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

Weepah Hills Geothermal Exploration Project Environmental Assessment

DOI-BLM-NV-B020-2023-0045-EA

BASELOAD POWER WEEPAH HILLS LLC
WEEPAH HILLS
GEOTHERMAL EXPLORATION PROJECT
ESMERALDA COUNTY, NEVADA

Environmental Assessment

#DOI-BLM-NV-B020-2023-0045-EA

September 2023

Bureau of Land Management
Tonopah Field Office
Battle Mountain District
1553 South Main Street
Tonopah, Nevada 89049

BASELOAD POWER WEEPAH HILLS LLC
WEEPAH HILLS GEOTHERMAL EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT

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LIST OF ACRONYMS AND ABBREVIATIONS

AO	Authorized Officer
ARPA	Archaeological Resources Protection Act of 1979
Baseload Power	Baseload Power Weepah Hills LLC
BLM	Bureau of Land Management
BMP	best management practice
CEQ	Council on Environmental Quality
CESA	cumulative effects study area
CFR	Code of Federal Regulations
COA	Conditions of Approval
DOI	United States Department of the Interior
EA	Environmental Assessment
EJ	environmental justice
EO	Executive Order
EPA	United States Environmental Protection Agency
EPM	environmental protection measure
ESA	Endangered Species Act of 1973, as amended
FLPMA	Federal Land Policy and Management Act of 1976
GDP	Geothermal Drilling Permit
GHG	greenhouse gas
gpd	gallons per day
HFRA	Healthy Forests Restoration Act of 2003
HMA	herd management area
IM	Instruction Memorandum
LR2000	Legacy Rehost System
LWC	lands with wilderness characteristics
MBTA	Migratory Bird Treaty Act of 1918
MDM	Mount Diablo Meridian
MMT	million metric tons
MOU	Memorandum of Understanding
mph	miles per hour
MT	metric tons
NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NDA	Nevada Department of Agriculture
NDEP	Nevada Division of Environmental Protection
NDNH	Nevada Division of Natural Heritage
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966, as amended

NRHP	National Register of Historic Places
OHV	off-highway vehicle
P.L.	Public Law
Plan	Weepah Hills Geothermal Exploration Project Operations Plan
Project	Weepah Hills Geothermal Exploration Project
RFFA	reasonably foreseeable future action
ROW	right-of-way
SR	State Route
Stantec	Stantec Consulting Services, Inc.
TCP	Traditional Cultural Property
TFO	Tonopah Field Office
US	United States
US 95	United States Highway 95
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VRM	Visual Resource Management
WestLand	WestLand Engineering & Environmental Services
WSA	Wilderness Study Area

1 INTRODUCTION / PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

In February 2023, Baseload Power Weepah Hills LLC (Baseload Power) submitted the Weepah Hills Geothermal Exploration Project (Project) Operations Plan (Plan) to the Bureau of Land Management (BLM) Battle Mountain District Office, Tonopah Field Office (TFO) pursuant to Title 43 Code of Federal Regulations (CFR) Subpart 3260 (43 CFR 3260). Baseload Power plans to drill up to four new geothermal production wells on two existing well pads (Well Pad 26-19 and Well Pad 25-29) associated with Lease NVNV105773132. Baseload Power also submitted four Geothermal Drilling Permit (GDP) applications with associated drill plans for the four proposed geothermal production wells in February 2023. The Project is located in Sections 19 and 29, Township 1 North, Range 38.5 East, Mount Diablo Meridian (Project Area). The Project can be accessed from United States (US) Highway 95 (US 95) by turning south on State Route (SR) 265 for approximately 11.4 miles to the main on-lease access road (Figure 1.1.1). This Environmental Assessment (EA) includes the analysis of the direct, indirect, and cumulative impacts for the Project, and associated activities.

1.2 Purpose of and Need for Action

The purpose of the action is to provide Baseload Power with the opportunity to conduct geothermal exploration activities on their federal geothermal leases as provided under the Energy Policy Act of 2005 (42 United States Code [USC] 149), the Geothermal Steam Act of 1970, as amended (30 USC 23), and other applicable federal and state laws. The need for the action is established by BLM's legal responsibility under the Geothermal Steam Act of 1970, the regulations under 43 CFR 3260, the Minerals Leasing Act of 1920, as amended (30 USC 181), and the amended Secretarial Order 3285 (Renewable Energy Development by the US Department of the Interior (DOI), signed February 22, 2010.

1.3 Relationship to BLM and Non-BLM Policies, Plans, and Programs

The BLM is responsible for the preparation of this EA, which was prepared in conformance with the National Environmental Policy Act of 1969 (NEPA), applicable laws and regulations passed subsequently, including the President's Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508), US DOI requirements, and the policy guidance provided in the BLM NEPA Handbook H-1790-1 (BLM 2008a).

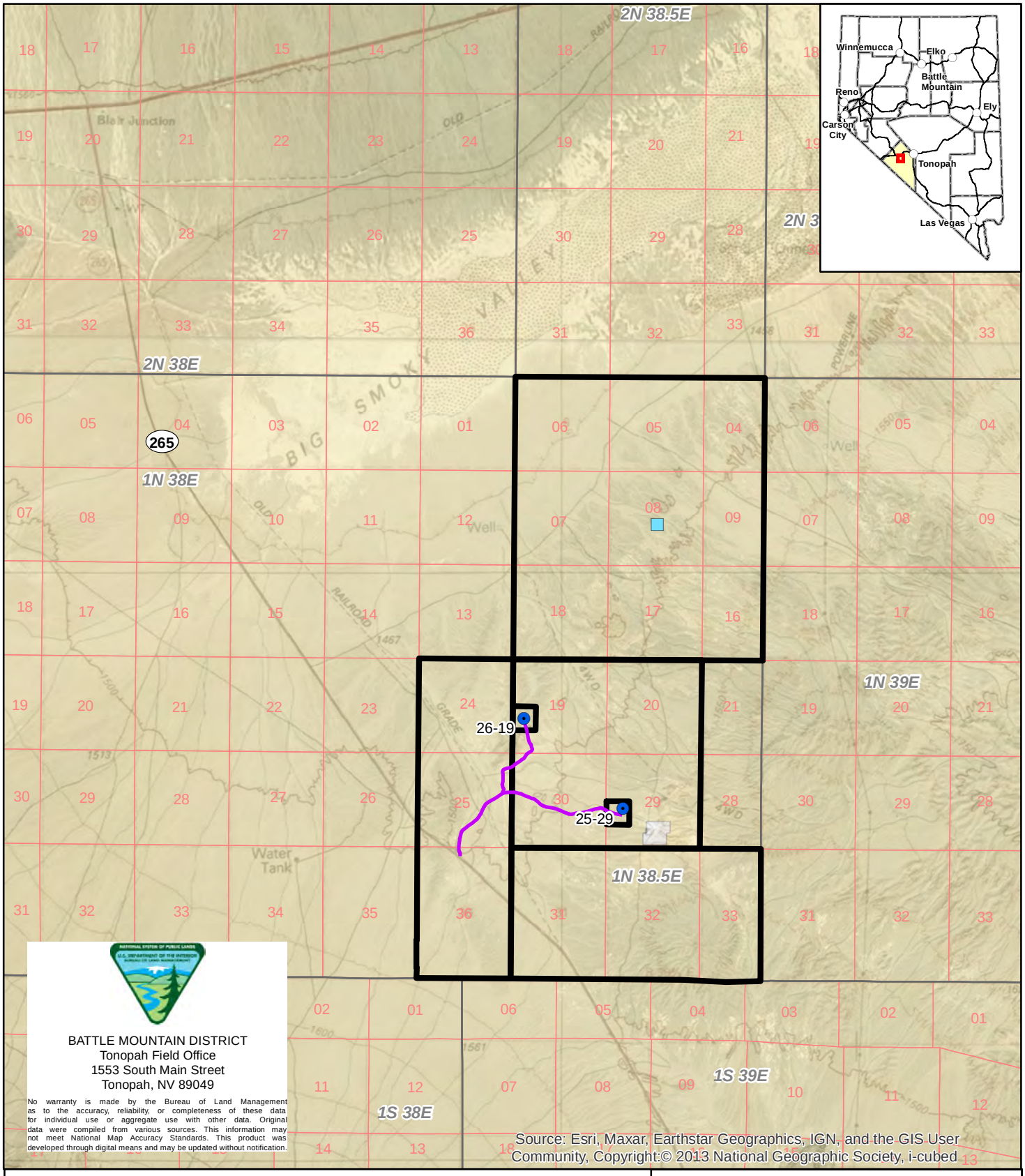
1.3.1 Land Use Plan Conformance

1.3.1.1 Tonopah Resource Management Plan

The Proposed Action is in conformance with the Tonopah Resource Management Plan and Record of Decision approved on October 2, 1997. Specifically, the Fluid Minerals Objective on page 22 is "To provide opportunity for exploration and development of fluid minerals such as oil, gas, and geothermal resources, using appropriate stipulations to allow for the preservation and enhancement of fragile and unique resources" (BLM 1997).

1.3.1.2 Esmeralda County Public Lands Policy Plan

The Proposed Action is in conformance with the Esmeralda County Public Lands Policy Plan, Policy 7-1, which states (in part): "Encourage the careful development and production of Esmeralda County's metal, mineral, and geothermal resources while recognizing the need to protect the environment and ecological resources" (Esmeralda County 2013).



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Explanation

- Geothermal Lease
- On-Lease Access Roads
- Water Source
- Well Site (2)

Land Status

- Bureau of Land Management
- Private

0 1 2 Miles

N

BUREAU OF LAND MANAGEMENT

WEEPAH HILLS GEOTHERMAL EXPLORATION PROJECT

Project Location, Land Status, and Proposed Activities

Figure 1.1.1

05/30/2023

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

This Proposed Action includes a description of the following proposed activities at the Project: improvements to existing well pads; improvements to existing access roads; ancillary facilities; equipment and personnel; the proposed water sources; applicant-committed environmental protection measures (EPMs); and reclamation.

2.1.1 Existing Well Pad Improvements and Layout

The two existing well pads currently measure approximately 250 feet by 350 feet each, or approximately two acres each (Figure 2.1.1). Due to several years of inactivity at these pads, Baseload Power would conduct surface smoothing and leveling, as necessary, to return the sites to functional conditions, to create level areas for the drill rig and support equipment. The two well pads also contain previously constructed reserve pits, both approximately 55 feet by 230 feet in size (Figure 2.1.1), which would also be rehabilitated and recontoured, as necessary, to accommodate the proposed activities. At least one side of the pit would be sloped at an incline of approximately 30 percent to prevent livestock, wildlife, or humans from becoming entrapped. Any growth media or topsoil would be salvaged in stockpiles on each drill pad for use during subsequent reclamation of the disturbed areas.

Stormwater runoff from undisturbed areas around the constructed well pads would be directed into ditches surrounding the well pad and back onto undisturbed ground, which is consistent with best management practices (BMPs) for stormwater management. The pad surfaces have been previously designed to prevent the movement of stormwater off the constructed site and into the reserve pit in accordance with the standards of the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (The Gold Book) (US DOI and US Department of Agriculture [USDA] 2007).

No new surface disturbance is proposed outside the existing footprints of the existing drill pads.

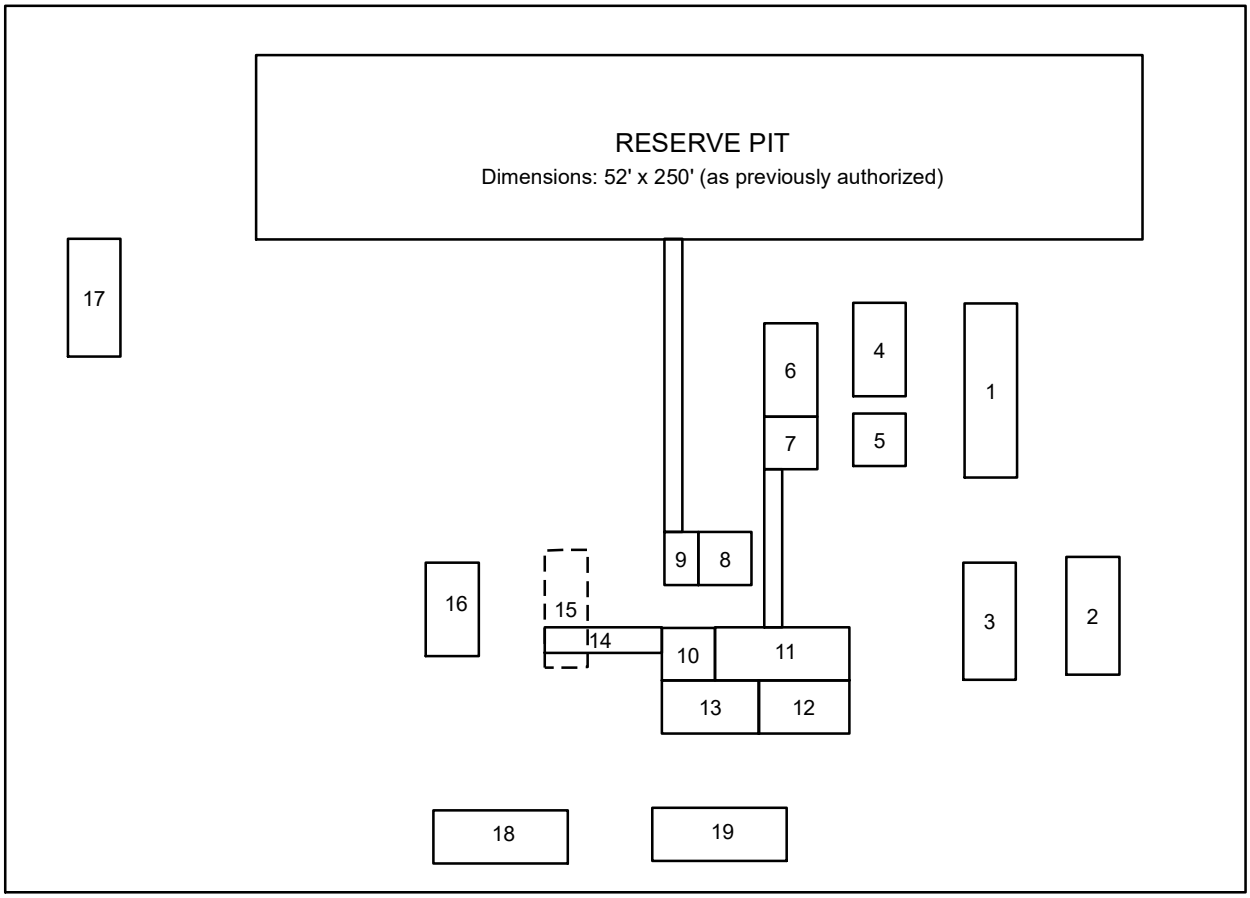
2.1.2 Well Drilling and Testing Procedures, Equipment, and Personnel

Well drilling would be conducted by one large rotary drilling rig, alternating between the two well pads, as necessary. Approximately 25 tractors/trailers and eight small trucks would be required for drilling operations. Approximately ten workers would be at the active drill site for the entire duration of well drilling. A maximum of 18 workers may be required throughout drilling operations. Data collected from each well would update the reservoir model and determine viability of a commercial geothermal resource. Drilling operations would last approximately 25 days per well. Drilling operations would be conducted 24 hours a day, seven days a week.

The drilling crew is anticipated to consist of current Baseload Power employees and contractor(s) that would travel to the Project site for exploration activities as needed. The drilling supervisor and mud logger would typically sleep in a trailer (temporary ancillary facility) on the active drill site while the well is being drilled. The drilling crew would stay in off-site accommodations, most likely in Tonopah. Drilling crews typically would include one mud logger, one tool pusher, one driller, one derrickman, one motorman, and up to four floorhands.

Blow-out prevention equipment would be used while drilling below the surface casing. During drilling operations, a minimum of 10,000 gallons of cool water would be stored at each well site for use in preventing uncontrolled well flow (“killing the well”), as necessary.

Pad Dimensions: 250' x 300' (as previously authorized)



NOT TO SCALE

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1. Mud Tank
2. Fuel Tank
3. Water Tank
4. Mud Storage
5. Generator
6. Change House
7. Accumlator
8. Mud Pit
9. Shale Shaker
10. Rig Floor
11. Draw Works
12. Storage
13. Dog House
14. Catwalk
15. Pipe Rack
16. Electric Logger
17. Mud Logger
18. Trailer House
19. Trailer Office

BUREAU OF LAND MANAGEMENT

WEEPAH HILLS GEOTHERMAL EXPLORATION PROJECT

General Well Pad Layout

Figure 2.1.1

05/30/2023

The upper sections of the well bore would be drilled using non-toxic, temperature-stable drilling mud composed of a bentonite clay-water or polymer-water mix for all wells. Variable concentrations of additives would be added to the drilling mud as needed to prevent corrosion, increase mud weight, and prevent mud loss. Some of the mud additives may be hazardous substances and would only be used in low concentrations that would not render the drilling mud toxic or hazardous. Additional drilling mud would be mixed and added to the mud system as needed to maintain the required quantities. The lower sections of the well would be drilled using fresh water.

Target depths range between 1,800 and 5,000 feet below ground surface but may change depending on the results of well testing. Further, depending on the subsurface targets, directional drilling may be employed to intercept geothermal targets. Well casing would meet all requirements outlined in Geothermal Resources Operational Order No. 2, where the surface casing string would be set at no less than 200 feet to prevent co-mingling of the geothermal fluids with underground aquifers.

Each well may need to be worked over or re-drilled. Well re-drilling may consist of 1) re-entering and redrilling the existing well bore; 2) re-entering the existing well bore and drilling and casing a new well bore; or 3) sliding the rig over a few feet on the same well pad and drilling a new well bore through a new conductor casing. While the drill rig is still over the well, the residual drilling mud and cuttings would be flowed from the well bore and discharged to the reserve pit.

2.1.2.1 Short-Term Well Testing

One or more short-term well test(s) of each well drilled would likely be conducted to measure the geothermal fluid temperatures, pressures, flow rates, chemistry, and additional other parameters. Each short-term test, lasting approximately 24 hours on average, would consist of flowing the well into the reserve pit or portable steel tanks brought on-site. An injectivity test may also be conducted, which reinjects the produced geothermal fluid from the reserve pit or steel tanks back into the well and geothermal reservoir. Following the conclusion of the short-term test(s), the drill rig would likely be moved from the well site. Each short-term well test is expected to flow approximately 1.5 million gallons of geothermal brine.

2.1.2.2 Long-Term Well Testing

One or more long-term flow test(s) of each well drilled would likely be conducted following the short-term flow test(s) to determine more accurately long-term well and geothermal reservoir productivity. The long-term flow test(s), each lasting between seven to ten days, would be conducted by pumping the geothermal fluids from the well through on-site test equipment that is closed to the atmosphere (using a line shaft turbine pump or electric submersible pump), and into the reserve pit or tanks. A surface booster pump would then pump the residual geothermal water/fluid through a temporary eight- to ten-inch diameter pipeline to inject the fluid into one of the other geothermal wells previously drilled at the Project. The on-site test equipment would include standard flow metering, recording, and sampling apparatus. Each long-term well test is expected to flow approximately ten million gallons of geothermal brine.

2.1.3 Access Roads

Approximately 180 feet of on-lease access road to Drill Pad 25-29 and approximately 1.5 miles of on-lease access road to Drill Pad 26-19 may require routine road maintenance activities, which may include filling holes and ruts, smoothing, and minimal grading. No road widening would be required; therefore, there would be no new surface disturbance outside the existing road footprint.

2.1.4 Water Requirements and Source

Water required for well drilling could total up to as much as 50,000 gallons per day (gpd) for an estimated 25 days of drilling activities per well. Water requirements for grading, road and pad retrofitting, and dust control (approximately 10,000 gpd for an estimated 30 days per well) would also be required. One or more potable water tank(s) holding a combined total of at least 10,000 gallons would be maintained on the active well site during drilling operations.

Water would be obtained from an existing well (Well W1) located in the northwest ¼ southeast ¼, Section 7, T1N, R38.5E, MDM. Baseload Power would obtain a waiver for the Temporary Use of Ground Water for Oil & Gas or Geothermal Exploration (Form 4026) from the Nevada Division of Water Resources (NDWR). This well was previously drilled under NDWR Permit OG-258A dated January 31, 2011. When no longer needed and in accordance with Nevada Administrative Code (NAC) 534.420, the well would be plugged and abandoned with cement plugs across the bottom of the casing and, if needed, with additional plugs to isolate individual producing zones if identified as present.

2.1.5 Reclamation Plan

After the well drilling and testing operations are completed, the liquids from the reserve pits would either naturally evaporate or be removed off site as necessary to reclaim the reserve pits. The solid contents remaining in each of the reserve pits, typically consisting of non-hazardous, non-toxic drilling mud and rock cuttings, would be tested to confirm that they are not hazardous. Typical tests may include the Toxicity Characteristic Leaching Procedure (US Environmental Protection Agency [EPA] Method 1311), testing for heavy metals; pH (EPA method 9045D); Total Petroleum Hydrocarbons/Diesel (EPA Method 8015B); and Oil and Grease (EPA Method 413.1). Non-hazardous and non-toxic drilling mud and cuttings would be buried in the reserve pit, and any drilling mud and/or cuttings identified as hazardous and toxic would be disposed of according to Nevada Division of Environmental Protection (NDEP) regulations.

If a well is judged by Baseload Power to have no commercial potential, it may continue to be monitored for the Project, but would be plugged and abandoned in conformance with BLM and Nevada Division of Minerals well abandonment requirements. Abandonment typically involves filling the well bore with clean, heavy abandonment mud and cement until the top of the cement is at ground level, which is designed to ensure that fluids would not move across these barriers into different aquifers. The well head (and any other equipment) would then be removed, the casing cut off well below the ground surface, and the hole backfilled to the surface.

The portions of the cleared well sites not needed for operational and safety purposes (i.e., the "shoulders" of the pad) would be recontoured to a final or intermediate contour that would blend with the surrounding topography as much as possible. Areas able to be reclaimed would be ripped, tilled, or disked on contour, as necessary and reseeded with a BLM-approved weed-free seed mix. The stockpiled topsoil would also be spread over the area to aid in revegetation.

2.1.6 Applicant-Committed Environmental Protection Measures

Baseload Power would commit to the following EPMs to prevent unnecessary or undue degradation during construction, operation, and reclamation of the Project.

Air Quality

- Emissions of fugitive dust from disturbed surfaces would be minimized by the application of water from a water truck as a method of dust control.

Cultural and Paleontological Resources

- Pursuant to 43 CFR 10.4(g), Baseload Power would notify the BLM-authorized officer (AO) immediately by telephone and in writing within 72 hours upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further pursuant to 43 CFR 10.4, Baseload Power would immediately stop all activities within 100 meters of the discovery and not commence again until a notice to proceed is issued by the BLM AO.
- Baseload Power would inform all field personnel of the Archaeological Resources Protection Act of 1979 (ARPA) and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (Public Law [P.L.]101-601) responsibilities and their associated penalties.
- Any cultural resources discovered by Baseload Power, or any person working on their behalf, during the course of activities on federal land would be immediately reported to the BLM AO by telephone and in writing within 72 hours. The permit holder would suspend all operations within 100 meters of such discovery and protect it until an evaluation of the discovery can be made by the BLM AO. This evaluation would determine the significance of the discovery and what mitigation measures are necessary to allow activities to proceed. Baseload Power would be responsible for the cost of evaluation and mitigation. Operations would resume only upon written authorization to proceed from the BLM AO.
- Pursuant to 43 CFR 3252.11(a)(2) and 43 CFR 3262.11(a)(2), Baseload Power would conduct the Project in a manner that protects the quality of cultural, scenic, and recreational resources.
- Baseload Power would not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. In the event that previously undiscovered paleontological resources are discovered by Baseload Power in the performance of any surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the AO of the BLM. If significant paleontological resources are found, avoidance, recordation, and/or data recovery would be required as determined by the BLM, and at the expense of Baseload Power.

Fire Management

- All applicable state and federal fire laws and regulations would be complied with and all reasonable measures would be taken to prevent and suppress fires at the well pads.
- The following precautionary measures would be taken to prevent and report wildland fires:
    - All vehicles would carry fire extinguishers and a minimum of five gallons of water;
    - Adequate fire-fighting equipment (i.e., shovel, Pulaski, extinguishers), and an ample water supply would be kept at each drill site;
    - Vehicle catalytic converters would be inspected often and cleaned of brush and grass debris;
    - Welding operations would be conducted in an area free from or mostly free from vegetation. A minimum of ten gallons of water and a shovel would be on hand to extinguish any fires created from the sparks. Extra personnel would be at the welding site to watch for fires created by welding sparks. Welding aprons would be used when conditions warrant (i.e., during red flag warnings);
    - Wildland fires would be immediately reported to the BLM Central Nevada Interagency Dispatch Center at (775) 623-3444. Information reported would include the location (latitude and longitude if possible), fuels involved, time started, who or what is near the fire, and the direction of fire spread; and

- When conducting operations during the months of May through September, the BLM Battle Mountain District Tonopah Field Office, Division of Fire and Aviation would be contacted at (775) 635-4000 to determine if any fire restrictions are in place for the Project and to provide approximate beginning and ending dates for Project activities.

Hazardous or Solid Wastes

- Pursuant to 43 CFR 8365.1-1(b)(3), no sewage, petroleum products, or refuse would be dumped from any trailer or vehicle.
- Portable chemical sanitary facilities would be available and used by all personnel during periods of well drilling and/or flow testing, and construction. These facilities would be maintained by a local contractor.
- All regulated wastes, including hazardous and miscellaneous solid wastes, would be removed from the well pads and disposed of in a state, federal, or local designated area on a daily basis, or as appropriate.
- No solid waste would be permitted in the reserve pit.
- Please see the Spill Contingency Plan (Appendix B of the Plan) prepared for the Project. All spills, regardless of quantity, would be addressed and the material would be removed for proper disposal.
- If a spill of a petroleum constituent is considered to meet the reportable quantity per the NDEP's guidelines (releases to the soil or other surfaces of land in a quantity greater than 25 gallons or 200 pounds; releases discovered in at least three cubic yards of soil during any subsurface excavation; releases discovered in or on groundwater; or a confirmed release from an underground storage tank), or a reportable quantity for hazardous waste is released based on the Federal EPA guidelines established under 40 CFR Part 302, the NDEP would be notified within 24 hours, and the appropriate remedial actions and confirmation sampling would be conducted under direction of the NDEP.

Noise

- To abate noise pollution, mufflers would be used on all drilling rig engines.

Noxious Weeds

- Baseload Power would implement the Noxious Weed Monitoring and Control Plan (Appendix C of the Plan) prepared for the Project during construction and continuing through operations and reclamation. Management strategies include prevention (i.e., awareness and education and protective management practices), treatment (i.e., mechanical treatment, chemical treatment, and biological treatment), and monitoring.

Public Safety, Access, and Survey Monuments

- Public safety would be maintained throughout the life of the Project. All equipment and other facilities would be maintained in a safe and orderly manner.
- Any survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible.
- If any existing roads are degraded because of Baseload Power activities, Baseload Power would return them to as close as possible to their original condition.

Special Status Species

- To minimize impacts to golden eagle (*Aquila chrysaetos*) nests, Project activities would not be conducted between December 15 and July 31 within one mile of a nest. However, if that is not practicable, a survey would be conducted during the incubation/early brood rearing period of the nesting season after April 15 at eagle nest sites that are within one mile of the Project Area to determine occupancy. The timing of the surveys may be adjusted due to winter weather conditions and is subject to approval from the Nevada Department of Wildlife (NDOW) based on consideration of bighorn sheep (*Ovis canadensis*) lambing activity. If a nest has a bird in an incubating/brooding posture, it would be assumed that the nest is active that year, and a one-mile disturbance buffer would be applied until July 31, or until it has been determined that 1) the nest has failed; or 2) the young have fledged and are no longer dependent on the nest. If the nest is not active at the time of the surveys, the one-mile buffer would not apply and Project activities could commence.

Vegetation

- Reseeding would be consistent with BLM recommendations for seed mix species, application rate, and seeding methods.

Visual Resources

- To minimize effects from lighting, Baseload Power would utilize hooded stationary lights and light plants. Lighting would be directed onto the pertinent site only and away from adjacent areas not in use, with safety and proper lighting of the active work areas being the primary goal. Lighting fixtures would be hooded and shielded as appropriate. Baseload Power would utilize lighting designed to reduce the impacts to night skies.
- The wellheads would each be painted a color that blends with the surrounding landscape to minimize visibility.

Water Quality

- Exclusive of short- and long-term flow testing wherein fluids would be discharged to the reserve pit, geothermal fluids would not be discharged to the ground under normal operating conditions. Each well pad would be graded towards the reserve pit to prevent movement of stormwater runoff from the pads. Geothermal wells would be cased to prevent co-mingling of the geothermal fluids with underground aquifers.
- Stormwater runoff from undisturbed areas around the constructed well pads would be directed into ditches surrounding the well pad and back onto undisturbed ground, consistent with BMPs for stormwater. The site would be graded to prevent the movement of stormwater from the pad off the constructed site but rather into the reserve pit in conformance with The Gold Book standards (DOI and USDA 2007).
- Stormwater BMPs, such as berms, silt fences, and/or straw bales, would be used at construction sites to minimize stormwater erosion and off-site migration of sediment.

Wildlife

- The reserve pit would be constructed with a sloped end for egress and fenced when necessary to preclude access.
- Vehicle speeds on access roads would not exceed 25 miles per hour (mph).

2.2 No Action Alternative

Under the No Action Alternative, the BLM would not approve the GDPs and Baseload Power would not have authorization to drill the proposed geothermal wells. BLM's authority to implement the No Action Alternative is limited because geothermal lease holders possess valid existing rights to explore and potentially develop their lease subject to the stipulations of the specific lease agreement. However, BLM can deny the GDPs if the proposal would violate lease stipulations or applicable laws and regulations or result in undue or unnecessary environmental degradation.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

Since the four proposed geothermal wells would be located on two existing well pads, no other alternatives were considered. The scoping process did not provide any need or reasoning for an alternate proposal.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

The purpose of this section of the EA is to describe the existing environment of the Project Area, as well as environmental consequences from implementation of the Proposed Action or any of the listed alternatives of affected resources including the No Action Alternative, as well as potential cumulative impacts. EPMs are incorporated as necessary in the relevant resource section.

Supplemental Authorities that are subject to requirements specified by statute or executive order (EO) must be considered in all BLM environmental documents. The elements associated with the supplemental authorities listed in the NEPA Handbook (BLM 2008a, Appendix 1) and in the Nevada Instruction Memorandum (IM) 2009-030, Change 1, are listed in Table 3.1-1. The following elements have been determined as Not Present in the Project Area, Present/Not Affected, or Present/May Be Affected by Project activities, and the following table provides the rationale for those determinations, or the section of the EA where the resource is discussed. The elimination of non-relevant elements complies with CEQ policy.

Table 3.1-1: Elements Associated with Supplemental Authorities and Rationale for Elimination from Detailed Analysis for the Proposed Action

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale for Elimination
Air Quality		X		The proposed Project is not within a non-attainment area or areas where total suspended particulates or other criteria pollutants exceed Nevada air quality standards. Project activities would result in negligible short-term adverse effects to air quality in the form of vehicle emissions and fugitive dust (Appendix A – Emissions Inventory). Estimated emissions from the Project are below the Federal Conformity De Minimis thresholds, which would suggest that the Project would have a de minimis effect on compliance with state and federal air quality standards. As outlined in the EPMs in Section 2.1.6, fugitive dust emissions would be minimized by the application of water from a water truck. Adherence to the EPM should maintain potential impacts on air quality at a negligible level. Therefore, this element is not further analyzed in this EA.
Areas of Critical Environmental Concern	X			This element is not present within either Project Area or vicinity.

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale for Elimination
Cultural Resources		X		A Class III Cultural Resources Inventory was conducted in a larger Project area that encompassed the two existing well pads (Richey and Harmon 2019). No archaeological sites eligible for listing on the National Register of Historic Places (NRHP) are within the Project Area. A cultural resources indirect effects assessment was completed on May 11, 2023. This assessment concluded that the proposed Project would have no adverse indirect effects on any NRHP-eligible or potentially eligible cultural resource. Therefore, this element is not further analyzed in this EA. However, an EPM is included in Section 2.1.6 for undiscovered resources.
Environmental Justice (EJ)			X	According to BLM guidance (IM 2022-059 and attachments), the BLM is committed to determining if its proposed and alternative actions would adversely and disproportionately impact minority, low-income, or Tribal populations. According to a desktop analysis performed for the Project, there are EJ communities in the study area. To determine if an action or alternative disproportionately and adversely impacts an EJ population, the BLM analyzes aggregate effects of all proposed actions and resources and cumulative effects of all proposed actions when compounded by an impact when added to other past, present, and reasonably foreseeable future actions (RFFAs). This Project would result in temporary and sporadic geothermal exploration drilling activities on existing drill pads and existing access roads. The project is rural in nature and EJ communities would not experience disproportionate and adverse effects associated with the Project. There would only be a maximum of 18 people working at the Project at any one time, but their presence in the area would be temporary and sporadic. Conversations concerning unforeseen impacts should continue with members of the Duck Valley Reservation, Duckwater Shoshone Tribe, Yomba Shoshone Tribe, and Timbisha Shoshone Tribe. Outreach efforts will be conducted in the nearby communities; therefore, the determination may change as further information becomes available. There are no cultural resources of concern or Traditional Cultural Properties in the Project Area.
Farm Lands (Prime or Unique)	X			This element is not present within the Project Area or vicinity.
Fish Habitat	X			Fish habitat is not present within the Project Area or vicinity.

Supplemental Authority Element	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale for Elimination
Floodplains	X			This element is not present within the Project Area or vicinity.
Forests and Rangelands (Healthy Forests Restoration Act of 2003 [HFRA] projects only)	X			The Project does not meet the requirements to qualify as a HFRA project; therefore, this element is not analyzed further in this EA.
Human Health and Safety (Herbicide Projects)	X			The Project may use herbicides to eradicate noxious weeds; however, EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks," would not apply to the Project as there would be no children at the sites during application of the herbicides.
Migratory Birds			X	See Section 3.2.
Native American Religious and Cultural Concerns		TBD		See Section 3.3.
Noxious Weeds, Invasive and Non-native Species		X		See Section 3.4.
Surface and Groundwater Quality		X		Surface water in the vicinity of the Project Area include ephemeral drainages/washes adjacent to the two existing well pads. Applicant-committed EPMs outlined in Section 2.1.6, adherence to the Spill Contingency Plan prepared for the Project, and compliance with any Conditions of Approval (COAs) would minimize any potential impacts to surface water quality. The closest spring is approximately three miles away from the Project Area. Up to four new geothermal wells are not anticipated to result in a drawdown to the spring. Compliance with the required casing, plugging, and abandonment techniques would minimize any potential impacts to groundwater quality. This element is not further analyzed in this EA.
Wastes – Hazardous/Solid		X		The operator or any contractor working for the operator would have Safety Data Sheets available for all chemicals, compounds, or substances used. All chemicals would be handled in an appropriate manner to prevent leaks or spills to the environment. The Project would comply with all applicable federal and state laws concerning hazardous materials and the operator's Spill Contingency Plan. Solid waste would be disposed off site at an applicable facility. This element is not further analyzed in this EA.
Wetlands and Riparian Zones	X			This element is not present within either Project Area or vicinity.
Wild and Scenic Rivers	X			This element is not present within either Project Area or vicinity.
Wilderness/Wilderness Study Area (WSA)	X			This element is not present within either Project Area or vicinity.

Potentially affected elements are analyzed in Sections 3.2 through 3.7. Those elements listed under the supplemental authorities that do not occur in the Project Area and elements present but would not be affected are not evaluated further in this EA, based on the rationale provided in Table 3.1-1.

In addition to the elements listed under supplemental authorities, the BLM considers other resources and uses that occur on public lands and the issues that may result from the Proposed Action. Other resources or uses of the human environment considered for this EA are listed in Table 3.1-2 below.

Table 3.1-2: Resources or Uses Not Associated with Supplemental Authorities

Other Resources or Uses	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Climate Change		X		Climate change is a far-reaching and long-term issue that would affect the Project Area, its resources, and management beyond the scope of this assessment and its ten-year timeframe. Although many effects of climate change are considered known or likely to occur, specific impacts to the Project Area cannot be determined exactly at our current level of understanding. Much depends on the rate at which temperature would continue to rise and whether global emissions of greenhouse gases (GHGs) can be mitigated before serious ecological thresholds are reached. GHG emissions were estimated for the Proposed Action and were compared to annual Nevada emissions and US emissions. The Proposed Action is not expected to cause significant methane or nitrous oxide emissions. Annual GHG emissions from the Proposed Action are estimated at 589 metric tons (MT) (Appendix A), which is equivalent to the emissions from 131 passenger vehicles driven for one year (EPA 2023a). This amount is well below the 25,000 MT threshold set for reporting from stationary sources by the EPA and is insubstantial compared to state emissions (37.336 million metric tons [MMT]) (NDEP 2022), and national (6,347.7 MMT) (EPA 2023b) emissions. Reductions in Proposed Action emissions, such as by following the EPMs in Section 2.1.6, could have a negligible beneficial effect in terms of directly reducing the adverse impacts of human-forced climate change.

Other Resources or Uses	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Geology and Mineral Resources		X		Geology and mineral resources are present in the Project Area; however, Project activities would not preclude the exploration and/or development of other mineral resources. This resource is not analyzed further in this EA.
Lands and Realty	X			There are no authorized rights-of-way (ROWs) within the Project Area or adjacent to the Project Area. The Project Area would be accessed by existing on-lease roads, and Project activities would be conducted on Baseload Power's authorized lease. This resource is not analyzed further in this EA.
Lands with Wilderness Characteristics (LWC)	X			The Project is located in LWC unit NV-050-329. The BLM has determined that this unit does not contain wilderness characteristics. This resource is not analyzed further in this EA.
Paleontological Resources		X		A Paleontological Resource Baseline Technical Report (Western Paleo Associates, Inc. 2018) was prepared for a larger project area, but includes the proposed Project Area. The geology underlying Well Pad 25-29 primarily consists of alluvium with a low potential for fossil discovery. The geology underlying Well Pad 26-19 has a high potential for fossil discovery; however, since there is no new surface disturbance proposed for the Project, it is unlikely that fossils would be discovered. Section 2.1.6 includes an EPM for undiscovered paleontological resources. This resource is not analyzed further in this EA.
Rangeland Management		X		The Project Area is in the Sheep Mountain Grazing Allotment. Since there is no new surface disturbance associated with the Project, there would be no reduction of acreage in the allotment, and the Project would not result in the reduction of animal unit months or management of the allotment. Additionally, the reserve pit would be temporarily fenced and sloped on one end. This resource is not analyzed further in this EA.
Recreation			X	See Section 3.5.

Other Resources or Uses	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Socioeconomics		X		Due to the short-term nature of the exploratory drilling activities at the Project, the workforce would not create a demand for additional public or private services and would not impact public schools, the permanent housing market, or other services otherwise associated with permanent workers. There is potential for small, temporary economic impacts that may result from use of lodging and other accommodations in the study area, but those impacts are anticipated to be temporary and minor. This resource is not further analyzed in the EA. Should the project move beyond the exploratory phase, further analysis would be warranted.
Soils		X		The Project proposes to drill up to four new geothermal production wells on two existing well pads. Since the soils were previously disturbed and there is no new surface disturbance proposed, impacts to soils are not anticipated. Therefore, this resource is not analyzed further in this EA.
Special Status Species (including bald and golden eagles and threatened and endangered species)			X	See Section 3.6.
Vegetation		X		The Project proposes to drill up to four new geothermal production wells on two existing well pads. Since the vegetation was previously removed and there is no new surface disturbance proposed, impacts to vegetation are not anticipated. Therefore, this resource is not analyzed further in this EA.

Other Resources or Uses	Not Present	Present/ Not Affected	Present/May Be Affected	Rationale/Reference Section
Visual Resources		X		The Project is in Visual Resource Management (VRM) Class IV. The VRM Class IV objective is to provide for management activities, which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and should repeat the basic elements inherent in the characteristic landscape. There are several components of the Project that would be visible and generate visual contrast, primarily including tanks, trailers, equipment storage facilities, and the drill rig. The drill rig would be visible and the operation likely noticeable from observation points in the vicinity. The contrast created by adding the drill rig structure and other Project facilities would be high; they would attract attention and would be dominant features during the life of the Project, or for approximately 40 to 70 days total at each well pad. These activities are in compliance with VRM Class IV objectives; therefore, this resource is not analyzed further in this EA.
Wild Horses and Burros	X			The Project is not located within a Herd Management Area (HMA); therefore, this resource is not analyzed further in this EA.
Wildlife			X	See Section 3.7.

Potentially affected resources or uses are discussed and analyzed in Sections 3.2 through 3.7. Those other resources listed that do not occur in the Project Area and resources present but would not be affected are not evaluated further in this EA, based on the rationale provided in Table 3.1-2.

The potential effects of the No Action Alternative on both supplemental authorities and other resources or uses are also discussed in these sections.

3.2 Migratory Birds

3.2.1 Affected Environment

"Migratory bird" means any bird listed in 50 CFR 10.13. All native birds found commonly in the US, with the exception of native resident game birds that do not migrate, are protected under the Migratory Bird Treaty Act of 1918 (MBTA). The MBTA prohibits the taking of migratory birds, their parts, nests, eggs, and nestlings. EO 13186, signed January 10, 2001, directs federal agencies to protect migratory birds by integrating bird conservation principles, measures, and practices into projects.

Additional direction comes from a Memorandum of Understanding (MOU) between the BLM and US Fish and Wildlife Service (USFWS), signed January 17, 2010. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between the BLM and USFWS, in coordination with state, tribal, and local governments. The MOU identifies management practices that impact populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats, on public lands, and develops management objectives or recommendations that avoid or minimize these impacts.

The NDOW, Nevada Division of Natural Heritage (NDNH), and the USFWS were contacted to request information regarding wildlife use and nesting raptors in the area. In the NDOW data response dated June 28, 2023, the NDOW identified the following migratory birds as having distribution ranges with a ten-mile radius of the Project: American kestrel (*Falco sparverius*); bald eagle (*Haliaeetus leucocephalus*); barn owl (*Tyto alba*); burrowing owl (*Athene cunicularia*); California spotted owl (*Strix occidentalis occidentalis*); Cooper's hawk (*Accipiter cooperii*); ferruginous hawk (*Buteo regalis*); flammulated owl (*Psiloscops flammeolus*); golden eagle; great horned owl (*Bubo virginianus*); long-eared owl (*Asio otus*); merlin (*Falco columbarius*); northern goshawk (*Accipiter gentilis*); northern harrier (*Circus cyaneus*); northern pygmy owl (*Glaucidium californicum*); northern saw-whet owl (*Aegolius acadicus*); osprey (*Pandion haliaetus*); peregrine falcon (*Falco peregrinus*); red-tailed hawk (*Buteo jamaicensis*); rough-legged hawk (*Buteo lagopus*); sharp-shinned hawk (*Accipiter striatus*); short-eared owl (*Asio flammeus*); Swainson's hawk (*Buteo swainsoni*); turkey vulture (*Cathartes aura*); and western screech-owl (*Megascops kennicottii*). Several raptors have been observed within a ten-mile buffer of the Project, but no raptors have been observed within the Project area. The NDOW has identified the bald eagle, burrowing owl, California spotted owl, ferruginous hawk, flammulated owl, golden eagle, northern goshawk, peregrine falcon, and short-eared owl as NDOW species of special concern and are target species for conservation (NDOW 2023). The NDNH data identified golden eagle observations within the vicinity of the Project Area (NDNH 2023). The USFWS reported that no critical habitats for avian species occur in the Project Area or vicinity (USFWS 2023).

Migratory bird point count surveys were conducted in a larger project area in 2018 (2018 Survey Area), which included the two existing well pads proposed for Project activities. Species observed near Well Pad 25-29 included: black-throated sparrow (*Amphispiza billineata*); common raven (*Corvus corax*); horned lark (*Eremophila alpestris*); prairie falcon (*Falco mexicanus*); rock wren (*Salpinctes obsoletus*); and Say's phoebe (*Sayornis saya*) (Stantec Consulting Services, Inc. [Stantec] 2019). Since there is similar habitat adjacent to Well Pad 26-19, it is highly likely that similar avian species could be observed at that location. Even though these were the only avian species observed during the 2018 surveys, there is potential habitat for several other avian species.

3.2.2 Environmental Consequences

Effects Analysis Definitions

Negligible – Migratory birds would not be affected, or effects would not result in a loss of individuals or habitat.

Minor - Effects on migratory birds would be measurable or perceptible and local; however, the overall viability of the population or subpopulation would not be affected and without further adverse effects the population would recover. Effects on migratory birds, such as displacement of nests or loss of foraging and/or nesting habitat, would be detectable. Effects would be minimized with implementation of applicant-committed EPMs and reclamation of the Project.

Moderate – Effects would be sufficient to cause a change in the population or subpopulation (e.g., abundance, distribution, quantity, viability) or loss of foraging and/or nesting habitat; however, the effects would remain local. The change would be measurable and perceptible, but the negative effects could be reversed. Mitigation beyond applicant-committed EPMs may be necessary to reduce or rectify adverse effects, but these measures would most likely be effective.

Major – Effects would be substantial, highly noticeable, and could be permanent in their effect on a population or subpopulation survival without active management. Mitigation beyond the applicant-committed EPMs may be necessary, but these measures would need to be monitored to determine their effectiveness.

Short-term – One year or less for an individual or habitat; five years or less for a population.

Long-term – Greater than one year for an individual or habitat; greater than five years for a population.

Permanent – Effects on migratory bird habitat would be permanent.

Localized – Effects are confined to a small part of the population, habitat, or range.

Regional – Effects would affect a widespread area of suitable habitat or the range of a population or species.

3.2.2.1 Proposed Action

The proposed Project includes the use of two existing well pads and access by existing roads, so would not result in the creation of new surface disturbance resulting in the associated removal of foraging, breeding, or nesting migratory bird habitat. The proposed Project would introduce new vehicles and equipment that would travel on the access roads and mobilize at the existing well pads, which would increase the potential for migratory bird collisions and/or mortalities. Outlined in the EPM in Section 2.1.6, Baseload Power has committed to a speed limit no greater than 25 mph on the access roads, which would minimize the potential for migratory bird collisions and/or mortalities. Therefore, impacts to the loss of potential foraging and breeding habitat in the Project Area would be negligible, short-term, and localized. Impacts to individual migratory birds in the Project Area would be minor, short-term, and localized.

3.2.2.2 No Action Alternative

Under the No Action Alternative, the GDPs submitted by Baseload Power for the Project would not be approved. There would be no Project activities occurring in the Project Area that would produce noise, human presence, and vehicles that could result in collisions and/or mortalities; therefore, no impacts to migratory birds would occur.

3.3 Native American Religious and Cultural Concerns

3.3.1 Affected Environment

Located within the traditional territory of the Western Shoshone, the TFO administrative boundary contains spiritual, traditional, and cultural resources, and sites to engage in social practices that aid in maintaining and strengthening the social, cultural, and spiritual integrity of the Tribes. Recognized Tribes with known

interests near the Project Area include the Duck Valley Reservation, the Timbisha Shoshone Tribe, the Yomba Shoshone Tribe, and the Duckwater Shoshone Tribe. The BLM TFO initiated government-to-government consultation with the three Tribes for the Project on July 5, 2023.

Social activities of Native Americans continue to define places of cultural importance across lands currently administered by the BLM. Some Western Shoshone maintain cultural, spiritual, and traditional activities, visit their sacred sites, hunt game, and gather available medicinal and edible plants. Through oral history (the practice of handing down knowledge from the elders to the younger generations), some Western Shoshone continue to maintain a world view similar to that of their ancestors.

Cultural, traditional, and spiritual sites and activities of importance to Tribes include, but are not limited to the following:

- Existing animal traps;
- Certain mountain tops used for vision questing and prayer;
- Medicinal and edible plant gathering locations;
- Prehistoric and historic village sites and gravesites;
- Sites associated with creation stories;
- Hot and cold springs;
- Collection of materials used for basketry and cradle board making;
- Locations of stone tools such as points and grinding stones (mano and matate);
- Chert and obsidian quarries;
- Hunting sites;
- Sweat lodge locations;
- Locations of pine nut ceremonies, traditional gathering, and camping;
- Rock collecting for use in offerings and medicine gathering;
- Tribally identified Traditional Cultural Properties (TCPs);
- TCPs found eligible to the NRHP;
- Rock shelters;
- Lands or resources that are near, within, or bordering current reservation boundaries; and
- Actions that conflict with tribal land acquisition efforts.

In accordance with the National Historic Preservation Act of 1966, as amended (NHPA), the NEPA, the Federal Land Policy and Management Act of 1976 (FLPMA) (P.L. 94-579), the American Indian Religious Freedom Act of 1978 (P.L. 95-341), the NAGPRA (P.L. 101-601), and EO 13007, the BLM must provide affected Tribes an opportunity to comment and consult on the proposed Project. The NHPA allows that "properties of traditional, religious, and cultural importance to an Indian tribe or Native Hawaiian organization may be determined eligible for inclusion on the NRHP." Section 106 of the NHPA requires federal agencies to take into account the effects to historic properties (including those with religious, traditional, or cultural significance) posed by federal undertakings. In addition, under the NAGPRA, culturally affiliated Indian tribes and the BLM jointly may develop procedures to be undertaken when Native American human remains are discovered on federal lands. The BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional/cultural/spiritual sites, activities, and resources. Standard regulations for implementing Section 106 of the NHPA are outlined in 36 CFR 800.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Various Tribes and Bands of the Western Shoshone have stated federal projects and land actions might have widespread effects to their culture and religion as they consider the landscape sacred and as a provider.

Various locations throughout the TFO administrative area host certain traditional, spiritual, and cultural use activities today, as in the past. TCPs, designated by the Tribes, are not known to exist in or within the vicinity of the Project Area. The TFO continues to solicit input from local tribal entities. The TFO is continuing to coordinate with the Tribes to identify any other sites or artifacts, or cultural, traditional, and spiritual use resources and activities that might experience an impact.

If any TCPs, tribal resources, sacred sites, etc. are identified within or in close proximity to the Project Area, a protective "buffer zone" may be acceptable, if doing so satisfies the needs of the BLM, the proponent, and affected Tribe. The size of any "buffer zone" would be determined through coordination and communication between all participating entities.

The BLM Native American Coordinator or Cultural Resource Specialist, accompanied by designated tribal representatives, may periodically visit identified cultural resources sites within or near the Project Area. Native American Consultation and monitoring by the BLM and Tribal Representatives may occur throughout the life of a project to ensure that any identified TCPs are not deteriorating.

If a subsequent amendment to these projects is submitted to the BLM as a result of an approval of these specific proposals, the BLM would again initiate consultation with the local Tribes and utilize any data collected during these proposals.

During the Project's activities, if any cultural properties, items, or artifacts (i.e., stone tools, projectile points, etc.) are encountered, it must be stressed to those involved in the proposed Project activities that such items are not to be collected. The EPMs in Section 2.1.6 state all activities would be halted immediately in the event of a discovery of a cultural resource. Cultural and archaeological resources are protected under the ARPA and the FLPMA.

Though the possibility of disturbing Native American gravesites within most project areas is extremely low, inadvertent discovery procedures must be noted. Under the NAGPRA, Section (3)(d)(1), the discovering on-site manager must notify the AO in writing within 48 hours of such a discovery. If the discovery occurs in connection with an authorized use, the activity which caused the discovery is to cease and the materials are to be protected until the land manager can respond to the situation.

At this time, no impacts related to Native American Religious and Cultural Concerns have been identified by the Tribes and are not anticipated from the Project. However, Tribal consultation would continue throughout the life of the Project.

3.3.2.2 No Action Alternative

Under the No Action Alternative, the GDPs submitted by Baseload Power for the Project would not be approved. There would be no Project activities occurring in the Project Area; therefore, Tribal concerns would not be anticipated.

3.4 Noxious Weeds, Invasive and Non-native Species

3.4.1 Affected Environment

Noxious weeds, invasive and non-native species are species that are highly competitive, aggressive, and spread easily. They typically establish and infest disturbed sites, along roadsides and waterways. Changes in plant community composition from native species to non-native species can change fire regimes, negatively affect habitat quality, biodiversity, and ecosystem structure and function.

The Federal Noxious Weed Act of 1974 (7 USC 2801-2813) as amended by Sec. 15, Management of Undesirable Plants on Federal Lands 1990, requires that each federal agency: 1) Designate a lead office and

person trained in the management of undesirable plants; 2) Establish and fund an undesirable plant management program; 3) Complete and implement cooperative agreements with State agencies; and 4) Establish integrated management systems to control undesirable plant species.

The BLM defines noxious weeds as plant species that "are designated by federal or state law as generally possessing one of more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insect or disease; or non-native, new, or not common to the US" (BLM 2007). The BLM Battle Mountain District recognizes the current noxious weed list designated by the State of Nevada Department of Agriculture (NDA) statute, found in NAC 555.010. When considering whether to add a species to the list, the NDA makes a recommendation after consulting with outside experts and a panel comprising Nevada Weed Action Committee members. Per NAC 555.005, if a species is found probable to be "detrimental or destructive and difficult to control or eradicate," the NDA, with approval from the Board of Agriculture, designates the species as a noxious weed. The species is then added to the noxious weed list in NAC 555.010. Upon listing, the NDA would also assign a rating of "A," "B," or "C" to the species. The rating reflects the NDA view of the statewide importance of the noxious weed, the likelihood that eradication or control efforts would be successful, and the present distribution of noxious weeds within the state.

In addition to noxious weeds, some weed species are considered "invasive species." An "invasive species" is defined as a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (EO 13112, signed February 3, 1999).

The BLM's policy relating to the management and coordination of noxious weed and invasive plant species is set forth in the BLM Manual 9015 – Integrated Weed Management (BLM 1992). The BLM's primary focus is "providing adequate capability to detect and treat smaller weed infestations in high-risk areas before they have a chance to spread."

A noxious weed survey was conducted in the 2018 Survey Area (Stantec 2019). No noxious weeds were documented in the Project Area. Although not mapped, the following nuisance weed species (Hefner and Kratsch 2018) were observed during the June 2018 surveys in the 2018 Survey Area: flixweed (*Descurainia sophia*); hoary tansyaster (*Machaeranthera canescens*); and Russian thistle (*Salsola* sp.).

3.4.2 Environmental Consequences

Effects Analysis Definitions

Negligible: Effects from noxious weeds, invasive and non-native species would be so small they would not be measurable or perceptible.

Minor: Effects from noxious weeds, invasive and non-native species would be detectable, measurable, and perceptible, but would occur within the Project Area. Effects would be minimized with implementation of applicant-committed EPMs, BMPs, and reclamation of the Project.

Moderate: Effects from noxious weeds, invasive and non-native species would be readily apparent, measurable, large, and of consequence, but would occur within the Project Area. Mitigation beyond the applicant-committed EPMs and BMPs may be necessary, but these measures would most likely be effective.

Major: Effects from noxious weeds, invasive and non-native species would be readily apparent and would substantially change the biological value of the native plant community within and outside the Project Area. Mitigation beyond the applicant-committed EPMs and BMPs may be necessary, but these measures would need to be monitored to determine their effectiveness.

Short-term: Effects would last three years or less as related to noxious weed, invasive and non-native species establishment.

Long-term: Effects would last longer than three years as related to noxious weed, invasive and non-native species establishment.

Localized: Effects would be limited to the Project Area.

Regional: Effects would occur beyond the Project Area.

3.4.2.1 Proposed Action

No new surface disturbance would result from Project activities. However, the vehicle usage associated with Project activities would increase the potential for the spread and establishment of noxious weeds, invasive and non-native species. These impacts would be minimized based on implementation of the EPM outlined in Section 2.1.6 outlining compliance with the Project's Noxious Weed Monitoring and Control Plan (WestLand 2023b). Impacts from noxious weeds, invasive and non-native species would be negligible, short-term, and localized.

3.4.2.2 No Action Alternative

Under the No Action Alternative, the GDPs submitted by Baseload Power for the Project would not be approved. There would be no Project activities occurring in the Project Area; therefore, the potential for the spread of noxious weed seeds from vehicle travel would not occur.

3.5 Recreation

3.5.1 Affected Environment

Recreational uses of the public land in the vicinity of the Project Area consist primarily of dispersed recreation activities including the following: hunting; hiking; off-highway vehicle (OHV) riding; dirt biking; bike riding; photography; picnicking; wildlife viewing; and camping. The Project is located within NDOW Hunt Unit 212. Hunting of pronghorn antelope (*Antilocapra americana*), desert bighorn sheep (*Ovis canadensis nelsoni*), and mule deer (*Odocoileus hemionus*), occurs in this hunt unit (NDOW 2022), as well as hunting of small mammals and upland and migratory game birds.

There are several OHV event routes that use the main on-lease access road including the Zero 1 Off-Road Odyssey Tours, the Best in the Desert "Vegas to Reno" Race Event, and the Legacy Baja Nevada route.

3.5.2 Environmental Consequences

Effects Analysis Definitions

Negligible: Recreationists may notice changes to the recreational setting, but proposed activities would not affect their experience. The quality, quantity, and use of recreation areas would not be impacted to a measurable or detectable level. There would be no conflicts with existing federal, state, and local statutes or management plans.

Minor: Recreationists may notice changes in recreational setting and the availability of recreational opportunities, and these changes may affect the recreational experience. Effects to the quality, quantity, and use of recreation areas may be measurable and detectable, and displacement of recreationists to areas outside of the Project Area likely would occur. However, overall access to recreational opportunities, and

the ability to find comparable recreation experiences would not be affected. Applicant-committed EPMs would effectively minimize impacts to recreational users of the area.

Moderate: Changes to the recreational setting and availability of recreation opportunities would be measurable and detectable within the Project Area. Effects to the quality, quantity, and use of recreation areas within the Project Area would be apparent, and would potentially restrict access to recreational areas, reduce recreational opportunities, and/or reduce the quality of recreational areas. Displacement of recreationists to areas outside of the Project Area would occur, but it would not affect overall access to recreational opportunities outside of the Project Area. Mitigation measures beyond applicant-committed EPMs may be necessary to offset adverse impacts, but these measures likely would be successful.

Major: Changes to the recreational setting and availability of recreation opportunities would be measurable and detectable within and outside of the Project Area. Effects to the quality, quantity, and use of recreation areas within and outside of the Project Area would be apparent. There likely would be restricted access to recreational areas, reduced recreational opportunities, and/or reduced quality of recreational areas. Displacement of recreationists to areas outside of the Project Area would occur, and it would impact the quality and quantity of recreational opportunities outside of the Project Area. Mitigation measures beyond applicant-committed EPMs may be necessary to offset adverse impacts, but these measures would need to be monitored to determine their effectiveness.

Temporary: Effects would occur during construction or maintenance activities.

Short-term: Effects would last for the duration of the Project.

Long-term: Effects would last after Project reclamation is complete.

Permanent: Effects to recreation would be permanent.

Localized: Effects on recreation would be limited to the Project Area.

Regional: Effects on recreation would extend beyond the Project Area.

3.5.2.1 Proposed Action

No new surface disturbance would result from Project activities. Dispersed recreation opportunities would not be reduced by Project activities. The organized OHV races all contain stipulations for road repairs, and some have stipulations for notifications being sent to area stakeholders prior to the event. Once notified of an OHV event, Baseload Power would coordinate with the OHV organizers. In addition, all Project Area roads would remain open during Project activities, and there would be no fencing to preclude use, except for fences around the reserve pits to protect wildlife and humans. Any potential impacts to recreation would be negligible, short-term, and localized.

3.5.2.2 No Action Alternative

Under the No Action Alternative, the GDPs submitted by Baseload Power for the Project would not be approved. There would be no Project activities occurring in the Project Area; therefore, impacts on recreation would not be anticipated.

3.6 Special Status Species

3.6.1 Affected Environment

The BLM's policy for management of special status species is in BLM Manual Section 6840 (BLM 2008b). Special status species include the following:

- Federally Threatened or Endangered Species: Any species the USFWS has listed as an endangered or threatened species under the Endangered Species Act of 1973, as amended (ESA) throughout all or a significant portion of its range;
- Proposed Threatened or Endangered Species: Any species the USFWS has proposed for listing as a federally endangered or threatened species under the ESA;
- Candidate Species: Plant and animal taxa under consideration for possible listing as threatened or endangered under the ESA;
- Delisted Species: Any species in the five years following their delisting;
- BLM Sensitive Species: Native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either: 1) there is information that a species has undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or 2) the species depends on ecological refugia or specialized or unique habitats on BLM administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk (BLM 2008b); and
- State of Nevada Listed Species: State-protected animals that have been determined to meet BLM's Manual 6840 policy definition.

The USFWS, the NDNH, and NDOW were contacted to obtain lists of threatened and endangered and special status species that have the potential to occur within the vicinity of the Project Area (USFWS 2023; NDNH 2023).

In the responses to the 2023 agency data requests, the USFWS reported that one Candidate species, the Monarch butterfly (*Danaus plexippus*) may occur within the Project Area or vicinity. No critical habitats were reported by USFWS in the Project Area (USFWS 2023). The NDNH has records of three BLM sensitive plant species within five miles of the Project Area: Candelaria blazing star (*Mentzelia candelariae*); Eastwood milkweed (*Asclepias eastwoodiana*); and squalid milkvetch (*Astragalus serenoi* var. *sordescens*) (NDNH 2023).

In a data response from the NDOW dated June 28, 2023, NDOW reported that there is no known greater sage-grouse (*Centrocercus urophasianus*) habitat in the vicinity of the Project Area. NDOW also identified that there is occupied bighorn sheep distribution within four miles of the Project Area. NDOW identified 43 known raptor nest sites within ten miles of the proposed Project Area. No wildlife species were reported to have been observed in the Project vicinity (NDOW 2023).

Baseline surveys were conducted in the 2018 Survey Area (Stantec 2019), which includes the proposed Project Area. The results of those surveys that are applied to the proposed Project are described below.

3.6.1.1 BLM Sensitive Species

BLM Sensitive Plant Species

The following six BLM sensitive plant species were identified as having potential habitat within the 2018 Survey Area: Eastwood milkweed; squalid milkvetch; sand cholla (*Grusonia pulchella*); Candelaria blazing star; Tonopah pincushion (*Sclerocactus nyensis*); and Lone Mountain goldenhead (*Tonestus graniticus*). No BLM sensitive plant species were observed in the 2018 Survey Area (Stantec 2019), which included the proposed Project Area.

BLM Sensitive Wildlife Species

The following eight avian and 15 mammalian BLM sensitive wildlife species were identified as having potential habitat in the 2018 Survey Area: golden eagle; burrowing owl; ferruginous hawk; Swainson's hawk; yellow-breasted chat (*Icteria virens*); loggerhead shrike; sage thrasher (*Oreoscoptes montanus*); Brewer's sparrow; pallid bat (*Antrozous pallidus*); Townsend's big-eared bat; big brown bat (*Eptesicus fuscus*); spotted bat (*Euderma maculatum*); sagebrush vole (*Lemiscus curtatus*); dark kangaroo mouse (*Microdipodops megacephalus*); pale kangaroo mouse (*Microdipdops pallidus*); California myotis (*Myotis californicus*); western small-footed myotis (*Myotis ciliolabrum*); long-eared myotis (*Myotis evotis*); fringed myotis (*Myotis thysanodes*); long-legged myotis (*Myotis volans*); Yuma myotis (*Myotis yumaensis*); canyon bat (*Parastrellus hesperus*); and Botta's pocket gopher (*Thomomys bottae*). The following BLM sensitive wildlife species were observed during the 2018 field surveys within the 2018 Survey Area: golden eagle; pale kangaroo mouse; and several bat species were detected through acoustic surveys. An incidental observation of desert milkweed, a host plant for Monarch butterflies, was recorded in the Desert Plain ecological site (Stantec 2019). The Desert Plain ecological site does not occur in the proposed Project Area.

Golden Eagles and Raptors

Aerial and ground surveys were conducted for golden eagles and raptors in June and July 2018 within a four-mile and a two-mile radius of the 2018 Survey Area. Three nests associated with two BLM sensitive avian species were observed: golden eagle and peregrine falcon (Stantec 2019). The closest eagle nest to the proposed Project Area was mapped approximately 3.9 miles northwest of Well Pad 25-19, and approximately 4.8 miles east of Well Pad 26-29.

Pale Kangaroo Mouse

Kangaroo mouse trapping surveys occurred in 2018 and 2019 in the 2018 Survey Area. Two pale kangaroo mice were captured in the 2018 Survey Area; one was confirmed through genetic testing as pale kangaroo mouse (Stantec 2019). The mouse that was confirmed as a pale kangaroo mouse was trapped approximately 13 miles northeast of the proposed Project Area, although potential habitat does occur adjacent to the proposed Project Area.

Bats

Bat acoustic surveys were conducted at two locations in the 2018 Survey Area. One survey was conducted over nine miles northeast of the proposed Project Area, and one survey was conducted approximately 0.04 mile west of Well Pad 26-29 at a rock outcrop. The following bat species were recorded at the rock outcrop: canyon bat; Brazilian free-tailed bat (*Tadarida brasiliensis*); silver-haired bat (*Lasionycteris noctivagans*); and western red bat (*Lasiurus blossevillii*) (Stantec 2019).

3.6.2 Environmental Consequences

Effects Analysis Definitions

Negligible - Special status species would not be affected, or effects would not result in a loss of individuals or habitat.

Minor - Effects to special status species would be measurable or perceptible and local; however, the overall viability of the population or subpopulation would not be affected and without further adverse effects, the population would recover. Effects on special status species, such as the displacement of nests or dens or obstruction of corridors, or loss of foraging and/or nesting habitat, would be detectable. Effects would be minimized with implementation of applicant-committed EPMs and reclamation of the Project.

Moderate - Effects to special status species would be sufficient to cause a change in the population or subpopulation (e.g., abundance, distribution, quantity, or viability) or loss of foraging and/or nesting habitat; however, the effect would remain local. The change would be measurable and perceptible, but the negative effects could be reversed. Mitigation beyond applicant-committed EPMs may be necessary to reduce or rectify adverse effects, but these measures would most likely be effective.

Major - Effects to special status species would be substantial, highly noticeable, and could be permanent in their effect on the population or subpopulation survival without active management. Mitigation beyond the applicant-committed EPMs may be necessary, but these measures would need to be monitored to determine their effectiveness.

Short-term – One year or less for an individual or habitat; five years or less for a population.

Long-term - Greater than one year for an individual or habitat; greater than five years for a population.

Permanent – Effects on special status species or their habitat would be permanent.

Localized - Effects are confined to a small part of the population, habitat, or range.

Regional - Effects would affect a widespread area of suitable habitat or the range of the population or species.

3.6.2.1 Proposed Action

Direct impacts to special status wildlife species in the Project Area would consist of disturbance from human activity and noise; indirect impacts from temporary habitat loss are not anticipated. Mortality to special status wildlife species such as small mammals may occur from the introduction of vehicles and equipment to the area. Collisions with special status wildlife species would be minimized in the Project Area by maintaining speed limits of 25 mph or less during Project activities, as outlined in the EPM in Section 2.1.6. The proposed production wells would include blow-out preventers that are designed to prevent the release of hazardous fluids to the environment, and all fluids would be directed to the reserve pits. Direct impacts to special status wildlife species are expected to be negligible, long-term, and localized.

If the exploration Project is not successful, the existing well pads would be reclaimed and revegetated, returning the area back to special status wildlife species use. No noxious weed species were identified in the Project Area; however, the following invasive and non-native plant species were observed: flixweed; hoary tansyaster; and Russian thistle. These invasive, non-native species reduce the quality of habitat for special status wildlife species. Project-related activities increase the potential for the spread of these invasive, non-native species. Baseload Power has committed to the EPM outlined in Section 2.1.6, outlining compliance with the Noxious Weed Monitoring and Control Plan prepared for the Project.

3.6.2.2 No Action Alternative

Under the No Action Alternative, the GDPs submitted by Baseload Power for the Project would not be approved. There would be no Project activities occurring in the Project Area that would produce noise, human presence, and vehicles that could result in collisions and/or mortalities; therefore, no impacts to special status wildlife species would occur.

3.7 Wildlife

3.7.1 Affected Environment

In a response letter provided on May 23, 2018, NDOW indicated the following general wildlife species have been observed in the vicinity of the Project Area: American robin (*Turdus migratorius*); black-throated gray warbler (*Dendroica nigrescens*); blue-gray gnatcatcher (*Polioptila caerulea*); bushtit (*Psaltriparus minimus*); coachwhip (*Masticophis flagellum*); common raven; common side-blotched lizard (*Uta stansburiana*); desert kangaroo rat (*Dipodomys deserti*); desert spiny lizard (*Sceloporus magister*); flycatcher (*Tyrannidae* sp.); fox sparrow (*Passerella iliaca*); gophersnake (*Pituophis catenifer*); Great Basin fence lizard (*Sceloporus occidentalis longipes*); green-tailed towhee (*Pipilo chlorurus*); lazuli bunting (*Passerina amoena*); MacGillivray's warbler (*Oporornis tolmiei*); Merriam's kangaroo rat (*Dipodomys merriami*); northern desert horned lizard; Oregon junco (*Junco hyemalis oreganus*); pine siskin (*Spinus pinus*); rattlesnake (*Crotalinae* sp.); ruby-crowned kinglet (*Regulus calendula*); southern grasshopper mouse (*Onychomys torridus*); spotted towhee (*Pipilo maculatus*); tiger whiptail (*Aspidoscelis tigris*); Townsend's solitaire (*Myadestes townsendi*); warbling vireo (*Vireo gilvus*); western fence lizard (*Sceloporus occidentalis*); western tanager (*Piranga ludoviciana*); Wilson's warbler (*Muscicapa pusilla*); yellow-backed spiny lizard (*Sceloporus uniformis*); yellow-rumped warbler (*Setophaga coronata*); and zebra-tailed lizard (*Callisaurus draconoides*). An updated data response was received from the NDOW for the proposed Project dated June 28, 2023. No wildlife species were reported to have been observed in the Project vicinity. NDOW reported that no known occupied elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), or pronghorn antelope (*Antilocapra americana*) distribution occurs within a four-mile radius of the Project Area (NDOW 2023).

General wildlife field surveys were conducted in the 2018 Survey Area (Stantec 2019), which included the proposed Project Area. A total of eleven mammal species were detected through direct observation or by sign (e.g., calls, tracks, scat, pellets, or other sign) in the 2018 Survey Area: black-tailed jackrabbit (*Lepus californicus*); chisel-toothed kangaroo rat (*Dipodomys microps*); desert kangaroo rat; desert woodrat (*Neotoma lepida*); little pocket mouse (*Perognathus longimembris*); Merriam's kangaroo rat; northern grasshopper mouse (*Onychomys leucogaster*); Ord's kangaroo rat (*Dipodomys ordii*); and white-tailed antelope ground squirrel (*Ammospermophilus leucurus*). Cattle (*Bos taurus*) and wild horse (*Equus ferus caballus*) were also observed. The following four reptile species were also observed: gopher snake (*Pituophis catenifer*); side-blotched lizard (*Uta* sp.); western fence lizard; and zebra-tailed lizard. Although these were the only species observed during the field surveys, potential habitat is present for other wildlife species as well.

3.7.2 Environmental Consequences

Effects Analysis Definitions

Negligible – Wildlife species would not be affected, or effects would not result in a loss of individuals or habitat.

Minor - Effects on wildlife would be measurable or perceptible and local; however, the overall viability of the population or subpopulation would not be affected and without further adverse effects the population would recover. Effects on wildlife, such as displacement of dens or obstruction of corridors or loss of

foraging habitat, would be detectable. Effects would be minimized with implementation of applicant-committed EPMs and reclamation of the Project.

Moderate – Effects would be sufficient to cause a change in the population or subpopulation (e.g., abundance, distribution, quantity, or viability) or loss of foraging habitat; however, the effect would remain local. The change would be measurable and perceptible, but the negative effects could be reversed. Mitigation beyond applicant-committed EPMs may be necessary to reduce or rectify adverse effects, but these measures would most likely be effective.

Major – Effects would be substantial, highly noticeable, and could be permanent in their effect on a population or subpopulation survival without active management. Mitigation beyond applicant-committed EPMs may be necessary, but these measures would need to be monitored to determine their effectiveness.

Short-term – One year or less for an individual or habitat; five years or less for a population.

Long-term – Greater than one year for an individual or habitat; greater than five years for a population.

Permanent – Effects on wildlife habitat would be permanent.

Localized – Effects are confined to a small part of the population, habitat, or range.

Regional – Effects would affect a widespread area of suitable habitat or the range of a population or species.

3.7.2.1 Proposed Action

Direct impacts to wildlife species in the Project Area would consist of disturbance from human activity and noise; indirect impacts from temporary habitat loss are not anticipated. Mortality to wildlife species such as small mammals and reptiles may occur from the introduction of vehicles and equipment to the area. Collisions with wildlife species would be minimized in the Project Area by maintaining speed limits of 25 mph or less during Project activities, as outlined in the EPM in Section 2.1.6. The proposed production wells would include blow-out preventers that are designed to prevent the release of hazardous fluids to the environment, and all fluids would be directed to the reserve pits. Direct impacts to wildlife species are expected to be negligible, long-term, and localized.

If the exploration Project is not successful, the existing well pads would be reclaimed and revegetated, returning the area back to wildlife species use. No noxious weed species were identified in the Project Area; however, the following invasive and non-native plant species were observed: flixweed; hoary tansyaster; and Russian thistle. These invasive, non-native species reduce the quality of habitat for wildlife species. Project-related activities increase the potential for the spread of these invasive, non-native species. Baseload Power has committed to the EPM outlined in Section 2.1.6, outlining compliance with the Noxious Weed Monitoring and Control Plan prepared for the Project.

3.7.2.2 No Action Alternative

Under the No Action Alternative, the GDPs submitted by Baseload Power for the Project would not be approved. There would be no Project activities occurring in the Project Area that would produce noise, human presence, and vehicles that could result in collisions and/or mortalities; therefore, no impacts to wildlife species would occur.

4 CUMULATIVE IMPACT ANALYSIS

4.1 Introduction

For the purpose of this EA, the cumulative impacts are the sum of all past, present, and RFFAs resulting primarily from mineral exploration and public uses. The purpose of the cumulative analysis in the EA is to evaluate the Proposed Action's and No Action Alternative's incremental contributions to the cumulative environment within the Cumulative Effects Study Area (CESA) identified. A cumulative impact is defined as follows:

> "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (BLM 2008a).

These cumulative impacts include both direct and indirect actions occurring as a result of Project activities and how they affect the resources of concern. The significance of impacts should be determined based on context (i.e., the setting of the Project) and intensity. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Intensity refers to the severity of the impact. Factors that may be used to define the intensity of effects include the magnitude (relative size or amount of an effect), geographic extent, duration, and frequency of the effects.

For the purposes of this analysis, 'impacts' and 'effects' are assumed to have the same meaning and are interchangeable. The cumulative impacts analysis was accomplished through the following three steps:

Step 1: Identify, describe, and map CESAs for each resource evaluated in this chapter.

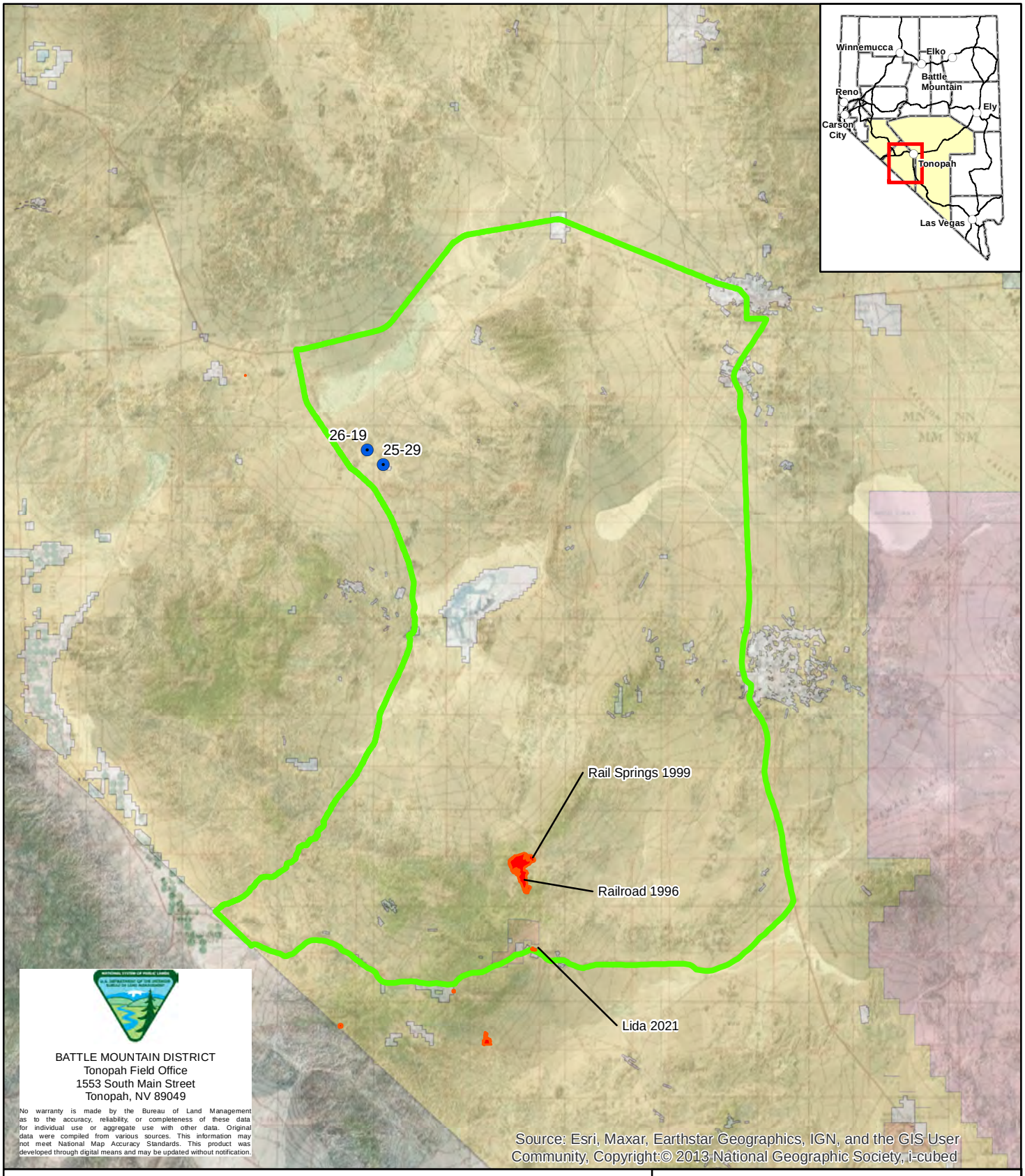
Step 2: Define timeframes, scenarios, and acreage estimates for cumulative impact analysis.

Step 3: Identify and quantify the location of possible specific impacts from the Proposed Action and judge the significance of these contributions to the overall impacts.

4.2 Cumulative Effects Study Area

Environmental consequences of the Proposed Action and No Action Alternative were previously evaluated in Chapter 3 for the various environmental resources. Discussed in the following sections are the resources with the potential to be cumulatively impacted by the Proposed Action within the identified CESA. The discussions are based upon the previous analysis of each environmental resource. The following six elements or resources have been brought forward for cumulative impact analysis: Migratory Birds; Noxious Weeds, Invasive and Non-native Species; Recreation; Special Status Species; Visual Resources; and Wildlife (General).

The CESA for analyzing cumulative impacts to Migratory Birds, Noxious Weeds, Invasive and Non-native Species, Recreation, Special Status Species, Wildlife (General), and Visual Resources is NDOW hunt unit 212, modifying it with US 95 as the eastern border and SR 266 as the southern border (Figure 4.2.1). The CESA encompasses approximately 778,014 acres.



BATTLE MOUNTAIN DISTRICT
Tonopah Field Office
1553 South Main Street
Tonopah, NV 89049

Explanation

- Well Site (2)
- Project CESA (778,014 acres)
- Wildland Fires

Land Status

- Bureau of Indian Affairs
- Bureau of Land Management
- Department of Defense
- Department of Energy
- Forest Service
- Nevada State
- Private

0 5 10 Miles

N

BUREAU OF LAND MANAGEMENT

WEEPAH HILLS GEOTHERMAL EXPLORATION PROJECT
Cumulative Effects Study Area
and Wildland Fires

Figure 4.2.1

05/31/2023

4.2.1 Past, Present, and Reasonably Foreseeable Future Actions

4.2.1.1 Past and Present Actions

Past and present actions in the CESA include the following: wild horse and burro usage; livestock grazing; wildland fires; dispersed recreation; ROW construction and maintenance; and mineral exploration and mining.

Wild Horse and Burro Usage

The Project CESA encompasses or intersects the Paymaster and Montezuma HMAs, and a small portion of the Palmetto HMA.

Livestock Grazing

The Project CESA encompasses or intersects portions of the following grazing allotments: Monte Cristo; Montezuma; Silver King; Sheep Mountain; Yellow Hills; Silver Peak; and Magruder Mountain.

Wildland Fires

Between 1996 and 2021, there were approximately 1,303 acres of wildland fire disturbance in the CESA.

Dispersed Recreation

Historical and present recreational activities that have occurred and are occurring within the CESA include primarily dispersed recreation activities such as the following: hunting; hiking; OHV riding; photography; picnicking; and dispersed camping. The CESA is comprised of a portion of NDOW Hunt Unit 212. Hunting of pronghorn antelope, desert bighorn sheep, and mule deer, occurs in this hunt unit (NDOW 2022), as well as hunting of small mammals and upland and migratory game birds. There are several OHV event routes that use the main on-lease access road leading to the Project, and also throughout the CESA, which include the Zero 1 Off-Road Odyssey Tours, Best in the Desert "Vegas to Reno" Race Event, and the Legacy Baja Nevada route.

Rights-of-Way

The BLM's Legacy Rehost 2000 System (LR2000) database was used to query the various types of ROWs that have been authorized or constructed within the CESA by Section, Township, and Range, and includes the following: roads and highways; power transmission facilities; communication sites; telecommunications; and irrigation and water facilities. The exact acreage of surface disturbance associated with these ROWs cannot be quantified; however, it is assumed that these types of ROWs and the construction and maintenance associated with these facilities would create a level of surface disturbance that would contribute to cumulative impacts to various resources. The LR2000 database was queried on May 21, 2023, for the CESA. Any newly approved ROWs that have been added to the LR2000 database after this date are not included in the analysis. The approximate total acreages of existing and approved ROWs within the CESA are listed in Table 4.2-1.

Table 4.2-1: Past and Present Rights-of-Way Action Acreages in the CESA

ROW Type	CESA acres
Roads and Highways	11,164
Power Transmission	5,358
Communication Sites	12
Telecommunications	971
Irrigation/Water Facilities	249
Total	**17,754**

Source: BLM 2023a

Mineral Exploration and Mining

The LR2000 database was queried by Section, Township, and Range to show the past and present mineral exploration or mining activities (i.e., authorized and expired Notices, authorized plans of operation, and mineral material disposal sites) that have been issued within the CESA. Past and present mineral exploration and mining activities in the CESA include historic and current mineral exploration and mining operations. Table 4.2-2 shows the results of the LR2000 query, in acres, of the exploration and mining activities within the CESA. The LR2000 database was queried on May 21, 2023, for the CESA. Any newly authorized Notices or plans of operation added to the LR2000 database after this date are not included in the analysis.

Table 4.2-2: Past and Present Minerals Action Acreages in the CESA

Authorization Status	CESA acres
Authorized and Expired Notices	103
Authorized Plans of Operations	4,275
Mineral Material Disposal Sites	2,323
Total	**6,701**

Source: BLM 2023a

Geothermal Exploration

There are approximately two acres of authorized geophysical exploration actions associated with geothermal leases in the CESA (BLM 2023b).

4.2.1.2 Reasonably Foreseeable Future Actions

RFFAs in the CESA include wild horse and burro usage, livestock grazing, ROW construction and maintenance, mineral exploration and mining, geothermal exploration, dispersed recreation, and potential wildland fires.

4.3 Evaluation of Potential Cumulative Impacts

4.3.1 Migratory Birds

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting migratory birds and their habitat include wild horse and burro usage, livestock grazing, wildland fires, dispersed recreation, ROW construction and maintenance, mineral exploration and mining, and geothermal exploration. Impacts to migratory birds and their habitat may have resulted from the following: 1) indirect

impacts from the destruction of habitat associated with building roads and clearing vegetation; 2) indirect impacts from the disruption from human presence or noise from drill rigs, water trucks, 4WD pickups, and other equipment and vehicles; and 3) direct impacts or harm to migratory birds that result from the removal of trees and shrubs containing viable nests or ground nests destroyed by construction or ranching equipment. There are no specific data that quantify impacts to migratory birds and their habitat because of wild horse and burro usage, livestock grazing, or dispersed recreation. Impacts to migratory birds from livestock grazing and wild horse and burro usage include trampling of vegetation or nesting areas near streams, springs, or riparian areas within the CESA. Impacts to migratory birds and their habitat from recreation activities include destruction of native vegetation or nesting areas from OHV that traveled off of established roadways.

Wildland fires (1996 to 2021) have burned approximately 1,303 acres in the CESA. Authorized and expired mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 6,701 acres (approximately 0.9 percent of the CESA) of surface disturbance. Approximately 17,754 acres of ROWs were issued within the CESA that had the potential to create surface disturbance and disturb migratory bird habitat and vegetation. There are approximately two acres of surface disturbance in the CESA associated with geothermal exploration activities. The CESA is also mainly comprised of NDOW Hunt Unit 212, which has the potential to create noise and disturbance to migratory birds or remove or alter habitat.

Seven grazing allotments intersect with the CESA, and portions of three HMAs are encompassed within or intersect with the CESA. Wild horse and burro usage, livestock grazing, and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on migratory birds and their habitat. However, disturbance to migratory birds from past and present actions would have been reduced through reclamation and seeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed approximately 25,758 acres, or 3.3 percent of the CESA. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, become naturally stabilized, or have naturally revegetated over time.

RFFAs: Potential impacts to migratory birds and their habitat from wild horse and burro usage, livestock grazing, ROW construction and maintenance, mineral exploration and mining activities, dispersed recreation, or loss of native vegetation associated with potential wildland fires could occur. There are no specific data to quantify impacts to migratory birds or their habitat within the CESA because of dispersed recreation, livestock grazing, wild horse and burro usage, or potential wildland fires. There are approximately 20,503 acres of pending ROW projects reported in LR2000 in the CESA. There are approximately 32,402 acres of pending minerals projects. There is one pending geothermal project totaling 0.005 acre of surface disturbance. All pending minerals, ROW, and geothermal projects are required to incorporate protection measures for migratory birds to ensure compliance with the MBTA and help minimize potential impacts.

4.3.1.1 Proposed Action

Due to the Proposed Action resulting in no new surface disturbance, there would be no incremental cumulative impact to the temporary removal of nesting and/or foraging habitat. The Project would create additional noise, dust, and other human-related effects from the addition of vehicles and equipment to the area. However, based on the total surface disturbance of the past and present actions shown in Tables 4.2-1 and 4.2-2, and RFFAs in the CESA, it can be assumed that there would be more vehicles and equipment and other human-related effects related to those actions in the CESA than those associated with the proposed Project. Therefore, based on the above analysis and findings, incremental impacts to migratory birds and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minor.

4.3.1.2 No Action Alternative

Under the No Action Alternative, geothermal exploration activities would not occur, and associated impacts to migratory birds would also not occur. Therefore, there would be no cumulative impacts to migratory birds associated with the No Action Alternative.

4.3.2 Noxious Weeds, Invasive and Non-native Species

Past and Present Actions: Past and present actions with impacts to noxious weeds, invasive and non-native species could have included and may currently include wild horse and burro usage, livestock grazing, wildland fires, dispersed recreation, ROW construction and maintenance, mineral exploration and mining, and geothermal exploration. These actions could have disturbed vegetation and soils creating an opportunity for invasive plant colonization and the introduction of noxious weed, invasive or non-native species seeds. There are no specific data to quantify impacts from noxious weeds, invasive and non-native species that resulted from wild horse and burro usage, livestock grazing, or dispersed recreation.

Wildland fires (1996 to 2021) have burned approximately 1,303 acres in the CESA. Authorized mineral exploration and mining Notices and plans of operation total approximately 6,701 acres (approximately 0.9 percent of the CESA) of surface disturbance. Approximately 17,754 acres of ROWs were issued within the CESA that had the potential to create surface disturbance and introduce noxious weeds, invasive and non-native species. The past and present actions that are quantifiable have disturbed approximately 25,758 acres, or 3.3 percent of the CESA. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, become naturally stabilized, or have naturally revegetated over time.

RFFAs: Potential impacts to noxious weeds, invasive and non-native species from wild horse and burro usage, livestock grazing, ROW construction and maintenance, mineral exploration and mining activities, geothermal exploration activities, dispersed recreation, or potential wildland fires could continue. There are no specific data to quantify impacts because of dispersed recreation, livestock grazing, wild horse and burro usage, or potential wildland fires. There are approximately 20,503 acres of pending ROW projects reported in LR2000 in the CESA. There are approximately 32,402 acres of pending minerals projects. There is one pending geothermal project totaling 0.005 acre of surface disturbance. Compliance with federal and state requirements for noxious weed management and abatement would help minimize cumulative impacts from noxious weeds.

4.3.2.1 Proposed Action

Due to the Proposed Action resulting in no new surface disturbance, there would be no incremental cumulative impacts to noxious weeds, invasive and non-native species resulting from opportunities for spread of noxious weeds and weed seeds from surface disturbance. The Project would bring additional vehicles and equipment to the area which may result in increased opportunities for the spread of noxious weeds and weed seeds. However, based on the total surface disturbance of the past and present actions shown in Tables 4.2-1 and 4.2-2, and RFFAs in the CESA, it can be assumed that there would be more vehicles and equipment brought to the CESA related to those actions in the CESA than those associated with the proposed Project. Therefore, based on the above analysis and findings, incremental impacts to noxious weeds, invasive and non-native species as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minor.

4.3.2.2 No Action Alternative

Under the No Action Alternative, geothermal exploration activities would not occur, and associated impacts to noxious weeds, invasive and non-native species would also not occur. Therefore, there would be no cumulative impacts to noxious weeds, invasive, and non-native species associated with the No Action Alternative.

4.3.3 Recreation

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting recreation include wildland fires, ROW construction and maintenance, mineral exploration and mining, and geothermal exploration activities. Impacts to recreation from these activities may have resulted from the following: 1) restrictions on access to recreational areas; 2) noise; 3) alterations to visual characteristics and impacts to night skies; and 4) loss or displacement of wildlife.

Wildland fires (1996 to 2021) have burned approximately 1,303 acres in the CESA. Authorized mineral exploration and mining Notices and plans of operation total approximately 6,701 acres (approximately 0.9 percent of the CESA) of surface disturbance. Approximately 17,754 acres of ROWs were issued within the CESA that had the potential to create surface disturbance and introduce noxious weeds, invasive and non-native species. The past and present actions that are quantifiable have disturbed approximately 25,758 acres, or 3.3 percent of the CESA.

RFFAs: Potential impacts to recreation from ROW construction and maintenance, mineral exploration and mining, geothermal activities, and potential wildland fires are expected to continue. There are no specific data to quantify impacts to recreation within the CESA from potential wildland fires. There are approximately 20,503 acres of pending ROW projects reported in LR2000 in the CESA. There are approximately 32,402 acres of pending minerals projects. There is one pending geothermal project totaling 0.005 acre of surface disturbance. These projects would create surface disturbance and potentially cause access, noise, and visual impacts to recreation.

4.3.3.1 Proposed Action

The Project would bring additional vehicles and equipment to the area, which may result in increased opportunities for impacts to recreation access, noise, and visual impacts. However, based on the total surface disturbance of the past and present actions shown in Tables 4.2-1 and 4.2-2, and RFFAs in the Wildlife CESA, it can be assumed that there would be more vehicles and equipment brought to the CESA related to those actions in the Wildlife CESA than those associated with the proposed Project. Therefore, based on the above analysis and findings, incremental impacts to recreation as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minor.

4.3.3.2 No Action Alternative

Under the No Action Alternative, geothermal exploration activities would not occur, and associated impacts to recreation would also not occur. Therefore, there would be no cumulative impacts to recreation associated with the No Action Alternative.

4.3.4 Special Status Species

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting special status wildlife species and their habitat include wild horse and burro usage, livestock grazing, wildland fires, dispersed recreation, ROW construction and maintenance, mineral exploration and mining, and geothermal exploration. These activities have the potential to impact water resources and special status

wildlife species habitat or result in direct impacts to individuals in travel routes, or loss of forage, cover, and habitat, as well as disturbance of mating and brood rearing practices.

Wildland fires (1996 to 2021) have burned approximately 1,303 acres in the CESA. Authorized and expired mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 6,701 acres (approximately 0.9 percent of the CESA) of surface disturbance. Approximately 17,754 acres of ROWs were issued within the CESA that had the potential to create surface disturbance and disturb special status wildlife species and their habitat and vegetation. As the CESA is mainly comprised of NDOW Hunt Unit 212, hunting activities have the potential to create noise and disturbance to special status wildlife species or remove or alter habitat. Seven grazing allotments intersect with the CESA, and portions of three HMAs are encompassed within or intersect with the CESA. Wild horse and burro usage, livestock grazing, and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on special status wildlife species and their habitat. However, disturbance to special status wildlife species and their habitat from past and present actions would have been reduced through reclamation and reseeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed approximately 25,758 acres, or 3.3 percent of the CESA. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, become naturally stabilized, or have naturally revegetated over time.

RFFAs: Potential impacts to special status wildlife species and their habitat from wild horse and burro usage, livestock grazing, ROW construction and maintenance, mineral exploration and mining, geothermal exploration, dispersed recreation, or loss of native vegetation associated with potential wildland fires could continue. There are no specific data to quantify impacts to special status wildlife species or their habitat within the CESA because of dispersed recreation, wild horse and burro usage, livestock grazing, or potential wildland fires. There are approximately 20,503 acres of pending ROW projects reported in LR2000 in the CESA. There are approximately 32,402 acres of pending minerals projects. There is one pending geothermal project totaling 0.005 acre of surface disturbance.

4.3.4.1 Proposed Action

Due to the Proposed Action resulting in no new surface disturbance, there would be no incremental cumulative impact to the temporary removal of breeding and/or foraging habitat. The Project would create additional noise, dust, and other human-related effects from the addition of vehicles and equipment to the area. However, based on the total surface disturbance of the past and present actions shown in Tables 4.2-1 and 4.2-2, and RFFAs in the CESA, it can be assumed that there would be more vehicles and equipment and other human-related effects related to those actions in the CESA than those associated with the proposed Project. Therefore, based on the above analysis and findings, incremental impacts to special status wildlife species and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minor.

4.3.4.2 No Action Alternative

Under the No Action Alternative, geothermal exploration activities would not occur, and associated impacts to special status wildlife species would also not occur. Therefore, there would be no cumulative impacts to special status wildlife species associated with the No Action Alternative.

4.3.5 Visual Resources

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting visual resources primarily include ROW construction and maintenance, mineral exploration and mining, and geothermal exploration activities. Geothermal, other fluid and hard rock mineral exploration cause

short-term impacts to visual resources from drill rigs, construction equipment and facilities, while transmission lines, communication sites, and mining facilities tend to cause more permanent impacts to visual resources.

RFFAs: RFFAs in the CESA include ROW construction and maintenance, solar energy development projects, lithium mines, and mineral and geothermal exploration. Continued short-term impacts to visual resources from drill rigs, construction equipment and facilities could occur. Long-term impacts to visual resources from lithium mining facilities could continue to occur.

4.3.5.1 Proposed Action

The Project would bring additional vehicles and equipment to the area which may result in increased opportunities for impacts to visual resources. However, based on the total surface disturbance of the past and present actions shown in Tables 4.2-1 and 4.2-2, and RFFAs in the CESA, and the known projects that exist in the CESA (i.e., Silver Peak Lithium Mine), it can be assumed that there would be more vehicles and equipment brought to the CESA related to those actions in the CESA than those associated with the proposed Project. Therefore, based on the above analysis and findings, incremental impacts to visual resources as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minor.

4.3.5.2 No Action Alternative

Under the No Action Alternative, geothermal exploration activities would not occur, and associated impacts to visual resources would also not occur. Therefore, there would be no cumulative impacts to visual resources associated with the No Action Alternative.

4.3.6 Wildlife

Past and Present Actions: Past and present actions that could have impacted and may be currently impacting wildlife species and their habitat include wild horse and burro usage, livestock grazing, wildland fires, dispersed recreation, ROW construction and maintenance, mineral exploration and mining, and geothermal exploration. These activities have the potential to impact water resources and wildlife species habitat or result in direct impacts to individuals in travel routes, or loss of forage, cover, and habitat, as well as disturbance of mating and brood rearing practices.

Wildland fires (1996 to 2021) have burned approximately 1,303 acres in the CESA. Authorized and expired mineral exploration and mining Notices and plans of operation, as well as mineral material disposal sites, total approximately 6,701 acres (approximately 0.9 percent of the CESA) of surface disturbance. Approximately 17,754 acres of ROWs were issued within the CESA that had the potential to create surface disturbance and disturb wildlife species and their habitat and vegetation. As the CESA is mainly comprised of NDOW Hunt Unit 212, hunting activities have the potential to create noise and disturbance to wildlife species or remove or alter habitat. Seven grazing allotments intersect with the CESA, and portions of three HMAs are encompassed within or intersect with the CESA. Wild horse and burro usage, livestock grazing, and associated management could have contributed to the establishment and spread of noxious weeds, invasive and non-native species, which could have had an indirect effect on wildlife species and their habitat. However, disturbance to wildlife species and their habitat from past and present actions would have been reduced through reclamation and reseeding of disturbed areas and natural recolonization of native species. The past and present actions that are quantifiable have disturbed approximately 25,758 acres, or 3.3 percent of the CESA. There are no data on the number of acres reclaimed. State and federal regulations require reclamation; therefore, it is reasonable to assume that some areas have been reclaimed, become naturally stabilized, or have naturally revegetated over time.

RFFAs: Potential impacts to wildlife species and their habitat from wild horse and burro usage, livestock grazing, ROW construction and maintenance, mineral exploration and mining, geothermal exploration, dispersed recreation, or loss of native vegetation associated with potential wildland fires could continue. There are no specific data to quantify impacts to wildlife species or their habitat within the CESA because of dispersed recreation, wild horse and burro usage, livestock grazing, or potential wildland fires. There are approximately 20,503 acres of pending ROW projects reported in LR2000 in the CESA. There are approximately 32,402 acres of pending minerals projects. There is one pending geothermal project totaling 0.005 acre of surface disturbance.

4.3.6.1 Proposed Action

Due to the Proposed Action resulting in no new surface disturbance, there would be no incremental cumulative impact to the temporary removal of breeding and/or foraging habitat. The Project would create additional noise, dust, and other human-related effects from the addition of vehicles and equipment to the area. However, based on the total surface disturbance of the past and present actions shown in Tables 4.2-1 and 4.2-2, and RFFAs in the CESA, it can be assumed that there would be more vehicles and equipment and other human-related effects related to those actions in the CESA than those associated with the proposed Project. Therefore, based on the above analysis and findings, incremental impacts to wildlife species and their habitat as a result of the Proposed Action, when combined with the impacts from the past and present actions and RFFAs, are expected to be minor.

4.3.6.2 No Action Alternative

Under the No Action Alternative, geothermal exploration activities would not occur, and associated impacts to wildlife species would also not occur. Therefore, there would be no cumulative impacts to wildlife species associated with the No Action Alternative.

5 CONSULTATION AND COORDINATION

This EA was prepared at the direction of the BLM TFO, Battle Mountain District, Nevada, by WestLand, under a contract with Baseload Power. The following is a list of persons, groups, and agencies consulted, as well as a list of individuals responsible for the preparation of this EA.

5.1 Native American Consultation

The BLM TFO initiated government-to-government consultation with the Duck Valley Reservation, the Timbisha Shoshone Tribe, the Yomba Shoshone Tribe, and the Duckwater Shoshone Tribe for the Project on July 5, 2023. Consultation is ongoing and would continue throughout the life of the Project. See Section 3.3.

5.2 Environmental Justice Outreach

The BLM drafted an EJ outreach plan aimed at informing identified EJ communities of Project details and opportunities for meaningful engagement and participation. Project-specific informational bulletins were drafted that included multiple methods for communities to access Project details and provide comments. Details of this outreach plan are available at the Project's National NEPA Register webpage.

5.3 Persons, Groups, and Agencies Consulted

Federal Agencies

USFWS

State Agencies

NDNH, NDOW

5.4 List of Preparers and Reviewers

BLM

Jeff Kirkwood	Planning and Environmental Coordinator; Project Manager
Perry Wickham	Native American Coordinator
Brandon Crosby	Migratory Birds; Special Status Species; General Wildlife
David Dick	Cultural Resources; Paleontological Resources
Matthew Fockler	Environmental Justice; Socioeconomics
Daltrey Balmer	Recreation; Visual Resources; Wilderness; Lands with Wilderness Characteristics
Thomas Mendoza	Rangeland Management; Vegetation; Soils; Noxious Weeds, Invasive and Non-native Species
Tom Gibbons	Surface and Groundwater Resources; Floodplains; Wetland and Riparian Zones
Frank Giles	Air Quality; Climate Change
Brianna Brodowski	Wild Horses and Burros
Melissa Jennings	Geology and Mineral Resources
Jensen Reese	Wastes, Hazardous and Solid

WestLand Engineering & Environmental Services

Catherine Lee	EA Manager, Document Preparation
Jim Branch	GIS Data Management and Figure Production
Danielle Felling	Cultural Resources
Ellen Farley	Editorial Review

6 REFERENCES

Bureau of Land Management (BLM). 1992. *Integrated Weed Management*. BLM Manual 9015.

_____. 1997. *Approved Tonopah Resource Management Plan and Record of Decision*. Tonopah Field Station, Tonopah, Nevada. October 1997.

_____. 2007. *Standard Operating Procedures from the Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States PEIS and ROD*. Proposed for use in the Vegetation Treatments Using Herbicides on BLM Lands in Oregon EIS. https://www.blm.gov/or/plans/vegtreatmentseis/files/StandardOperatingProcedures.pdf.

_____. 2008a. *BLM NEPA Handbook H-1790-1*.

_____. 2008b. *Special Status Species Management*. BLM Manual Handbook 6840.

_____. 2023a. Land & Mineral System Reports. https://reports.blm.gov/reports/LR2000. Accessed May 21, 2023.

_____. 2023b. Mineral & Land Records System. https://reports.blm.gov/reports/MLRS/. Accessed May 21, 2023.

Esmeralda County. 2013. 2013 Esmeralda County Public Lands Policy Plan. http://cms2.revize.com/revize/esmeraldanew/document_center/Es__Co__Public_Land_Policy_Plan_2013.pdf.

Hefner, M. and H. Kratsch. 2018. *Nevada Nuisance Weed Field Guide*. University of Nevada Cooperative Extension. U.S. Department of Agriculture, National Invasive Species Information Center, Nevada. Available online at https://www.invasivespeciesinfo.gov/us/Nevada.

Nevada Department of Wildlife (NDOW). 2022. *2021-2022 Big Game Status*. https://www.ndow.org/wp-content/uploads/2022/07/2021-2022-Big-Game-Status-Book.pdf. Accessed April 11, 2023.

_____. 2023. Weepah Hills Project Standard Data Response. June 28, 2023.

Nevada Division of Environmental Protection (NDEP). 2022. *Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 1990 – 2042*. https://ndep.nv.gov/uploads/air-pollutants-docs/ghg_report_2022.pdf. Accessed April 2023.

Nevada Division of Natural Heritage (NDNH). 2023. Data Response Letter. March 3, 2023.

Richey, Shaun, and Barbi Harmon. 2019. *Cultural Resource Studies for the Alum Geothermal Project*. BLM Report No. CRR 6-3262.

Stantec Consulting Services, Inc. [Stantec]. 2019. *Alum Geothermal Development Project Biological Baseline Report*. October 23, 2019.

United States Department of the Interior and United States Department of Agriculture (DOI and USDA). 2007. *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development*. BLM/WO/ST-06/021+3071/REV 07. Bureau of Land Management. Denver, Colorado. 84 pp.

United States Environmental Protection Agency (EPA). 2023a. Greenhouse Gas Equivalencies Calculator. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator. Accessed April 4, 2023.

_____. 2023b. *Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021*. https://www.epa.gov/ghgemissions/draft-inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021. Accessed April 2023.

United States Fish and Wildlife Service (USFWS). 2023. List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project. March 2, 2023.

Western Paleo Associates, Inc. 2018. *Paleontological Resource Baseline Technical Report, Alum Geothermal Development Project, Esmeralda County, Nevada*. December 2018.

APPENDIX A

EMISSIONS INVENTORY