

FINAL ENVIRONMENTAL ASSESSMENT

Ormat Technologies, Inc.

Dixie Meadows Geothermal Exploration Project

Finding of No Significant Impact

DOI-BLM-NV-C010-2011-0516-EA

December 2011



**FINDING OF NO SIGNIFICANT IMPACT
DIXIE MEADOWS GEOTHERMAL EXPLORATION PROJECT
CHURCHILL COUNTY, NEVADA**

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BACKGROUND

Ormat Technologies, Inc. (Ormat) has prepared this Environmental Assessment (EA) for the Bureau of Land Management (BLM) to analyze potential impacts to the human and natural environment resulting from exploratory drilling and testing for geothermal resources within the boundaries of the Ormat Dixie Meadows Lease Area (Lease Area) in Dixie Valley, Churchill County, Nevada. The Lease Area consists of approximately 22,021 acres of public land collectively formed by eight individual federal geothermal leases held by Ormat. The eight individual geothermal leases (NVN-083934, NVN-083935, NVN-083936, NVN-083937, NVN-083939, NVN-083941, NVN-083942 and NVN-086885) that form the Lease Area were issued in 2007. The Project Area is approximately 970 acres in size. All geothermal exploration activities would occur within the Project Area, including any disturbance necessary for construction and drilling operations. The Proposed action would result in up to 137 acres of surface disturbance and would have potential impacts beyond those attributed strictly to surface disturbance, such as groundwater quality impacts. As described in the EA Ormat would implement environmental protection measures to minimize or eliminate impacts to the extent practicable. Primary access to the Lease Area would be east from Fallon, NV for approximately 40 highway miles on U.S. Highway 50, then north about 35 miles on Dixie Valley Road, and then through the existing road network.

Ormat proposes to evaluate the geothermal resources that potentially exist within the Lease Area by constructing up to 20 well pads and drilling one of each of the three different types of geothermal exploration wells on each pad: temperature gradient wells, observation wells, and production wells. While each pad site would be permitted to accommodate a production well, well pads would be constructed only to the extent necessary to accommodate the well type(s) situated on it. If Ormat initially drills a temperature gradient well or observation well on a well pad, that well pad would not be expanded to full permitted size unless a production well is later drilled on it. Under no circumstances would a well pad be expanded to a size greater than that needed for a production well.

In support of the geothermal exploration drilling activities, Ormat proposes to construct new gravel access roads and utilize and repair existing roads for access to the Project Area. Gravel would be obtained from an existing mineral material site that Ormat would expand and from a new mineral material site that Ormat would construct. Ormat proposes to drill up to two groundwater wells on one or two of the proposed well pads or at the proposed new gravel source area. A total of 62 wells may be drilled, including 60 geothermal exploration wells and 2 groundwater wells. Ormat would install an above-ground water distribution pipeline, within the project boundary, between the groundwater wells and well pads actively being drilled. The pipeline would be located along the sides of proposed access roads and on well pads, and would not require additional surface disturbance. The water distribution pipeline system would require prior BLM approval of a Sundry Notice to authorize construction of the pipeline. Ormat would also construct or install the necessary ancillary facilities in support of drilling activities, including a temporary personnel "camp" for active drilling crews. The camp would be located on well pad "T".

The Proposed Action is within federal lands, managed by the Bureau of Land Management Carson City District Office (BLM). The purpose of the Proposed Action is to develop the geothermal resource within the Ormat Lease Area in response to Executive Order (EO) 13212, which directs the BLM in a timely manner to support efforts to increase energy production from federal minerals, while preserving the health of public lands.

FINDING OF NO SIGNIFICANT IMPACT

The Ormat Technologies, Inc. Dixie Meadows Geothermal Exploration Project, DOI-BLM-NV-C010-2011-0516-EA evaluated the impacts on the natural and human environment that could result from implementation of this geothermal exploration project. The impact analysis in the EA characterizes the potential for impacts, from the Proposed Action, for each resource in the project area. The determination of environmental risk is resource-specific and is based on a number of factors, including the presence and extent of resources within the federal geothermal leases associated with the Proposed Action, the extent of resources in the surrounding area, and the quality of existing data. Based on the analysis of the DOI-BLM-NV-C010-2011-0516-EA and its associated administrative record, it is my determination that the implementation of the Proposed Action is not a major federal action and will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area and an environmental impact statement (EIS) will not be prepared. The Proposed Action has been reviewed for conformance with the Carson City Field Office Consolidated Resource Management Plan (2001) and is found to be consistent with current BLM policies, plans and programs. The Proposed Action is consistent with federal laws and regulations; other plans, programs, and policies of affiliated Tribes; other federal agencies; and State and local government. Specific approvals, permits, and regulatory requirements would be required for constructing, testing, and maintaining the proposed geothermal exploratory wells.

CONTEXT AND INTENSITY

This finding and conclusion is based on the consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and the intensity of impacts described in the EA or as articulated in the letters of comment.

Context:

Ormat possesses federal geothermal leases on BLM administered lands and is proposing to explore for geothermal resources. The Proposed Action would be drilling into and testing of the geothermal resources, repair existing and construct new access roads, expand one and construct one mineral materials site, drill up to two ground water wells, install above ground water distribution pipeline and construct the necessary ancillary facilities including a temporary personnel "camp" on one well pad within the Ormat Dixie Meadows Lease Area.

In addition to complying with the lease stipulations (Appendix A of the EA) Ormat would implement environmental Best Management Practices (BMPs) (EA Section 2.1.9) for Air Quality, Cultural Resources, Native American Religious Concerns, Wildlife, Noxious, Invasive and Non-Native weed species (Appendix B of the EA), Surface Water, Ground Water BMPs, Hazardous and Solid Waste, Public Safety and Sanitation, Soil Erosion, Visual Resources, and comply with drilling permit Conditions of Approval (COAs). Environmental Monitoring Plans to be developed prior to implementation of the Proposed Action include:

- Aquifer Monitoring Plan
- Hydrologic Evaluation Plan
- Spill/Discharge Contingency Plan
- Fire Contingency Plan
- Project Hazardous Material Spill and Disposal Contingency Plan

Dixie Valley is an internally drained basin, that is, surface flows terminate in the basin rather than escaping the basin and flowing west to the Pacific Ocean (COE 2002). In a report prepared by the USGS, Dixie Valley is described as a closed hydrologic unit (Cohen and Everett 1963). These descriptions are indicative that the basin lacks any hydrologic connectivity to rivers or other water bodies outside of the basin. Consequently, it is expected that there are no navigable waters of the United States within Rivers and Harbors Act jurisdiction (as defined by 33 CFR part 329) and no waters of the United States within Clean Water Act jurisdiction (as defined by 33 CFR 328) in the Lease Area.

Intensity:

The Council on Environmental Quality (CEQ) regulations includes the following ten considerations for evaluating intensity:

1) Impacts that may be both beneficial and adverse.

None of the environmental effects discussed in detail in the EA are considered significant, nor do the effects exceed any known threshold of significance, either beneficial or adverse. The Proposed Action is geothermal exploration drilling and construction of twenty (20) well pads, as well as reclamation of these disturbances if the wells are not developed. The EA evaluated both beneficial and adverse impacts. I have determined that none of the direct, indirect or cumulative impacts associated with the Proposed Action are significant, individually or combined.

2) The degree to which the selected alternative will affect public health or safety:

The Proposed Action is to drill into and test the geothermal resources in the Project Area analyzed in the EA. It is reasonable to expect further resource exploration and development which could affect public health or safety but those types of activities would be subject to further environmental analysis when considered. These types of issues could be addressed through conditions of approval for further exploration and development actions as determined by federal and State agencies.

3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wilderness, wild and scenic rivers, or ecologically critical areas.

The BLM has considered the Area of Potential Effects (APE) relative to cultural resources and historic properties, providing oversight for a full inventory of the areas that include construction of the proposed well pads and access roads and their associated activity. A Class III cultural resource inventory has been performed in all areas where surface disturbance is proposed, and no observed sites were recommended as eligible for listing on the National Register of Historic Places. No part of the Lease Area occurs within a Wilderness Study Area (WSA) and Wilderness Characteristics are not present. There are no park lands, prime farm lands, wild and scenic rivers or ecologically critical areas or designated wilderness in or near the sites proposed.

4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

The effects of the Proposed Action on the human or natural environment were determined to be negligible. Drilling for geothermal resources and its potential effects on the subsurface in this project area has been demonstrated through the effects analyzed in this EA. No unresolved issues have been identified following public notification of the Proposed Action.

5) *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

The Proposed Action is not unique or unusual. The action described in the EA is drilling for geothermal resource. There are no predicted effects on the human environment that are considered highly uncertain or involve unique or unknown risks. Public comment has been minimal.

6) *The degree to which the action may establish a precedent for future actions with significant effects or presents a decision in principle about a future consideration.*

As exploration advances and additional development of energy generation facilities is proposed on a geothermal lease, an environmental analysis maybe warranted to assess impacts resulting from these types of projects. The progression of the project from leasing to exploration to development is customary and expected.

7) *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*

Resource values, as identified in this EA, were evaluated for cumulative impacts and determined that cumulative impacts would be negligible for the proposed exploration project. Potential impacts would be minimized due to implementation of environmental protection measures outlined in the EA section 2.1.9, Geothermal Leases and Stipulations (Appendix A) and the Noxious Weed Management Plan (Appendix B). Subsequent actions for geothermal resource exploration and/or development would be evaluated for cumulative impacts in associated environmental analysis that maybe warranted and would be addressed through mitigation of the proposed future action and conditions of approval.

8) *The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

A Class III cultural resource inventory has been performed in all areas where surface disturbance is proposed, and no observed sites were recommended as eligible for listing on the National Register of Historic Places. Based on the avoidance of known sites and the established protocol for the discovery of any new sites described in EA Section 2.1.9, the project will not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor will it cause loss or destruction of significant scientific, cultural, or historical resources.

9) *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under ESA of 1973.*

As described in the EA, various bird species, including Migratory Birds, would be anticipated to occur, as would various species of small mammals and reptiles. Although no bat roosting habitat is found in the Lease Area, habitat is found in mines, caves, and rock crevices of the Stillwater Range, and bats may use the Project Area for foraging. The impacts resulting from noise, human presence, and presence of heavy equipment would be expected to be temporary and short term for the duration of the proposed construction and drilling activities, and not expected to jeopardize the viability of migratory bird populations. Additionally, because there are no documented golden eagle nests within six miles (Nevada Department of Wildlife, 2010) of the Project Area and there are hundreds of thousands of acres of available cold desert scrub habitat for foraging in Dixie Valley and negligible prey impacts, no “take” or disturbance to “Important Eagle Use Areas” is reasonably expected. Wildlife would likely return to the Project Area after the project is completed and because similar habitat is available near the Project Area, impacts to wildlife resulting from implementation of the Propose Action are expected to be minor. BLM mapping confirmed that no greater sage-grouse habitat is present within the Lease Area. Springs and surface waters in Dixie Valley provide habitat for and support a population of the Dixie Valley toad. As described in EA Section 3.2.6. springs, wetlands and surface waters do occur within the Lease Area, but not within the Project Area or any area within 650 feet of the Project Area. The mitigation measures list

in the EA Section 3.2.5 requires a hydrologic monitoring plan that would confirm impacts to water quality, quantity, or temperature do not occur. Because all proposed surface disturbance would be limited to the Project Area, direct impacts to the toad or its habitat would not be anticipated. No impacts to wildlife dependent on riparian vegetation, springs, or open water would be anticipated. Lahontan beardtongue is commonly found next to roadsides. Disturbance would be limited to the current road surface on existing roads proposed for utilization as an access road. Proposed access roads that must be constructed would be placed outside of washes and drainages to the extent possible. Impacts to Lahontan beardtongue would not be expected. Surface disturbance would not occur any closer than 650 feet of wetland or riparian areas. This would prevent impacts to wetland dependent sensitive vegetation species. There are no sand dunes or exceptionally deep sandy soils in the Project Area. Sensitive vegetation dependent on deep sand would not be impacted. Any future exploration and development actions would be evaluated in a future environmental analysis for the future project.

10) *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

The Proposed Action is in compliance with the CRMP. As described in the EA, the Proposed Action does not violate any known Federal, State, or local law or requirement imposed for protection of the environment. Resource specialists from the BLM Stillwater Field Office, the State of Nevada, Churchill County, the Department of Defense (Naval Air Station Fallon), and the Fallon Paiute-Shoshone Tribe were notified of the proposal.


Teresa J. Knutson
Stillwater Field Manager
Carson City District Office


Date