

Finding of No Significant Impact

Glass Buttes Geothermal Exploration EA

DOI-BLM-OR-P040-2011-0021-EA

US Department of the Interior, Bureau of Land Management

Prineville Field Office and Burns District Office, Oregon

Introduction

The Bureau of Land Management (BLM) has completed an Environmental Assessment (EA) entitled Glass Buttes Geothermal Exploration DOI-BLM-OR-P040-2011-0021-EA. This EA was completed in response to operations plans, drilling programs, and geothermal drilling permit applications submitted to the BLM by Ormat Nevada Inc. ("Proponent") in September 2010. The BLM analyzed three alternatives in the EA including the proponent proposed action, briefly described below, one that responded to issues raised during scoping regarding sage-grouse and other wildlife, and a no action alternative.

Located approximately 70 miles southeast of Bend, Oregon and 50 miles northwest of Burns, Oregon, the proposed Projects would involve the maintenance and temporary construction of access roads, construction of two quarries, and drilling, testing, and monitoring of up to 13 geothermal exploratory wells on public lands administered by the Bureau of Land Management (BLM) and up to 3 geothermal exploratory wells on private lands located near Glass Buttes, Oregon. The objective of the proposed Projects is to evaluate the potential for the geothermal resources in the Glass Buttes area.

The Council on Environmental Quality (CEQ) regulations state that the significance of impacts must be determined in terms of both context and intensity (40 CFR 1508.27).

Context

Given that the physical effects of the projects would be limited to the local geographic area, many of the design features of the projects are common to both action alternatives, and the Habitat Mitigation Plan includes direction on improving at least twice as much sage-grouse habitat as the projects would disturb, I find that the EA has not identified any direct, indirect, or cumulative effects of sufficient size or duration to be significant at the local, regional, or national level.

Intensity

I have considered the potential intensity and severity of the impacts anticipated from implementation of a Decision on this EA relative to each of the ten areas suggested for consideration by the CEQ. With regard to each:

1. Would any of the alternatives have significant beneficial or adverse impacts (40 CFR 1508.27(b)(1))? No.

Rationale: The action alternatives would impact resources as described in Chapter 3 and Appendix A of the EA. Impacts identified in the EA include possible impacts to recreation (EA, p. 3-6), biological resources (EA, p. 3-17), visual resources (EA, p. 3-37), cultural resources and traditional practices (EA, p. 3-48), wilderness characteristics (EA, p. 3-50), public safety (EA, p. 3-51), wetlands (EA, p. 3-52), biological soil crust (A-3), and groundwater and water rights (EA, p.3-55). The design features of the projects were incorporated in the design of the action alternatives to reduce potential adverse impacts to these resources and to ensure that the effects do not rise to a level considered significant. None of the environmental effects analyzed and discussed in detail in the EA are considered significant due to the design features of the projects.

2. Would any of the alternatives have significant adverse impacts on public health and safety (40 CFR 1508.27(b)(2))? No.

Rationale: The EA identifies two potential impacts that the proposed projects could have on public health and safety – release of solids and natural gas during drilling and remaining in the reserve pits after liquids were evaporated (EA, p. 3-51). With respect to the release of natural gas, the Hazardous Gas Contingency Plan (EA, p. 2-41), which includes Lower Explosion Limit monitoring, minimizes the risk to worker safety from the presence of natural gas. Solids remaining in reserve pits, which typically consist of non-hazardous, non-toxic drilling mud and rock cuttings, would be sampled for pH, metals, and total petroleum hydrocarbons for confirmation of non-toxicity and non-hazardousness. The non-hazardous solids would then be mixed with the excavated rock and soil and buried by backfilling the reserve pit. If the material is determined to be hazardous per The Gold Book, then the material would be removed from the site with post-removal site testing to confirm that all hazardous material was removed. Therefore, the risk of the projects exposing the public to any hazardous and/or toxic chemicals would be minimal.

3. Would any of the alternatives have significant adverse impacts on unique geographic characteristics (cultural or historic resources, park lands, prime and unique farmlands, wetlands, wild and scenic rivers, designated wilderness or wilderness study areas, or ecologically critical areas (ACECs, RNAs, significant caves)) (40 CFR 1508.27(b)(3))? No.

Rationale: There are no park lands, prime and unique farmlands, wild and scenic rivers, designated wilderness or wilderness study areas or ecologically critical areas that would be affected directly or indirectly from the proposed projects. There are wetlands identified in the National Wetland Inventory in Ormat's leased areas, but these wetlands are located in areas that would not experience disturbance from projects activities.

The projects are designed to avoid disturbance to all cultural resources eligible or potentially eligible and those currently unevaluated for listing the National Register of Historic Properties (EA, p. 3-48). Additionally, any new discoveries of cultural resources would temporarily stop activities related to the projects and a cultural resources specialist would be contacted. The projects would resume upon completion of assessment and coordination.

The projects would not limit Indian tribal members' access to the projects area and would not physically prevent tribes from practicing their traditional activities. Through multiple Consultation discussions (which included person to person meetings, phone calls, email exchanges, and field trips with the Klamath Tribes and the Confederated Tribes of the Warm Springs council members and staff to the project area) the BLM has been informed by Tribal staff that the proposed Projects, even though they would occupy only a very small portion of the overall Glass Buttes area, would destroy "sacred and holy" areas; however, the tribes have not demonstrated how the Projects would do so. The tribes have not provided the BLM with a method to quantify or mitigate effects of the Projects to sacred and holy areas. The tribes have also not shown that the Projects would coerce tribal members to act contrary to their religious beliefs. Therefore, the BLM cannot find that there would be significant effects to historic structures or cultural resources as a result of the projects, and thus concludes that there are no significant effects to historic structures or cultural resources as a result of the projects.

- 4. Would any of the alternatives have highly controversial effects (40 CFR 1508.27(b)(4)? No.**

Rationale: Geothermal exploration drilling, temporary road construction, road improvements, quarry operation, and water well drilling are activities whose effects have been well documented and studied. A full suite of BLM and contract specialists (EA, p. 5-1) with expertise and knowledge on all of the proposed activities provided input on the analysis of effects (EA, Chapter 3) and have not identified any anticipated effects from the proposed activities that are undocumented and/or unstudied, thus the projects would not have highly controversial effects.

- 5. Would any of the alternatives have highly uncertain effects or involve unique or unknown risks (40 CFR 1508.27(b)(5)? No.**

Rationale: There are no parts of these projects that involve any new technology or that would use existing technology in a manner that it has not already been used. Due to this, there are no uncertain effects or unique or unknown risks associated with these projects.

6. Would any of the alternatives establish a precedent for future actions with significant impacts (40 CFR 1508.27(b)(6)? No.

Rationale: No alternative would establish a precedent for future actions. Any further proposals for geothermal exploration and/or development would be analyzed as a completely separate action in a new environmental analysis.

7. Are any of the alternatives related to other actions with potentially significant cumulative impacts (40 CFR 1508.27(b)(7)? No.

Rationale: The BLM evaluated the proposed projects in the context of past, present, and reasonably foreseeable future actions within the defined geographic scope for the proposed projects (EA Section 3.12).

8. Would any of the alternatives have significant adverse impacts on scientific, cultural, or historic resources, including those listed or eligible for listing on the National Register of Historic Resources (40 CFR 1508.27(b)(8)?

Rationale: The projects are designed to avoid disturbance to all cultural resources eligible or potentially eligible and those currently unevaluated for listing the National Register of Historic Properties (EA, p. 3-48). Additionally, any new discoveries of cultural resources would temporarily stop activities related to the projects and a cultural resources specialist would be contacted. The projects would resume upon completion of assessment and coordination.

9. Would any of the alternatives have significant adverse impacts on threatened or endangered species or their critical habitat (40 CFR 1508.27(b)(9)?

Rationale: No listed fish, animal, or plant species or their critical habitat occurs within the range of direct or indirect effects of the projects.

10. Would any of the alternatives have effects that threaten to violate Federal, State, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)? No.

Rationale: The projects would follow all of the laws and requirements specifically listed in the EA (EA Section 1.5.3) as well as any other Federal, State, or local law or requirement imposed for the protection of the environment.

Finding

On the basis of the information contained in the EA, the consideration of intensity factors described above, all other information available to me, it is my determination that: (1) implementation of the alternatives would not have significant environmental impacts beyond those already addressed in the Brothers/La Pine and Three Rivers Resource Management Plan EISs; (2) the alternatives are in conformance with the Brothers/La Pine and Three Rivers Resource Management Plans; and (3) neither alternative would constitute a major federal

action having a significant effect on the human environment. Therefore, an EIS or a supplement to the existing EIS is not necessary and will not be prepared.

Carol Benkosky
Carol Benkosky
District Manager, Prineville District

July 11, 2013
Date

Decision Record

NEPA Register Number: DOI-BLM-OR-P040-2011-0021-EA

Title of Action: Midnight Point and Mahogany Geothermal Exploration Projects, Glass Buttes, Oregon

BLM Office: Prineville District, Prineville, Oregon

Compliance

The Mahogany project is located on BLM administered lands subject to the provisions and stipulations of the Brothers/LaPine Resource Management Plan (RMP).

The two action alternatives (Alternatives B and C) are in conformance with the Brothers/LaPine RMP (BLM 1989):

- Approximately 910,000 acres of public lands will be open to exploration subject to standard lease requirements and stipulations (page 107).
- Seasonal restrictions will be applied to mitigate the impacts of human activities on important seasonal wildlife habitat (page 97).
- Soils will be managed to maintain productivity and to minimize erosion (page 121).

Relationship to Statutes, Regulations, or Other Plans and Projects

The project is consistent with the Energy Policy Act of 2005, BLM's 2001 National Energy Policy Implementation Plan, and other federal policies that relate to the use of renewable energy. It is also consistent with the Geothermal Steam Act of 1970, as amended by the Energy Policy Act of 2005; the Mining and Mineral Policy Act of 1970; the Federal Land Policy and Management Act of 1976 (FLPMA). Furthermore, the National Materials and Mineral Policy, Research and Development Act of 1980 directed the federal government to foster and encourage private enterprise to develop renewable energy resources with appropriate environmental constraints. The project is consistent with these national goals.

A U.S. Department of Interior policy, consistent with Section 2 of the Mining and Mineral Policy Act of 1970 and sections 102(a)(7), (8), and (12) of FLPMA, is to encourage the development of mineral resources, including geothermal resources, on federally managed lands. The Secretary of the Interior has the authority and responsibility to lease public lands and certain other federal lands for geothermal development. The Secretary has delegated this responsibility to BLM. Under the terms of the Geothermal Steam Act (and the Energy Policy Act) and subsequent implementing regulations, BLM must respond to the plans and programs submitted by the lessee and either approve, require modification, or deny an application.

Additional direction comes from the following list of applicable federal laws and regulations serves as the regulatory framework for the project:

Geothermal Exploration

- The Energy Independence and Security Act of 2007;
- 43 CFR 3200, Geothermal Resources Leasing and Operations; Final Rule, May 2, 2007;
- The Energy Policy Act of 2005; The National Energy Policy, Executive Order 13212, and Best Management Practices (BMPs) as defined in Surface Operating Standards and Guidelines for Oil and Gas; and,
- Best Management Practices as defined in the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, Fourth Edition (Gold Book) (BLM, 2007a).

Mineral Material Contract Sales

- The Minerals Act of July 31, 1947, as amended (30 USC §601 *et seq.*); and
- 43 CFR 3601.6, Mineral Material Disposals; and Section 304 of FLPMA (43 USC §1734) and the Independent Offices Appropriation Act of 1952 (31 USC §9701) authorize the U.S. Government to collect fees and to require reimbursement of its costs.

Access Road Rights-of-Way

- FLPMA of 1976, as amended, section 501 (43 USC §1761); and,
- The FLPMA (PL 94 579, 43 USC §1761 *et seq.*); 43 CFR 2800, Rights-of-Way, Principles and Procedures; Rights-of-Ways under FLPMA and the Mineral Leasing Act; final Rule, April 22, 2005.

The EA has been prepared in accordance with the following statutes, BLM handbooks, and implementing regulations:

- The National Environmental Policy Act of 1969, as amended (Public Law [PL] 91-190, 42 USC §4321 *et seq.*); 40 CFR 1500 *et seq.*; Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act;
- U.S. Department of Interior (DOI) requirements (Departmental Manual 516, Environmental Quality [DOI 2004]);
- National Historic Preservation Act (16 USC §470 *et seq.*);
- Native American Graves Protection Act (PL 101-601; 25 USC §3001 *et seq.*);
- Archaeological Resource Protection Act (PL 96-95; 16 USC §470 *et seq.*);
- Endangered Species Act (7 USC §136, 16 USC §1531 *et seq.*);
- The Bald and Golden Eagle Protection Act (16 USC §668(a); 50 CFR 22);
- Migratory Bird Treaty Act of 1918 (16 USC §703-712);

- Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds (66 CFR 3853, January 17, 2001);
- Memorandum of Understanding between BLM and U.S. Fish and Wildlife Service (USFWS) to Promote the Conservation of Migratory Birds (BLM MOU WO-230-2010-04);
- Greater Sage-Grouse Interim Management Policies and Procedures (BLM Instruction Memorandum No. 2012-043);
- BLM National Greater Sage-Grouse Land Use Planning Strategy (BLM Instruction Memorandum No. 2012-044);
- BLM NEPA Handbook (H-1790-1), as updated (BLM 2008a);
- Considering Cumulative Effects under the National Environmental Policy Act [CEQ 1997];
- Best Management Practices as defined in the Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (Gold Book);
- The Geothermal Energy Research, Development, Demonstration Act of 1974;
- BLM Mineral Materials Disposal handbook (H-3600); and,
- Use; Rights-of-Way, Code of Federal Regulation 43 CFR 2800.

Proposed or selected alternative

Based on the analysis documented in the environmental assessment (EA) and Finding of No Significance (FONSI), it is my decision to make the same decision that Brendan Cain is making for the Midnight point portion of the project on Burns BLM District, and select Alternative C (EA, pages 2-31 to 2-42) with the exception of the extended timing restriction for exploration and testing activities from December 1 through March 31. The applicant, Ormat LLC., will be allowed to move exploration related equipment and drill from August 16 to February 28. The applicant will be able to take water samples and take readings year round.

I am approving wells 16-9 and 63-19, water wells (limited to three between this project and the Midnight Point project on Burns District) and disturbance alongside two miles of existing access roads for truck pull-outs and truck turn around areas to allow access to wells 16-9 and 63-10 on the Prineville District and wells 15-33, 46-33, 62-33, 86-33, 28-34, 18-34, and 52-3 on the Burns District.

I am requiring the installation of cattle guards where access roads will cross grazing allotment fences. The applicant may use either temporary or permanent cattle guards, but if temporary cattle guards are used, they must be in place while the road is being used by the applicant for project related activities. I am allowing the applicant to minimally and temporarily improve access roads by leveling and spot graveling them and to widen access roads through the installation of truck pull-outs and truck turn around areas, to accommodate project vehicles traveling to the proposed well pads. These improvements will be made to closely resemble the existing profile of the access road. Spot graveling and leveling will only be done in locations that will result in four inch ruts if improvements are not performed. Roads will not be widened beyond their existing prism, except in locations where truck pull-outs or truck turn around areas are constructed. Road maintenance of access roads related to this project will only be performed from August 16 to February 28.

There are 88 acres of sage-grouse habitat mitigation and 241 acres of wintering mule deer and elk habitat mitigation (Table 1) identified for the Mahogany and Midnight Point projects. Given the close proximity of the two projects and since the Prineville District’s portion of the mitigation is relatively small in comparison to that on the Burns District, both Districts have agreed that all wildlife mitigation will be the responsibility of the Burns District. This will result in administrative efficiencies and a more effective use of mitigation funds. The Burns District will be responsible for the collection of these funds, the identification of appropriate mitigation, and implementation of the mitigation. Prior to issuing a Notice to Proceed all mitigation funds as described below must be deposited by the Applicant.

Table 1: Mitigation calculation for effects to sage-grouse habitat and mule deer and elk wintering habitat

Test Drilling Activity	Disturbed Acres*	Mitigation Acres
Drill Pads	33.1	$33.1 \times 2 = 66.2$
Temporary Access Road Construction, Truck Pull-Outs, and Truck Turn Around Areas	5.8	$6.4 \times 2 = 12.8$
Quarry	5	$5 \times 2 = 10$
Sage-Grouse Subtotal	43.9	88
Indirect impacts for disturbance to wintering mule deer and elk during the extended drilling time frame	0.2 mile buffer around 3 approved well sites – Habitat disturbance factor of 1.0	241
Mule Deer and Elk Subtotal		241
Direct & Indirect Total		329

The cost formula is \$80 per acre for sage-grouse and \$80 per acre for winter big game habitat. This results in a total of \$26,320 for mitigation costs that would need to be received by BLM Burns District prior to issuing a Notice to Proceed. Please note that wintering big game habitat mitigation measures may likely be different than that for sage-grouse habitat and will be discussed in the wintering deer and elk habitat mitigation plan (HMP). The HMP for sage-grouse is completed and is part of the EA (Appendix C) and the HMP for wintering mule deer and elk will be completed within two weeks of signing of this Decision Record.

The applicant will be required to follow the previously mentioned stipulations, in addition to the project design features that are common to both Alternatives (EA pages 2-35 to 2-42), namely:

General

- A pre-construction meeting will be required at a time mutually acceptable to the applicant and the BLM, but prior to approval of the Notice to Proceed.
- Flagging of proposed work by the applicant will be required to allow final clearances by BLM.
- The applicant will provide the BLM with any updates to the Operation Plan, Schedule of Operations, or any changes to the Geothermal Drilling Permit within the Notice to Proceed.
- Mitigation costs will be received and in place at the BLM prior to the BLM issuing a Notice to Proceed to the applicant.
- The applicant will provide the BLM all information that is submitted to other federal (excluding DOE, unless otherwise requested) and state (including DOGAMI) government agencies.
- The applicant will be required to follow all conditions of the DOGAMI and BLM GDP permits and compliance requirements as issued.

Prevention and Control of Fires

- The BLM District Office will be notified immediately of any wildland fire, even if the available personnel can handle the situation or the fire poses no threat to the surrounding area.
- A roster of emergency phone numbers will be available at the project site so that the appropriate firefighting agency could be contacted in case of a fire.
- All vehicles will carry at a minimum, a shovel, five gallons of water (preferably in a backpack pump), and a conventional fire extinguisher.
- Adequate fire-fighting equipment (a shovel, a pulaski, standard fire extinguisher(s), and an ample water supply) will be kept readily available at each active drill site. Water that will be used for construction and dust control will also be available for fire suppression.
- Vehicle catalytic converters (on vehicles that will enter and leave the drill site) will be inspected daily and cleaned of all flammable debris.
- All cutting/welding torch use, electric-arc welding, and grinding operations will be conducted in an area free, or mostly free, from vegetation. An ample water supply will be available onsite from the proposed 10,000 gallon water tank (see Ancillary Facilities above) and shovel will be on hand to extinguish any fires created from sparks. At least one person in addition to the cutter/welder/grinder will be at the work site to promptly detect fires created by sparks.

- The applicant will be responsible for being aware of and complying with the requirements of any fire restrictions or closures issued by the BLM District, as publicized in the local media or posted at various sites throughout the field office district. The applicant will be responsible for notifying personnel of these restrictions or closures.
- Personnel will be allowed to smoke only in designated areas and will be required to follow applicable BLM regulations regarding smoking.

Soil Erosion

- Topsoil will be salvaged, stockpiled, and reused; however, stumps, brush, and other organic material will be hauled off-site after site clearing.
- Temporarily disturbed areas will be reseeded where previously vegetated using a grass and sagebrush seed mix that is in compliance with BLM and Oregon seed policies. The seed will meet the requirements of the Federal Seed Act (P.L. 76-354; 1939) and the Oregon Certified Seed Handbook (2012). Only seed certified as “noxious weed free” will be used. In addition, the seed will be appropriate to the geographic and elevation characteristics of the area to be seeded (4,000 to 6,500 feet above mean sea level).
- Erosion control measures, including but not limited to silt fencing, diversion ditches, water bars, temporary mulching and seeding, and application of aggregate and rip rap, will be installed within well pads and access roads where evidence of erosion exists.
- Access roads will follow existing contours to the maximum extent possible. In areas where new access roads will need to be constructed across slopes, erosion control measures such as silt fence, surface roughening, and slope stabilization will be provided as necessary.
- Up to 6 inches of aggregate will be used as road surface where appropriate because roads will be used during all seasons.
- Aggregate will be laid down when ground conditions are wet enough to cause rutting or other noticeable surface deformation and severe compaction. As a general rule, if vehicles or other project equipment create ruts in excess of 4 inches deep when traveling cross-country over wet soils, an aggregate surface will be added prior to additional vehicle use.
- In areas of very soft soils, up to 3 feet of aggregate will be used during construction.

Hydrology - Surface Water and Groundwater

Surface Water

- Where proposed, new access roads will need to cross ephemeral washes, rolling dips will be installed. The rolling dips will be designed to accommodate flows from at least a 25-year storm event. Culverts will be used wherever rolling dips are not feasible.
- Silt fences and/or straw bales will be used in areas requiring sediment control.
- Roads and well pads not required for further geothermal development purposes will be re-contoured to preconstruction conditions and seeded to prevent erosion.

- Access roads will follow existing contours to the maximum extent possible. In areas where new access roads will need to be constructed across slopes, erosion control measures such as silt fence, surface roughening of slopes, and slope stabilization will be provided as necessary.

Groundwater

- Excavation into native soil during construction of well pad reserve pits will be minimized to the maximum extent possible.
- Drill pad reserve pits will be compacted during construction and settled bentonite clay from drilling mud will accumulate on the bottom of the drill pad reserve pits to act as an unconsolidated clay liner, reducing the potential for drilling fluid to percolate to groundwater.
- A BLM-approved cementing and casing program for the drilling of observation wells will be implemented to prevent water quality effects on groundwater during or after completion of the wells.
- Borehole geophysics analyses (cement bond logs) will be conducted to document that well casing cementing activities provide an effective seal isolating the geothermal aquifer from shallow alluvial aquifers, therefore minimizing potential impacts on surface springs or streams.
- The use of "blow-out" prevention equipment during drilling and the installation of well casing cemented into the ground will ensure that any geothermal fluid encountered during the drilling will not flow uncontrolled to the surface.
- Any well on the leased land that is not in use or demonstrated to be potentially useful will be promptly plugged and abandoned in accordance with lease stipulations. No well will be abandoned until it has been demonstrated to the satisfaction of the BLM that it is no longer capable of producing in commercial quantities, and will not serve any other useful purpose such as for injection of geothermal fluids or monitoring of the geothermal reservoir or groundwater.
- No water wells will be installed within a 5,000 foot radius of existing water wells on BLM lands.

Biological Resources

- Trash and other waste products will be properly collected and disposed of, with the objective of eliminating any litter. The applicant will use air-tight containers for any garbage that could attract wildlife. All trash will be removed from the project area and disposed of at an authorized landfill.
- Speeds will be reduced from 25 mph to 15 mph when workers/drivers observe terrestrial wildlife (i.e. deer, sage-grouse) near project activities, especially near/on access roads and posted with signage.
- Employees and contractors will be prohibited from carrying firearms on the job site.

- Reclamation of the disturbed areas, as described earlier in this document, will be completed in order to return these areas to the condition required in the drilling permit Conditions of Approval.
- Areas that become infested with invasive species/noxious weeds during construction will be mapped, reported to BLM, physically (i.e. disking, mowing) and/or chemically (i.e. herbicide) treated, and then seeded with certified weed-free seed and mulching materials.
- Existing weed infestations will be avoided or treated before disturbance.
- All weed prevention and control practices performed on BLM lands will be done so in accordance with all applicable BLM regulations and procedures.
- The applicant will submit a Weed Management Plan to the BLM, and the BLM will approve this plan, prior the Notice to Proceed will be issued. The Weed Management Plan will address the following:
 - Mineral material aggregate applied to federal lands will be from a pit certified by Harney County to be free of weeds.
 - Plan of operations (who, what, when, where, and how) for monitoring and treating any noxious weeds infestations in the work area, especially in areas of activities of disturbance.
 - Spraying products used will only be those allowed with the Prineville and Burns District.
 - Consultation with the BLM District that the weed treatment will take place in prior to performing the weed treatment.
 - For three years following final reclamation, reclaimed sites will be monitored by the applicant, and if weeds are found, the applicant will treat the weeds.
- There will be no surface operations during sage-grouse lekking and nesting season (March 1 to August 15).
- All surface operations (including drilling) and surface construction activities (drill rigs, wellheads, and power plants) will not be visible from leks.
- Where sagebrush is present to begin with, sagebrush will be used in the re-vegetation seed mixes applied during reclamation, or sagebrush plants will be planted to ensure sagebrush returns to the site.
- Fencing reserve pits will include fencing all four sides of the pit as well as applying netting over the top of the pit. A ramp will be placed in the reserve pit as a safeguard in the event that the fencing/netting fails and an animal or human falls in.
- All surface operations (i.e. well drilling and resource testing) will be less than 40 decibels (db) or less than 10 db above ambient sound at surrounding leks.
- Well pad sites and rock quarries will be surveyed for Threatened and Endangered and Special Status plant species in May prior to project implementation. Threatened and Endangered and Special Status plant sites will be avoided if found.

- Surveys for burrowing owls will be performed during breeding/nesting season (April 15-August 1) before any proposed ground disturbing activities (i.e. well pad construction, drilling, road construction/improvements, rock quarries) later in the year. If burrowing owls are discovered within 0.25 miles of a proposed disturbance area, the applicant will monitor burrows for collapse during drilling operations or other disturbance. Should the burrows collapse, then artificial burrows will be constructed by the applicant greater than 0.25 miles away as an alternate site for owls to nest the following year based on recommendations from Green (2006).
- Reserve pits will be overbuilt to accommodate a greater volume of water than is discharged. This will result in un-vegetated and muddy shorelines that breeding mosquitos (*Cx. tarsalis*), which may carry West Nile virus, avoid. Steep shorelines will be used in combination with this technique.
- Reserve pit slopes will be built steep to reduce shallow water (>24 in) and aquatic vegetation around the perimeter of reserve pit impoundments.
- The water level of the reserve pits will be maintained below that of rooted vegetation for a muddy reserve pit that is unfavorable habitat for mosquito larvae. Rooted vegetation includes both aquatic and upland vegetative types. Terrestrial vegetation will not be flooded in flat terrain or low lying areas.
- The channel where discharge water flows into the reserve pit will be lined with crushed rock, or a horizontal pipe will be used to discharge inflow directly into existing open water, thus precluding shallow surface inflow and accumulation of sediment that promotes aquatic vegetation.
- The overflow spillway will be lined with crushed rock, and the spillway will be constructed with steep sides to preclude the accumulation of shallow water and vegetation.

Air Quality

- All access roads will be surfaced with aggregate materials, as needed.
- Dust abatement techniques, such as watering on unpaved, unvegetated surfaces will be used to minimize airborne dust, as needed.
- Dust abatement techniques (such as watering, requiring loader buckets to be emptied slowly, and minimizing drop heights) will be applied to earthmoving, excavating, trenching, grading, and aggregate crushing and processing activities.
- A speed limit of 25 mph will be observed on all access roads by project vehicles to minimize potential collisions with recreationists/visitors, other project vehicles/workers, and wildlife. Signage will be used to control vehicle speed and provide an enforceable limit (i.e. 25 mph).
- Equipment and vehicle idling times during construction activities will be kept to the necessary minimum.
- Access roads, project area roads and other traffic areas will be maintained on a regular basis to minimize dust and provide for safe travel conditions.

Noise

- Noise suppression devices will be utilized on all compressors.

Visual Resources

- Periodic application of water will be used on soil surfaces during construction and grading to control dust.
- Cut-and-fill areas will be minimized by proper placement of roads and well pads.
- Equipment placed at the well pads will be removed after drilling and testing so that only the wellhead extends above the well pad.
- Drill rig and well test facility lights will be limited to those required to safely conduct the operations, and will be shielded and/or directed in a manner that focuses direct light to the immediate work area.
- If aggregate is applied to roads or well pads it will be earth-toned (i.e. brown, tan, green) in color at any location that is visible from Highway 20.
- Aggregate applied to the portion of access road R2B that is visible from KOP 11 will be earth-toned in color.
- No artificial light source used at well 16-9 will face directly at Highway 20.
- Disturbances will be reclaimed to preconstruction conditions or equivalent and all rehabilitation work on proposed improved access roads, temporary access roads, and well pads will be performed in such a way that when completed, the color, contours, and planted or seeded vegetation will match the visual characteristics of the surrounding area.

Cultural, Archaeological, Native American and Other Natural Resources

- Known eligible and potentially eligible cultural resource sites will be avoided.
- A 100-foot buffer zone will be established around eligible and potentially eligible cultural resource sites to help provide protection to the sites. Project facilities and disturbance will not encroach into the established 100-foot buffer zone.
- The applicant will limit vehicle and equipment travel to existing and proposed roads, well pads, construction areas, and aggregate source areas.
- All construction equipment and vehicles used for the proposed Projects will be kept off access roads when not in use.
- Any unplanned discovery of cultural resources, items of cultural patrimony, sacred objects or funerary items will cause all activity in the vicinity of the find to cease, and the BLM will be notified immediately by phone with written confirmation to follow. The location of the find will not be publicly disclosed, and any human remains will be secured and preserved in place until a Notice to Proceed is issued by the authorized officer.

Waste Disposal

- A project hazardous material spill and disposal contingency plan will be prepared that will describe the methods for cleanup and abatement of any petroleum hydrocarbon or other hazardous material spill. The hazardous material spill and disposal contingency plan will be submitted to and approved by the BLM and made readily available onsite before operations begin.
- Secondary containment structures will be provided for all chemical and petroleum/oil storage areas during drilling operations. Additionally, absorbent pads or sheets will be placed under potential spill sources and spill kits will be maintained onsite during construction and drilling activities to provide prompt response to accidental leaks or spills of chemicals and petroleum products.
- Handling, storage, and disposal of hazardous materials, hazardous wastes, and solid wastes will be conducted in conformance with federal and state regulations to prevent soil, groundwater, or surface water contamination and associated adverse effects on the environment or worker health and safety.
- Portable chemical sanitary facilities will be available and used by all personnel during periods of well drilling and/or flow testing. These facilities will be maintained by a local contractor.

Public Safety

- All environmental soil and ground water sampling will be consistent with industry standards, The Gold Book (i.e. publication for 'Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development'), and in coordination with BLM.

Safety Plans

A summary of the safety plans that will apply to the Projects is presented below:

Injury Contingency Plan

In the event injuries occur in connection with the operations of the Projects, specific and immediate attention will be given to proper transportation as the nearest medical facility is the Harney District Hospital in Burns.

Blowout Contingency Plan

Blowout prevention equipment will be kept in operating condition and tested in compliance with BLM regulations, DOGAMI regulations, and industry standards. In addition, cold water and barite will be stored at the well pad for use in killing (i.e., preventing the continued flow of) the well in case of an emergency. In the event of an emergency, such as a blowout, immediate efforts will be taken to shut surface valves and blowout preventer system. If the means to shut-in or control the flow from the well are lost, the Blowout Contingency Plan contains procedures that will be implemented to completely contain the well and initiate steps to return the area to its normal state prior to the blowout or fluid flow.

Spill or Discharge Contingency Plan

In the event of discharge of formation fluids, drilling muds, petroleum products, or construction debris, the person responsible for the operation will make an immediate investigation, then contact the Drilling Supervisor and advise him of the spill, The Drilling Supervisor will in turn callout equipment, regulate field operations, or do other work as applicable for control and clean-up of the spill.

The Spill or Discharge Contingency Plan contains specific procedures for responding to geothermal fluid, drilling mud, and petroleum product spills:

- Geothermal fluid spills - Contain spillage with dikes if possible and haul to disposal site by vacuum or water trucks or dispose of in an acceptable manner.
- Drilling mud - Repair sump or contain with dikes. Haul liquid to another sump, available tanks or approved disposal site.
- Petroleum products - Contain spill with available manpower. Use absorbents and dispose of same in approved disposal area. Clean up surface staining on soil on a regular basis.

The applicant will notify agencies and regulatory bodies, and will also advise the local population and affected property owners if a spill affects residents or property. The applicant will have the source of the spill repaired at the earliest practical time, and continue working crews and equipment on cleanup until all concerned agencies are satisfied.

Hazardous Gas Contingency Plan

All personnel will be trained in warning signs, signals, first aid, and responsibilities in case of hazardous gases. The site will have two briefing areas so that one is upwind from the well and containment basin at all times. Before drilling or testing commences, all personnel will be advised of escape routes. Weekly drills will be conducted. In addition, automatic H₂S detectors will be stationed around the rig. Safety precautions will include the possibility for encountering natural gas (as noted within a nearby well log) during drilling. Lower Explosive Limit (LEL) meters will be installed on the drill rig to monitor natural gas levels. The Hazardous Gas Contingency Plan contains emergency procedures that will be followed in the event that hazardous gas is detected. This plan will be submitted to BLM prior to the commencement of project activities and amended according to agency discretion.

An Air Containment Discharge Permit (ACDP) from the Oregon Department of Environmental Quality (DEQ) will not be required because a) the drill rig engines are non-road engines and do not count towards toward stationary source emissions; b) each well will release not more than 10 tons per year of a regulated pollutant; and, c) the wells will be sufficiently far apart such that each well will be considered a separate "stationary source" as defined in OAR 340-200-0020(134).

FONSI Reference

In addition to the EA, a Finding of No Significant Impact (FONSI) has been completed for the proposed Midnight Point and Mahogany Geothermal Exploration Projects, Glass Buttes, Oregon

(DOI-BLM-OR-P040-2011-0021-EA). The Mahogany project has been found to have no significant impacts, thus an Environmental Impact Statement (EIS) is not required.

Public, tribal and other involvement

A scoping notice entitled “Notice of Intent to Conduct Geothermal Resource Exploration Operations” was published on March 11, 2011 in *The Oregonian*, *Central Oregonian*, and *Bend Bulletin* newspapers. The scoping notice included a detailed project description and procedures for submitting comments on the proposed project and issues of concern. In addition, on March 9, 2011, BLM sent a letter to 76 interested parties containing the same types of information included in the scoping notice. Publication of the scoping notice initiated a 30-day public scoping period which formally concluded on April 11, 2011.

Comments from governmental agencies, environmental organizations, and concerned citizens submitted during the scoping period helped frame the issues considered in the EA.

Following the completion of the EA, on April 19, 2013 the EA and unsigned FONSI were posted online on the Prineville and Burns BLM websites, as well as the Department of Energy’s website. On April 17, 2013 a notice of the completion of the EA was published in the Burns Times-Herald. A press release was released on April 19, 2013 and posted on Prineville BLM’s website notifying the public of the completion of the EA and the beginning of the comment period for the EA. On April 17, 2013, the BLM sent letters signed by the Prineville District Manager to those individuals that provided comments during the scoping period notifying them of the completion of the EA and the beginning of the comment period. Finally, on April 17, 2013 over 80 post cards were mailed to individuals, adjacent landowners, organizations, and state and local government agencies notifying the recipients of the completion of the EA and the beginning of the comment period for the EA.

Between April 17 and April 19 2013, Prineville and Burns BLM managers informed the Tribal Chairpersons and staff of the Confederated Tribes of the Warm Springs Reservation, the Klamath Tribes, and the Burns Paiute Tribe by phone and mailings that the EA was completed and that the BLM was seeking comments on the EA.

In response to comments from the Oregon Department of Fish and Wildlife (ODFW) and the U.S. Fish and Wildlife Service (USFWS), the Prineville and Burns BLM District Managers and staff engaged both groups in collaborative discussions pertaining to the Habitat Mitigation Plan portion of the EA (EA, Appendix C). Through these discussions the BLM clarified questions about the project that ODFW and USFWS brought up during the comment period.

Rationale for the Decision

Chapter 2 of the EA described three alternatives: Alternative A the “No Action” alternative; Alternative B the applicant’s proposal; and Alternative C the applicant’s proposal with additional stipulations.

The rationale for the approval of the applicant’s proposal with additional stipulations but not the additional timing restriction stipulation includes:

- The decision is consistent with the purpose for which lands were leased by the United States to Ormat LLC.
- The Geothermal Steam Act of 1970, as amended, 30 U.S.C. 1001-1028, provides the authority for the BLM to allow for the exploration of geothermal resources on BLM-managed public lands.
- The decision is consistent with the surface use stipulations that were made part of the leases OR-65722, OR-65721, OR-65725, and OR-65726, which Ormat LLC. acquired, which allowed them to apply to the BLM to perform geothermal exploration.
- The exploration of the geothermal resource is consistent with initiatives of the National Energy Policy and supports the National Renewable Energy Initiative by providing more information about the energy production from geothermal resources.
- No impacts were identified in the EA that will not be adequately mitigated by design features built into the project.

Alternative C’s additional timing restriction stipulation from December 1 to March 31, was not selected because the BLM has learned, through comments submitted on the EA, that the additional timing restriction would decrease the viability of the project by making it economically and technically infeasible. While Alternative C, with the additional timing restriction stipulation from December 1 to March 31, would have technically allowed some geothermal exploration while also providing protection from disturbance to wintering mule deer, elk, and sage-grouse, I weighed the potential elimination of the project against the fact that the reduced number of wells in Alternative C will result in fewer disturbance acres and less access road use, thus, there will be a reduced amount of disturbance to wintering mule deer, elk, and sage-grouse.

Some comments from the public and other agencies resulted in the need for some minor changes to the EA for clarification. These comments and the subsequent changes to the EA are:

Comment: The [US Fish & Wildlife] Service anticipates an increase in the use of certain roads by the public, both in numbers of vehicles using the road and by extending the season of use when the current road system may be impassable. Please review project access roads to determine if any will likely experience increased public use due to project road improvements and then update the EA and HMP to reflect these impacts and any proposed mitigations to offset these road impacts.

Response: I do not anticipate that any project access roads would experience increased public use due to the proposed improvements. The rationale for this assumption is: existing roads

would not be widened beyond their current prism, except where pull-outs or truck turn around areas are constructed; graveling and leveling would only be done in areas where road damage (i.e. four inch ruts) occur; and road maintenance of access roads would only be performed during the window that each Alternative provides for exploration and testing activities to be performed.

To provide further clarification in the EA, the first paragraph in the Access Roads section on page 2-21 will be changed (changes are in bold) to read, “The Applicant proposes to use existing roads as much as possible, but some of these existing roads would be **minimally and temporarily** improved by leveling and **spot graveling** and **widened**, to accommodate project vehicles traveling to the proposed well pad and mineral material quarry locations. These improvements would be made to closely resemble the existing profile of the access road **and would only be done in locations that would result in four inch ruts. Roads would not be widened beyond their existing prism, except in locations where truck pull-outs or truck turn around areas are constructed. Road maintenance of access roads related to this project would only be performed from August 16 to February 28.** The Applicant has placed the proposed well pads as close to existing roads as possible to minimize the amount of required new road construction. Figure 1-2 shows the locations of access roads that would be used by the Projects.”

Comment: Since it is unclear to the Service if mitigation ratios for direct effects associated with road construction and widening impacts are already in the ODFW Framework’s impact analysis and mitigation ratio formulae, please consult with ODFW to ensure Alternative C’s mitigation ratios for the Project’s direct and indirect impacts are consistently applied per the Framework’s guidance.

Response: While the Tables C-1 and C-2 on page C-1 of the EA do not state that the disturbed and mitigated acres are for temporary road construction, truck pull-outs, and truck turn around areas, the row titled “Access Roads” in the chart is meant to refer to all three activities.

To clarify the activities that the disturbed acres would come from in Tables C-1 and C-2, the Tables will be changed (changes in bold) to,

Table C-1 Mitigation calculation for Category 2 Habitat

Test Drilling Activity	Disturbed Acres*	Mitigation Acres
Drill Pads	33.1	33.1 x 2 = 66.2
Temporary Access Road Construction, Truck Pull-Outs, and Truck Turn Around Areas	6.4	6.4 x 2 = 12.8

Quarry	5	5 x 2 = 10
Total	45	89

Table C-2 Mitigation calculation for Category 1 Habitat

Test Drilling Activity	Disturbed Acres*	Mitigation Acres
Drill Pads	20.7	20.7 x 10 = 207
Temporary Access Road Construction, Truck Pull-Outs, and Truck Turn Around Areas	1.8	1.8 x 10 = 18
Quarry	5	5 x 10 = 50
Total	28	275

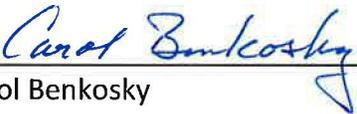
Comment: When will cattle guards need to be installed and what type of cattle guards will need to be installed?

Response: It was my intention that cattle guards would only need to be placed on access roads that the applicant was going to use and that the cattle guards only needed to be there as long as the applicant was using the road. If the cattle guards are to be removed, the road needs to be repaired and the gate rebuilt to BLM specifications. To add clarity to the EA, page 2-32 of the EA will be changed (changes in bold) to,

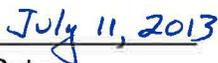
“Cattle guards would be installed to prevent livestock passage at locations designated by the BLM Authorized Officer, primarily where any improved or new roads cross grazing allotment boundary fences. **Cattle guards could be permanent or temporary, but would be in place while the road is being used by the applicant for project related activities.** Cattle guards would maintain the integrity of allotments and pasture boundary fencing for the purpose of livestock management. Cattle guards will be heavy enough to support the weight and wide enough to accommodate well rigs, trucks, and other equipment required for well drilling and testing. If cattle guards or fences are damaged by the Applicant or their contractors, facilities would be promptly repaired or replaced to maintain the function of the affected fence and allow safe vehicle passage. **If the cattle Guards are to be removed, the road would be repaired and the gate rebuilt by the applicant to BLM specifications.** For the purpose of this analysis, three cattle guards would be installed under Alternative C at the locations shown in Figure 2-9.”

Protest and Appeal Opportunities

This decision constitutes my final decision and may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4 and the enclosed Form 1842-1. If an appeal is taken, your notice of appeal must be filed in this office (3050 N.E. Third Street, Prineville, OR 97754) within 30 days from receipt of this decision. Notice of appeal must be sent certified mail. The appellant has the burden of showing that the decision appealed from is in error. Any request for stay of this decision in accordance with 43 CFR 4.21 must be filed with your appeal. A notice of appeal and/or request for stay electronically transmitted (e.g., email, facsimile, or social media) will not be accepted. A notice of appeal and/or request for stay must be on paper.



Carol Benkosky
District Manager



Date