

RECORD OF DECISION

Salt Wells Energy Projects:

Vulcan Power Company Salt Wells Geothermal Development Project

Environmental Impact Statement [FEIS 11-12]

Case File Number: BLM/NV/CC/ES/11-10-1793

Lead Agency:

United States Department of the Interior

Bureau of Land Management

Carson City District – Stillwater Field Office

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Cooperating Agencies:

U.S. Bureau of Reclamation, Churchill County, City of Fallon, Naval Air Station Fallon, Nevada Division of Minerals, and Nevada Department of Wildlife

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ACRONYMS AND ABBREVIATIONS

Full Phrase

BLM	United States Department of the Interior, Bureau of Land Management
BMP	best management practice
CFR	Code of Federal Regulations
EIS	environmental impact statement
EPA	United States Environmental Protection Agency
FEIS	final environmental impact statement
FLPMA	Federal Land Policy and Management Act
Ormat	Ormat Technologies
POU	plan of utilization
POD	plan of development
Reclamation	Bureau of Reclamation
ROW	right-of-way
SHPO	State Historic Preservation Office
SPPC	Sierra Pacific Power Company
US	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
Vulcan	Vulcan Power Company

RECORD OF DECISION

I. DECISION

I.1 BACKGROUND

Gradient Resources (formerly known as Vulcan Power Company [Vulcan]) submitted a plan of utilization (POU) in Churchill County, Nevada in August 2009. The Vulcan Project includes the construction and operation of up to four power plants and associated substations at five possible locations. In addition, a 230-kV interconnection transmission line will be constructed to connect the power plant(s) to Vulcan's proposed Bunejug Switching Station. Vulcan will also construct up to 26 new well pads and associated wells, roads, and pipelines on approximately 15,622 acres of land. The project will be located on public land in Churchill County, Nevada (See Figure 1, included as Attachment A).

Concurrent with the Vulcan submittal, the Bureau of Land Management Stillwater Field Office (BLM) received a geothermal POU for Ormat Technologies, Inc. (Ormat) and an application from NV Energy (doing business as Sierra Pacific Power Company [SPPC]) for a right-of-way (ROW) grant under Title V of the Federal Land Policy and Management Act (FLPMA), 43 United States Code (USC) 1761-1771, for the construction and operation of an electric transmission line and related facilities on private and public lands in Churchill County, Nevada. The BLM determined that because of similar timing, geography, and types of actions, the three proposals would be analyzed in one Environmental Impact Statement (EIS), together known as the Salt Wells Energy Projects EIS. Although the projects have been analyzed in one EIS, each proposed project requires a separate, stand-alone record of decision (ROD) from the BLM. This ROD is for the Vulcan project.

The proposed facilities will be sited on public land managed by the BLM and Newlands Project lands managed by the United States (US) Bureau of Reclamation (Reclamation); such operations must comply with BLM regulations for Geothermal Leasing, Title 43 Code of Federal Regulations (CFR), Part 3200, the Geothermal Steam Act, as amended, regulations for activities on public land,

43 CFR Part 2800, Rights-of-Way Program, and the FLPMA. Applicable Reclamation regulations are at 43 CFR Part 400. Cooperating agencies for the EIS are Reclamation, Churchill County, City of Fallon, Naval Air Station Fallon, Nevada Division of Minerals, and Nevada Department of Wildlife. BLM and Vulcan personnel presented the proposed project and the EIS process at several public venues to solicit comments on the EIS.

I.2 INFORMATION DEVELOPED SINCE THE FEIS

Easement data has been updated from what was shown in Figure 2-17 in the Final EIS (FEIS) based on additional discussions with and between Churchill County and Naval Air Station Fallon. The correct figure is included in Attachment A.

I.3 DECISIONS BEING MADE (40 CFR 1505.2(A))

Based on the analysis of the FEIS, I have determined that the implementation of the Agency Preferred Alternative, described in the FEIS as Vulcan Proposed Action, will not cause unnecessary or undue degradation of public land. This alternative is comprised of all components of the Proposed Action. By this decision and as Authorized Officer of the BLM, Stillwater Field Office, I approve the Vulcan Preferred Alternative for the public land portion of the project, including 26 new well pads, pipelines and access roads, subject to compliance with all pertinent federal, state, and local laws or requirements and the mitigation measures described in this ROD.

I.4 ADDITIONAL REQUIREMENTS

The following permits or plans and associated conditions of approval are adopted by the BLM and incorporated into this ROD (See Attachments B and C):

- Avian Protection Plan (Attachment B)
- Programmatic Agreement for the Salt Wells Energy Projects (Attachment C)

Actions proposed on BLM-administered lands must comply with FLPMA, whose statutes require the BLM to analyze the Proposed Actions to ensure the following:

- Adequate provisions are included to prevent undue or unnecessary degradation of public lands;
- Measures are included to provide for reasonable reclamation of disturbed areas; and
- Proposed Actions will comply with other applicable federal, state, and local laws and regulations.

Several proposed well sites are located on federal geothermal leases in the Carson Lake and Pasture area, currently open to leasing under the BLM Carson

City District Office Consolidated Resource Management Plan (2001) (as amended by the 2008 resource management plan (RMP) amendments to Geothermal Leasing in the Western US Programmatic EIS) and whose surface is managed by Reclamation, although these lands have been authorized by federal legislation to be transferred to the Nevada Department of Wildlife (NDOW). All lands within the Salt Wells Energy Projects Area are already under lease.

Other federal, state, and local agencies have jurisdiction (including inspection responsibilities) over certain aspects of the Preferred Alternative. The FEIS, Table I-1, Potential Regulatory Responsibilities, lists additional federal, state, and local permits, policies, and actions that may be required and lists the agencies that may use the information presented in the FEIS to make decisions about issuing permits or approvals.

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2. ALTERNATIVES

The FEIS analyzed the no action alternative, Proposed Action, and one action alternative as summarized below. A full description of each alternative can be found in Chapter 2 of the FEIS.

2.1 PROPOSED ACTION

Vulcan is proposing up to four power plants and associated substations at five possible locations. In addition, a 230-kV interconnection transmission line will be constructed to connect the power plant(s) to Vulcan's proposed Bunejug Switching Station. Vulcan will also construct up to 26 new well pads and associated wells, roads, and pipelines. Table I, Vulcan Salt Wells Proposed Project Facilities, describes the major components of Vulcan's Proposed Action. Vulcan will finalize the POU prior to construction of their power facilities.

Table I
Vulcan Salt Wells Proposed Project Facilities

Project Component	Description/Location	Temporary Disturbance	Permanent Disturbance
Proposed Power Plants	<p><u>Site 1:</u> 2.3 miles south of US Highway 50 and accessed via the main road from the Salt Wells intersection</p> <p><u>Site 2:</u> 2.9 miles south of US Highway 50 and accessed via the main road from the Salt Wells intersection</p> <p><u>Site 3:</u> 4.1 miles south of US Highway 50 and accessed via Pit Road</p> <p><u>Site 4:</u> 0.3 mile south of US Highway 50 and accessed via the main road from the Salt Wells intersection</p> <p><u>Site 5:</u> 6.6 miles south of US Highway 50 and accessed via Pit Road</p>	<p>A maximum of 4 power plants will be constructed. Each power plant site will result in 23.5 acres of disturbance, including laydown areas.</p> <p>23.5 acres (including a 5-acre laydown area) x 4 power plants = 94 acres</p>	<p>A maximum of four power plants will be constructed. Each power plant site will result in 23.5 acres of disturbance, including laydown areas.</p> <p>23.5 acres (including a 5-acre laydown area) x 4 power plants = 94 acres</p>
Proposed Power Plant Substations	<p>One on each power plant site (see Proposed Power Plant Substations). See Figures 2-9 through 2-14</p>	<p>One on each power plant site.</p> <p>Each substation will occupy approximately 1.4 acres within each 23.5-acre power plant site. 1.4 acres x 4 power plants = 5.6 acres</p>	<p>One on each power plant site.</p> <p>Each substation will occupy approximately 1.4 acres within each 23.5-acre power plant site. 1.4 acres x 4 power plants = 5.6 acres</p>
Proposed Bunejug Switching Station	<p>Bunejug Switching Station See Figures 2-9 through 2-14.</p>	5.75 acres	5.75 acres
Interconnect	From selected power plants to	Maximum buildout with the	Maximum buildout with the

Transmission Lines	the proposed Bunejug Switching Station.	total length of the possible interconnect transmission lines of 7.9 miles. Temporary Corridor Width: 300 feet 7.9 miles (41,712 feet) x 300 feet = 12,513,600 square feet (287 acres) (temporary)	total length of the possible interconnect transmission lines of 7.9 miles. Permanent Corridor Width: 125 feet 7.9 miles (41,712 feet) x 125 feet = 5,214,000 square feet (120 acres) (permanent)
Pipelines	The permanent pipeline corridor will be 155 feet (100-foot-wide joint, 5 feet for pipeline, and 50 feet for road). See Figures 2-9 through 2-14.	Maximum buildout with the total length of possible pipelines of 19.2 miles. 19.2 miles (101,375 feet) x construction width of 300 feet = 30,412,500 square feet (698 acres)	Maximum buildout with the total length of possible pipelines of 19.2 miles. 19.2 miles (101,375 feet) x 155 feet = 15,713,125 square feet (361 acres)
Well Pads	Up to 26 well pad locations will be built as shown in Figures 2-9 through 2-14 and described in Table 2-6.	Maximum buildout of 26 well pads at 4.2 acres each. 26 well pads x 4.2 acres = Approximately 109 acres	Maximum buildout of 26 well pads at 4.2 acres each. 26 well pads x 4.2 acres = Approximately 109 acres
Geothermal Wells	Production: Approximately 8 per binary power plant and 14 per flash power plant Injection: Approximately 4 per binary power plant and 7 per flash power plant Observation/Monitoring: None See Figures 2-9 through 2-14.	Included in well pad disturbance footprint above.	Included in well pad disturbance footprint above.
Water Wells	Five (5) wells will be required for construction and operation of each 30-MW power plant and its associated facilities (roads, well pads, pipelines, etc.). For maximum build-out (four 30-MW power plants), up to 20 wells could be required. Water wells will be located within a 1-mile radius of their respective power plant site or within an area near the existing well 58-9.	50-foot radius of disturbance around each water well head (0.2 acre) 1 mile of 20-foot-wide corridor for road and pipe (2.5 acres) per well 3 acres of disturbance per water well For maximum buildout, approximately 60 acres of disturbance.	50 foot radius of disturbance around each water well head (0.2 acre) 1 mile of 20-foot-wide corridor for road and pipe (2.5 acres) per well 3 acres of disturbance per water well For maximum buildout, approximately 60 acres of disturbance.
Well Pad Access Roads	See Figures 2-9 through 2-14.	Disturbance acres are included in the pipeline corridor area of disturbance.	Disturbance acres are included in the pipeline corridor area of disturbance.
Total Estimated Disturbance:		1,260 acres	756 acres

2.2 ALTERNATIVES FULLY ANALYZED

Alternative

An Alternative for the Vulcan project, should SPPC elect not to build its project, will be for Vulcan to propose to construct the Bass Flat Switching Station and extend its proposed interconnection 230-kV transmission power line from the Site 5 power plant to their Alternative Bass Flat Switching Station. The Alternative Bass Flat Switching Station will be constructed as previously described under the SPPC Proposed Action and will allow Vulcan to tie into the existing Austin to Fort Churchill 230-kV transmission line (see Figure 2-12). The transmission line from Power Plant Site 5 to the Bass Flat Switching Station will be constructed adjacent to an existing road.

2.3 ALTERNATIVES NOT FULLY ANALYZED

As part of the EIS process, the BLM and Vulcan coordinated to develop an alternative switching station. Those alternatives that were carried forward are discussed in Section 2.2 of the FEIS. The following alternatives were considered but eliminated from further consideration.

An alternative was considered to construct the Cocoon Switching Station approximately 2.25 miles southwest of the existing ENEL Geothermal Power Plant and tie into the station via a 230-kV transmission line from power plant Site 5 by continuing the transmission line south approximately 2.5 miles and then heading west approximately one mile to connect to the Cocoon Switching Station. This Alternative was eliminated due to engineering challenges.

2.4 ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The National Environmental Policy Act, as interpreted through the regulations promulgated by the Council for Environmental Quality, requires that the ROD for any federal action also identify the 'environmentally preferable' alternative. The No Action Alternative, as described in the FEIS, would result in no disturbance to the environment. The Proposed Action and the action alternatives would result in disturbance to the environment. Therefore, the No Action Alternative is the environmentally preferable alternative.

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3. MANAGEMENT CONSIDERATIONS

The BLM manages federal lands in accordance with land use plans under the FLPMA on principles of multiple use and sustained yield. A geothermal lease under the Geothermal Steam Act, as amended, is for the heat resource of the earth where there is federal mineral estate. Unless specifically owned in fee, the federal government does not own the hot water commonly associated with the heat; this falls under state water laws. Geothermal developers must obtain the appropriate water rights and state permits, in addition to the federal lease for the resource.

Vulcan intends to use ground water wells and/or geothermal fluid from the geothermal reservoir as the primary source to cool the plants and will be responsible for obtaining the appropriate water rights before it can begin operations.

In accordance with the Geothermal Steam Act, as amended and 43 CFR Part 3200, BLM needs to consider whether to approve the application for utilization of geothermal resources, which includes construction, operation, and maintenance of the Agency Preferred Alternative. Title V of the FLPMA, implemented by 43 CFR Part 2800 and Part 3200, authorizes the Secretary of the Interior (through the BLM) to grant ROWs over, upon, under, or through public lands for the purposes of generating and transmitting electric energy.

The Proposed Action and Alternative are in conformance with the terms and conditions in the CRMP page ROW 1: National Policy, Section I and for Lands and Realty and Minerals, as amended by the 2008 Geothermal Programmatic EIS, and are consistent with the NEPA analysis supporting these decisions. Specifically page MINI, Decision I: the desired outcome for minerals and energy management is to “encourage development of energy and mineral resources in a timely manner to meet national, regional, and local needs consistent with the objectives for other public land uses” (BLM 2001a).

Additionally, the BLM’s implementation strategy titled, *BLM Implementation of the National Energy Policy*, and other federal policies, including the Geothermal Steam Act of 1970, amended and supplemented by the Energy Policy Act of 2005; the Mining and Mineral Policy Act of 1970; the FLPMA; 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. If constructed, the Salt Wells Energy Projects will provide new renewable energy sources and contribute to meeting these goals. Under Section 7 of the Endangered Species Act, as amended, a federal agency that authorizes, funds, or carries out a project that “may affect” a listed species or its critical habitat must consult with the US Fish and Wildlife Service (USFWS). No listed species will be affected by approval of the project and subsequent development, therefore, consultation was not conducted.

The BLM coordinated with the USFWS under the Bald and Golden Eagle Protection Act. This Act provides for the protection of bald and golden eagles by prohibiting, except under certain specified conditions, disturbance or harm of these species. To comply with the Act and in accordance with BLM's Instruction Memorandum 2010-156, the BLM coordinated with the USFWS and required the preparation of an Avian Protection Plan (See Attachment B).

The National Historic Preservation Act Section 106 process has been completed and is in accordance with the Programmatic Agreement (PA, pursuant to 36 CFR 800.14[b]) executed by signature through the BLM and the Nevada State Historic Preservation Officer (SHPO) (See Attachment C).

All construction and operation activities associated with Vulcan's geothermal development will comply with Clean Air Act (CAA) and Emergency Planning and Community Right-to-Know Act (EPCRA).

4. STATEMENT OF NO UNNECESSARY OR UNDUE DEGRADATION

The BLM is responsible for the development of energy resources on public lands in an environmentally sound manner (43 USC 1701). The BLM's purpose for this project is to direct and control the use of public lands for the orderly development of commercial-scale geothermal power generation facilities, associated infrastructure, and a transmission line in a manner that will allow other existing uses to continue, protect the natural resources, minimize resource conflicts and prevent unnecessary or undue degradation to the public lands. The Agency Preferred Alternative will not cause unnecessary or undue degradation to public lands.

The Agency Preferred Alternative falls within the jurisdiction of Churchill County and requires a Special Use Permit for construction of the project.

The Naval Air Station Fallon, as a fully participating cooperating agency in the development of the Salt Wells Energy Projects EIS, has not raised objections to the geothermal development as described in the FEIS dated July 2011. The projects, with the operator-committed measures, mitigation measures, and lease stipulations were found to not interfere with Naval Air Station Fallon operations.

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5. MITIGATION AND MONITORING

This ROD incorporates mitigation and monitoring measures, and conditions and stipulations prescribed by the BLM. Considering the pertinent factors, the Agency Preferred Alternative provides for the construction and operation of up to four power plants and associated substations at five possible locations, a 230-kV interconnection transmission line, a switching station, and up to 26 new well pads and associated wells, roads, and pipelines in the least impacting manner. All practicable methods to avoid or minimize environmental harm from the selected alternative have been adopted.

Prior to project initiation, the POU will be developed by Vulcan and reviewed by the BLM to outline the specifics of how the project will be constructed and operated on federal leases and will list monitoring measures to ensure commitments are fulfilled. The project is contingent on Vulcan's compliance with measures to be imposed by cooperating agencies in their permits, whether already final or still pending.

The BLM will have the continuing authority to make changes to mitigation measures or create new ones if needed under adaptive management principles (43 CFR 46),

The following mitigation and monitoring measures, as identified in the FEIS, have been developed by the BLM and the Cooperating agencies to reduce potentially adverse impacts:

5.1 LAND USE AUTHORIZATIONS, AIRSPACE, AND ACCESS

- If the historic portions of Highway 50 were damaged as a result of the Proposed Action, Vulcan will repair the damage.

5.2 AIR QUALITY

Fugitive Dust Control

Vulcan or its contractors will be required to prepare a Fugitive Dust Control Plan at least 30 days prior to the start of construction. This plan will be approved by the Nevada Division of Environmental Protection, Bureau of Air Pollution, or, if designated by Nevada Division of Environmental Protection, by Churchill County. This plan will include best management practices (BMPs) defined by the Nevada State Conservation Commission in its Best Management Practices Handbook (1994), best practical methods included in the Dust Control Handbook for Churchill County (2010), and other measures that must be implemented during construction to reduce fugitive dust emissions. Specific measures will be developed as part of the construction planning and permitting processes; however, the Fugitive Dust Control Plan will include, at a minimum, the following measures:

- Stabilize open storage piles by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour. Limit speed of earthmoving equipment to 10 miles per hour.

Other BMPs and best practical methods that could be employed to control fugitive dust emissions and visibility impacts during construction could include the following:

- Apply water or dust suppressant to all active construction and site preparation work areas at least twice daily and more often during windy periods;
- Apply water or dust suppressants on all unpaved access roads and staging areas;
- Gravel access roads and staging areas;
- Reclaim (revegetate) disturbed areas as soon as possible after surface disturbance;
- Train construction personnel to recognize excessive fugitive dust conditions and implement dust control during these times;
- Install trackout control devices at paved access points to control fugitive dust from leaving the project site via trucks and motor vehicles;
- Use construction equipment that meets applicable Environmental Protection Agency (EPA) standards for criteria pollutants from diesel engines and maintain this equipment per manufacturer's specifications; and
- Sweep paved access roads with water sweepers.

Equipment Emissions Mitigation Plan

To reduce diesel particulate, carbon monoxide, hydrocarbon, and NO_x emissions associated with construction activities, Vulcan or its contractors will prepare an Equipment Emissions Mitigation Plan as an appendix to the POU. This plan will be approved by BLM and will include, at a minimum, the following measures requiring that all construction-related engines adhere to the following:

- Are tuned to the engine manufacturer's specification in accordance with an appropriate time frame;

- Do not idle for more than five minutes (unless, in the case of certain drilling engines, it is necessary for the operating scope);
- Are not tampered with in order to increase engine horsepower;
- Include particulate traps, oxidation catalysts, and other suitable control devices on all construction equipment used at the Project site;
- Use diesel fuel having a sulfur content of 15 parts per million or less, or other suitable alternative diesel fuel, unless such fuel cannot be reasonably procured in the market area; and
- Include control devices to reduce air emissions. The determination of which equipment is suitable for control devices should be made by an independent Licensed Mechanical Engineer. Equipment suitable for control devices may include drilling equipment, generators, compressors, graders, bulldozers, and dump trucks.

In addition, the following mitigation measures will be implemented during well drilling to reduce emissions associated with off-gassing and large (over 37 kilowatts) diesel well-drilling equipment:

- Monitor H₂S emissions during all phases of drilling and testing and report the results to the BLM regularly. If the monitoring reveals emissions exceeding the Nevada ambient air quality standard, an H₂S abatement plan will be developed and implemented. The abatement plan will include additional control measures to ensure compliance with the emission limitation. Additional control measures could include, but will not be limited to, the following:
 - Reduce the number of wells venting simultaneously, as applicable; and
 - Implement additional wellhead abatement measures, such as caustic injection between the flash tank and the portable silencer.
- Establish a public H₂S hotline for reporting nuisance odor conditions if any result during project construction and operation.
- Ensure that generators over 37 kilowatts (50 horse power) are diesel-fired units manufactured after January 1996, certified to meet at a minimum EPA Tier 1 Emission Standards, and equipped with an exhaust particulate filter system. Where possible, employ equipment that meets Tier 4 emission standards.

The following measures will be implemented to avoid visibility impacts:

- Adjust operations to avoid significant vapor plumes.

- Require the installation of drift eliminators to prevent cooling tower drift.

The following measures will be implemented to prevent air quality-related health and safety impacts:

- Install BOPE to the production wells to prevent large releases of H₂S.
- Incorporate safety systems in the power plant design to prevent the accidental release of significant amounts of hydrocarbons and non-condensable gases to the atmosphere.

5.3 WATER QUALITY AND QUANTITY

Implementation of a Spill Prevention Contingency and Countermeasure Plan will reduce or eliminate effects of petroleum or chemical releases to the environment. Blow-out prevention equipment will be used to protect the environment during all drilling work. Implementation of a storm water pollution prevention plan will prevent erosion and sedimentation due to storm water effects on disturbed areas. Berms will be constructed around all drill pads to prevent runoff from leaving the site.

Mitigation of potential impacts on groundwater, springs, and other surface water features can be addressed by development of monitoring plans for these water resources. The water monitoring plan is a dynamic document that will be developed as exploration and production operations move forward. Existing hydrologic information in the project area is very limited. As new information is gathered, a water monitoring program will be implemented.

The water monitoring plan will provide for the collection and evaluation of data necessary to document baseline conditions and impacts on the resources (i.e., water quantity, quality, and temperature). Monitoring wells can be installed in different aquifers for measuring water levels and quality characteristics, as necessary or required. Frequency of monitoring will be sufficient to document potential seasonal changes in the resources. Contingencies can be developed (e.g., modification of geothermal pumping rates) to address any potential impacts that may be documented during the monitoring program.

Reserve pits will be monitored during operations to be sure that no leakage is occurring to groundwater or surface water resources. The pits will also be properly closed to prevent release of any contaminants to the environment over time.

Due to the importance of ephemeral channels to drain water from the area during snow melt and heavy rain storms, the following mitigation measures will be implemented, to the extent practicable:

- Avoid placement of support structures in channels;

- Use natural channels to continue passing runoff water through the project area, rather than constructing concrete-line channels; and
- Minimize the number of road crossings over channels, and design necessary crossings to provide adequate flow-through during storm events.

5.4 FLOODPLAINS, WETLANDS AND RIPARIAN ZONES

Implementation of the POU and associated protection plans as well as environmental protection measures for facilities within the floodplain will reduce impacts on wetlands, riparian zones, and floodplains. In addition, water monitoring plans will be implemented.

The following mitigation measures will also be necessary to reduce impacts:

- While the wetlands within the Vulcan Project Area are considered isolated and not Waters of the US, if any wetlands are encountered during construction they must be avoided. **OR** A wetland delineation of wet meadows associated with the Newlands canals will be conducted to determine the boundaries, acreage, and types of wetlands that could be affected by the Proposed Action. The project proponent will comply with any mitigation measures determined by the USACE to ensure no net loss of wetlands.
- Sediment and erosion control BMPs will be implemented in accordance with state and local guidelines, including filter fencing, coir logs, etc., as needed;
- Construction within any wet meadow areas will be conducted when relatively dry conditions exist, in order to minimize soil erosion and potential impacts on vegetation and wildlife;
- There will be the ability to deploy standby sediment control BMPs, as needed, to protect all exposed portions of the site within 48 hours of a predicted storm event (a predicted storm event is defined as a National Weather Service forecasted, 50 percent chance of rain);
- Slopes along the roadways will be revegetated with native or suitable species as appropriate; and
- Vulcan will obtain and comply with provision of a State of Nevada Section 401 Water Quality Certification permit.

5.5 VEGETATION

- The aridity of the desert lowers the resilience of many land areas when disturbed, thus reducing revegetation success and potentially allowing for weed invasion and causing permanent loss of ecological function. As such, regular vegetation monitoring and

adaptive management measures will be included as part of the revegetation plan.

- The wetlands within the Vulcan Project Area are considered isolated and not Waters of the US, however, if any wetlands are encountered during construction they must be avoided.

No additional mitigation will be necessary, since revegetation, invasive, nonnative species management, and dust control plans will be implemented as part of the POU.

5.6 INVASIVE, NONNATIVE VEGETATION

No additional mitigation measures are necessary with implementation of the invasive, nonnative species management plan, and revegetation plan.

5.7 WILDLIFE

Impacts on wildlife will be reduced through implementation of BMPs. Mitigation measures to reduce wildlife impacts, where feasible, will be detailed in the POU, which will include development of an invasive, nonnative plant species management plan, and revegetation plan.

5.8 MIGRATORY BIRDS

Impacts on migratory birds will be reduced through implementation of BMPs. Mitigation measures to reduce migratory bird impacts, where feasible and appropriate, will be detailed in the POU, which will include development of an invasive, nonnative plant species management plan, and revegetation plan. An avian protection plan for golden eagles was developed through coordination with the USFWS (Attachment B). Other measures will be employed, such as installing perch and nest prevention devices and anti-collision devices on all relevant structures, where applicable. A monitoring program, to be detailed in the POU, will be implemented to detect collisions and additional mitigation will be required if necessary. These measures will likely prevent take of migratory bird species, as defined by the Migratory Bird Treaty Act, and will reduce the likelihood of population-level effects.

5.9 BLM DESIGNATED SENSITIVE SPECIES (ANIMALS AND PLANTS)

Mitigation and monitoring measures will be the same as those described for Wildlife and Migratory Birds. With implementation of mitigation measures, the Vulcan Project will not result in impacts to BLM-designated sensitive bird species' nests and will not be in conflict with direction provided in BLM Instruction Memoranda and regulations. Furthermore, the project will not contribute to the need to list any BLM-designated sensitive species.

5.10 CULTURAL RESOURCES

Mitigation and monitoring strategies are detailed in the Programmatic Agreement between the BLM, Reclamation, and SHPO and SPPC, Ormat, and Vulcan (Attachment C). If the Vulcan Preferred Alternative is approved, the Programmatic Agreement will guide all activities concerning cultural resources

and historic properties within the project area from its origin date, October 5, 2010, until the undertaking is completed or until it is terminated by one or more of the signatories.

Recommended treatment measures for architectural historic properties are also outlined in treatment plans that help mitigate adverse effects on resources eligible to the National Register of Historic Places under criteria A, B, and C. These types of treatment measures may include the following:

- Measures will be taken to minimize the visual impact associated with the proposed action. This may take the form of modifying facility placement, selecting paint colors that diminish the visual impact of the facilities, the planting of trees that will eventually reduce the visual impact of the towers, and/or other measures that may be identified in the future.
- Photo-documentation will be prepared of pre-disturbance viewsheds from all National Register of Historic Places-eligible properties within one-half mile of the power line selected for construction. Emphasis will be placed on documenting viewsheds as seen from the resource looking toward the power line. Also, a representative sample of eligible resources from each property type located within one-half mile of the power line selected for construction will be selected for similar photo-documentation of viewsheds. The documentation will be included in a technical report submitted to the BLM and SHPO.
- Visual/video products intended to document a select number of architectural resources will be prepared. The products will incorporate architectural, historical, and family histories in an integrated manner. Draft products will be submitted to the BLM and SHPO for technical review prior to production. Copies of the final products will be provided to BLM and SHPO for distribution.
- To the extent that access can be secured, a selected sample of specific property types based on standards established by the SHPO for properties of local and state significance will be documented. The documentation will be included in a technical report submitted to the BLM and SHPO.
- Two or more professional articles intended for publication in local or state journals will be prepared. The articles will focus on specific property types, historic periods, and/or centennial ranches. The draft articles will be submitted to the BLM and SHPO for technical review prior to publication. Its content will rely heavily on information developed by the other treatment measures.

It should be noted that the exact type and extent of treatment will be determined based on consultation between the BLM and the SHPO.

5.11 NATIVE AMERICAN RELIGIOUS CONCERNS

In order to maintain access to and use of traditional use sites, Vulcan will coordinate with local tribes and plan construction activities around traditional use periods during the construction phase of the project to eliminate any impacts.

Ongoing consultation may result in identification of additional Native American Religious Concerns which will be reviewed, and, as appropriate and necessary, additional monitoring and mitigation measures will be developed.

5.12 PALEONTOLOGICAL RESOURCES

Pleistocene and early Holocene surficial deposits, such as alluvium, colluvium, talus, and playa deposits, have a low paleontological sensitivity ranking. Monitoring during construction will not be required, but spot-checking may be conducted in certain areas at the discretion of the BLM. In the case of the Quaternary deposits, this will ensure that any older underlying fossiliferous sediments were not being affected. If paleontological localities are identified in the Vulcan Project Area, the mitigation and monitoring measures outlined in Section 4.16 of the FEIS would be implemented.

5.13 VISUAL RESOURCES

- All equipment will be painted a BLM-approved color to blend in with predominant vegetation and soil whenever feasible. Screening berms or landscaping will surround the power plant site and well sites whenever feasible to make them less visible from Macari Lane. The fencing materials and structures associated with the power plant site and associated structures will be nonreflective when possible. Substation, switching station, and pipeline design will use low profile components. Transmission line poles and cross arms similar in color to surrounding landscapes will be used whenever possible. The pole structures will be aesthetically and structurally similar to existing poles in the area. Existing vegetation on the substation site will be preserved to the extent possible and disturbed areas will be revegetated wherever possible.

5.14 LIVESTOCK GRAZING

- The BLM rangeland management specialist and Vulcan will coordinate with the permittees to locate range improvements within the Vulcan Preferred Action. Vulcan will ensure that all temporary road or fence removal creating openings will have barriers across them to prevent the movement of livestock off range. Vulcan will repair all damaged or removed range improvements after completion of construction activities.

5.15 RECREATION

- Construction of the wells and pipelines on the eastern boundary of the Carson Lake and Pasture resulting in access restrictions for the public will be timed to avoid the peak hours for hunting during the hunting season.
- Potential use conflicts and safety hazards for the Valley Off Road Racing Association race route will be mitigated by coordinating with BLM to locate project facilities a safe distance from the race route where feasible. If necessary the Valley Off Road Racing Association route may be modified to avoid project facilities as was done to address safety concerns for the ENEL Geothermal Power Plant. In other areas, use or construction conflicts with the race will be mitigated by timing the transmission line construction to avoid the annual Valley Off Road Racing Association race.
- Revegetation measures will be outlined in the POU and implemented to reclaim temporary roads.

5.16 NOISE

- The BLM will require the project proponent to ensure that mufflers are present on all diesel engines and any other components that can be muffled such that noise emissions are reduced by at least 15 dBA from the original, non-muffled noise level for the equipment.

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6. AGENCY AND PUBLIC INVOLVEMENT

The public scoping period began on September 11, 2009, with the publication of the Notice of Intent in the Federal Register and continued through November 10, 2009 (Scoping Period). The news media and the public were notified of the public meetings and comment period. A public scoping meeting was held on October 21, 2009, at the County Administration Complex in Fallon, Nevada.

The Draft EIS Notice of Availability was published by the BLM and the EPA in the Federal Register on January 28, 2011, for a 60-day comment period. The BLM presented the findings of the Draft EIS and solicited comments at the following two meetings:

- Public Open house on March 3, 2011, at the County Administration Complex in Fallon, Nevada.
- Churchill County Commissioner Presentation on March 4, 2011, in Fallon, Nevada.

During the public review period for the Draft EIS, 30 comment letters were received containing 425 specific comments. Of the 30 comment letters, 20 were hard copy letters and 10 were submitted via electronic mail.

The Notice of Availability for the FEIS was published by the EPA in the Federal Register on July 22, 2011, with a 30-day review/wait period. The BLM received three written comment letters, faxes, and e-mails.

The following cooperating agencies were involved in the process including development of the alternatives and review of the EIS: Churchill County Planning, City of Fallon, Reclamation, Naval Air Station Fallon, Nevada Department of Wildlife and Nevada Division of Minerals.

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7. ERRATA

Figure 2-17 was revised after the FEIS to incorporate new easement data and to show only those parcels with completed easements as a result of discussions with and between Churchill County and Naval Air Station Fallon. The correct figure is included in Attachment A.

The geothermal leases held by Ormat were erroneously omitted from Table F-1 of Appendix F. Please refer to Table 2-3 of the FEIS for the lease numbers and locations.

Clarifications to the text of the FEIS include removal of any reference to the Top Gun Training Program and the Naval Fighter Weapons School.

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8. FINAL AGENCY ACTION

It is my decision to approve and authorize Vulcan Power Company's Salt Wells Geothermal Development Project as outlined in the FEIS as the Proposed Action, subject to the terms, conditions, stipulations, plan of development, and environmental protection measures developed by the Department of the Interior. In general, a decision of the BLM is not effective during the time in which an adversely affected person may file a notice of appeal (43 CFR 4.21(a)(1)). However, according to regulation, BLM decisions issued under 43 CFR Part 3200 are and remain in effect pending appeal (43 CFR 3279). Since this decision was issued under 43 CFR Part 3200, it is and remains in effect as of the date of issuance.

This decision 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 Form 1842-1. If an appeal is taken a notice of appeal must be filed at the Bureau of Land Management, Carson City District, Stillwater Field Office, 5665 Morgan Mill Road, Carson City, Nevada 89701 within 30 days from receipt of this decision. The appellant has the burden of showing that the decision appealed from is in error. This Decision will remain in full force and effect during the appeal unless a written request for a Stay is granted.

If the appellant wishes to file a petition pursuant to regulations at 43 CFR 3279 for a stay of the effectiveness of this decision during the time that the appeal is being reviewed by the Board, the petition for a stay must accompany notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed in this office. If the appellant requests a stay, the appellant has the burden of proof to demonstrate that a stay should be granted. Except as otherwise provided by law or by other pertinent regulation, a Petition for a Stay of a Decision pending appeal shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied,
2. The likelihood of the appellant's success on the merits,
3. The likelihood of immediate and irreparable harm if the stay is not granted, and
4. Whether the public interest favors granting the stay.



Teresa J. Knutson
Manager
Stillwater Field Office

9/28/2011
Date

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9. ATTACHMENTS

Attachment A – Figures Errata

Attachment B – Avian Protection Plan

Attachment C - Programmatic Agreement