliance with Project permits and authorizations, as detailed in the Construction Monitoring Plan for Sensitive Species (Appendix P of the POD) and Environmental Compliance Monitoring Plan Framework (Appendix V of the POD).
- During the nesting season (January 1 through August 31), MVE will avoid construction activities within 0.5 mi (0.8 km) of any occupied golden eagle nest to the extent feasible, if the nest is located within line-of-sight of Project-related activities. Construction activities may occur within this timeframe and buffer if nest surveys determine the nest is no longer active or adults have not yet initiated nesting activities by the latest known egg-laying date for the species.

4.3 Conservation Measures During Operation

In addition to the post-construction fatality monitoring (discussed in Section 5.0), conservation measures to be implemented during operation of the Project are described below.

- MVE and its contractors are committed to compliance with all applicable federal, state, and local environmental laws, orders, and regulations. To ensure compliance, MVE will hold training at least once every three years that provides instruction to Project employees (and any contractors working on site) on:
    - minimizing impacts to wildlife and other environmental resources;
    - avoiding harassment and disturbance of eagles within the Project Footprint;
    - how to record incidental observations of avian carcasses; and
    - how to properly handle dead or injured wildlife if observed.
- Traffic will be restricted to roads or work areas associated with the Project or public roads. Use of unimproved roads will be minimized to the extent possible.
- All personnel will obey posted speed limits on public roads. Project personnel will be required to drive 25 mph or less on non-public Project roads, be alert for wildlife, and use additional caution in low-visibility conditions when driving any vehicle.
- Natural material (e.g. woody debris) and tall vegetation (i.e. tall forbs, grass, weeds) will be removed/maintained within 10 meters of the base of each turbine to reduce shelter and forage for small mammals.
- During Project operation, all Project-related materials, parts, and equipment will be stored in designated storage areas.
- MVE will remove any dead medium- and large-sized animal (i.e. squirrel or larger) incidentally found and dispose of it at least beyond line-of-sight of Project turbines, when doing so is consistent with the Permittee's permissions/authorizations. For livestock carcasses, MVE will work with the property/animal owner to have the carcass removed or obtain permission to remove it. Carcasses will be covered with a tarp to prevent scavenging while seeking permission from the owner to relocate it, or in the instance the carcass cannot be removed. To increase the chances of locating animal carcasses, MVE will: a) look for animal carcasses while travelling within the Project Footprint and b) look for eagles, vultures, or other scavenging birds that are consistently present and/or circling (e.g. in a kettle) in one area. Any animal behavior that suggests a carcass may be present in the Project Footprint will be reported to the site manager within 8 hours and the vicinity of the behavior will be searched within 24 hours of the observation. All carcasses identified will be reported to the site manager within 8 hours of discovery and removed from the site (i.e., beyond line-of-sight of Project infrastructure) within 48 hours of notification or upon receiving permission by the property/animal owner.
- Deceased birds and bats discovered by site personnel or contractors on-site will be addressed in conformance with the Project's post-construction monitoring protocol or long-term wildlife reporting system protocol, outlined in the Project's Bird and Bat Conservation Strategy (Appendix M of the POD).

- If Project operations occur on private land not owned by MVE, the affected private landowner(s) will be informed on proper reporting procedures to follow if they discover a dead bird or eagle. MVE will advise private landowners to not collect injured or dead birds unless designated as a subpermittee on all applicable collection permits.
- Non-emergency maintenance or other activities at the Project site will be restricted to outside the eagle nesting season (January 1 to August 31) if it will occur within 1 mile of any occupied golden eagle nest, and will adhere to the National Bald Eagle Management Guidelines for any occupied bald eagle nest. If this maintenance or activity cannot be conducted outside of the nesting season, MVE will coordinate with the USFWS.

5.0 EAGLE FATALITY MONITORING

Monitoring for eagle fatalities at an operating Project is a critical component of an ECP and ETP, if an ETP is issued. The primary objectives of fatality monitoring are to ensure eagle fatalities are detected to ensure compliance with the terms of an ETP (if issued) and that appropriate actions can be taken under the adaptive management plan described in Section 6.0.

Eagle fatality monitoring surveys will be incorporated into standardized post-construction monitoring studies that will be conducted for all bird and bat fatalities. Standardized carcass surveys are broken into four primary components:

1) Standardized carcass surveys
2) Searcher efficiency trials
3) Carcass persistence trials
4) Adjusted fatality estimates

MVE is committed to implementing an eagle fatality monitoring program that will meet USFWS standards and ensure compliance with the conditions of an ETP issued for the Project. MVE plans to conduct standardized carcass searches at Project turbines from the start of operation. The final design of eagle fatality monitoring studies will be coordinated with the USFWS to ensure ETP compliance and may include multiple survey methods (e.g., pedestrian transects, visual scans) pending the final Project layout and environmental factors (e.g., vegetation height/density, topography) that may influence an effective study design. The number of eagle fatalities detected during carcass surveys does not equal the actual number of eagle fatalities at a turbine or project. Searcher efficiency and carcass persistence trials are needed to adjust potential downward bias of the annual fatality estimate, so the total number of turbine-related fatalities that occur each year can be estimated. Eagle fatality monitoring studies will be designed for the Project in coordination with USFWS to achieve a probability of detection value (g) that meets USFWS standards for estimating eagle fatalities.

5.1 Detection Procedures and Protocols

MVE will apply for a Special Purpose Utility Permit (SPUT) from the USFWS to authorize the use of raptor carcasses for persistence trials, allowing MVE to collect, transport, and temporarily possess migratory birds found dead or injured at the Project. Sub-permittees and employees directly reporting to the sub-permittees should also be authorized under the permit. If the SPUT is issued, MVE will apply for permit renewal as necessary throughout the duration of the Project. Under the conditions of the SPUT, MVE will report to USFWS all birds found dead or injured at the Project. MVE will report all eagle fatalities in accordance with conditions of the SPUT and ETP.

5.2 Annual Reports

MVE will submit written reports to the USFWS during the first quarter of every year the Project is covered under an ETP. A summary of the key contents of each annual report is provided below.

- A list of eagle carcasses found during standardized searches and incidentally during the monitoring year.
- Disposition (alive/dead), location, and dates of eagle species recorded as casualties in the Project area during the monitoring program.
- One or more maps or graphical representations illustrating the geographic distribution and location of all discovered eagle fatalities (relative to turbine locations).
- A description of the mitigation activities, adaptive management actions, carcass persistence trials, and enforcement activities conducted and their outcomes.
- Analysis of the data to be used as part of adaptive management.

5.3 Operations and Maintenance

MVE will develop and implement a Wildlife Incident Reporting System (WIRS) for the life of the Project (Appendix T-a). The purpose of the WIRS procedure is to standardize and describe the actions taken by Project personnel in response to wildlife incidents found at the Project. MVE will record all dead or injured birds and bats, including eagles, found incidentally in the Project on an annual basis over the entire life of the Project. In addition, all discoveries of dead or injured eagles will be reported to USFWS within 24 hours.

Following the completion of the eagle fatality monitoring program, MVE will continue with the Project's internal WIRS monitoring program to monitor for and document significant events. Each incident will be documented on data sheets, logged in a tracking spreadsheet, reported to the designated Environmental Affairs contact, and reported annually.

6.0 COMPENSATORY MITIGATION AND ADAPTIVE MANAGEMENT

For projects entering operation after issuance of the Eagle Permit Rule in 2009 (USFWS 2009, 50 CFR 22.26 [2009]), the USFWS requires compensatory mitigation to offset all predicted golden

eagle take. Therefore, impacts to golden eagles resulting from Project operation would need to be considered in the realm of no-net-loss at the scale of the golden eagle management unit. As such, compensatory mitigation to offset golden eagle take resulting from Project operation will be needed. Offsetting compensatory mitigation for bald eagles is only required if 1) annual take exceeds the threshold for the eagle management unit (EMU; Pacific flyway in this case) or 2) annual take (together with cumulative effects) is greater than 5% of the LAP (USFWS 2013, 2016a). This section identifies compensatory mitigation and adaptive management techniques to offset eagle mortality associated with operation of the Project.

6.1 Compensatory Mitigation through Power Pole Retrofitting

Compensatory mitigation required for golden eagle take can be achieved through retrofitting power poles in the same EMU as the Project[2]. Electrocution while perching on power poles has been shown to cause a significant number of eagle fatalities; therefore, retrofitting power poles is an effective way to minimize eagle fatalities, generally (USFWS 2013). Retrofits are also a quantifiable compensatory mitigation measure that may be used to offset any eagle fatalities that may result from Project operations.

The USFWS has resource equivalency analysis (REA) models for calculating appropriate golden eagle and bald eagle compensatory mitigation values for power pole retrofits (USFWS 2013). The REAs use information on golden and bald eagle life history as inputs and the effectiveness of retrofitting lethal power poles, along with an estimated annual take rate for a Project to determine the number of power pole retrofits needed as compensatory mitigation to offset golden and bald eagle fatalities. The number of power pole retrofits needed to offset the predicted take of golden eagles at the Project will be based on a REA analysis to be conducted by the USFWS (2013).

6.2 Other Compensatory Mitigation Options Under Consideration

In concert with the power pole retrofit mitigation strategy described above or as an alternative to this strategy, MVE may work with the USFWS to develop an offsetting compensatory mitigation plan that addresses golden eagle fatalities associated with vehicle collision or lead poisoning, or provides benefits to golden eagles through habitat conservation or other mitigation measures.

6.3 Tiered Mitigation Approach with Adaptive Management

Integral to any ECP, adaptive management is an iterative process that will improve decisions for avoiding, minimizing, and/or mitigating effects to eagles throughout all phases of the Project. As part of the adaptive management strategy, MVE agrees to coordinate with the USFWS to determine the need for management adjustments and/or implementation of mitigation measures if eagle conservation goals are not achieved (i.e., permitted take is exceeded). Assessing various management options determined to be most appropriate to achieve conservation goals, as well as designing, implementing, and monitoring each option will be completed as part of the adaptive management plan.

[2] Retrofits will be prioritized to be undertaken within the same LAP.

Adaptive management is based on learning and adapting, allowing for flexibility in decision-making as new data are gathered and analyzed. Understanding that uncertainties exist, adaptive management provides resource managers the latitude to change monitoring protocols, avoidance and minimization measures, or mitigation methods to achieve desired goals. The findings of monitoring could indicate the need for modification of operations and/or management strategies. If issues or concerns are identified during eagle fatality monitoring studies at the Project, MVE intends to work cooperatively with the USFWS to develop appropriate actions or mitigation measures aimed at permit compliance.

Depending on the results of eagle fatality monitoring studies, no further action may be needed if Project-caused eagle fatalities are determined to be less than permitted. A primary objective of the eagle fatality monitoring will be to determine the cause(s) of fatality (e.g., collision with Project equipment, electrocution, etc.). If Project-caused eagle fatalities are determined to be higher than anticipated, an assessment of why impacts are occurring will be conducted to aid in developing appropriate corrective actions. Further monitoring efforts may be implemented to help understand impacts if causes of mortality are unknown. If voluntary avoidance and minimization measures are deemed necessary and put into place, additional monitoring to determine the effectiveness of the voluntary measures would be conducted. Voluntary avoidance and minimization measures may be operational or non-operational as shown in Table 6.1, and would be implemented in a tiered fashion, if deemed necessary. Each subsequent step or tier will trigger more robust corrective actions to reduce the rate of eagle take. This table will be updated once additional discussions with the agencies have occurred and/or after the USFWS has conducted their analysis of the EIS to decide whether to issue an ETP for this Project.

Table 6.1. Anticipated Conservation Measures using Adaptive Management.

Step	Anticipated Conservation Measure	Threshold or Trigger
I	Assess eagle fatality to determine and/or understand potential cause. Conduct detailed analysis of all existing data and information surrounding the known fatality and relate it to existing meteorological and wind turbine operational data. Consult with USFWS to review appropriate measures to minimize likelihood of future take. Evaluate take levels relative to permitted value.	One golden or bald eagle carcass found in any permit year.
II	Evaluate the need to conduct additional studies to inform take occurrences. Identify actions that can be taken to avoid or minimize future take. This may include operation Best Management Practices, habitat management, Advanced Conservation Practices, or other activities deemed appropriate. Consult with USFWS to determine potential course of action.	At any time take is projected to exceed the permitted level.

Table 6.1. Anticipated Conservation Measures using Adaptive Management.

Step	Anticipated Conservation Measure	Threshold or Trigger
III	MVE will consult with the USFWS to review and discuss information known about previous takes, in an attempt to identify factors that might be targeted. MVE's overall mitigation program for the subsequent 5-year permit period would be re-evaluated, based on actual results as compared with permitted levels of take, and this stepwise approach will start over with Step I. Examples of measures that may be implemented include: • Employ onsite biological monitor(s) during daylight hours at locations and/or times of suspected risk, to refine further the understanding of risk factors. • Implement habitat management or modification plan to minimize attraction to the Project, limit perching within the Project, and generally minimize risky behaviors. • Implement a limited curtailment program specific to the area(s) and/or period(s) of highest collision risk. • Develop and evaluate detection and deterrent system for eagles approaching area(s) of risk. • Other measures agreed upon in consultation with USFWS.	If at any time before the end of the 4th year the Project has taken one less than the permitted take level for bald or golden eagles.

1

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Appendix T-a. Wildlife Incident Reporting System

[to be added to final version]

Lava Ridge Wind Project

Draft Appendix U: GRSG Mitigation Plan

Magic Valley Energy, LLC

October 2022

Greater Sage-grouse Mitigation Plan

Lava Ridge Wind Project

Jerome, Minidoka, and Lincoln Counties, Idaho

Prepared by:

Magic Valley Energy, LLC and Western EcoSystems Technology, Inc.

October 2022

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1. INTRODUCTION

Magic Valley Energy, LLC (MVE), is developing the Lava Ridge Wind Project (Project) in Jerome, Minidoka, and Lincoln counties, Idaho. The Project falls within the range of greater sage-grouse (GRSG; *Centrocercus urophasianus*), a species for which multiple state and federal agencies are working to conserve populations and habitat. The majority of the Project is located in GRSG General Habitat Management Areas (GHMAs; Figure 1), as defined in the 2015 Bureau of Land Management (BLM) *Idaho and Southwestern Montana Greater Sage-grouse Approved Resource Management Plan Amendment* (ARMPA; BLM 2015a). Within the 2015 ARMPA, GHMAs are described as "generally characterized by lower quality disturbed or patchy habitat of low lek connectivity" and contain approximately 10% of the occupied GRSG leks. As the lowest priority of the three management areas, the GHMA is designated as open for renewable energy development, provided appropriate measures to reduce impacts to GRSG are considered in project planning (BLM 2015a). However, all disturbance within GHMAs is subject to mitigation measures, including compensation for unavoidable (residual) impacts. Mitigation measures should be conducted to achieve a net conservation gain standard for the species (BLM 2015a). A net conservation gain standard is the actual benefit or gain above baseline conditions and accounts for any uncertainty associated with the effectiveness of mitigation (BLM 2015a). The purpose of this document is to summarize the mitigation measures MVE undertook and plans to implement given the Project overlaps with GHMAs, in accordance with the principles of the BLM Mitigation Policy (IM 2021-046; incl. Manual MS-1794 and Handbook H-1794-1).

2. BASELINE CONDITIONS AT PROJECT SITE

The Project Assessment Area, as defined in the Habitat Quantification Tool (HQT; State of Idaho 2021), consists of the planned footprint of Project infrastructure plus a 6-kilometer (km; 4-mile [mi]) buffer offset from proposed Project infrastructure, as presented in the Project's Plan of Development (MVE 2022). The Project area occurs within the Snake River Basin Level III Ecoregion (US Environmental Protection Agency [USEPA] 2017a, 2017b). The Snake River Basin is part of the xeric intermontane west, and is characterized by shallow stony soils, though barren lava fields also occur in the region. Dominant vegetation historically included native species such as big sagebrush (*Artemisia tridentata*), Sandberg bluegrass (*Poa secunda*), Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass (*Achnatherum thurberianum*), and bluebunch wheatgrass (*Pseudoregneria spicata*), but due to the numerous wildfires that have swept through much of the Project area, much of the grassland areas are currently dominated by a mix of native and introduced grass and forb species, some of which were applied for post-fire soil stabilization and revegetation. Although not as dominant as grasslands, big sagebrush shrublands are scattered throughout the Project area, often occurring in areas with undulating topography from intermittent lava plateaus. Sheep and cattle grazing is the primary land use in the Project area, but irrigated cropland (center-pivot) surrounds much of the Project boundary and several large irrigation canals extend through the Project area. During 2021, sensitive plant species surveys identified Picabo milkvetch (*Astragalus oniciformis*) at two survey transects, and eight species of noxious were identified in the Project area including black henbane (*Hyoscyamus niger*), musk

thistle (*Caduus nutans*), Russian knapweed (*Acroptilon repens*), Canda thistle (*Cirsium arvense*), scotch thistle (*Carduus nutans*), diffuse knapweed (*Centaurea diffusa*), field bindweed (*Convolvulus arvensis*), and rush skeletonweed (*Chondrilla juncea*). Rush skeletonweed was observed throughout the Project area.

The Project Assessment Area is located in a mix of habitat demarcated as GHMA and GRSG non-habitat at the southern extent of the GRSG's range in the central Idaho. Habitats identified as GHMAs connect with areas identified as Important Habitat Management Areas (IHMA) and Priority Habitat Management Areas (PHMA) to the north, but areas immediately to the south of the Project are considered GRSG non-habitat and extend a considerable distance south through the Snake River drainage (Figure 1). The Project Assessment Area occurs entirely within the BLM's Desert region mid-scale assessment area, and also occurs within portions of BLM's Timmerman Hills and Craters of the Moon fine-scale assessment areas (Figure 1). At a landscape level, proposed Project infrastructure is located in relatively low sagebrush (*Artemisia* spp.) cover and in an area with higher agricultural development compared to the region to the north (Figure 2). The Project Assessment Area is heavily impacted by existing disturbance. In areas where the Habitat Suitability Index (HSI) was greater than 0.5, the average landscape integrity index[1] (described below) was 0.15 (value range: zero to 0.44), suggesting these suitable habitats are directly or indirectly impacted by existing anthropogenic development that may not be captured by the HSI.

[1] The landscape integrity index scales from zero (low integrity and highly disturbed) to 1 (high integrity and undisturbed).

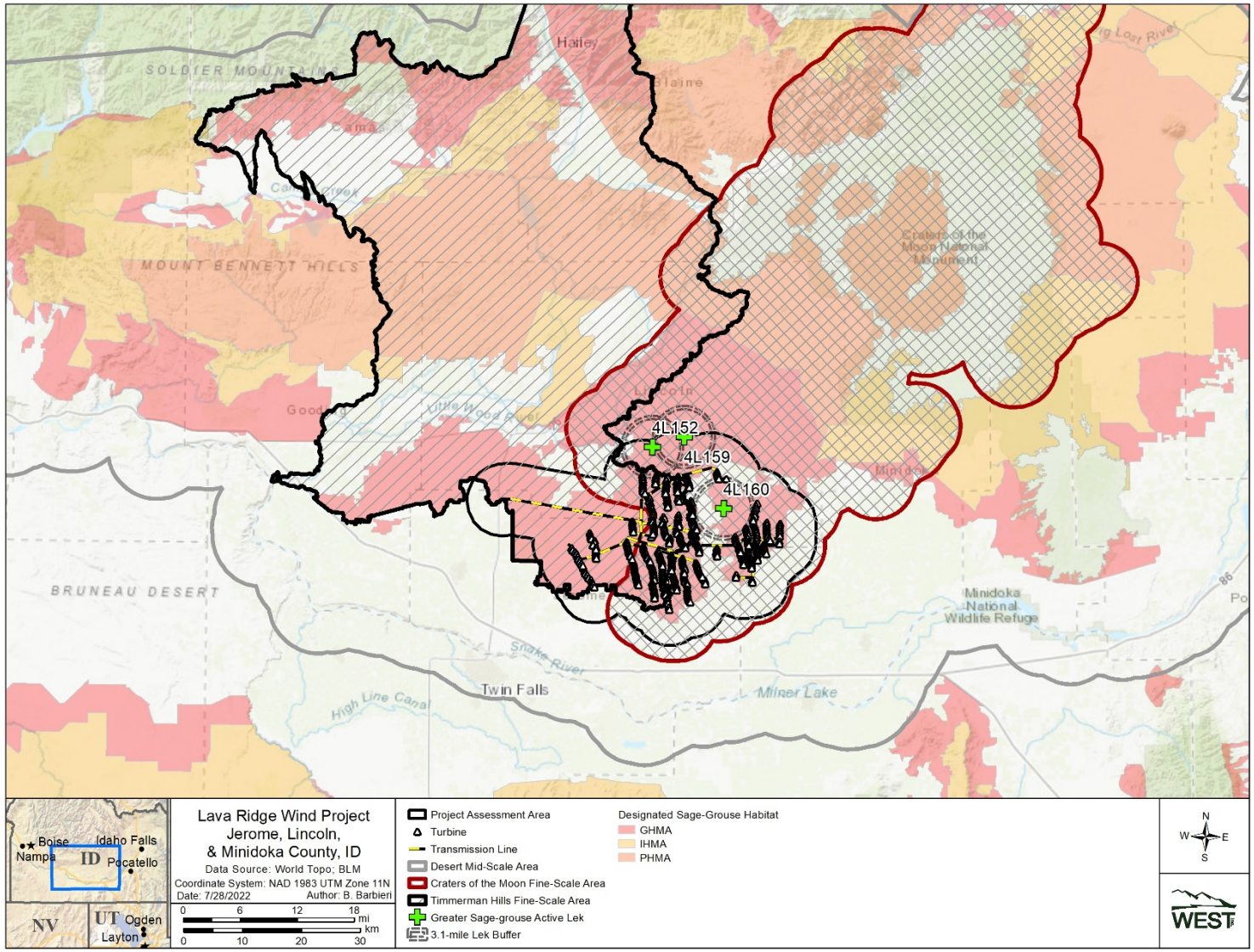

Figure 1. Location of the proposed Lava Ridge Wind Project, Jerome, Lincoln and Minidoka counties, Idaho, relative to designated sage-grouse habitat and leks.

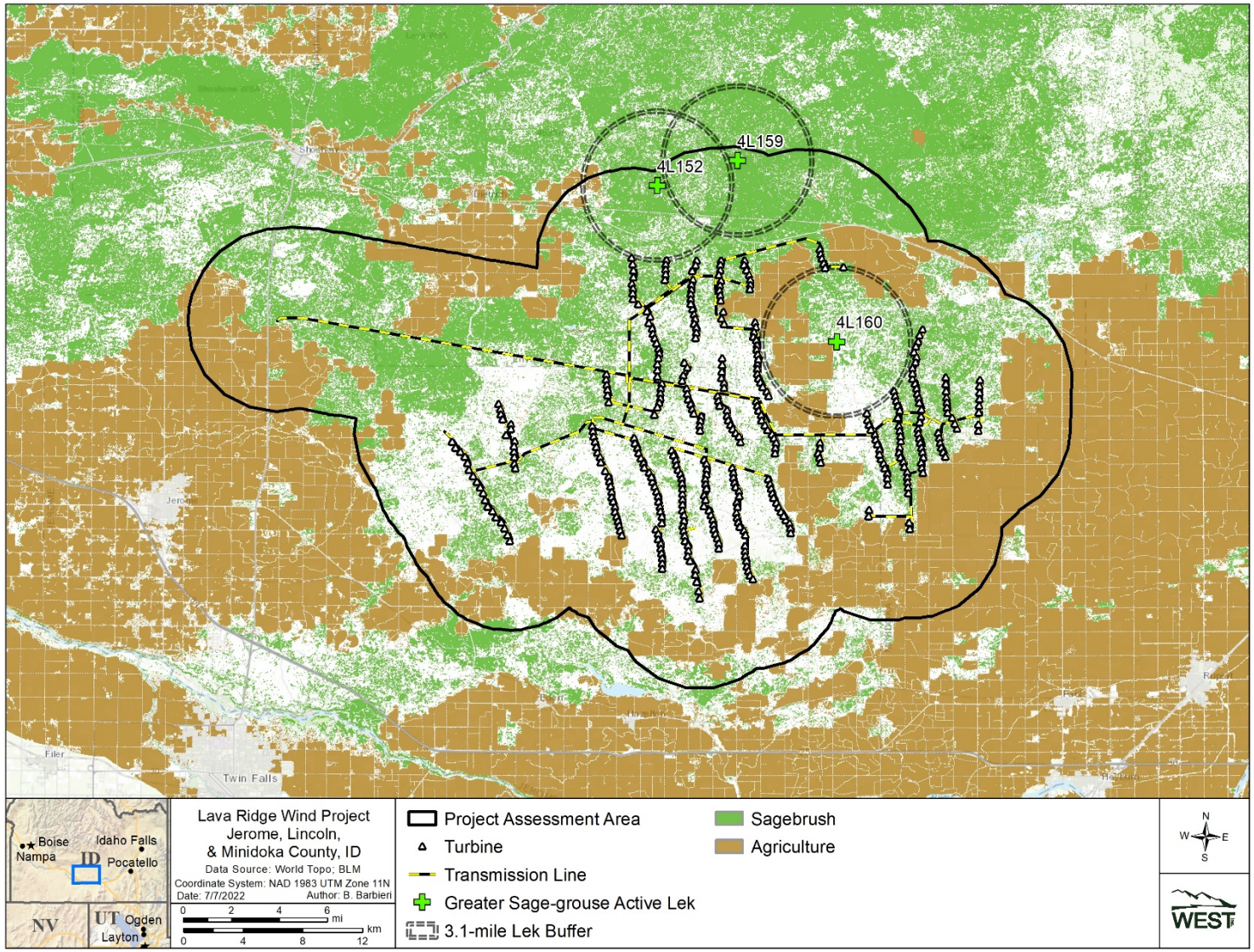

Figure 2. Location of the proposed Lava Ridge Wind Project, Jerome, Lincoln and Minidoka counties, Idaho, relative to sage-grouse leks, sagebrush, and agriculture.

The Project Assessment Area is located in an area with low GRSG breeding density. GRSG breeding density is evaluated on a scale from 1 (one breeding density) to 1.5 (high breeding density). The average breeding bird density within the Project Assessment Area is 1.02 (Range 1.0 to 1.1). Sixty-seven percent of the Project Assessment Area is located outside of breeding density areas, 22% is located in low breeding density, and 11% is located in medium-low breeding density (State of Idaho 2021). Since 2018, WEST and the Idaho Department of Fish and Game (IDFG) completed a combination of aerial and ground-based surveys to document lek locations in and around the Project (e.g., McCormack et al. 2020, Harvey et al. 2021; Table 1). These surveys documented three leks in the vicinity of the Project (Figure 1). These leks are located generally north and east of proposed Project infrastructure (Figure 2). The two leks (4L152 and 4L159) to the north are separated by 3.5 mi (5.6 km), while lek 4L160 is separated from the northern two leks by 8.6 mi (13.8 km), which includes an approximately 2.0-mi (3.2-km) wide swath of agricultural land. The next nearest lek to these three leks is located approximately 14.0 mi (22.5 km) to the east. Based on lek count data from 2020, approximately 2.3% of the total males in the Desert region and 12.6% of the total males in the Craters of the Moon region were counted at the three leks within the Project Assessment Area.

Table 1. Peak male counts recorded from 2018 – 2022 at the three greater sage-grouse leks located near the Lava Ridge Wind Project.

Lek ID	2018	2019	2020	2021	2022
4L152	18	8	7	3*	3
4L159	20	18	18*	23	24
4L160	NA	6	5	10*	7

Lek ID = identification assigned by the Idaho Department of Fish and Game (IDFG).

* Western EcoSystems Technology, Inc. observations; all other observations provided by the IDFG.

NA = no apparent count was conducted

Because of the large expanse of non-habitat south of the Project and existing fragmentation near the Project, the Project Assessment Area is unlikely to facilitate landscape-level connectivity for GRSG at its current conditions. The level of existing agricultural development and other disturbances within the Project Assessment Area suggests that connectivity between the northern two leks (4L152 and 4L159) and the southern lek (4L160) is likely low. The percentage of existing surface disturbance, excluding agriculture, within 3.1 mi of each raster pixel within the Project Assessment Area averaged 2.9% (range: 0.6 to 9.6%). Surface disturbance within 3.1 mi of the three lek locations was lower than the Project Assessment Area (mean = 1.5 %, range: 1.3 to 1.8%).

Based on the distribution of leks, habitat suitability, and existing disturbance throughout the Project, GRSG use of the area is likely to be concentrated in habitats with higher suitability near leks. During the breeding season, GRSG often visit multiple leks and, because of the proximity of 4L159 to 4L152, it is conceivable that individuals are likely to visit both leks during the breeding season. Although lek 4L160 is located 8.6 mi from the nearest lek, and is separated by cultivated agriculture and Highway 24, there is potential that GRSG using lek 4L160 will also use suitable habitats to the north near leks 4L159 and 4L152.

3. MITIGATION PRINCIPLES

The following subsections describe how the Project will adhere to the mitigation principles outlined in the BLM's document entitled, "Framework for Developing a Compensatory Mitigation Plan" (BLM 2021a).

3.1. Authorities

The Project proposes development of wind energy facilities on federal lands managed by the BLM and on State Endowment Lands managed by the Idaho Department of Lands, including lands designated as GHMA. As set forth in the 2019 Memorandum of Agreement between the State of Idaho and the BLM (State of Idaho and BLM 2019), the BLM "shall require avoidance, minimization, and other onsite mitigation (related to GRSG), consistent with its approved land use plans and as the BLM Idaho determines to be appropriate under (Federal Land Policy and Management Act's) principles of multiple use and sustained yield, or as may be otherwise required by law." The 2015 ARMPA (BLM 2015a) is applicable to the Project site and the development activities proposed by MVE.

The BLM's authority to require mitigation measures related to GRSG as part of the Project is set forth by the following laws and policies:

- Applicable Idaho Law and regulations, including Idaho Constitution, Article IX, §4, 8; Idaho Executive Order 2012-02; Idaho Executive Order 2015-04; Idaho Code 58-101; Idaho Code 36-103; Idaho Code 67-818;
- Federal Land Policy and Management Act, 43 U.S.C. §§ 1701-1787;
- Applicable Department of the Interior (DOI) and BLM regulations, including 43 C.F.R. § 24, DOI Fish and Wildlife Policy: State-Federal Relationships and 43 C.F.R. subpart 1610;
- The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321-3470h;
- Secretary's Order 3353, Greater Sage-Grouse Conservation and Cooperation with Western States (June 7, 2017);
- Secretary's Memorandum, Improving the BLM's 2015 Sage-Grouse Plans (August 4, 2017);
- BLM Instruction Memorandum No. 2018-093, Compensatory Mitigation (December 6, 2018);
- BLM Manual 6840, Special Status Species Management Manual for the BLM (December 12, 2008);
- BLM Mitigation Policy (IM 2021-046; incl. Manual MS-1794 and Handbook H-1794-1).

3.2. Residual Impacts

According to the BLM Mitigation Handbook (BLM 2021b), "residual effects" are defined as follows:

> "Any adverse reasonably foreseeable effects that are expected to remain after consideration and application of the first four aspects in the mitigation hierarchy; also referred to as unavoidable impacts. Residual effects include those adverse impacts that

will persist until the outcome of a mitigation measure is achieved at some point in the future."

Even with the avoidance and minimization measures explained in this Mitigation Plan, the Project is expected to cause unavoidable (residual) impacts to GRSG habitat. The residual impacts associated with the Project will be quantified using the HQT, which is a common currency for evaluating impacts to GRSG habitat (debits) in Idaho. The Project's residual impacts to GRSG and its habitat (i.e., HQT outputs) will be evaluated in the EIS being prepared by the BLM. The HQT accounts for residual effects related to habitat loss, habitat degradation, and avoidance behavior, as described below.

While the potential impacts are not well known due to lack of research, wind energy development may impact GRSG populations directly through habitat loss and indirectly by avoidance of otherwise suitable habitat. In Wyoming, LeBeau et al. (2014) reported lower GRSG nest and brood survival in habitats closer to wind turbines two years following development. However, over a 6-year period after development, LeBeau et al. (2017b) failed to detect negative effects on GRSG nest, brood, or summer female survival, suggesting variability in survival was better explained by temporal variability than wind energy infrastructure. Avoidance behaviors in response to wind energy infrastructure could possibly mask the ability to detect any potential survival consequences. LeBeau et al. (2017b) did find GRSG selection for brood-rearing and summer habitats to be negatively correlated with surface disturbance associated with wind energy infrastructure. Similar displacement behaviors have also been documented for greater prairie chicken, with avoidance of wind turbines in Kansas (Winder et al. 2014). These results suggest that there is some level of indirect loss of potentially suitable habitat as a result of wind energy infrastructure. However, the current body of evidence does not suggest these avoidance behaviors translate to population level effects (LeBeau et al. 2017a).

Power lines (transmission, collection, and distribution lines) associated with wind energy infrastructure also have the potential to directly and indirectly negatively affect GRSG populations. Direct mortality caused by collision with power lines has been documented in Idaho (Beck et al. 2006), and indirect effects could include displacement and survival consequences similar to wind energy infrastructure. In Nevada, GRSG resource selection and demography was negatively associated with a 345-kilovolt (kV) transmission line (Gibson et al. 2018). At the same study site, population growth rates were lower for leks near power lines (Gibson et al. 2018). GRSG resource selection and demography was also negatively associated with power lines, but transmission lines did not affect lek persistence in a multi-state study (Kohl et al. 2019). In Wyoming, LeBeau et al. (2019) also found that transmission lines had a negative effect on GRSG habitat selection and survival. However, the authors determined the effect varied by proximity to occupied leks and habitat suitability, suggesting the magnitude of effects may be minimized when placing transmission lines in unsuitable habitats when they occur within 1.9 mi from an occupied lek (LeBeau et al. 2019).

3.3. Mitigation Hierarchy

In accordance with the BLM Mitigation Policy (IM 2021-046; incl. Manual MS-1794 and Handbook H-1794-1), the BLM will consider the full mitigation hierarchy when evaluating impacts to resources. A net conservation gain is the standard set forth in the ARMPA (BLM 2015a).

In accordance with the 2015 ARMPA (BLM 2015a), the BLM Mitigation Policy, and the 2019 Memorandum of Agreement between the State of Idaho and the BLM, MVE has implemented and plans to implement several mitigation measures intended to avoid and minimize adverse impacts to GRSG and its habitat at and near the Project site. A comprehensive list of these best management practices, design features, and Required Design Features is provided in Appendix U-a. The following sections explain some of the major avoidance and minimization measures MVE has incorporated into the Project design.

3.3.1. Avoidance

Because the Project is located within the range of GRSG, complete avoidance of GRSG habitat is not possible. However, during the Project design, MVE purposefully avoided PHMA and IHMA in the surrounding area to protect those habitats, which aligns with the habitat management objectives in the ARMPA (BLM 2015a).

MVE also re-designed the Project to remove all Project infrastructure from BLM-managed lands located within 3.1 mi (5.0 km) of occupied leks (BLM 2015a; Figure 2). Revisions of the Project layout to avoid the three lek buffers included relocating the locations of 63 proposed wind turbines to less productive wind resource areas and re-routing the associated collector lines and access roads. From a wind energy resource perspective, long-term average wind speeds within the lek buffers are estimated to be approximately 5% above that found at the next most efficient site for the relocated turbines. This difference in long-term average wind speed equates to a potential annual loss of approximately 40 gigawatt-hours (GWh) of generation, enough to power more than 3,500 homes annually.

MVE removed turbines from BLM-managed lands within the buffer of lek 4L160, even though the ecological value and suitability of that land for GRSG is impaired. A substantial percentage of the existing habitat within this lek buffer is in agricultural use (e.g., cultivated crop fields; Figure 3), which is not considered GRSG habitat. Compared to other leks in the Craters of the Moon fine-scale assessment area, the land within the 3.1-mi buffer of lek 4L160 exhibits lower coverage of sagebrush and big sagebrush (*Artemisia tridentata*), and higher coverage of agricultural land. The

[This figure contains confidential biological resources information and is therefore redacted from the public version of the document. The figure is included in confidential Appendix U-b (Confidential Biological Resource Mapping).]

Figure 3. Location of greater sage-grouse lek 4L160, relative to agricultural development near the proposed Lava Ridge Wind Project, Jerome, Lincoln and Minidoka counties, Idaho.

amount of existing agricultural development within the 3.1-mi buffer of lek 4L160 (29.1%) exceeds the amount that Knick et al. (2013) found to be the upper threshold for lek persistence.

The inability to site turbines in areas of higher wind quality, such as the 3.1-mile buffer of lek 4L160, which contains Sid Butte, negatively impacts the overall efficiency of the Project. The quality of the wind resource is one of the primary considerations when siting wind turbines.

Average long-term wind speeds can vary widely across a project site due to terrain or atmospheric affects. Thus, significant time is spent collecting atmospheric data and producing sophisticated long-term models to evaluate the wind resource prior to development. Perceptibly small shifts in wind speed can result in wide disparities in wind turbine performance. For instance, a reduction in wind speed of only 0.5 meter (m; 1.6 feet [ft]) per second can result in an energy production decrease of hundreds of kilowatts for just a single turbine. This impact is magnified as the difference in wind speed and the number of affected turbines increases. Therefore, siting turbines in areas with even slightly lower-than-optimal wind speeds can erase significant portions of the renewable energy benefits provided by a wind generating facility.

In summary, the Project has been intentionally sited to avoid PHMA and IHMA and has been re-designed to avoid impacts to GRSG leks by siting infrastructure beyond 3.1 mi of GRSG leks on BLM-managed lands, which negatively impacted the Project's power generation efficiency.

3.3.2. Minimization

MVE minimized impacts to GRSG habitat beyond 3.1 mi of leks by siting infrastructure in relatively low-quality habitats compared to the surrounding habitat. The habitat within and surrounding the Project Assessment Area contains lower sagebrush cover and greater agricultural development than the surrounding region (LeBeau et al. 2021). As such, Project infrastructure has been broadly sited in an area of lower quality habitat that has been previously impacted by other uses. The HQT includes a GRSG HSI with a scale ranging from 0 to 1 (low to high suitability; State of Idaho 2021). An HSI value of 0.5 or greater indicates an area has a 50% or higher likelihood of being suitable habitat for GRSG. The HSI within the Project Assessment Area averages 0.04 (range = 0.0–0.8), and 0.3% of this area contains HSI values greater than 0.5, reflecting MVE's successful efforts to site the Project in an area with low habitat suitability.

Removing turbines from the two lek buffers located north of State Highway 24 minimized impacts to connectivity among key habitats in the Project Assessment Area. GRSG are expected to use habitats in close proximity to leks to satisfy life history needs (Coates et al. 2013). However, GRSG in Idaho are known to make large-scale movements during different time periods (Connelly et al. 1988). MVE's avoidance of the lek buffers located north and south of State Highway 24 minimized impacts to local- and large-scale movements of GRSG occurring near the Project. GRSG breeding on the two northern leks are able to connect with the larger population in the north. Large-scale movements of GRSG associated with lek 4L160 are unknown, but the extent of existing habitat fragmentation near this lek likely limits the potential for large-scale movements.

MVE has minimized impacts in GHMA within the Project area by co-locating infrastructure with existing features to the extent possible. The HQT uses a landscape integrity index, which

devalues areas based on the proximity to anthropogenic development (scale 0 to 1, where higher values have greater landscape integrity; State of Idaho 2021). The average landscape integrity value across the Project resulting from existing disturbance is 0.40 (median = 0.38). The locations of proposed wind turbines occur in areas with an average pre-development landscape integrity value of 0.43 (range = 0.01–0.95). In addition, approximately 68 mi (110 km) of the Project's proposed power lines (about 33%) are within 0.06 mi (0.10 km) of existing power lines or roads. The relatively low landscape integrity value, along with the extensive co-location of power lines with existing power lines and roads, are a result of MVE's efforts to co-locate Project infrastructure in proximity with existing disturbances to the maximum extent feasible, ensuring minimization of Project impacts (e.g., habitat degradation and displacement of GRSG).

MVE has committed to noxious weed control and reclamation plans, as provided in the Plan of Development, that detail implementation of noxious weed best management practices (BMPs) for the life of the Project and seeding with BLM-approved seed mixtures, both of which are efforts that will likely minimize the Project's impact on GRSG habitat in the Project area. Post construction, MVE will complete interim reclamation activities, including application of BLM-approved seed mixes and noxious weed control BMPs, in areas temporarily disturbed during construction, which are estimated at approximately 5,400 acres (ac; 2,185 hectares [ha]). As part of final reclamation, approximately 1,900 ac (769 ha) of land that was occupied by Project infrastructure will undergo reclamation, seeding, and noxious weed BMPs, for a total of up to approximately 7,300 ac (2,954 ha) of habitat restoration that will occur as a result of reclamation activities. Although not specifically intended as GRSG mitigation measures, these actions are expected to minimize the Project's impact on GRSG habitat and might ultimately provide incremental improvement in vegetation conditions in the Project area after final decommissioning and restoration when compared with current baseline conditions.

MVE has also taken a proactive approach to identify strategies that protect birds, including GRSG, and minimize possible negative impacts from birds of prey on the local GRSG population. As noted in the Project's Plan of Development, the following minimization measures related to avian resources are proposed:

- Turbine towers have been designed and will be constructed to discourage bird nesting and wildlife attraction.
- MVE shall ensure all aboveground transmission lines and collector lines will be designed and constructed in compliance with Avian Power Line Committee (APLIC) standards (APLIC 2006, 2012) in order to reduce impacts to avian species.
- Where practicable, collection lines will be installed underground to minimize risk of collision and electrocution associated with aboveground lines.
- When practicable for aerial collector lines, MVE will use tubular structures to reduce the ability of birds to perch and to reduce risk of collision.
- Any deterrent devices installed on the Project's power line infrastructure will be maintained as part of the standard operations and maintenance plans; any sensitive portions of the Project area where deterrents may be required will be determined in coordination with BLM.

- If applicable, avian diverters will be installed and maintained on all guy wires/lines of all existing or any new temporary meteorological towers.
- Where guy wires are necessary, appropriate guy line guards would be installed at the base of the guy wires.
- Contractors will participate in training on the BMPs used to avoid and minimize impacts to environmental resources and ensure all contractor personnel receive such training. Contractor personnel will be trained to not approach or harass wildlife and to avoid all wildlife to the greatest extent possible. Additionally, personnel will be trained to minimize activities that attract wildlife.
- Tree or native vegetation clearing will occur outside the migratory bird nesting season to the extent practicable. Tree or vegetation clearing conducted during the nesting season will be done under the supervision of a compliance monitor, who will identify nests for avoidance prior to construction.
- Existing trees, vegetation, water resources, and wildlife habitat will be protected and preserved to the extent practical.
- The establishment and spread of invasive plant species and noxious weeds within and adjacent to the Project's footprint of disturbance will be managed, as detailed in the Noxious Weed Management Plan (Appendix R of the POD).
- MVE will install the minimum amount of fencing needed to ensure the safety and security of Project features and to provide for mitigation of impacts to grazing operations.
- Roads, turbine pads, and other Project infrastructure elements were designed to utilize existing roads to the extent feasible to minimize habitat impacts and reduce wildlife displacement.
- Maintenance vehicle movement is restricted to pre-designated access, Project personnel or contractor-required access, or public roads. If feasible, existing roads and previously disturbed areas will be used during construction, operation, and maintenance to minimize impacts to native habitat.
- Traffic will be restricted to roads associated with the Project or public roads. Use of unimproved roads will be minimized to the extent practicable.
- All personnel will obey posted speed limits on Project roads.
- All operations personnel will be directed to extinguish nighttime exterior lights at the Project when not in use and when not needed to ensure security, and operations personnel will be briefed on the importance of minimizing nighttime light use at the Project.
- Project personnel will use spark arrestors on any power equipment (all-terrain vehicles, chainsaws, and other such equipment) and will maintain fire extinguishers in all onsite service vehicles.
- Any garbage/waste will be collected and disposed of in an appropriate trash receptacle that is securely protected from wildlife.
- MVE will remove any dead medium- and large-sized animal (i.e., squirrel-sized or larger) found incidentally, and dispose of it at least beyond line-of-sight of Project turbines, when doing so is consistent with the MVE permissions/authorizations. For livestock carcasses, the Permittee will work with the property/animal owner to have the carcass removed or obtain permission to remove it.

3.3.3. Compensatory Mitigation

MVE proposes compensatory mitigation to offset anticipated residual impact and achieve a net conservation gain following the 2015 ARMPA policy (BLM 2015a). Informing MVE's consideration of the proposed mitigation proposal, the *Idaho Sage-Steppe Mitigation Principles* document summarizes the standards of the State of Idaho for all forms of compensatory mitigation in GRSG habitat (State of Idaho 2019). The State of Idaho and BLM have a Memorandum of Agreement (MOA) in place to guide the coordination and implementation of GRSG habitat mitigation in Idaho (State of Idaho and BLM 2019). This coordination has resulted in the development of the Idaho HQT, which is an approach for assessing the quality of GRSG habitat and changes in GRSG habitat function based on various actions within the Project area (State of Idaho 2021). The HQT is intended to be a common currency when evaluating impacts to GRSG habitat (debits) and benefits to GRSG through conservation projects (credits).

The HQT outputs quantify change in functional acres from pre-project conditions compared to estimated post-Project conditions by computing the average habitat function within a project area and the surrounding area buffered by indirect effects associated with existing and project-related anthropogenic development. The HQT calculates habitat function by generating a local-scale score and a site-scale score, where the local-scale score includes a GRSG score and an anthropogenic disturbance score (landscape integrity index). The GRSG score incorporates a Habitat Suitability Index (HSI), GRSG breeding density, and important, late brood-rearing habitats. The anthropogenic score includes the direct footprint of anthropogenic disturbance as well as indirect impacts based on distance buffers generated from best available science. The local-scale scores are averaged within map units, which are based on unique vegetation communities. Once a local-scale score is calculated within each map unit, the site-scale score is used to adjust the local-scale score to calculate habitat function. The HQT also incorporates a landscape importance factor that weighs areas based on habitat management areas (i.e., PHMA, IHMA, and GHMA), with GHMAs receiving lower weights compared to areas designated as IHMA or PHMA. Pre- and post-project habitat function is then multiplied by the acres within a project assessment area to estimate functional acres. The difference between current functional acres and projected functional acres equals the amount of debits or credits associated with a development or conservation project, respectively.

Per the 2015 ARMPA, projects impacting GRSG habitat must provide compensatory mitigation to ensure a "net conservation gain." A net conservation gain standard is the actual benefit or gain above baseline conditions and accounts for any uncertainty associated with the effectiveness of mitigation (BLM 2015a).

After BLM determines which Project alternative will be selected and issues its decision, the debit amount, and thus compensatory mitigation obligation, will be determined for the fully engineered project by a future HQT analysis to be conducted by the IDFG. The results of this future HQT analysis will be used by the BLM to establish the quantity of compensatory mitigation required to achieve a net conservation gain for the Project.

To achieve a net conservation gain for the Project, as defined above in BLM guidance, MVE plans to implement the extensive impact avoidance and minimization measures described above and outlined in Appendix U-a, in concert with purchasing credits from a State of Idaho-approved GRSG habitat conservation bank and/or providing an in-lieu fee payment towards the National Mitigation and Conservation (NMC) Account, as explained below.

MVE plans to purchase GRSG mitigation credits from the TerraWest Conservancy's (TerraWest) Eastern Idaho Greater Sage Grouse Habitat Bank (Habitat Bank), known as the "Wilcox Ranch Conservation Bank" (WRCB), which includes an approximately 10,000-ac (4,047-ha) bank located in Idaho's Critical Habitat Zone for GRSG and containing full seasonal offsets for GRSG and sagebrush-obligate species. The proposed purchase of mitigation credits, instead of on-site compensatory mitigation activities, is consistent with feedback received from BLM resource specialists indicating that compensatory mitigation would be most suitable outside of the Project Area, in area(s) exhibiting higher quality habitat for GRSG. The Project is located in the service area of the Habitat Bank. As of July 2022, state approval of the TerraWest bank is pending. The Habitat Bank management plan outlines durability, additionality, performance standards, monitoring and reporting, and financial assurances. It is MVE's understanding, based on discussions with TerraWest, that the Habitat Bank will be assigned mitigation credits based on habitat preservation and habitat "uplift" activities (e.g., restoration and/or enhancement), providing a net conservation gain for GRSG. TerraWest has advised MVE that it expects to be in a position to fully satisfy the Project's (proposed action's) need for mitigation credits to offset Project debits through the Habitat Bank, including receipt of state-certification and approval to sell credits, before the predicted time of the BLM's Record of Decision for this Project. Additional information regarding the Habitat Bank is provided in the "Habitat Bank" section below.

As an additional option that MVE could select to provide compensatory mitigation for unavoidable impacts to GRSG habitat on BLM-managed lands, an in-lieu fee program is available in accordance with the "National Mitigation and Conservation Account MOA" between the BLM and the National Fish and Wildlife Foundation (NFWF; executed March 15, 2022). Pursuant to the MOA, the NFWF has established a financial account (i.e., the NMC Account) to facilitate implementation of mitigation activities for fish, wildlife, plants, and these species' habitats, and other natural resources (either voluntarily or specifically required by federal or state law) relating to BLM authorizations to use the public lands. The MOA also helps the BLM promote compliance with Decision Documents for permittees or other authorized public land users by allowing for the collection and administration of such funds by the NFWF. If MVE decides to provide an in-lieu fee payment towards the NMC Account, the funds would be deposited into a sub-account that would be held, managed, and administered by the NFWF. In coordination with the BLM, the NFWF would use the funds from the sub-account to accomplish mitigation activities to benefit GRSG (e.g., conservation, protection, restoration, enhancement), to be specifically identified in the BLM Record of Decision for this Project. If MVE decides to provide an in-lieu payment towards the NMC Account, further coordination between the BLM, IDFG, ID Governor's Office of Species Conservation, and MVE would be required to determine the appropriate types (e.g., conservation, restoration, enhancement) and amounts of mitigation actions to be undertaken to achieve a net conservation gain for this Project.

Both of the compensatory mitigation options being evaluated by MVE are acceptable in accordance with the *Idaho Sage-steppe Mitigation Principles* (State of Idaho 2019), the BLM Mitigation Manual MS-1794 (BLM 2021c), and the 2015 ARMPA. Mitigation banking and mitigation funds (in-lieu fee programs) are included in the definition of "compensatory mitigation mechanism" provided in the BLM Mitigation Manual MS-1794 (BLM 2021c), including the BLM Mitigation Handbook H-1794-1 (BLM 2021b). The purchase of mitigation credits from an approved conservation bank is one of the acceptable forms of compensatory mitigation identified in the *Idaho Sage-steppe Mitigation Principles*. "Utilizing certified mitigation/conservation bank or credit exchanges" and "contributing to an existing mitigation/conservation fund" are identified as acceptable compensatory mitigation options in the 2015 ARMPA.

Considering the relatively low quality of GRSG habitat to be impacted by the Project, in concert with MVE's commitment to implement the avoidance, minimization, and compensation measures explained in this Mitigation Plan, it is clear that the Project will provide a net conservation gain by ensuring an actual benefit or gain above baseline conditions while accounting for uncertainty associated with the effectiveness of mitigation, as required by the BLM pursuant to the 2015 ARMPA.

4. HABITAT BANK

According to IDFG mapping, TerraWest's proposed WRCB is located entirely within the Mountain Valleys Greater Sage-grouse Conservation Area, including PHMA (11.3%), IHMA (87.5%), and GHMA (1.2%).

The information presented in the following sections is from the draft Management Plan for the WRCB. This information was provided to MVE by TerraWest in September 2022. As of September 2022, MVE had not yet received a copy of the complete Management Plan for the WRCB because it was under review by various stakeholders.

4.1. General Objectives

The goal of the WRCB is to preserve and enhance habitat for sage-grouse and other sagebrush obligate species. The WRCB will also preserve and/or enhance the habitat of moose, elk, mule deer, pronghorn, raptors, and migratory birds. Improved water quality and other ecological services will also be promoted through the WRCB. The primary method used to achieve these goals is through implementation of the WRCB Management Plan.

The WRCB Management Plan identifies management and conservation measures to maintain or increase sage-grouse habitat function. The WRCB Management Plan provides guidance for the conservation and management of sage-grouse and other species by reducing and/or eliminating threats to those species and providing a long-term framework for the management of the WRCB.

Establishment of the WRCB will result in the following:

- Preservation of suitable sage-grouse habitat;
- Removal and reduction of threats and accounting for associated Avoidance Loss Factors;

- Preservation of suitable habitat for other wildlife species endemic to the area, including other sagebrush obligates;
- Increased rangeland health consistent with management of livestock grazing and agricultural activities;
- Removal over time of existing human-made impediments to habitat;
- Permanent protection of the site through transfer of conservation easements; and
- Permanent management of the site through funding of a non-wasting endowment.

4.2. Management Objectives Specific to Benefitting Sage-grouse

Implementing appropriate management actions is necessary to maintain current high-quality habitat on the WRCB and achieve the desired threat abatement for all threats present. The following is a list of each conservation measure and its associated goal that forms the basis of the Management Plan. These measures will be implemented to maintain and enhance sage-grouse habitats and populations on the WRCB. Many of the management actions and conservation measures listed are informed by the threats and conservation measures outlined in the Conservation Plan for Sage-Grouse in Idaho (Idaho Sage-Grouse Advisory Committee 2006) as well as guidance set forth by Local Working Groups.

- Preservation

  The goal for preservation is to protect the WRCB perpetually from development activities that are incompatible with sage-grouse habitat.

- Wildfire Management

  The goal for fire management on the WRCB is to reduce or eliminate fire-related harm to greater sage-grouse and their habitat.

- Invasive Species Management

  The goal of the invasive species management program is to eliminate or prevent the spread of existing infestations and prevent new infestations on the WRCB.

- Marking or Removal of High and Moderate Collision Risk Fences

  The goal for fence marking is to reduce or eliminate fence collisions by sage-grouse on the WRCB.

- Livestock Grazing and Range Management

  The goal for livestock grazing and range management on the WRCB is to manage livestock grazing in a manner that meets the BLM's Rangeland Health Standard while maintaining the current levels of high-quality greater sage-grouse habitat.

- Recreation Management

  The goal of recreation management on the WRCB is to reduce any negative impacts to greater sage-grouse resulting from persons engaging in recreational activities on the WRCB.

- Water Improvement Projects

  The goal for water improvement projects on the WRCB is to ensure that future projects do not negatively impact sage-grouse.

- Disease Management

  The goal with disease management is to eliminate any known occurrences on the WRCB in order to prevent sage-grouse deaths caused by West Nile virus.

- Juniper Management

  The goal for juniper management on the WRCB is to reduce or eliminate junipers on the project parcels, which will enhance GRSG habitat.

Through the purchase of mitigation credits to offset residual impacts to be caused by the Project, MVE would financially support the conservation activities at the WRCB, which include preservation and enhancement of high quality stronghold habitat for GRSG.

4.3. Timeliness

Habitat maintenance and improvement at the WRCB will occur both from avoided loss due to preservation and from uplift due to habitat restoration. These categories generally align with administrative (avoided loss) and resource (uplift) actions in relation to performance standards. Administrative actions generally occur at a point in time and can usually be quickly documented (e.g., execution of the site protection instrument) (State of Idaho 2021). Resource actions generally lead to an improvement in the vegetation characteristics of the habitat and oftentimes are a gradual change over time (e.g., achievement of sagebrush density and age class diversity).

TerraWest has informed MVE that the anticipated initial credit allotment attributed to habitat preservation (avoided loss) at the WRCB is expected to fully cover the anticipated credit need for the Lava Ridge Wind Project, based on a preliminary HQT run for the proposed action and an assumption by MVE (with input from professionals) regarding the maximum ratio (debits:credits) that could be required to achieve a net conservation gain. It is anticipated that mitigation credits will be transferred prior to or concurrent with construction activities. Therefore, with the preservation action at the WRCB occurring prior to the planned impacts at the Project Site, there will be no delay between the time of impact at the Project Site and the time of the proposed compensatory mitigation action (i.e., habitat preservation).

The timelines for the different categories of conservation actions are outlined below.

- Avoided Loss (Administrative)

- Preservation – Preservation actions occur by preserving the property from development and other uses incompatible with sage-grouse conservation. Preservation actions will be completed immediately when the WRCB is approved and the site protection instrument is executed.
- Reducing Wildfire Risk – Occurs through implementing actions that decrease the risk of wildfire affecting the project area. The projects outlined in the WRCB Management Plan are specific actions that will reduce the risk of wildfire. Wildfire risk abatement actions will occur within one year of WRCB approval.
- Annual Grasses – Occurs through active treatment to restore habitat within the project area. This category can be separated into two actions – an initial treatment and the resulting habitat restoration/uplift. The treatment is an action with a specific timeline, while the habitat uplift will occur over time. The initial annual grass treatments will occur within two years of WRCB approval and the habitat uplift is expected to take 3-10 years to meet performance standards for restored habitat.
- Marking High and Moderate Collision Risk Fences – Occurs by marking fences in high and moderate collision risk areas on the WRCB property with anti-collision devices. This action will occur within one year of WRCB approval.

- Resource (Uplift)

  Habitat quality uplift from habitat restoration projects typically occurs over longer timeframes and are equal to the difference between baseline (i.e., pre-project) habitat function and post-project habitat function. Uplift is confirmed when monitoring and verification indicates an increase in habitat quality.

  It is anticipated that management of the WRCB property will provide an uplift to the habitat over time. As monitoring indicates uplift has occurred, the uplift will be quantified through the HQT.

4.4. Durability

The WRCB will be perpetually managed as a conservation bank providing benefits to sage-grouse, other sagebrush obligates, and multiple other wildlife species that use the WRCB property. The bank will be protected through transfer of a perpetual conservation easement and management of the bank will be funded by a non-wasting endowment. The specific management actions implemented on the WRCB may change over time as directed by the adaptive management process and in response to changing environmental conditions. However, the overall purpose of and mitigation actions occurring on this bank site will be to perpetually preserve and enhance habitat for sage-grouse and other wildlife species.

5. SUMMARY

In summary, MVE's proposed complete mitigation package is composed of the following elements:

- AVOIDANCE
  - MVE's intentional avoidance of PHMA and IHMA habitats in siting the Project.
  - MVE's re-design of the Project to keep all Project infrastructure on BLM-managed lands more than 3.1 mi away from GRSG leks, which directly resulted in the following:
    - Relocation of 63 wind turbines to less productive wind resources areas; and
    - Loss of approximately 40 GWh of generation potential.
- MINIMIZATION
  - MVE's extensive minimization measures (see "Minimization" section and Appendix U-a), which will minimize impacts to GRSG during important time periods including breeding, nesting, brood-rearing, and wintering seasons.
  - While not driven primarily by GRSG considerations, implementation of MVE's plans for noxious weed management and reclamation are expected to minimize the Project's impact on GRSG habitat and might ultimately provide incremental improvement in vegetation conditions in the Project area after final decommissioning and restoration when compared with current baseline conditions.
- COMPENSATION
  - MVE's purchase of mitigation credits from the Habitat Bank (number of credits to be determined in coordination with the BLM); and/or
  - MVE's payment of an in-lieu fee towards the NMC Account to benefit GRSG (amount to be determined in coordination with the BLM).

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Appendix U-a: Avoidance and Minimization Measures

This appendix includes avoidance and minimization measures related to greater sage-grouse that are likely to be implemented by the Project. These measures were taken from the Project's Plan of Development (October 2022), a table of draft best management practices provided by BLM in May 2022, and the 2015 Approved Resource Management Plan Amendment (BLM 2015a). The measures listed here may be revised for consistency with subsequent revisions to the Project's POD or to applicable BLM documents, and additional measures may be added in subsequent permitting phases.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
1	MVE avoided Priority Habitat Management Area and Important Habitat Management Area.	MVE				2015 ARMPA	Avoidance of habitats having high to moderate conservation value.
2	Locate staging areas outside the greater sage-grouse Priority Habitat Management Areas to the extent possible.	BLM 2015			#58		Avoidance of habitats having high conservation value.
3	MVE's proposed infrastructure is sited in relatively low-quality habitats compared to the surrounding habitat.	MVE		X			Minimize habitat loss and habitat fragmentation.
4	MVE has minimized impacts in GHMA within the Project area by co-locating infrastructure with existing features to the extent possible.	MVE		X			Minimize habitat degradation, risk of predation, and behavioral avoidance by sage-grouse.
5	No Project infrastructure would occur on BLM-managed lands within 3.1 miles of greater sage-grouse leks in compliance with the BLM's Approved Resource Management Plan Amendment (2015), in order to minimize impacts to native sagebrush habitats.	MVE (POD Appendix M, Bird and Bat Conservation Strategy), BLM 2015		X		2015 ARMPA	Avoid disruption of breeding activities and minimize habitat fragmentation.
6	Micro-site linear facilities to reduce impacts to sage-grouse habitats.	BLM 2015			#57		Minimize habitat degradation and risk of predation.
7	Restrict the construction of tall facilities and fences to the minimum number and amount needed.	BLM 2015			#60		Minimize risks of predation and incidental Project-related mortality (collision).
8	Occupied habitat for BLM sensitive plants or BLM sensitive wildlife would be avoided to the extent feasible. Avoidance measures to reduce disturbance to occupied habitat may include the use of construction fencing to avoid specific areas or environmental monitors to ensure avoidance, or seasonal restrictions during breeding seasons (wildlife only).	MVE (POD Appendix V, Environmental Compliance Monitoring Plan)	X		#3		Minimize habitat loss; avoidance of lek buffer area on BLM-managed lands and minimize impacts to seasonal use areas.
9	Construction and development activities would conform to seasonal restrictions.	BLM 2015, MVE (POD Appendix V, Environmental Compliance Monitoring Plan)			#63		Avoid disruption of breeding activities and minimize risk of displacement of sage-grouse.
10	No repeated or sustained behavioral disturbance (e.g., visual, noise over 10 dbA at lek, etc.) to lekking birds from 6:00 pm to 9:00 am within 2 miles (3.2 km) of active leks during the lekking season.	BLM 2015			#2		Avoid disruption of breeding activities.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
11	Avoid Project-related mechanized anthropogenic disturbance within 2.0 miles of active sage-grouse leks during the nesting season when implementing infrastructure construction or maintenance and geophysical exploration activities.	BLM 2015			#3		Avoid disruption of breeding activities; minimize anthropogenic disturbance and displacement of sage-grouse.
12	Avoid Project-related mechanized anthropogenic disturbance during the winter, in greater sage-grouse winter concentration areas when implementing infrastructure construction or maintenance and geophysical exploration activities.	BLM 2015			#4		Minimize risks of incidental Project-related mortality and displacement of sage-grouse.
13	MVE will avoid construction within species-specific time constraints and nest buffers for all sensitive species raptors, BLM special status bird species, and other migratory birds, as detailed in Appendix P (Construction Monitoring Plan) of the POD. If seasonal nest restrictions cannot be applied for construction activities, a biological monitor would monitor the nesting birds. If construction activities appear to agitate the birds (as evidenced by alarm calls or disruption of normal nesting activities [i.e., incubating or feeding young]), construction activities would cease within the previously identified buffers until the nest has fledged or failed from natural causes.	MVE (POD Appendix M, Bird and Bat Conservation Strategy, and Appendix P, Construction Monitoring Plan), BLM 2015	X		#3		Avoid disruption of breeding activities.
14	The area of permanent disturbance (i.e. direct equipment footprint) would be kept to a minimum. The area disturbed by construction- related activities (i.e., footprint) would be kept to a minimum. The area disturbed by operational-related activities (i.e., footprint) would be kept to a minimum.	MVE (POD main body)	X				Minimize habitat loss, habitat degradation, and habitat fragmentation.
15	MVE would work with the BLM to avoid, minimize, and/or mitigate for impacts to environmentally sensitive areas to the greatest extent feasible.	MVE (POD main body)	X				Avoidance of lek buffer area on BLM-managed lands and minimize impacts to seasonal use areas.
16	The number and size/length of roads, temporary fences, lay-down areas, and borrow areas would be minimized to the extent feasible.	MVE (POD main body)	X				Minimize habitat loss, habitat degradation, habitat fragmentation, and risk of vehicle-wildlife collisions.
17	The Project would maximize use of existing roads, thus keeping new construction to a minimum.	MVE (POD Appendix J, Road Design, Traffic and Transportation Plan)	X				Minimize habitat loss and habitat fragmentation.
18	Roads, turbine pads, and other Project infrastructure would be designed to utilize existing roads to the extent feasible to minimize habitat impacts and reduce habitat fragmentation and wildlife displacement.	MVE (POD Appendix M, Bird and Bat Conservation Strategy), BLM 2015	X		#88		Minimize habitat loss, habitat fragmentation, and displacement of sage-grouse.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
19	Access roads would be designed to minimize stream crossings where feasible. Where practical, structures crossing streams would be designed to not decrease channel stability or increase water velocity.	MVE (POD Appendix D, Stormwater Pollution Prevention Plan)		X			Minimize habitat degradation and habitat fragmentation.
20	Access roads would be designed to be located away from drainage bottoms and avoid wetlands, if practical. If drainage bottoms and wetlands cannot be avoided, appropriate design features would be used to reduce erosion and sedimentation.	MVE (POD Appendix D, Stormwater Pollution Prevention Plan)		X			Minimize habitat degradation and habitat fragmentation.
21	Where practical, access roads would be designed so that changes to surface water runoff are avoided and erosion is not initiated.	MVE (POD Appendix J, Road Design, Traffic and Transportation Plan)		X			Minimize habitat degradation.
22	MVE would generally design access roads to follow natural topography, as practicable, considering factors such as vehicle dimensions, weight, turning radius, and safety considerations.	MVE (POD Appendix J, Road Design, Traffic and Transportation Plan)		X			Minimize habitat degradation and habitat fragmentation.
23	Horizontal roadway alignment would consider the shortest distance of access roadway, avoidance of steep terrain, and sensitive resources.	MVE (POD Appendix J, Road Design, Traffic and Transportation Plan)	X				Minimize habitat loss and habitat fragmentation.
24	Road crossings would be constructed at right angles to ephemeral drainages and stream crossings.	BLM 2015			#93		Minimize habitat loss and habitat degradation.
25	Improvements to stream crossings would maintain water conveyance flows during and after construction.	MVE (POD Appendix D, Stormwater Pollution Prevention Plan)	X				Minimize habitat degradation.
26	Meteorological towers would not be located in areas where ecological resources, known to be sensitive to human activities, are present. Installation of towers would be scheduled to avoid disruption of breeding activities or other important wildlife behaviors.	MVE (POD main body)	X		#3		Minimize habitat degradation, minimize anthropogenic disturbance and displacement of sage-grouse; avoid disruption of breeding activities.
27	Use free standing structures where possible, to limit the use of guy wires. Where guy wires are necessary and appropriate, bird collision diverters would be used, if doing so would not cause a human safety risk.	BLM 2015			#61		Minimize risk of Project-related mortality (collision).
28	Project substations would be monitored occasionally for any potentially unusual wildlife impacts.	MVE (POD Appendix M, Bird and Bat Conservation Strategy)	X				Minimize risk of incidental Project-related mortality.
29	Turbine towers have been designed and will be constructed to discourage bird nesting and wildlife attraction.	MVE (POD Appendix M, Bird and Bat Conservation Strategy)		X			Minimize risk of predation.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
30	Where practicable, collection lines will be installed underground to minimize risk of collision and electrocution to birds associated with aboveground lines. Any aboveground lines will be constructed in compliance with Avian Power Line Interaction Committee (APLIC) (2006) standards.	MVE (POD main body)		X			Minimize risk of collision and behavioral avoidance by sage-grouse.
31	MVE would design and construct all transmission lines and collector lines in compliance with APLIC standards (APLIC 2006, 2012) in order to reduce impacts to avian species.	MVE (POD Appendix M, Bird and Bat Conservation Strategy), USFWS 2022	X				Minimize risk of collision.
32	BLM would require sage-grouse-safe fences.	BLM 2015			#81		Minimize risk of Project-related mortality (collision).
33	Utilize temporary fencing (e.g., ESR, drop down fencing) where feasible and appropriate to meet management objectives.	BLM 2015			#107		Minimize risk of Project-related mortality (collision).
34	MVE would install the minimum amount of fencing needed to ensure the safety and security of Project features and to provide for mitigation of impacts to grazing operations.	MVE (POD main body)	X				Minimize habitat degradation and risk of collision.
35	All personnel working on the Project would undergo a Worker Environmental Awareness Program training, describing the importance of all final environmental avoidance measures. Contractor personnel would be trained as follows: • not to approach or harass wildlife; • to avoid all wildlife to the greatest extent possible; • to minimize activities that attract wildlife. Interpretation of all training materials for non-English speaking workers would be provided.	MVE (POD Appendix V, Environmental Compliance Monitoring Plan)	X				Minimize anthropogenic disturbance and displacement of sage-grouse.
36	Training of on-site staff would be conducted during Project operation to help identify noxious weed species for successful long-term vegetation management.	MVE (POD Appendix R, Noxious Weed Management Plan)	X				Minimize habitat loss and habitat degradation.
37	At least once every three years, MVE would hold a training to provide instruction to employees (and contractors working on site) on avoiding harassment and disturbance of eagles within the Project footprint, how to record incidental observations of avian carcasses, and how to properly handle dead or injured birds or bats if observed.	MVE (POD Appendix T, Eagle Conservation Plan), USFWS 2022	X				Minimize risk of incidental Project-related mortality, anthropogenic disturbance, and displacement of sage-grouse.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
38	Prior to construction, MVE would identify all potential habitat for sensitive species relative to planned disturbances. Areas of potential habitat where absence has not been confirmed and areas previously un-surveyed would be targeted for construction clearance surveys. Surveys would be conducted using species-specific protocols agreed upon by the BLM to determine presence/absence, and would be conducted within the appropriate survey window for each species to the extent practicable based on the timing of issuance of the BLM ROW grant for the Project and construction schedules. If modifications to construction occur outside the species-specific windows, MVE would work with BLM to develop alternatives to minimize impacts to sensitive species.	MVE (POD Appendix V, Environmental Compliance Monitoring Plan)	X				Minimize anthropogenic disturbance and displacement of sage-grouse; avoid disruption of breeding activities.
39	Signs, flags, and/or fencing would be used to delineate and protect sensitive environmental resources in the vicinity of construction activities. Signs would be installed prior to construction to denote areas temporarily closed to construction due to special status wildlife breeding, nesting, or seasonal use range (determined with the assistance of appropriate resource specialists); wetlands, drainages, and invasive weed infestations adjacent to construction areas; closed roads, and blasting areas. Signage intended to protect a specific resource or the public will be placed at or beyond the buffer zone or resource being protected. The need for replacement or repair of exclusionary flagging or fencing would be routinely monitored. Upon completion of construction, and following clean-up and/or reclamation, all staking and flagging would be removed.	MVE (POD Appendix K, Flagging, Fencing, and Signage Plan)	X				Minimize anthropogenic disturbance and displacement of sage-grouse; avoid disruption of breeding activities.
40	Operators would reduce visual impacts during construction by clearly delineating construction boundaries and minimizing areas of surface disturbance. Minimization efforts may include preserving vegetation to the greatest extent feasible; using undulating surface disturbance edges; stripping, salvaging, and replacing topsoil; contoured grading; controlling erosion; using dust suppression techniques as required; and restoring exposed soils as closely as possible to their original contour and vegetation.	MVE (POD main body)	X				Minimize anthropogenic disturbance and displacement of sage-grouse; minimize habitat loss and habitat degradation.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
41	The Project would be permitted as necessary through the Federal Aviation Administration (FAA) for construction exceeding 200 feet above ground level. Aviation hazard lighting would comply with FAA requirements and strobed, minimum-intensity red lights would be installed on turbines at the Project, as recommended by the FAA and USFWS (2012) to avoid attracting birds or bats.	MVE (POD main body)		X			Minimize habitat degradation; minimize behavioral avoidance by sage-grouse.
42	With FAA's approval, MVE would implement avoidance detection lighting systems for deployment at the Project to mitigate the need for continuous operation of the red flashing lights during night-time hours. Flashing red lights would be designed to flash in unison and to concentrate the beam in the horizontal plane, thus minimizing light diffusion down to the ground.	MVE (POD main body)		X			Minimize habitat degradation; minimize behavioral avoidance by sage-grouse.
43	All unnecessary lighting at the Project would be deactivated at night to limit wildlife attraction, particularly migratory birds.	MVE (POD Appendix M, Bird and Bat Conservation Strategy)		X			Minimize habitat degradation; minimize behavioral avoidance by sage-grouse.
44	Where practical, lighting at both the operation and maintenance facilities and substations located within 0.5 mile of the turbines would include at a minimum the following: • Lights with motion or heat sensors and switches would be used to keep lights off when not required. • Outdoor facility lighting would be designed with light caps and/or directed downward to minimize off-site glare. • The use of high-intensity lighting, steady-burning lights, or bright lights such as sodium vapor, quartz, halogen, or other bright spotlights would be minimized. • All internal turbine nacelle and tower lighting would be extinguished when unoccupied. • Turbine doors would not have exterior lights installed at the entrance.	MVE (POD main body), USFWS 2012		X			Minimize habitat degradation; minimize behavioral avoidance by sage-grouse.
45	Ancillary structures would be designed in a manner that minimizes the need for and amount of lighting where practical.	MVE (POD main body)		X			Minimize habitat degradation; minimize behavioral avoidance by sage-grouse.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
46	MVE would restrict motorized equipment, including worker transportation vehicles, to the designated and approved work limits or as required to support specific tasks requiring travel outside of developed work areas (e.g., tag line management). Project traffic would be restricted to roads associated with the Project; use of unimproved roads would be minimized to the extent possible.	MVE (POD Appendix J, Road Design, Traffic and Transportation Plan)	X				Minimize habitat degradation, risk of collision, anthropogenic disturbance, and displacement of sage-grouse.
47	Construction personnel would 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. Speed limit signs would be posted along access roads as necessary to reduce airborne fugitive dust. Project personnel are required to drive 25 mph or less on non-public Project roads, be alert for wildlife, and use additional caution in low- visibility conditions when driving any vehicle.	MVE (POD Appendix J, Road Design, Traffic and Transportation Plan), BLM 2015	X		#91		Minimize habitat degradation, risk of collision, anthropogenic disturbance, and displacement of sage-grouse.
48	Carpooling among construction workers would be encouraged to the extent practical in order to reduce the number of vehicles entering and exiting the site on a daily basis.	MVE (POD Appendix J, Road Design, Traffic and Transportation Plan)	X				Minimize risk of vehicle-wildlife collision, anthropogenic disturbance, and displacement of sage-grouse.
49	A fire protection and prevention plan would be implemented and would outline responsibilities, notification procedures, fire prevention measures and precautions, fire suppression equipment, initial response procedures, and post-fire rehabilitation strategies related to the Project.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
50	All field personnel would be instructed about emergency response for fire events.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
51	All personnel would be advised of their responsibilities under the applicable fire laws and regulations. The Project Team will receive training on initial fire suppression techniques, reporting requirements, how to determine if a fire is manageable and what control measures should be implemented by on-site field crews, and at what point field crews should evacuate. The training also will address how to respond to wildfires in the area and maintain knowledge of and plans for evacuation routes.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
52	The Project Team would be responsible for taking immediate steps to suppress a Project-related fire and will be responsible for post-fire rehabilitation. The Project Team will take aggressive action to prevent and suppress fires on and adjacent to the Project areas. If a fire starts in the Project area, initiating and implementing fire suppression activities until relieved by the appropriate fire agencies. Fire suppression personnel and equipment will be dispatched by the Project Team within 15 minutes from the time a fire is reported.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
53	The Project Team would conduct regular inspections of tools, equipment, and first aid kits for completeness, and conduct regular inspections of storage areas and practices for handling flammable fuels to confirm compliance with applicable laws and regulations.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
54	Lightning arresters, overhead shield wires, and lightning masts will be installed at the substation to protect against over-voltages caused by lightning strikes. Transmission lines would support two overhead ground wires at the top of the structures to protect the system from lightning strikes. Ground rods would be installed next to the structure foundations to prevent a lightning strike from damaging the overhead conductors.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
55	No smoking would be allowed while operating equipment or while walking or working in areas with vegetation. Smoking would only be allowed in cleared areas.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
56	In areas where smoking is allowed, all burning tobacco and matches would be completely extinguished and discarded in ash trays, not on the ground.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
57	Fires or barbecues would not be allowed at temporary staging areas, along access roads, or other construction areas with an elevated fire risk.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
58	All flammable material would be cleared away for a minimum of 10 feet, including snags (fallen or standing dead trees), from areas of operation where a spark, fire, or flame could be generated.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
59	Fire prevention and suppression equipment would be readily available and maintained in good working order at all times during Project construction and operation and maintenance.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
60	All onsite service vehicles will have at least one fire extinguisher. At least one motorized vehicle in each active construction area shall contain: • One long-handled round point shovel; • One ax or Pulaski fire tool; • One 5-gallon water backpack (or other approved container); • full of water or other extinguishing solution; • Hardhat, work gloves, and eye protection.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
61	Any power equipment (ATVs, chainsaws, and other such equipment) would be equipped with spark arresters and accompanied by one 5-pound ABC dry chemical fire extinguisher and a long-handled and round-point shovel when used away from a vehicle.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
62	Construction fuel service trucks would be equipped with one 35-pound capacity fire extinguisher charged with the necessary chemicals to control electrical and fuel fires. MVE would maintain fire extinguishers in all onsite service vehicles.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
63	Wood cutting, welding, or other construction work sites that have a higher risk of starting fires would have at least two long-handled and round-point shovels and two 5-pound ABC dry chemical fire extinguishers available on-site.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
64	Every construction work site or vehicle would have at least one radio and/or cellular/satellite telephone to contact fire suppression agencies, spill response agencies, or the project management.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
65	The electrical design of the Project would comply with National Electrical Safety Code and National Fire Protection Association standards, which would reduce the risk of equipment-related fires. All wind turbines and associated electrical equipment would be constructed with non-flammable material around the base of the equipment to reduce the spread of fire should equipment ignite.	Administrative Draft EIS, Appendix D		X			Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
66	Numerous measures related to hazardous materials, including storage, use, transportation, handling, disposal, and cleanup of inadvertent releases.	MVE (POD Appendix F, Health and Safety Plan, and Appendix G, Spill Prevention, Control, and Countermeasures Plan)	X				Minimize habitat degradation and risk of incidental Project-related mortality.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
67	Every effort would be made to minimize the production of hazardous waste during the Project, including, but not limited to, minimizing the amount of hazardous materials needed for the Project; using alternative non-hazardous substances when available; recycling usable material such as oils, paints, and batteries to the maximum extent; and filtering and reusing solvents and thinners whenever possible.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat degradation and risk of incidental Project-related mortality.
68	Trash and food items would be disposed of properly in predator-proof containers with predator-proof lids to reduce the attractiveness of the area to opportunistic predators.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat degradation and risk of predation.
69	Trash containers would be emptied and construction waste would be removed regularly from the Project area and disposed of in an approved landfill.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat degradation and risk of predation.
70	Vehicles hauling trash to the landfill or transfer facility would be secured to prevent litter from blowing out along the road.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat degradation.
71	Wastewater generated at the Project site would be removed periodically and transported to an appropriate facility. Temporary, portable sanitary facilities provided for construction crews would be adequate to support expected on-site personnel and would be removed at completion of construction activities.	MVE (POD Appendix F, Health and Safety Plan)	X				Minimize habitat (water quality) degradation.
72	The ROW would be maintained in a sanitary condition at all times; waste materials would be disposed of at an appropriate waste disposal site. ‘Waste’ is defined as all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ash, and equipment that are a result of MVE’s activities. Any garbage/waste observed would be collected and disposed of in an appropriate trash receptacle securely protected from wildlife.	MVE (POD Appendix F, Health and Safety Plan), USFWS 2021	X				Minimize habitat degradation and risk of incidental Project-related mortality.
73	All construction equipment would have sound-control devices no less effective than those provided on the original equipment. All construction equipment would be adequately muffled and maintained.	MVE (POD main body)	X				Minimize anthropogenic disturbance and displacement of sage-grouse.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
74	A noxious weed management plan would be implemented to reduce the likelihood of introduction and spread of noxious weeds. The plan would address the manner in which weeds spread, and methods for treating infestations.	MVE (POD Appendix R, Noxious Weed Management Plan), BLM 2015	X		#71		Minimize habitat loss and habitat degradation.
75	MVE would comply with the applicable Federal and State Laws and regulations concerning the use of herbicides and other similar substances in all activities/operations. Herbicides would be used only in accordance with their registered uses and within the limitations imposed by the Secretary of the Interior. Prior to the use of herbicides, MVE would obtain from the BLM a written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary. Herbicides would not be permanently stored on public lands, and applicator(s) would hold a current applicator's license or be under the direct supervision of a licensed applicator. MVE would provide an annual report to the BLM to report type and quantities of herbicides applied to public lands.	MVE (POD Appendix R, Noxious Weed Management Plan)	X				Minimize habitat loss and habitat degradation.
76	MVE would develop a seed mix for restoration of temporarily disturbed areas by using a combination of native grasses and forbs and incorporating pollinator plant species. MVE will coordinate with a BLM botanist to develop an approved seed mix for the Project.	MVE (POD Appendix R, Noxious Weed Management Plan)	X				Minimize habitat loss and habitat degradation.
77	MVE would use certified weed-free mulch.	MVE (POD Appendix R, Noxious Weed Management Plan)	X				Minimize habitat loss and habitat degradation.
78	MVE would clean equipment, machinery and vehicles that disturb soil or vegetation prior to entry to the Project. Cleaning is defined as removal of all dirt, grease, plant parts and material that may carry seeds or plant material from tires, tracks, belly plates, undercarriages, etc. Cleaning may occur at laydown yard areas, designated cleaning station locations (see measure 115), or commercial car wash facilities. Portable wash stations for vehicles and equipment would be maintained and strategically placed at staging areas or designated entrance/exit locations.	MVE (POD Appendix R, Noxious Weed Management Plan), BLM 2015	X				Minimize habitat loss and habitat degradation.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
79	Equipment, machinery, and vehicles may be inspected (for noxious weeds) prior to entry onto BLM-managed lands.	MVE (POD Appendix R, Noxious Weed Management Plan)	X				Minimize habitat loss and habitat degradation.
80	Where practicable, avoid or minimize travel through or parking in areas infested with noxious weeds to avoid spreading seeds or plant parts.	MVE (POD Appendix R, Noxious Weed Management Plan)	X				Minimize habitat loss and habitat degradation.
81	MVE would discourage weed establishment at Project-related storage and staging yards through regular site inspections and herbicide applications, subject to the appropriate approvals.	MVE (POD Appendix R, Noxious Weed Management Plan)	X				Minimize habitat loss and habitat degradation.
82	Noxious weed monitoring for three years post-construction will be conducted for priority areas and all areas of the Project included in the baseline weed survey to allow pre- and post-construction infestation levels to be compared.	MVE (POD Appendix R, Noxious Weed Management Plan)	X				Minimize habitat loss and habitat degradation.
83	Pursuant to Section 512€ of the Federal Land Policy and Management Act of 1976 (Public Law 115-141), if vegetation or hazard trees have contacted or present an imminent danger of contacting an electric transmission or distribution line from within or adjacent to the right-of-way, the vegetation or hazard trees would be pruned or removed to avoid the disruption of electric service and eliminate immediate fire and safety hazards. MVE would notify the local BLM field or district office of such occurrence no later than 1 day after the date of the response to emergency conditions.	MVE (POD main body)	X				Minimize habitat loss, habitat degradation, and displacement of sage-grouse due to fire.
84	Herbaceous plants and low-growing shrubs would be left in place if they do not interfere with the safe operation of Project electrical lines and equipment.	MVE (POD main body)	X				Minimize habitat loss and habitat degradation.
85	MVE would develop and implement a dust and emissions control plan.	MVE (POD Appendix O, Dust and Emissions Control Plan), BLM 2015	X		#94		Minimize habitat degradation and behavioral avoidance by sage-grouse.
86	A stormwater pollution prevention plan (SWPPP) would be prepared in accordance with federal, state, and local regulations, and approved by the BLM prior to implementation. The SWPPP would provide temporary and permanent sediment and erosion control designs and would identify practices to control erosion and sediment, and treat and monitor stormwater (if necessary).	MVE (POD Appendix D, Stormwater Pollution Prevention Plan), USFWS 2012	X				Minimize habitat degradation.
87	Where practical, MVE would avoid altering existing drainage systems in sensitive areas such as erodible soils or steep slopes.	MVE (POD Appendix D, Stormwater Pollution Prevention Plan)	X				Minimize habitat degradation.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
88	A 100-foot no-ground-disturbance buffer would be applied to all wetlands, streams, and riparian areas. If disturbance to such areas cannot be avoided, MVE would prepare site-specific plans and measures (e.g., erosion and sediment control measures, culverts sized in accordance with USACE and BLM standards, etc.) to mitigate impacts. These plans would be incorporated into the final Plan of Development and submitted for approval by the Authorized Officer prior to issuance of a Notice to Proceed.	MVE (POD Appendix D, Stormwater Pollution Prevention Plan)	X				Minimize impact to sensitive habitat.
89	Riparian areas would be avoided to the extent practical; however, full avoidance may not be practical.	MVE (POD Appendix D, Stormwater Pollution Prevention Plan)	X				Minimize habitat loss.
90	The Plan of Development includes a Bird and Bat Conservation Strategy and an Environmental Compliance Monitoring Plan with measures intended to avoid and minimize effects to birds and bats.	MVE (POD Appendix M, Bird and Bat Conservation Strategy, and Appendix V, Environmental Compliance Monitoring Plan)	X				Minimize anthropogenic disturbance, risk of collision, risk of predation, and avoid disruption of breeding activities.
91	Vegetation clearing conducted during the nesting season would be done under the supervision of a compliance monitor who would identify nests for avoidance prior to construction. Active nests would be marked/staked with the appropriate buffer and construction activities would not occur within the buffer until a biologist determines the nest is no longer active. When a nest is no longer active, nest marking sticks or flagging would be removed and the construction company notified that activities can resume.	MVE (POD Appendix M, Bird and Bat Conservation Strategy, and Appendix V, Environmental Compliance Monitoring Plan)	X				Avoid disruption of breeding activities.
92	If an injured bird or bat is found, MVE will contact the appropriate authorities and/or wildlife rehabilitator. Fatalities will be reported in accordance with the Bird and Bat Conservation Strategy and the Eagle Conservation Plan.	MVE (POD Appendix M, Bird and Bat Conservation Strategy, and Appendix T, Eagle Conservation Plan)	X				Minimize risk of incidental Project-related mortality.
93	To avoid attracting eagles and other raptors, standard operating procedures would be implemented to promptly remove all dead medium to large-sized animals and dispose of carcasses outside the line-of-sight of turbines. Any carcasses found would be removed from the site within 48 hours of notification or upon receiving permission by the property/animal owner.	MVE (POD Appendix M, Bird and Bat Conservation Strategy, and Appendix T, Eagle Conservation Plan), USFWS 2021	X				Minimize risk of predation.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
94	Avian flight diverters will be installed and maintained on all guy wires/lines of all existing or any new temporary meteorological towers, and where guy wires are necessary, appropriate guy guards would be installed at the base of the guy wires.	MVE (POD Appendix M, Bird and Bat Conservation Strategy), USFWS 2021		X			Minimize risk of collision.
95	When practicable for collector lines, MVE will use tubular structures to reduce the ability of birds to perch and to reduce risk of collision.	MVE (POD Appendix M, Bird and Bat Conservation Strategy)		X			Minimize risk of collision and predation.
96	Occupied avian nests would be flagged with the appropriate buffer and construction activities would only occur within the disturbance buffer (defined for each species in Appendix P of the POD) under the following circumstances: • A biologist confirms the nest is no longer occupied 1 (i.e., the nest has failed or young have fledged). • If construction cannot be avoided within these buffers, a biologist with stop work authority will be present during construction activities to monitor the nest for signs of agitated behaviors. If such behavior is observed, work will be stopped to avoid nest abandonment. Work will resume when the nest is determined to no longer be occupied.	MVE (POD Appendix V, Environmental Compliance Monitoring Plan)	X				Avoid disruption of breeding activities.
97	Any deterrent devices installed on the Project's power line infrastructure would be maintained as part of the standard Operations and Maintenance plans; any sensitive portions of the Project area where deterrents may be required will be determined in coordination with BLM.	MVE (POD Appendix M, Bird and Bat Conservation Strategy)	X				Minimize risk of predation.
98	Post-construction monitoring would be completed to estimate bird and bat fatality rates at the Project turbines, evaluate the circumstances under which fatalities occur, and provide an efficient, long term survey protocol for detecting large-bird (e.g., large raptor, vulture, eagle) carcasses that may occur over the life of the Project. Post-construction monitoring results would be used to inform the need for adaptive management, as outlined in the BBCS.	MVE (POD Appendix M, Bird and Bat Conservation Strategy)	X				Minimize risk of incidental Project-related mortality.

No. (this list)	Measure Description	Origin	Type of measure				Effect(s) Related to Greater Sage-grouse
			Best Management Practice	Design Feature	Required Design Feature	Other Policy	
99	MVE would implement a Wildlife Incidental Reporting Strategy (WIRS) for the life of the Project, as detailed in the Bird and Bat Conservation Strategy (POD Appendix M). The purpose of the WIRS procedure is to standardize and describe the actions taken by Project personnel in response to wildlife incidents at the Project. All dead or injured birds and bats found incidentally in the Project area would be recorded over the life of the Project.	MVE (POD Appendix M, Bird and Bat Conservation Strategy, and Appendix T, Eagle Conservation Plan)	X				Minimize risk of incidental Project-related mortality.
100	Unless required by the BLM or needed for grazing or fire mitigation, wildlife habitat enhancements or improvements such as ponds, guzzlers, rock or brush piles for small mammals, bird nest boxes, nesting platforms, wildlife food plots, etc. would not be installed to minimize the presence of birds, bats, and their prey in the siting corridors. In general, MVE would minimize activities or conditions that may attract prey and predators. • Natural material (e.g. woody debris) and tall vegetation (i.e. tall forbs, grass, weeds) would be removed/maintained within 10 meters of the base of each turbine to reduce shelter and forage for small mammals (that could attract large birds). • During Project operation, all Project-related materials, parts, and equipment must be stored in designated storage areas.	MVE (POD main body)	X				Minimize risks of predation and incidental Project-related mortality.
101	As part of decommissioning, foundations for turbines, transformers, met towers, substations, Operation and Maintenance facilities, and other above ground infrastructure would be removed to a minimum of three feet below surrounding grade and covered with soil.	MVE (POD Appendix L, Decommissioning Plan)	X				Minimize habitat loss and habitat degradation.
102	MVE will coordinate with the BLM botanist to develop an approved seed mix for reclamation activities at the Project site. A Project-specific seed mix will help ensure native plants are actively growing throughout the growing season to benefit pollinator species and reduce opportunities for noxious weeds to establish and spread.	MVE (POD Appendix R, Noxious Weed Management Plan), BLM 2015			#53		Minimize habitat loss and habitat degradation.
103	Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.	BLM 2015			#102		Minimize habitat loss and habitat degradation.
104	MVE would work with the BLM to implement the Idaho Habitat Quantification Tool (HQT) to mitigate for residual impacts to sage-grouse and meet the applicable conservation standard (e.g., net conservation gain).	BLM 2015				X	Offset residual impacts associated with the Project.

References:

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Public Interest Energy Research Program (PIER) Final Project Report CEC-500-2006-022. Edison Electric Institute, APLIC, and the California Energy Commission. Washington D. C. and Sacramento, California. Available online: https://www.nrc.gov/ docs/ML1224/ML12243A391.pdf

APLIC. 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC, Washington, D.C. Available online: https://www.aplic.org/uploads/files/11218/Reducing_Avian_Collisions_2012watermarkLR.pdf

Bureau of Land Management (BLM). Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management.

BLM. 2015. Record of Decision and Approved Management Plan Amendments for the Great Basin Region, Including the Greater Sage-Grouse Sub-Regions of Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, Utah. Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management.

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USFWS. 2012. U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines. Available: https://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf. Accessed 12/14/21.

USFWS. 2021. Review of Application for Eagle Incidental Take Permit (MBPER0020198). Sent to Magic Valley Energy, Middlesex, NJ. Portland, OR: USF.

USFWS. 2022. Revised USFWS Proposed Avoidance and Minimization Conditions for Lava Ridge Incidental Eagle Take Permit. Email correspondence from Matthew Stuber, USFWS, to Don Brickner, Magic Valley Energy, April 25, 2022.

Appendix U-c: Baseline Conditions at the Habitat Bank

The information presented in this appendix is from the Management Plan for TerraWest's Wilcox Ranch Conservation Bank (WRCB). This information was provided to MVE by TerraWest in September 2022.

Baseline Conditions

Ecological sites were delineated from NRCS soils data and Ecological Site Descriptions. Table 1 summarizes the ecological sites found on the WRCB.

Table 1. Ecological sites delineated across the WRCB.

Ecological Site Name	Acres
Loamy 16-22 ARTRV/FEID-PSSPS	2,077.6
Shallow Fractured Loam 16-22 ARTRV/PSSPS	1,333.7
Loamy 8-12 – Provisional	74.1
Shallow Loamy 8-12 ARAR8/PSSPS	245.7
Loamy 12-16 – Provisional	980.5
Shallow Sand 12-16 ARTRV/PSSPS	214.6
Sand 12-16 PUTR2/HECOC8	2,231.6
Total	7,157.8

Vegetation surveys were also conducted throughout the WRCB to quantify specific habitat components (Table 2). Results from surveys indicated 96.3% of surveys recorded sagebrush present and 88.9% of surveys had sagebrush cover >10%. Sagebrush heights averaged 87 cm across all surveys. Perennial grass was recorded at all survey locations and annual grass was found on 51.9% of surveys. A total of 94 unique species were recorded across the WRCB. The most commonly recorded species included yellow salsify (*Tragopogon dubius*), desert madwort (*Alyssum desertorum*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), Western wheatgrass (*Pascopyrum smithii*), common yarrow (*Achillea millefolium*), and Gardner's yampah (*Perideridia gairdneri*).

Sage-grouse use has been observed by the property owner and has been documented by sightings and pellet piles during surveys and other site visits. Three leks are located within the WRCB, including 2 with occupied and 1 with undetermined management status. An additional 31 known leks are located within 4 miles of the WRCB including 12 occupied, 14 undetermined, and 5 unoccupied.

Additionally, a sage-grouse study occurred in the area from 2015-2018. Over 1,300 sage-grouse GPS locations were recorded on the WRCB during this study and over 13,000 locations were recorded within 4 miles of the WRCB. Another sage-grouse study occurred in the area in 1995-1996. During this study, 3 sage-grouse VHF locations were recorded within the WRCB and 95 sage-grouse VHF locations were recorded within 4 miles of the WRCB. These locations indicate extensive sage-grouse use of the areas on and around the WRCB site over an extended timeframe.

Table 2. Results of vegetation surveys within the WRCB properties.

Ecological Site	Survey ID	Dominant Top Canopy Species*	Sagebrush Present?	Average Sagebrush Plant Height (in cm)	Sagebrush Cover (%)	Ground Surface Type(s)	Noxious weeds Present?	Grass Present (P) Perennial Grass Present (A) Annual Grass Present
Loamy 16-22 ARTRV/FEID-PSSPS	23	Snowbrush ceanothus (*Ceanothus velutinus*)	Yes	74	16	79% litter, 13% rock, 6% unprotected soil	No	P; A
	24	Snowbrush ceanothus (*Ceanothus velutinus*)	Yes	59	14	94% litter, 4% unprotected soil, 2% rock	No	P; A
	25	Big sagebrush (*Artemisia tridentata*)	Yes	97	50	94% litter, 6% unprotected soil	No	P
	21	Big sagebrush (*Artemisia tridentata*)	Yes	88	64	91% litter, 7% unprotected soil, 2% rough cyano	No	P; A
	22	Big sagebrush (*Artemisia tridentata*)	Yes	101	38	98% litter, 2% lichen crust	No	P; A
	19	Big sagebrush (*Artemisia tridentata*)	Yes	100	44	97% litter, 3% moss	No	P
Shallow Fractured Loam 16-22 ARTRV/PSSPS	26	Snowberry (*Symphoricarpos sp.*)	Yes	88	12	92% litter, 8% unprotected soil	No	P
	27	Big sagebrush (*Artemisia tridentata*)	Yes	89	30	94% litter, 6% unprotected soil	No	P
	28	Snowberry (*Symphoricarpos sp.*)	Yes	79	2	92% litter, 8% unprotected soil	No	P
	16	Big sagebrush (*Artemisia tridentata*)	Yes	55	18	57% litter, 26% rock, 13% unprotected soil, 2% moss, 2% smooth cyano	No	P; A
	18	Antelope bitterbrush (*Purshia tridentata*)	Yes	74	8	74% litter, 21% rock, 2% unprotected soil, 2% moss	No	P; A
	29	Antelope bitterbrush (*Purshia tridentata*)	Yes	84	30	77% litter, 14% unprotected soil, 9% rock	No	P; A
	30	Sandberg's bluegrass (*Poa secunda*)	Yes	79	28	81% litter, 16% unprotected soil, 3% rock	No	P
Loamy 8-12 – Provisional	03	Big sagebrush (*Artemisia tridentata*)	Yes	78	28	94% litter, 4% moss, 2% embedded litter	No	P; A
Shallow Loamy 8-12 ARAR8/PSSPS	01	Big sagebrush (*Artemisia tridentata*)	Yes	109	14	72% litter, 24% unprotected soil, 4% moss	No	P
	02	Big sagebrush (*Artemisia tridentata*)	Yes	82	28	81% litter, 9% moss, 6% unprotected soil, 4% embedded litter	No	P; A
Loamy 12-16 – Provisional	15	Sandberg's bluegrass (*Poa secunda*)	Yes	83	34	96% litter, 4% unprotected soil	No	P
	11	Antelope bitterbrush (*Purshia tridentata*)	Yes	72	22	82% litter, 14% unprotected soil, 5% moss	No	P
	13	Big sagebrush (*Artemisia tridentata*)	Yes	88	32	80% litter, 14% unprotected soil, 6% moss	No	P
	14	Smooth brome (*Bromus inermis*)	No	--	0	98% litter, 2% unprotected soil	No	P
Shallow Sand 12-16 ARTRV/PSSPS	17	Sandberg's bluegrass (*Poa secunda*)	Yes	77	24	95% litter, 2.5% rock, 2.5% unprotected soil	No	P; A
	20	Sandberg's bluegrass (*Poa secunda*)	Yes	71	14	60% litter, 21% rock, 17% unprotected soil, 2% moss	No	P
	09	Needle and thread (*Hesperostipa comata*)	Yes	65	12	65% litter, 21% rock, 9 % unprotected soil, 5% moss	No	P; A
	10	Antelope bitterbrush (*Purshia tridentata*)	Yes	80	14	100% litter	Yes – Leafy spurge (*Euphorbia esula*)	P; A
Sand 12-16 PUTR2/HECOC8	07	Antelope bitterbrush (*Purshia tridentata*)	Yes	138	20	85% litter, 15% unprotected soil	No	P; A
	08	Needle and thread (*Hesperostipa comata*)	Yes	70	14	100% litter	No	P; A
	12	Needle and thread (*Hesperostipa comata*)	Yes	94	32	100% litter	No	P

Note: Transect ID numbers 4-6 aren't used, so there are 27 transects but numbering goes to 30.

* Where vegetation present; not inclusive of bare ground.

Lava Ridge Wind Project

Draft Appendix V: Environmental Compliance Monitoring Plan

Magic Valley Energy, LLC

October 2022

August 30, 2022

MAGIC VALLEY ENERGY

Lava Ridge Wind Farm

Environmental Compliance Monitoring Plan

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Environmental Compliance Monitoring Plan

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APPENDICES:

ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
C.F.R.	Code of Federal Regulations
CIC	Compliance Inspection Contractor
ECM	Environmental Compliance Monitoring
FEIS	Final Environmental Impact Statement
MVE	Magic Valley Energy, LLC
NTP	Notice to Proceed
POD	Plan of Development
Project	Lava Ridge Wind Project
ROD	Record of Decision
ROW	Right-of-Way
WSO	Work Stop Order

1.0 PLAN PURPOSE

The Environmental Compliance Monitoring (ECM) Plan is the primary guide for documentation and management of compliance with the federal grants and authorizations for the Project. This ECM Plan contains information on the following items:

- Roles and responsibilities of the Compliance Team
- Procedures for assessing Project compliance and process for implementing corrective actions
- Procedures for submitting, evaluating, and approving variance requests
- Communications
- Environmental and Safety Training
- Reporting and documentation
- Project closeout
- Resource-specific monitoring requirements (Appendices A - E)

Because there is the potential for the Project to affect sensitive environmental resources, design criteria have been developed to minimize potential impacts on these resources. For a list of design criteria, please refer to the Project Plan of Development (POD). The ECM Plan is intended to be a guidance document to facilitate compliance and the effective implementation of the monitoring and reporting commitments provided in the POD. If the ECM Plan is updated, Bureau of Land Management (BLM) will need to approve each update prior to implementation.

A third party Compliance Inspection Contractor (CIC) will be engaged by the BLM to enforce terms and conditions of the federal grants and authorizations. The CIC will be responsible for assuring that the POD and all associated permitting documents have been distributed to the Compliance Team for their review prior to construction being initiated. The CIC will also review all environmental requirements with key construction managers and Magic Valley Energy, LLC (MVE) personnel at the initial construction kickoff meeting. At that time, a document control system, which may be used to manage the submittal and distribution of Project compliance information and documentation, may be presented and demonstrated. Environmental inspectors and monitors will also be retained by MVE and/or by the Construction Contractor(s) to implement design criteria, provide specific resource monitoring, and to prepare daily reports on those construction activities monitored.

2.0 ROLES AND RESPONSIBILITIES

The following sections describe the roles and responsibilities of the Compliance Team in executing the ECM Plan and describes their reporting relationships. The Compliance Team includes the BLM, CIC, MVE Project Manager, MVE Compliance Manager, MVE Environmental Monitors, and the Construction Contractor(s). Subject to the requirements of the Health and Safety Plan (POD Appendix F: Health and Safety Plan), the Compliance Team shall have access to all Project work areas to inspect construction, operations, maintenance, decommissioning and reclamation activities in accordance with the terms and conditions of the federal grants and authorizations. Access to work areas will not be unreasonably withheld provided that entry to work areas would be safe and the members of the Compliance Team have received all required safety training necessary to enter the work area.

2.1 Bureau of Land Management

The role of the BLM is to ensure that all stipulations and requirements of the federal grants and authorizations are implemented and complied with during all phases of the Project.

2.1.1 BLM Authorized Officer

Oversight on the part of the BLM will be provided the BLM's Authorized Officer. The Authorized Officer will have ultimate authority and be the decision maker for issues pertaining to right-of-way (ROW) grant and authorization. The Authorized Officer will supervise the Project to verify environmental compliance meets the requirements of all applicable laws, permits, regulations, and agreements. The Authorized Officer, in coordination with others, will determine if noncompliance events for which MVE is accountable qualify as violations to the terms and conditions of any ROW grant or authorization. Only the Authorized Officer in accordance with 43 Code of Federal Regulations (C.F.R.) 2807 and 36 C.F.R. 251.60, will have the authority to suspend or terminate a ROW grant or authorization if MVE and/or its Construction Contractor(s) do not comply with applicable stipulations, conditions, or other applicable laws and regulations.

2.1.2 BLM Compliance Manager

The BLM Compliance Manager will be primarily responsible for enforcing MVE's day-to-day compliance with environmental laws and regulations, the POD, and all stipulations and conditions of the federal grants and authorizations. The BLM Compliance Manager will ensure that compliance during construction proceeds in a manner which facilitates timely and efficient construction while protecting the public interest and the environment. The BLM Compliance Manager will also manage the third-party CIC (Section 2.2). The BLM Compliance Manager will coordinate with agency resource specialists for their technical expertise and input when needed. The BLM Compliance Manager will be responsible for notifying MVE of any grant or authorization violations due to noncompliance, issuing work stoppage orders (WSOs) if needed, issuing work continuation notices (or lifting work stoppage orders) and enforcing corrective actions as needed. The BLM Compliance Manager will be responsible for maintaining an accurate and complete administrative record.

All Level 2 or Level 3 variance requests described in Section 3.3 below, will require approval by either the BLM Compliance Manager or Authorized Officer.

2.1.3 BLM Compliance Inspection Contractor

MVE and the BLM will agree to the use of a third-party CIC to act on the BLM's behalf to ensure adequate oversight during the construction and reclamation phases of the Project. The CIC will report directly to the BLM and will be authorized to enforce the stipulations of the federal grants and authorizations. It is not the role of the CIC to direct the work of either MVE or its Construction Contractor(s). Rather the CIC's primary role is to observe work activities and bring non-compliant situations to the attention of the appropriate party and offer recommendations on how to prevent or rectify non-compliance. Additional responsibilities of the CIC include:

- Monitor construction activities to ensure that surface disturbances stay within the limits of the ROW grant and that construction equipment does not operate within environmentally sensitive areas marked for avoidance.

- Participate in pre-construction meetings, safety meetings, safety training, environmental training and other meetings attended by the BLM, MVE, and Construction Contractor(s) as appropriate that involve environmental compliance aspects of the Project.
- Prepare and distribute weekly summary reports.
- Review all applicable environmental documents and requirements, including the Final Environmental Impact Statement (FEIS), Record of Decision (ROD), POD, ROW grant, and special use authorizations.
- Maintain a complete copy of the POD and associated environmental documents while in the field.
- Verify that construction occurs as outlined in the POD, FEIS, ROD, ROW grant, special use authorizations, and Notice to Proceed (NTP).
- Perform compliance monitoring in areas of active construction or reclamation.
- Respond to inquiries by MVE or its Construction Contractor(s) concerning environmental compliance.
- Discuss any potential compliance issues with Construction Contractor(s) and MVE personnel.
- Provide recommendations to the BLM Compliance Manager and MVE personnel on ways to resolve or prevent non-compliance.
- Meet weekly, at a minimum, with the BLM Compliance Manager (or designee), in person or by telephone, to review status of construction and compliance.
- Meet with MVE and Construction Contractor(s) project managers, construction managers, environmental inspectors, or environmental monitors as needed.
- Support and coordinate the review of all variance requests.
- Approve or deny Level 1 variance requests described below.
- Participate in and support Project safety.
- Work with MVE and Construction Contractor(s) to support the Project's safe, timely, and effective construction.
- If warranted, issue an immediate temporary suspension or WSOs for any construction activity determined to be in non-compliance.
- As warranted, rescind any temporary suspension or WSOs in a timely fashion following determination that the non-compliance issue has been adequately addressed.
- Conduct field reviews and inspections with agency personnel and MVE as needed.

The CIC will deploy an adequate number of field personnel to work with the Environmental Inspectors and Monitors to sufficiently monitor construction activities and fulfill the responsibilities listed above. It is important to note that it is not the role of the CIC to direct work of either MVE or the Construction Contractor(s).

2.2 Magic Valley Energy

MVE will be the holder of the ROW grant, authorizations, and easements, both public and private. As such, MVE is ultimately accountable for adherence to all conditions of the Project's ROW grant, ROD, and environmental permits. In addition to the compliance and monitoring roles described below, MVE

will also be responsible for completing necessary monitoring described in other POD documents. The monitoring requirements of these documents are provided in Appendices A through E of this ECM Plan.

2.2.1 MVE Project Manager

MVE will designate a Project Manager who will work with designated MVE Environmental Monitors and the Construction Contractor(s). The MVE Project Manager will also support the efforts of the CIC. The MVE Project Manager will maintain regular and consistent communication with the Construction Contractor(s) to track the success of environmental protection, mitigation, and compliance efforts during all phases of the Project. MVE is responsible for assuring that all instances of non-compliance are corrected.

2.2.2 MVE Compliance Manager

MVE will designate a Compliance Manager who will have direct oversight over day-to-day compliance and the MVE Environmental Monitor(s) (Section 2.2.3). The MVE Compliance Manager will work directly with the Construction Contractor (Section 2.3) to ensure compliance throughout construction of the Project and will continue working through restoration activities. The MVE Compliance Manager will be the main point of contact with the CIC. The MVE Compliance Manager will work with the Construction Contractor to prepare any requests for variances, compile necessary reporting, and manage MVE Environmental Monitors to ensure the appropriate personnel are on-site as needed during construction activities. The duties of the MVE Compliance Manager are provided below (note that some responsibilities, specifically those regarding the POD, FEIS, ROW grant, and special use authorizations may be shared with the CIC and are repeated):

- Prepare and maintain a Project compliance contact list containing the names, titles, phone numbers and email addresses of the Authorized Officer, BLM Project Manager, MVE Project Manager, Construction Contractor(s) field supervisors and construction managers, environmental inspectors, monitors and any other individuals or agencies who will be involved with environmental compliance for the Project.
- Deliver environmental training in cooperation with the MVE Environmental Monitors.
- Maintain records that assure all required environmental training of construction personnel has been conducted.
- Prepare and distribute weekly compliance summary reports.
- Review and be familiar with all applicable environmental documents and requirements, including the FEIS, ROD, POD, ROW grant, and special use authorizations.
- Maintain a complete copy of the POD and associated environmental documents at the Project site.
- Verify that construction occurs as outlined in the POD, FEIS, ROD, ROW grant, special use authorizations, and NTP.
- Conduct final Project reviews and prepare Post-Reclamation Closeout reports following completion of interim and final reclamation activities (excluding reclamation monitoring).
- Document instances of non-compliance through mapping and photography and complete non-compliance report.
- Review environmental inspector and environmental monitor daily logs.

- Prepare meeting notes that highlight decisions made during key Project meetings.
- Coordinate with the Construction team regarding resource-specific construction restrictions (e.g., migratory bird nest status, seasonal restrictions).

2.2.3 MVE Environmental Monitors

MVE will employ a team of Environmental Monitors to monitor compliance with the federal ROW grant and other authorizations. The duties and responsibilities of the MVE Environmental Monitors will include:

- Daily inspections and monitoring of construction activities as required.
- Coordinate and communicate with MVE Compliance Manager and the CIC.
- Support and participate in field inspections by federal agency personnel as needed.
- Deliver environmental training and provide the CIC with a current list of all personnel who have received training.
- Confirm on-the-ground locations of sensitive resources and areas of concern prior to construction activities commencing.
- Verify that construction work areas, access roads, and sensitive resources or areas of concern have been properly marked and flagged prior to work commencing in those areas.
- Communicate and coordinate with construction crews and act as a resource to explain environmental regulations and requirements.
- Attend safety meetings.
- Prepare daily logs/reports to be provided to the MVE Compliance Manager.
- Inform Construction Contractor(s) and CIC of all compliance issues and support implementation of corrective actions.
- Stop-work authority when construction activities violate the environmental conditions of the federal grant and authorizations or when sensitive resources are threatened.
- Participate in and support the implementation of corrective actions for non-compliance violations.
- Monitor, inspect, and document reclamation and revegetation activities as needed.

2.3 Construction Contractor(s)

As part of MVE's commitment to environmental compliance, the Construction Contractor(s) will be contractually bound to comply with all relevant laws, regulations, and permits, including the ECM Plan, POD, design criteria, and other specific stipulations set forth in the federal grants and authorizations. All construction personnel and employees entering work areas will be required to participate in environmental training before starting work. Construction crews will also be required to cooperate and support the work of the Compliance Team to build the Project safely and in compliance with all terms and conditions; federal, state, and local laws and regulations; and all landowner agreements. If a non-compliance event occurs, it will be the responsibility of the Construction Contractor(s) to notify MVE and the CIC and to cooperate fully in developing and implementing a solution as soon as possible to resolve the non-compliance. The Construction Contractor(s) will be expected to involve the CIC in key Project management meetings and the Project safety program.

3.0 PROCEDURES

This section describes the procedures that will be followed to assess compliance levels, responses to non-compliance, and for the submittal, review, and tracking of variance requests.

3.1 Compliance Levels

Each separate activity that is inspected and documented in a daily report will be assigned one of the following compliance levels:

- Acceptable
- Problem area
- Non-compliance

The MVE Compliance Manager, MVE Environmental Monitors, and the CIC will assess potential non-compliant activities based on the extent and nature of actual impacts on a resource, the potential for additional impacts on a resource, the intent behind the action, and the history of the occurrence. Failure by MVE or the Construction Contractor(s) to disclose in a timely manner or accurately characterize an impact will result in an automatic non-compliance and temporary suspension of work in the area where the violation has occurred. Each compliance level is described below.

3.1.1 Acceptable

All activities that are in compliance with the Project's federal grants and authorizations will be documented as acceptable.

3.1.2 Problem Area

A problem area is a location or activity that does not meet the definition of acceptable but no impacts to sensitive resources have occurred. Examples include:

- An incident that is accidental or unforeseeable, where no sensitive resources were damaged, is reported in a timely manner, and is repaired quickly.
- A location where the CIC or MVE Environmental Monitor has determined that damage to a sensitive resource could occur if corrective actions are not taken.
- Implementation of mitigation measures is occurring too slowly to be fully effective.

The Construction Contractor(s) will be notified of the problem area and it will be documented in the daily report, as well as the corrective actions that will be applied. If a problem area is corrected in a timely manner, it will not be considered non-compliance. If a problem area is not corrected within an agreed upon timeframe, the CIC or MVE Environmental Monitor may document the situation as non-compliance.

3.1.3 Non-Compliance

Non-compliance occurs when one or more of the following take place:

- Requirements or stipulations contained within the Project's federal grants or authorizations are not followed or implemented properly.
- Unauthorized impact to sensitive resources has occurred.
- Problem areas consistently reoccur and adversely impact sensitive resources identified in the ROW grant or ROD.
- Corrective actions for problem areas are not implemented within the specified timeframe.
- Construction Contractor(s) display direct disregard for Project requirements.

3.2 Responses to Non-Compliance

Depending on the circumstances of the non-compliance and if sensitive resources are threatened, the CIC, MVE Compliance Manager, or MVE Environmental Monitor may orally issue a temporary suspension of construction activities within a localized area. All non-compliance will be documented in a non-compliance report. The non-compliance report will be prepared by the MVE Compliance Manager based on personal observations or information provided by the MVE Environmental Monitor or CIC. In all cases when non-compliance occurs, the CIC will be informed immediately.

Once the non-compliance report is prepared, the MVE Compliance Manager will provide a copy to the MVE Project Manager, the Construction Contractor(s), the CIC, and the BLM Compliance Manager. Upon review, the BLM Compliance Manager, in consultation with the Authorized Officer as needed, may direct the CIC to take one or more of the following actions:

- Work with the Construction Contractor(s) and MVE to develop a written plan to address the cause of the non-compliance and actions to avoid its reoccurrence.
- Work with the Construction Contractor(s) and MVE to develop a written plan to repair any impacts to resources.
- Issue a temporary suspension to halt specific activities or all activities within a localized work area.
- Issue a WSO to temporarily suspend all activities within a given construction area of the Project (requires written authorization by either the BLM Compliance Manager or the Authorized Officer).

The BLM has the authority to suspend or terminate the Project's ROW grant or authorization pursuant to 43 C.F.R. 2807.17(a).

In cases where construction activities have been halted, the Construction Contractor(s), MVE Project Manager, MVE Compliance Manager, BLM Compliance Manager, and the CIC will meet to discuss the corrective actions that must be implemented before work will be allowed to resume. Prior to the suspension or termination of the Project's ROW grant or authorization, MVE will be notified in writing and allowed a reasonable opportunity to correct any non-compliance pursuant to 43 C.F.R. 2807.18(a), and if applicable, provided a hearing pursuant to 43 C.F.R. 2807.18(b) and 36 C.F.R. 251.

3.3 Variances

It is expected that during the construction of the Project circumstances may arise requiring a change, or variance, in how the Project will be constructed, or how mitigation measures or stipulations will be implemented. Under such circumstances, MVE will follow the following procedure to request variance.

The first step in the variance process is the preparation of a variance request form. It is important that the form is complete, accurate, and contains sufficient information for the CIC, and BLM if necessary, to adequately assess the request and reach a decision on its approval or denial. The Construction Contractor(s) and MVE Compliance Manager will be responsible for preparing the request with the prior approval of MVE.

A completed variance request form, with any required attachments, will be submitted to the CIC in electronic format. The CIC will conduct an initial assessment of the request for completeness and will determine a variance level based on the following definitions:

- Level 1: minor field adjustment within an approved/granted area that was previously analyzed in the Project's environmental documents and does not result in greater impacts to resources.
- Level 2: changes in procedures or adjustments located outside of an approved/granted work area but still within an area analyzed in the Project's environmental documents and do not result in greater impacts to resources.
- Level 3: changes in procedures or adjustment located outside of an approved/granted work area and outside area analyzed in the Project's environmental documents and results in greater impacts to resources.

Incomplete or inadequate submittals will be returned within 24 hours with an explanation. Level 1 variance requests will be approved, approved with conditions, or denied by the CIC. Level 2 variance requests will be forwarded on to the BLM Compliance Manager and will be approved, approved with conditions, or denied within a specified time to be determined. Level 3 variances will be forwarded to the BLM Compliance Manager and Authorized Officer. The timeframe for approval or denial of a Level 3 variance will depend on the scope of any additional studies and consultations that may be required and will take place within a specified time to be determined. The BLM will provide a written explanation for any denial of a variance request.

The MVE Compliance Manager will be responsible for tracking all variance requests and will provide a summary of these in the Post-Reclamation Project Report.

4.0 COMMUNICATIONS

Effective communication and the sharing of information between the Compliance Team, as described in Section 2.0, will be critical to achieving and maintaining environmental compliance throughout the construction of the Project. It is especially important for construction crews to communicate daily with environmental monitors concerning work schedules and locations. The Construction Contractor(s), CIC, MVE Compliance Manager, and MVE Environmental Monitors will maintain a communications network that consists of two-way radios and/or cellular phones. The Construction Contractors(s) will be responsible for assuring that field crews have the ability to communicate effectively and will implement solutions if communication problems arise.

Given the scope and complexity of the Project, it is critical that all communications involving key decisions, safety, approvals, non-compliance, or variances be documented in writing. Oral communication will not substitute for written approvals.

The MVE Compliance Manager will be responsible for developing and maintaining a Project compliance contact list containing the names, titles, phone numbers and email addresses of the Authorized Officer, BLM Compliance Manager, CIC personnel, MVE Project Manager, MVE Environmental Monitors, Construction Contractor(s) field supervisors and construction managers, and any other individuals or agency personnel who will be involved with environmental compliance for the Project. The MVE Compliance Manager will also be responsible for developing appropriate distribution lists for weekly compliance reports, non-compliance notifications, and variance requests.

The Construction Contractor(s) will hold daily morning meetings that will include the CIC and the MVE Environmental Monitors to review the day's planned construction activities, discuss safety, and if needed discuss any compliance problem areas or non-compliance issues. The Construction Contractor(s) will also schedule periodic meetings with the CIC, MVE Compliance Manager, MVE Environmental Monitors, and construction managers to discuss such topics as safety, communication, compliance, schedule, staffing, or other issues related to keeping the Project safe, on schedule, and in compliance.

5.0 TRAINING

All personnel, including agency personnel, entering work areas are required to receive environmental and safety training prior to entering. Safety training will be provided by the Construction Contractor(s) following the requirements found in the Health and Safety Plan (POD Appendix F).

Environmental training will be provided by the MVE Compliance Manager and/or MVE Environmental Monitors. Training will emphasize compliance with all Project-wide environmental and biological resource requirements including stipulations in the ROW grant, special use authorizations, POD, NTP, and other associated permits and conditions. Requirements pertaining to a particular construction spread, such as requirements for the protection of biological or cultural resources, will be addressed as necessary. Roles and responsibilities will be reviewed and the authority of the CIC, MVE Compliance Manager, and MVE Environmental Monitors will be emphasized.

The MVE Compliance Manager will be provided with a list of all personnel who have successfully completed the environmental training. Each trainee will receive proof of certification that must be carried at all times while in Project work areas (training certification card or hard hat sticker). At the discretion of the CIC, they may ask any personnel on the ROW to produce their training certification card. Any personnel present in work area that is found to have not gone through the training will result in a "problem area" report and possibly non-compliance. The individual will be required to leave the work area immediately and will not be allowed back onto the Project until training has been completed.

6.0 REPORTING AND DOCUMENTATION

Effective management of the Project will require the completion of multiple forms and reports to be submitted on a regular basis during the course of construction. These will include:

- Daily inspection reports
- Weekly compliance reports
- End of Construction Project Report

- Non-compliance report
- Variance request forms
- Environmental training list

These reports will be drafted and compiled by the MVE Compliance Manager with the aid of MVE Environmental Monitors. The MVE Compliance Manager will then provide these reports to the CIC who will distribute them to the BLM Compliance Manager. The BLM Compliance Manager will be responsible for assuring that documents are incorporated into the official administrative record for the Project.

7.0 POST-RECLAMATION CLOSEOUT

Once all construction has been completed, the Project is operational, and interim (i.e., post-construction) reclamation activities completed, the MVE Compliance Manager and CIC will coordinate on-the-ground inspections with the BLM Compliance Manager. The purpose of these post-construction inspections will be to document compliance with the requirements contained within the ROD and the Reclamation Plan (POD Appendix E: Reclamation Plan). After the post-construction inspections are completed, the BLM Compliance Manager will determine if any further work is required. If no further work is required, the MVE Compliance Manager will prepare the Post-Reclamation Project Report.

The Post-Reclamation Project Report will contain the following information:

- Record of final reports and documentation.
- Number of days of construction.
- Number of CIC monitors employed.
- Number of MVE Environmental Monitors employed.
- Number of personnel who received environmental training.
- Number of safety incidents that occurred during construction.
- Number of non-compliance reports issued.
- A summary of causes for non-compliance.
- A summary of corrective actions taken for non-compliance.
- Number and duration of temporary suspensions of construction activities.
- Number and duration of WSOs.
- Number of variances submitted, approved, and denied.
- A summary of special status animals or plants taken during construction and reclamation activities (including number of captures, displacements, mortalities, injuries, or harassment).
- Overall assessment of Construction Contractor(s) support of and compliance with requirements.
- A summary of the effectiveness of reclamation activities and the current state of the Project area.
- A summary of lessons learned that could be applied to future projects.

Once the Post-Reclamation Project Report is drafted, the MVE Compliance Manager and CIC will coordinate a construction closeout meeting with the Compliance Team, as defined in Section 2.0. At this meeting, the End of Construction Project Report will be reviewed to ensure that all requirements have been met and any issues have been satisfactorily resolved. If no further actions are needed, the work of the CIC will be deemed complete and the post-construction reclamation monitoring period will begin, as described in the Reclamation Plan (POD Appendix E).

At the end of the Project life, the same procedures will be implemented with respect to decommissioning and final reclamation, and a Project Decommissioning Report will be prepared and submitted to BLM addressing the same topics listed above for the End of Construction Report. The post-decommissioning monitoring period will then begin, as detailed in the Reclamation Plan (POD Appendix E).

Appendix V-a. Avian and Bat Fatality Monitoring Requirements

The following avian and bat monitoring requirements are included in the Lava Ridge Bird and Bat Conservation Strategy ("BBCS") (POD Appendix M: Bird and Bat Conservation Strategy).

6.0 Tier 4 – Post Construction Avian and Bat Monitoring

6.1 Monitoring Goals

The goals of post-construction monitoring (PCM) are to estimate bird and bat fatality rates at the Project turbines, evaluate the circumstances under which fatalities occur, and provide an efficient, long-term survey protocol for detecting large-bird (e.g., large raptor, vulture, eagle) carcasses that may occur over the life of the Project. PCM results will be used to inform the need for adaptive management, described in Section 7 (of the BBCS). In accordance with the WEG (USFWS 2012), the Project will analyze bird and bat carcass monitoring data to accomplish the following:

- Estimate bird and bat fatality rates for the Project
- Evaluate the distribution of bird and bat carcasses within the Project in relation to site characteristics
- Compare estimated fatality rates at the Project to fatality rates at existing projects in similar landscapes with similar species composition
- Assess whether fatality data suggest the need for measures to reduce impacts

Standardized carcass surveys will include four primary components:

1) Standardized carcass surveys
2) Searcher efficiency trials
3) Carcass persistence trials
4) Adjusted fatality estimates

Standardized carcass surveys will be conducted for a minimum of two years. Standardized circular search plots will be established at 1/3 of Project turbines, and would have a radius at least half the height of the turbine. The search plot radius would be determined based on available carcass density distribution models (i.e. Hull and Muir, Hallingstad et. al) to minimize area correction (which accounts for the probability of carcasses falling outside of the search plot). Search interval will be a minimum of 14 days and may be adjusted by season and in response to carcass persistence trial results to achieve a detection probability that will provide robust fatality estimates.

While all fatalities found at the site will be recorded, only fatalities found during standardized searches within search plots will be included in the PCM analysis,

which will be conducted using peer-reviewed fatality models such as GenEst (a generalized estimator of fatality; Dalthorp et al. 2018, Simonis et al. 2018), or the Huso estimator (Huso et al. 2018). Searcher efficiency and carcass persistence trials will be conducted for small birds, large birds, and bats using representative carcasses for each size class. The results of fatality searches and trials, along with an area correction factor that accounts for carcasses that may fall outside of search plots, will be incorporated into fatality estimates. Methods will be designed to provide estimates with confidence intervals comparable to other PCM studies, to allow comparison of fatality rates with other wind projects.

Following the completion of standardized fatality monitoring, assuming no further monitoring is required under adaptive management (Section 7.0 of the BBCS), MVE will continue with their internal WIRS monitoring program to monitor for and document significant events.

Appendix V-b. Wildlife Reporting System Requirements

The following avian and bat monitoring requirements are included in the Lava Ridge Bird and Bat Conservation Strategy ("BBCS") (POD Appendix M: Bird and Bat Conservation Strategy).

Long-term Monitoring

MVE will implement a Wildlife Incidental Reporting Strategy (WIRS) for the life of the Project (Appendix M-a). The purpose of the WIRS procedure is to standardize and describe the actions taken by Project personnel in response to wildlife incidents found at the Project. The Project will record all dead or injured birds and bats found incidentally in the Project over the entire life of the Project.

Following the completion of standardized fatality monitoring, assuming no further monitoring is required under adaptive management (Section 7.0), MVE will continue with their internal WIRS monitoring program to monitor for and document significant events. Each incident will be documented on a data sheet, logged in a tracking spreadsheet, reported to the designated Environmental Affairs contact, and reviewed periodically by MVE. Details of the WIRS are under development in the BBCS and will be incorporated in this appendix once available.

Appendix V-c. Eagle Monitoring Requirements

The following eagle monitoring requirements are included in the Lava Ridge Eagle Conservation Plan ("ECP") (POD Appendix T: Eagle Conservation Plan).

5.0 Eagle Fatality Monitoring

Monitoring for eagle fatalities at an operating Project is a critical component of an ECP and ETP, if an ETP is issued. The primary objectives of fatality monitoring are to ensure eagle fatalities are detected to ensure compliance with the terms of an ETP (if issued) and that appropriate actions can be taken under the adaptive management plan described in Section 6.0 (of the ECP).

Eagle fatality monitoring surveys will be incorporated into standardized post-construction monitoring studies that will be conducted for all bird and bat fatalities. Standardized carcass surveys are broken into four primary components:

1. Standardized carcass surveys
2. Searcher efficiency trials
3. Carcass persistence trials
4. Adjusted fatality estimates

MVE is committed to implementing an eagle fatality monitoring program that will meet USFWS standards and ensure compliance with the conditions of an ETP issued for the Project. MVE plans to conduct standardized carcass searches at Project turbines from the start of operation. The final design of eagle fatality monitoring studies will be coordinated with the USFWS to ensure ETP compliance and may include multiple survey methods (e.g., pedestrian transects, visual scans) pending the final Project layout and environmental factors (e.g., vegetation height/density, topography) that may influence an effective study design. The number of eagle fatalities detected during carcass surveys does not equal the actual number of eagle fatalities at a turbine or project. Searcher efficiency and carcass persistence trials are needed to adjust potential downward bias of the annual fatality estimate, so the total number of turbine-related fatalities that occur each year can be estimated. Eagle fatality monitoring studies will be designed for the Project in coordination with USFWS to achieve a probability of detection value (g) that meets USFWS standards for estimating eagle fatalities.

5.1 Detection Procedures and Protocols

MVE will apply for a Special Purpose Utility Permit (SPUT) from the USFWS to authorize the use of raptor carcasses for persistence trials, allowing MVE to collect, transport, and temporarily possess migratory birds found dead or injured at the Project. Sub-permittees and employees directly reporting to the sub-permittees should also be authorized under the permit. If the SPUT is issued, MVE will apply for permit renewal as necessary throughout the duration of the Project. Under the conditions of the SPUT, MVE will report to USFWS all birds found dead or injured at the Project. MVE will report all eagle fatalities in accordance with conditions of the SPUT and ETP.

5.2 Annual Reports

MVE will submit written reports to the USFWS during the first quarter of every year the Project is covered under an ETP. A summary of the key contents of each annual report is provided below.

- A list of eagle carcasses found during standardized searches and incidentally during the monitoring year.
- Disposition (alive/dead), location, and dates of eagle species recorded as casualties in the Project area during the monitoring program.
- One or more maps or graphical representations illustrating the geographic distribution and location of all discovered eagle fatalities (relative to turbine locations).
- A description of the mitigation activities, adaptive management actions, carcass persistence trials, and enforcement activities conducted and their outcomes.
- Analysis of the data to be used as part of adaptive management.

5.3 Operation and Maintenance

MVE will develop and implement a Wildlife Incident Reporting System (WIRS) for the life of the Project (Appendix A of the ECP). The purpose of the WIRS procedure is to standardize and describe the actions taken by Project personnel in response to wildlife incidents found at the Project. MVE will record all dead or injured birds and bats, including eagles, found incidentally in the Project on an annual basis over the entire life of the Project. In addition, all discoveries of dead or injured eagles will be reported to USFWS within 24 hours.

Following the completion of the eagle fatality monitoring program, MVE will continue with the Project's internal WIRS monitoring program to monitor for and document significant events. Each incident will be documented on data sheets, logged in a tracking spreadsheet, reported to the designated Environmental Affairs contact, and reported annually.

Appendix V-d. Noxious Weed Monitoring Requirements

The following noxious weed monitoring requirements are included in the Lava Ridge Noxious Weed Management Plan (POD Appendix R: Noxious Weed Management Plan).

4.5 Post-construction Noxious Weed Monitoring

Post-construction monitoring completes the Project cycle by providing insight on noxious weed control efforts implemented during Project construction and restoration of construction areas. For three years post-construction MVE will monitor priority areas and all areas of the Project included in the baseline survey to allow pre- and post-construction infestation levels to be compared. Annual monitoring may require two site visits by a botanist to capture noxious weed species in rosette and bolting stages (spring/early summer) and during fall regrowth. A memorandum reporting the results of the monitoring and providing management recommendations will be prepared after the annual monitoring is completed for the three-year period. MVE will continue to implement noxious weed best management practices for Project activities through the lifetime of the Project. In addition, MVE staff will be provided training to identify and report noxious weeds.

Appendix V-e. Cultural Resources Monitoring Requirements

[In Development]