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Bureau of Reclamation

Mid-Pacific Region  
Lahontan Basin Area Office  
Carson City, Nevada

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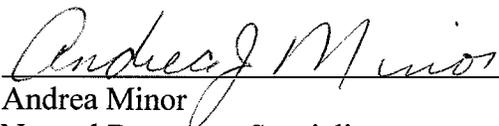
Finding of No Significant Impact  
and  
Environmental Assessment

Patua Geothermal Project Phase II  
Churchill and Lyon Counties, Nevada

June 2012

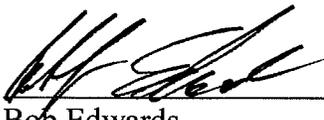
FONSI NO. LO-12-02

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Date: 6/4/12

Recommended:

  
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Bob Edwards  
Resource Division Manager

Date: 6/5/2012

Approved:

  
\_\_\_\_\_  
Terri Edwards  
Deputy Area Manager

Date: 6/7/12

**FINDING OF NO SIGNIFICANT IMPACT**  
**Patua Geothermal Project**  
**Geothermal Unit N-85168X**  
**DOI-BLM-NV-CO10-2011-0501-EA**  
**LBAO LOID 2011-1009**

**I. Background, Proposed Action, and Purpose and Need**

Gradient Resources Inc., (GRI) has obtained the rights to federal geothermal leases issued by the Department of the Interior (DOI), Bureau of Land Management (BLM) for NVN-76139, NVN-77739, NVN-75005, and NVN-85705, which comprise portions of the Patua Geothermal Project Phase II (project). The lease areas are located in Churchill and Lyon Counties, Nevada. The BLM manages the subsurface geothermal resources underlying the federal leases in the project area. The BLM and the Bureau of Reclamation, Lahontan Basin Area Office (Reclamation) are surface management agencies.

This Environmental Assessment (EA) analyzes the proposed project pursuant to the national Reclamation/BLM Interagency Agreement, December 1982, and the analysis is jointly prepared between BLM and Reclamation pursuant to the National Environmental Policy Act (NEPA). Reclamation reviewed the analysis for construction of the project components on Reclamation managed lands. BLM oversees approval of the geothermal Utilization and Operations Plans (geothermal facilities on Reclamation-managed lands) in consultation with Reclamation. Each agency determined the terms and conditions under which it would authorize the geothermal facilities based on this analysis, if the project is authorized.

GRI is proposing to design, construct, and operate geothermal well pads and wells, geothermal fluid pipelines, and their associated access roads. These facilities would be connected to the previously proposed geothermal power plant for the Patua Phase I project or to a new nominal 60MW net geothermal power generation facility, to be located on one of two privately owned sections of land within the Unit. The power plant could be located adjacent to the existing Patua Phase I power plant, or in Section 29, T20N R26E. The elements of the proposed action include:

- Reclamation-managed lands
  - Drill 3 new temperature gradient holes (TGHs) (no vegetation removal required)
  - Construct 14 new well pads and drill multiple wells (57 acres disturbance)
  - Construct approximately 10.5 miles of geothermal fluid pipeline and access roads (159 acres of temporary disturbance and 159 acres of permanent disturbance)
  - Construction of 1.51 miles of new transmission line if a power plant is built south of Alt 50 (18.3 acres disturbance, assuming a 100-foot corridor)
- BLM-managed lands
  - Drill 1 new TGH (no vegetation removal required)

- Construct five new well pads and drill multiple wells (22 acres disturbance)
- Construct approximately 2.2 miles of geothermal fluid pipeline and new access road (40 acres of temporary disturbance and 40 acres of permanent disturbance)
- Private land
  - Construct approximately 1.1 miles of new access road and geothermal fluid pipeline (33 acres of temporary disturbance and 33 acres of permanent disturbance)
  - Construct nominal 60 MW net geothermal power generation facility and generation substation (29 acres permanent disturbance)
  - Construction of 0.8 miles of new transmission line if a power plant is built south of Alt 50 (9.7 acres permanent disturbance, assuming a 100-foot corridor plus 32 acres of temporary disturbance for staging)

The geothermal pipelines would cross the Truckee Canal in three locations, two laterals (TC-11 and TC11-1), and the Hazen Drain. The Truckee Canal and Hazen Drain would be crossed underground below the canals. Geotechnical investigations would be conducted adjacent to the Truckee Canal to assess the feasibility of the crossings, and the crossings would meet Reclamation's Engineering and Operations and Maintenance Guidelines for canal crossings. The geotechnical evaluations and final design of the underground crossings would be reviewed and approved by Reclamation.

Reclamation's action would be to approve the geotechnical investigations of the three under-crossings of the Truckee Canal. Pending the results of the investigations, Reclamation would review and approve the design of the crossings and consequently allow construction of the crossings of the Truckee Canal, laterals, and Hazen Drain. Reclamation will not issue a license, as these activities are authorized under the BLM lease.

The purpose of the proposed action is to develop a portion of the geothermal resources on the geothermal leases in the southwest area of the Patua Geothermal Unit in order to produce electricity. The need for the project is to meet the requirements of the National Energy Policy Act of 2005 and other federal policies that encourage the use of alternative and renewable energy. The Geothermal Steam Act of 1970, amended and supplemented by the National Energy Policy Act of 2005; the Mining and Mineral Policy Act (MMPA) of 1970; and the National Materials and Mineral Policy, Research and Development Act of 1980 direct the federal government to foster and encourage private enterprise to develop alternative energy resources with appropriate environmental constraints.

## II. Summary of Impacts

**Proposed Action Alternative:** Gradient's leases contain stipulations specific to Reclamation lands (Appendix G to the EA). The EA also includes Environmental Protection Measures that identify emergency plans and specific environmental protection measures, including Best Management Practices (BMPs), listed by activity or

environmental resource area (Appendix B to the EA).

Wetlands and Riparian Areas: There are no wetlands on public or Reclamation-managed lands within the project area.

Threatened and/or Endangered Species: No threatened and endangered species are known to occur in the project area or were identified during project surveys.

Environmental Justice: Implementing the proposed action will not disproportionately affect minorities or low-income populations and communities.

Land uses and ROWs: The Proposed Action, as proposed and mitigated, is compatible with existing and future lands uses, including Newlands Project facilities. The well pads, as currently proposed, would not interfere with future operations of the materials pit in section 30.

The EA states that GRI would obtain permission from Reclamation for use of short portions of operations and maintenance roads. Once a plan has been submitted for upgrading these road segments to AASHTO U80 and canal design standards, Reclamation would review and approve final design.

The lease stipulations in Appendix G include a requirement of no surface occupancy within 650 feet of any surface water body; all pads have been sited at least 650 feet from the Truckee Canal and laterals. The lease stipulations also include a requirement of no surface occupancy within 500 feet of the centerline of roads or highways, and 200 feet of the centerline of any trails within the lease area.

The Truckee Canal must be de-watered during pipeline crossing construction. The canal will not be de-watered to accommodate Gradient's construction schedule. Reclamation is obligated to meet water delivery demands of the Newlands Project.

Native American Religious Concerns: Consultation on the Patua Geothermal project between the BLM and federally recognized Native American tribes is ongoing. Native Americans religious and spiritual concerns could be affected if project construction disturbed Native American artifacts, remains, or traditional cultural practices. Protection measures, such as avoidance of sites, and notification requirements if sites or human remains are discovered, would help minimize impacts.

Livestock: The project area is not within any Reclamation grazing pasture.

#### Water Quality

Surface water: Surface waters would not be impacted by geotechnical investigations nor by TGH drilling. Surface water runoff during construction would increase slightly at the well pads due to vegetation removal and soil compaction. The geothermal lease stipulates no surface occupancy or ground disturbance within 650 feet from "water bodies".

The geothermal pipelines would be constructed under the Truckee Canal and Hazen Drain, and over or under the two laterals in Section 32. If the crossings are to be made above ground, appropriate best management practices would be implemented to ensure that no materials, debris, or waste falls into the laterals during construction. The above or undercrossing of the canal would be constructed in accordance with the recommendations presented in the geotechnical evaluations and as approved by Reclamation and following *Reclamation's Engineering and O&M Guidelines for Crossings, Bureau of Reclamation Water Conveyance Facilities (Canals, Pipelines, and Similar Facilities)* (Bureau of Reclamation 2008).

**Groundwater:** Geotechnical investigations would have no impacts on groundwater. BMPs to prevent release of fuels or other construction materials would be implemented, including GRI's Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention, Control, and Countermeasure (SPCC) Plan, which would be prepared and submitted to the BLM and Reclamation prior to construction. Potential risks and impacts would be minimized by following the procedures outlined as environmental protection measures in Appendix B of the EA.

**Minerals:** The Hazen Mine (referred to as the Gopher Pit by Reclamation) is located in Section 30; Reclamation and its contractors use this area for O&M of Newlands features. Well pads have been sited in coordination with Reclamation to minimize impacts to mining and access to the mineral resource.

**Vegetation:** Completion of the proposed geotechnical investigations, and construction of the TGHs, well field, power plant, and associated features would require permanent and temporary disturbance. Impacts to vegetation would be minimized by following the procedures outlined as environmental protection measures in Appendix B.

**Soils:** The removal of ground cover during construction of project components would increase the potential for erosion by wind and water through exposure of denuded surfaces. Effects from erosion would be minimized with implementation of BMPs as outlined in Appendix B.

**Invasive, Non-Native, Noxious Species:** Construction and implementation of the proposed project has the potential to increase the spread of invasive, non-native, and noxious species. This potential would be minimized through the implementation of the Noxious Weed Abatement Plan, included in Appendix H of the EA.

**Wastes, Hazardous or Solid:** Project construction and operation would involve limited hazardous material use and waste generation. Potential risks and impacts would be minimized by following the procedures outlined as environmental protection measures in Appendix B.

**Wildlife:** Direct impacts to wildlife species could result from mortality or injury from equipment during project construction. Indirect effects to wildlife could include loss of

habitat and changes in vegetative composition. Noise, human presence, and heavy equipment during construction would likely temporarily displace wildlife. Direct impacts are limited after construction is complete; however, long-term indirect impacts could still occur due to permanent habitat loss, as well as from habitat fragmentation from these features and with interactions with humans.

Migratory Birds: Project construction and operation could have direct and indirect impacts to migratory birds. Losses would be mitigated due to timing restrictions of construction. Mitigation measures on transmission lines, such as anti-perching and anti-collision devices, would also be employed (Appendix B).

Air Quality: Air quality is likely to be impacted by fugitive dust, combustion emissions, hydrogen sulfide (H<sub>2</sub>S), and greenhouse gases (GHG). Dust will be minimized by the use of BMPs. Combustion emissions and H<sub>2</sub>S would also be minimized by use of BMPs in order to meet acceptable state standards. NDEP has exempted geothermal projects from GHG reporting. Potential impacts would be minimized by following the procedures outlined as environmental protection measures in Appendix B of the EA.

Cultural Resources: Seven archaeological resources were recommended as eligible for listing in the National Register of Historic Places. All sites can likely be avoided. Project construction also has the potential to affect undiscovered or subsurface resources. Potential impacts would be minimized by following the procedures outlined as environmental protection measures in Appendix B of the EA.

The No Action Alternative: This includes no action of any kind. No geothermal exploration or development of any kind would occur. No ground-disturbing earthwork, drilling, road-building, pad construction, or other activities described in the project description would occur. No impacts to the existing environment would occur as it would remain unchanged.

No other alternatives were assessed because there are no unresolved conflicts involving alternative uses of the resources [BLM NEPA Handbook H 1790-1, page IV-3].

**Cumulative impacts / Irreversible and Irretrievable Commitments:**

Current land use activities in the vicinity of the project include existing geothermal exploration activities by GRI and construction of the Patua Phase I project, including well pads and pipelines, a transmission line, and power plant. Other activities in the project area include mining activities, recreation, and farming. OHV use, as well as illegal uses, may also occur in the project area.

For the Proposed Action, the time frame for potential future actions is assumed to be the duration of the lease, or approximately 30 years. Future activities are anticipated to include all current land use activities, as well as future geothermal development. Several other leases within the Patua Unit could also be subject to geothermal development in the

future. Additional mining of the sand and aggregate deposit in Section 30 is expected to occur in the future.

Because reasonably foreseeable future actions are similar to the proposed action, the cumulative impacts are likely to be the same resources and uses as those potentially impacted by the proposed action. These would include potential impacts to livestock, vegetation, water resources, wildlife, migratory birds, cultural resources, soils, water resources, and air quality. There is a greater likelihood of hazmat spills, and an increasing chance of spread of noxious or invasive species. If the other developments employ BMPs and similar mitigating measures, the potential for impacts decreases.

### **III. Comments Received on the EA**

No comments were received regarding Reclamation's responsibilities or actions.

### **IV. Findings**

In coordination with Reclamation, BLM prepared an environmental assessment on the impacts of authorizing the various components of Gradient's Patua Geothermal Project Phase II. The EA documents that compliance has occurred with the Endangered Species Act, Section 106 of the National Historic Preservation Act, Indian Trust Assets, Clean Air Act, Clean Water Act, Environmental Justice, Fish and Wildlife Coordination Act, Migratory Bird Treaty Act, and the National Environmental Policy Act.

**The Lahontan Basin Area Office has found that the proposed action is not a major federal action that would significantly affect the quality of the human environment. Therefore, an environmental impact statement is not required for carrying out this action.**

Following are the reasons why the impacts of the proposed action are not significant:

1. There would be short-term, temporary impacts during construction to the following resources: wildlife, migratory birds, soils, air quality, water resources, and vegetation. Many of these impacts will be mitigated by BMPs and other measures.
2. There will be no impact to Threatened or Endangered Species.
3. There are no known impacts to Native American Religious concerns.
4. Implementing the proposed action will not disproportionately affect minorities or low-income populations and communities.
5. Hazardous materials will be handled in accordance with federal and state regulations. An emergency response plan would be implemented that includes contingencies for hazardous materials spills and disposals.

6. Historic or cultural resources: Protection measures included in the project would minimize the likelihood of effects (through avoiding all known resources and stopping work if a resource or remains are encountered).
7. There would be no impact to existing land uses, including operation and maintenance of the Newlands Project.

#### **V. Mitigating Measures / Resource Commitments**

BLM is responsible for ensuring that all lease stipulations (Appendix G) and Environmental Protection Measures (Appendix B) are followed.

GRI is required to provide geotechnical drilling results on each of the Truckee Canal crossings to Reclamation, who will review these results on each of the Truckee Canal crossings. GRI is required to submit engineering drawings for the crossings of the Truckee Canal, the two laterals (TC-11 and TC11-1), and the Hazen Drain; the crossings must meet Reclamation's Engineering and Operations and Maintenance Guidelines for canal crossings.

GRI is required to have a Reclamation inspector on site during Truckee Canal crossing construction. The canal must be de-watered prior to and during construction and will not be de-watered to accommodate Gradient's construction schedule.

GRI would obtain permission from Reclamation for use of short portions of operations and maintenance roads. Once a plan has been submitted for upgrading these road segments to AASHTO U80 and canal design standards, Reclamation would review and approve final design.

#### **VI. Decision**

**My Decision is to concur with the environmental assessment and approve Gradient to begin the geotechnical investigations. Pending the results of the investigations, Gradient will provide engineering drawings of the proposed crossings: the three crossings of the Truckee Canal, the two laterals (TC-11 and TC11-1) and the Hazen Drain. As GRI submits each proposal, Reclamation will review the designs and approve construction. Reclamation will issue a Notice to Proceed as each crossing is reviewed and approved.**