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Final Environmental Impact Statement

Record of Decision

Inyo National Forest Casa Diablo IV Geothermal Development Project



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Inyo National Forest Casa Diablo IV Geothermal Development Project

Record of Decision

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Introduction

This Record of Decision (ROD) documents my decision on the Casa Diablo IV Geothermal Development Project (CD-IV Project) on the Inyo National Forest. The CD- IV Project would construct, operate, maintain and decommission a 33 megawatt (MW) geothermal power generating facility and related infrastructure on Bureau of Land Management (BLM)-administered federal geothermal leases located on National Forest System lands. The CD-IV Project is located in the vicinity of the existing Casa Diablo geothermal complex near Mammoth Lakes in Mono County, California.

The Bureau of Land Management, Bishop Field Office, has the authority to authorize the construction, operation, and maintenance of the geothermal power plant and associated infrastructure (i.e., well fields and geothermal pipeline) (See section 1.2 of the CD-IV Project Final Environmental Impact Statement/ Environmental Impact Report (Final EIS/EIR)). The USDA Forest Service (USFS), Inyo National Forest, has the authority to authorize use and occupancy of surface resources for project facilities needed ancillary to the construction, operation, and maintenance of the geothermal development, including use of existing roads, construction of new access roads, snow removal, as well as construction and operation of transmission lines.

The Final EIS/EIR discloses the environmental impacts associated with the Proposed Action, a No Action alternative (Alternative 4), and two additional action alternatives (Alternative 2 and Alternative 3) developed to meet the purpose and need and respond to issues raised by the public.

Purpose and Need

As described in section 1.3 of the Final EIS/EIR, the purpose and need for the CD-IV Project is to respond to an application submitted by Mammoth Pacific, L.P. (MPLP) requesting authorization to construct, operate and decommission a commercial geothermal power generation facility, wells, pipelines, and associated infrastructure on BLM Geothermal Leases CACA-11667, CACA-14407, CACA-14408 and CACA-11672. [Note: Subsequent to the application being filed, MPLP was acquired by Ormat Nevada Inc., which has formed a wholly owned subsidiary (ORNI 50 LLC) to implement the CD-IV Project.] Specifically, there is a need for the USFS to respond to the portions of the application related to use of existing roads, construction of new access roads, and construction of a transmission line.

Decision

Working together with the BLM as lead agency and the Great Basin Unified Air Pollution Control District (GBUAPCD) as a cooperating agency, we have selected Alternative 3, Modified Pipeline Alternative, for implementation. With the selection of Alternative 3, the BLM, as lead agency, has approved the “Application for Geothermal Drilling, Commercial Use, Site License, and Construction Permit; Plan of Development (POD), Plan of Operation and Plan of Utilization (POU)” submitted by MPLP on February 17, 2010 and revised on June 5, 2012 (Appendix A, BLM Record of Decision). The BLM’s decision will allow for the construction, operation and maintenance, and decommissioning of a geothermal power plant, well field, pipelines, and associated infrastructure on portions of BLM-administered federal geothermal leases CACA-11667, CACA 11672, CACA-

14407, and CACA-14408 located on National Forest System lands administered by the USFS Inyo National Forest in Mono County, California. Please refer to section 3.0 of the BLM Record of Decision (Appendix A) for a complete description of the Selected Alternative.

The USFS has the authority to approve the components of the Selected Alternative related to use and occupancy of surface resources on National Forest System lands for project facilities needed ancillary to the construction, operation, and maintenance of the geothermal development. Specifically, my decision is to issue a special use authorization to ORNI 50, LLC for the following components of Alternative 3:

- Construct and operate approximately 650 feet of electrical transmission line as shown in Figure 2-14, Final EIS/EIR to the existing SCE Casa Diablo Substation.
- Improve existing roads, construct new access roads, add existing unauthorized routes to the National Forest Transportation System and close system roads as shown in Figure 2-14, Final EIS/EIR to provide access to the geothermal power plant and the geothermal wells as follows:
 - Construct a total of approximately 0.87 miles (1.4 km) of new access roads. These roads would be constructed using a durable road surface (aggregate, road base or paving) if utilized to access a production well. Drainage improvements would also be installed.
 - Improve 5.58 miles (8.98 km) of existing National Forest System Roads (NFSR), County-maintained roads, and unauthorized roads.
 - Install a durable road surface (aggregate or road base) to allow for winter snow plowing on up to 5.58 miles of existing NFSRs, County-maintained roads, and unauthorized roads. If erosion on the roads or surrounding areas continues after implementation of Best Management Practices (BMPs), the entire road or portions of the road will be paved.
 - Widen Sawmill Cutoff Road (NFSR 03S08) between SR 203 and Shady Rest park to include a 2-foot shoulder beyond the fog line.
 - Widen Sawmill Cutoff Road (NFSR 03S08) between Shady Rest Park and NFSR 03S08N near well 34-25 to match the width of the paved section between SR 203 and Shady Rest Park, including the width of the new shoulders. Drainage features would be installed to maintain hydrology.
 - Reroute the following NFSRs on a permanent or temporary basis, if necessary: 03S35D, 03S35E, 03S123, 03S36, 03S08N, 03S08P, 03S25J
 - Add 0.61 miles of unauthorized roads to the National Forest Transportation System for use as access roads for the CD-IV Project and public use.
 - Close system roads to public use as follows:

- Close NFSR 03S129E to public access within the fence line of the proposed CD-IV power plant.
- Close NFSR 03S35C and 03S08S if necessary.
- Close additional roads to the public temporarily during construction.

In order to develop proper maintenance and operation stipulations to incorporate into the special use authorization, my decision includes the requirement that surface occupancy engineering drawings be provided to the USFS for review and approval prior to issuance of the special use authorization.

My decision includes the implementation of project design measures (PDMs) and mitigation measures that are designed to avoid, minimize or rectify adverse impacts. PDMs and mitigation measures are identified in Appendix B of the ROD, Mitigation Monitoring and Reporting Program.

All practicable means to avoid or minimize environmental harm have been adopted in the design of Alternative 3 (Modified Pipeline Alternative). I have included all of the PDMs and mitigation measures that I believe are necessary to reduce impacts on resources affected by the implementation of the Selected Alternative while still allowing reasonable use of the surface by ORNI 50, LLC in order to exercise their rights to develop the geothermal resources within their lease.

My decision is based on the best available science. I base this conclusion on an evaluation of the record that shows a thorough review of relevant scientific information, acknowledgment of incomplete or unavailable information, scientific uncertainty, and risk. The resource analyses disclosed in Chapter 4 of the Final EIS/EIR identify the methodologies used, reference scientific sources which informed the analysis, and disclose limitations of the analysis due to incomplete or unavailable information.

Rationale for My Decision

In reaching my decision, I worked closely with the BLM and the GBUAPCD to develop the alternatives analyzed in the Final EIS/EIR, to review the environmental consequences of the alternatives, and to develop the monitoring and mitigation requirements listed in Appendix B. I have considered the purpose and need for action, the Inyo National Forest Land and Resource Management Plan (LRMP) and associated amendments, current policies and regulations, effects on natural and cultural resources, public comments received, and the full range of alternatives. I also considered the broad range of concerns expressed throughout this process relating to geothermal development.

While my decision is limited to the authorization of road access and the transmission line, I have reviewed and considered the full range of environmental consequences associated with the alternatives. Alternative 3, the Modified Pipeline Alternative, was selected because it reflects a careful balance of the varied and competing public interests associated with managing National Forest System lands. The Selected Alternative includes all the primary components of the applicant's proposed action, but with a modified pipeline alignment to minimize impacts to biological, cultural, and visual resources.

Implementation of the Selected Alternative would result in reduced impacts to biological resources as a result of the reduced pipeline length and associated surface disturbance and vegetation removal (see Sections 4.3, Biological Resources - Vegetation and 4.4, Biological Resources - Wildlife of the Final EIS/EIR for a complete analysis of impacts). The total acreage of impacts to native vegetation communities would decrease under the Selected Alternative as would impacts to special-status plants. Potential impacts from the introduction, establishment and spread of noxious weeds would also be reduced. Impacts to special-status species and the disturbance and removal of habitat would also be reduced as compared to the proposed action.

Unlike the other two action alternatives, the Selected Alternative has been designed to avoid all known cultural resources (see Section 4.6, Cultural Resources of the Final EIS/EIR). For example, under the Selected Alternative, the location of well 26-30 has been moved slightly to avoid known cultural resources (Figure 2-14, Final EIS/EIR). Potential inadvertent effects on cultural resources would be resolved through compliance with the terms and conditions of the *Memorandum of Agreement among the U.S. Bureau of Land Management, the U.S. Forest Service, the California State Historic Preservation Office, and ORNI 50 LLC (ORNI), a Subsidiary of Ormat, Nevada Inc. Regarding the Issuance of a Record of Decision under the Geothermal Steam Act of 1970 for the Proposed Casa Diablo IV Geothermal Development Project, Mono County, California* (MOA) developed and signed in accordance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR 800).

Impacts to visual resources would also be reduced under the Selected Alternative as compared to the other action alternatives (Table ES-2, Final EIS/EIR). This is because less geothermal piping would be constructed parallel to Sawmill Cutoff Road (NFSR 03S08). In addition, at locations where a new pipeline must cross the existing pipeline, a production pipeline, or both, the pipeline crossings would be underground. In comparison to the proposed action, installation of new pipeline below-ground at specific pipeline crossings would reduce visual impacts and impacts to recreational access. However, as discussed in Section 4.18, *Visual Resources* of the Final EIS/EIR, there are mapped visual quality objectives (VQOs) assigned by the LRMP in the CD-IV Project area. Even with implementation of required mitigation measures (Appendix B) the CD-IV Project would remain inconsistent in some areas with VQOs designated as “retention.” In accordance with the LRMP (p. 93), the Forest Supervisor documented his approval of the deviation of the CD-IV Project area from the assigned Visual Quality Objective of Retention; the letter is included in the project record and available upon request.

I recognize that many of the comments received are in regards to potential impacts to historic, ongoing, and future recreational use in the project area. Specifically, I also recognize that existing conflicts between over snow vehicles (OSVs) and other recreation uses and existing pipelines and well facilities currently occur as a result of the existing geothermal facility’s infrastructure. A reasonably foreseeable project includes the proposed USFS relocation of the existing Shady Rest OSV staging area and the reconstruction of the Shady Rest OSV staging area to a location to the north of Shady Rest Park, with potential plowing and/or trail construction connecting the proposed staging area to the Town of Mammoth Lakes. Relocation and reconstruction of the Shady Rest Park OSV staging area to the north would move the staging area to a location with fewer CD-IV Project

pipelines and well facilities that would need to be crossed to access open areas popular for OSV use. Therefore, potential recreation conflicts and safety hazards would be reduced under cumulative project conditions. However, as a decision has not been issued on this proposed project, I believe the PDMs and mitigation measures described in Appendix B will reduce to the extent practicable impacts on recreation resources affected by the implementation of the Selected Alternative. For instance, Mitigation Measure REC-3 (see Appendix B) requires ORNI 50, LLC to ensure that winter access is provided to the OSV staging area in coordination with the USFS and the Town of Mammoth Lakes. Impacts to recreation resources are analyzed in Section 4.14 of the Final EIS/EIR.

Authorization of the CD-IV Project will assist the BLM with implementation of Executive Order 13212, The Energy Policy Act of 2005, and Secretarial Order 3285A1. The CD-IV Project is also consistent with Section 2 of the Mining and Mineral Policy Act of 1970 and Sections 102(a)(7), (8), and (12) of the FLPMA (43 USC 1701 et seq.), which encourage the development of mineral resources, including geothermal resources, under the BLM's jurisdiction.

The CD-IV Project will generate up to 33 MW of electricity annually and is expected to provide employment and energy security benefits to California and the nation. The CD-IV Project will also provide clean electricity for homes and businesses and bring desirable jobs to the Eastern Sierra region. Employment of workers for project construction will have a beneficial effect in helping to reduce unemployment. As described in Section 2.2.6.3 of the Final EIS/EIR, construction employment is estimated to peak at a maximum of 120 workers on site at any one time. The total construction employment is anticipated to create the equivalent of 180 full time jobs, of which 46 are expected to be held by residents of Mono or Inyo counties. Six new permanent jobs would be created in Mono County (section 4.15, Final EIS/EIR).

Public Involvement

Involving the public in the decision-making process and incorporating comments has been crucial to the completion of this decision, and I believe strengthened the final design for the CD-IV Project. We began working with the public on this project more than three years ago. From the beginning, our intent was to include those who recreate on the Inyo National Forest lands, and to use that collective knowledge to ensure that the design of the project also supported the enjoyment of the Inyo National Forest for local residents and visitors alike.

The following characterizes the types of public involvement efforts that we have used throughout this process:

Scoping: The NOI for the CD-IV Project was published in the Federal Register on March 25, 2011 (76 FR 1686). The GBUAPCD submitted the Notice of Preparation (NOP) to the State Clearinghouse, responsible and trustee agencies, and local jurisdictions on April 1, 2011, announcing the anticipated preparation of the Draft EIS/EIR for the project. The NOI and NOP were also posted on the BLM and GBUAPCD websites, respectively, and notice of scoping meetings was sent to local agencies and community organizations, Indian tribes, and radio, television, print, and internet news sources. Two scoping meetings were conducted on

April 18-19, 2011 and written comments were accepted through May 9, 2011. Issues identified during scoping include potential effects to air quality, cultural resources, wildlife movement corridors, surface and groundwater supplies, public safety, and recreation (section 6.3 of the Final EIS/EIR). Issues were used to develop the action alternatives analyzed in the EIS/EIR, and have been considered in this decision.

Tribal Consultation:

The BLM and Inyo National Forest consulted with Indian tribes in the vicinity of the CD-IV Project on a government-to-government basis in accordance with several authorities including the NEPA, the National Historic Preservation Act (NHPA), the American Indian Religious Freedom Act, and Executive Order 13007 (Final EIS/EIR Chapter 6). The BLM and Inyo National Forest invited Indian tribes to consult on a government-to-government basis during the earliest stages of project planning, and the agencies and the applicant have followed up with additional correspondence, communication, and other information throughout the environmental review process.

Under Section 106 of the NHPA, the BLM and Inyo National Forest consulted with Indian tribes as part of our responsibilities to identify, evaluate and resolve potential adverse effects on cultural resources that may result from this undertaking. Tribes from Mono and Inyo counties were formally contacted based on the known extent and location of their aboriginal homeland, their involvement in earlier consultations related to the project area, and from interest expressed during phone calls. The Inyo National Forest sent scoping letters to these tribal governments in April 2010. These letters provided background information about the proposed project, detailed the planned content of the EIS/EIR, and solicited tribal participation in the planning and environmental review process. The Tribal Governments and interested members were invited to consult at a meeting held on May 27, 2010 at the BLM/Inyo National Forest office. Tribes and interested groups present at the meeting included the Bishop Paiute, Benton Paiute, Mono Lake Kutzadikaä, Big Pine Paiute-Shoshone and Lone Pine tribes, and the California Indian Basketmakers Association.

After alternatives were developed during the NEPA process, the BLM sent certified letters to the Tribal Chairs and Tribal Historic Preservation Officers from the Bishop Paiute, Benton Paiute, Mono Lake Kutzadikaä, Big Pine Paiute-Shoshone and Lone Pine Paiute tribes. These letters detailed the proposed project and alternatives and asked the tribes to identify any cultural resources within the project area to which they attached cultural or religious affiliation. No replies to these letters were received. The letters were followed up with phone calls to each tribal office in order to continue the consultation process.

In August of 2012, the BLM and Inyo National Forest conducted a field trip to the project area to discuss the results of the cultural resource inventory and BLM recommendations for avoiding site impacts. Tribal leadership from the Bishop Paiute, Benton Paiute, Mono Lake Kutzadikaä, Big Pine Paiute-Shoshone and Lone Pine Paiute were invited via phone. Tribal leadership from the Bishop Paiute and the Mono Lake Kutzadikaä attended this outing. During this field review both tribal entities voiced approval of the efforts taken by the BLM to use resource avoidance as the primary measure to prevent impacts to cultural resources.

Some concern regarding potential impacts to the geothermal reservoir was expressed. The BLM committed to holding an informational meeting to explain the binary geothermal process and to detail how the binary process differs from the flash process used at the Coso Geothermal facility located in Inyo County. That same evening the BLM met with the entire Bishop Paiute Tribal Council and the Vice-Chair of the Mono Lake Kutzadikaä to discuss the proposed project in detail. This meeting also addressed the findings of the cultural resource inventory report and the concerns that had been raised earlier.

On September 5, 2012, the BLM held a consultation meeting with the Bishop Paiute Tribe to provide project updates and to solicit further input on the environmental review. The focus of this meeting was to address the potential for negative impacts to the geothermal reservoir. No other concerns were elicited. The Vice-Chair and the Tribal Historic Preservation Officer again voiced their approval of BLM efforts to avoid cultural resource impacts.

On December 12, 2012, the BLM meet with the tribal council for the Big Pine Paiute-Shoshone. During this meeting the tribe was informed of the results of the cultural resource inventory and the proposed site avoidance measures. The council did not voice any concerns and stated that they would likely defer to the Bishop Tribe given the range of their aboriginal homeland.

On February 2, 2013 and May 14, 2013, the BLM met with the tribal council of the Bishop Paiute Tribe. The tribe was informed of the agreement to move well 26-30 to avoid a known cultural site and the determination that no known Historic Properties would be affected. The council agreed to participate in the cultural resource MOA that was being developed for the project as a Concurring Party.

During development of the MOA to address cultural resource compliance, both the Bishop Paiute and Big Pine Paiute-Shoshone were invited to provide comments and to sign onto the MOA as Concurring Parties. The Bishop Tribe provided comments on the draft MOA and agreed to sign as a Concurring Party. The Big Pine Tribe provided a single comment regarding tribal monitoring and deferred to the Bishop Paiute Tribe. On August 8, 2013, the MOA was signed by the BLM, Inyo National Forest, and the applicant (ORNI 50, LLC). The Bishop Paiute Tribe and the Great Basin Unified Air Pollution Control District also signed onto the MOA as Concurring Parties.

Additional information can be found in Chapter 6, Consultation, Coordination, and Public Participation in the Final EIS/EIR.

Draft EIS/EIR Public Comment Period:

A Notice of Availability (NOA) of the Draft EIS/EIR for the CD-IV Project was published in the Federal Register on November 16, 2012 (77 FR 68813) and the draft was distributed for a 60-day public and agency review and comment period scheduled to end on January 15, 2013. Following release of the Draft EIS/EIR, informational public meetings were also held on December 5 and 6, 2012 to provide an overview of the environmental review processes and to facilitate public comment on the draft document. In response to a request from the Mammoth

Community Water District (MCWD) and others, the official comment period was extended for an additional 15 days until January 30, 2013. At the close of the 75-day comment period, 27 comment letters had been received. One additional comment letter, from the MCWD, was received after the close of the official comment period. All 28 comment letters were considered and incorporated into the environmental review and responses to all 28 comment letters (Appendix G) and each individual comment (Appendix H) were provided in the Final EIS/EIR.

The nature of comments received on the Draft EIS/EIR primarily pertained to the NEPA and CEQA process, project alternatives, and impacts to various resources and uses. The cooperating agencies also received comments in support of the proposal. Public comments on the Draft EIS/EIR were incorporated into the Final EIS/EIR and resulted in corrections and clarifying text but did not significantly change the impact analysis for any of the alternatives considered. Comments concerning decommissioning, recirculation, biological resource project design measures, hydrologic monitoring, and ground water resources were received from various agencies, organizations and individuals. These comments were grouped together and provided a common response in section 6.4.3 of the Final EIS/EIR.

Final EIS/EIR: The Notice of Availability (NOA) of the Final Environmental Impact Statement (Final EIS/EIR) for public review was published in the Federal Register on July 5, 2013. Pursuant to 40 CFR 1506.10(a)(2), the BLM is required to wait a minimum of 30 days following release of a Final EIS before issuing a decision on the action under environmental review. During the required 30-day wait period for the CD-IV Project, the BLM and Great Basin Unified Air Pollution Control District received 9 comment letters (from 6 separate entities) on the proposed project and the Final EIS/EIR from the following agencies, organizations and individuals:

- Town of Mammoth Lakes Community and Economic Development Department, dated July 10, 2013;
- Jo Bacon, dated July 10, 2013;
- Adams Broadwell Joseph & Cardozo on behalf of the Coalition for Responsible Mammoth Development and the California Unions for Reliable Energy, dated July 12, 2013 (including attachments A-C);
- Mammoth Community Water District, dated July 12, 2013 (including attachments dated July 12, 2013 from Wildermuth and Schmidt);
- Lozeau Drury, LLP on behalf of Bishop residents Russell Covington, Robert A. Moore, Randy Sipes, and Randal Sipes ("Bishop Residents"), Laborers International Union of North America, Local Union 783, and its members living in Mono County ("LiUNA" or "Commenters"), dated July 15, 2013 (including exhibits A-D);
- U.S. Environmental Protection Agency Region IX, dated July 19, 2013;

- Lozeau Drury, LLP on behalf of Bishop residents Russell Covington, Robert A. Moore, Randy Sipes, and Randal Sipes ("Bishop Residents"), Laborers International Union of North America, Local Union 783, and its members living in Mono County ("LiUNA" or "Commenters"), dated July 23, 2013;
- Mammoth Community Water District, dated August 2, 2013 (including attachments dated July 12, 2013 from Wildermuth and Schmidt); and
- Lozeau Drury, LLP on behalf Bishop residents Russell Covington, Robert A. Moore, Randy Sipes, and Randal Sipes and Randal Sipes ("Bishop Residents"), Laborers International Union of North America, Local Union 783, and its members living in Mono County ("LiUNA" or "Commenters"), dated August 5, 2013 (including exhibits A-D).

Although submitted to the BLM, and outside of the formal comment period on the Draft EIS, I have considered the comments submitted on the Final EIS/EIR. None of the comments raise new issues or concerns related to components of the Selected Alternative under my decision authority.

Alternatives Considered in Detail

Four alternatives were considered in detail, and are summarized below. A more detailed comparison of these alternatives can be found in Chapter 2 of the Final EIS/EIR. The Selected Alternative, Alternative 3 (Modified Pipeline Alternative), was identified as the environmentally preferred alternative. Alternative 1 (Proposed Action), Alternative 2 (Plant Site Alternative), and Alternative 4 (No Action Alternative) were rejected for the reasons described below.

Alternative 1 (Proposed Action)

Alternative 1 represents the Proposed Action and provided a starting point for analysis and public input and comment. It includes the Project Design measures listed in section 2.2.9 of the Final EIS/EIR. Alternative 1 consists of the following facilities:

1. A geothermal power plant consisting of two (2) Ormat Energy Converter (OEC) binary generating units (21.2 MW gross each) with vaporizers, turbines, generators, air-cooled condensers, preheaters, pumps and piping, and related ancillary equipment. The gross power generation of the CD-IV plant would be 42.4 MW. The estimated auxiliary and parasitic loads (power used within the project for circulation pumps, fans, well pumps, loss in transformers and cables) is about 9.4 MW, thus providing a net power output of about 33 MW. Additional components of the power plant would include:
 - a) A motive fluid system consisting of motive fluid (n-pentane) storage vessels (either one or two vessels in the range of 9,000 to 12,000 gallons) and motive fluid vapor recovery systems (VRUs). Each VRU would consist of a diaphragm pump and a vacuum pump.
 - b) A new substation would be constructed on the power plant site and would be connected to the SCE Casa Diablo Substation at Substation Road.
 - c) An overhead 33 kV transmission line connecting the power plant substation with the SCE Casa Diablo Substation approximately 650 feet (198 meters) long.

2. Up to 16 geothermal wells are proposed. Fourteen of the wells would be located in the Basalt Canyon Area and two wells would be located southeast of the proposed power plant east of U.S. Highway 395. The specific locations for these wells would be selected out of the 18 possible locations shown in Figure 2-2 of the Final EIS/EIR. The actual number may be less depending on the productivity of the wells. The final number and location of wells would be determined by modeling and actual drilling results. Approximately half of the wells would be production wells and the other half would be injection wells. Each production well would range in depth from 1,600 to 2,000 feet below ground surface (bgs), and each new injection well would be drilled to approximately 2,500 feet bgs. Production wells would be equipped with a down-hole pump powered by a surface electric motor. Most of the well sites in Basalt Canyon have been analyzed previously for the development of exploratory wells, two of which were drilled in 2011. Additional detail is provided in Section 2.2.4 of the Final EIS/EIR.
3. Piping would extend from production wells to the power plant and from the power plant to the individual injection wells. Two main pipelines would parallel the existing Basalt Canyon pipeline and would cross beneath U.S. Highway 395 between the wellfield and the CD-IV power plant site. Where pipelines must cross another pipeline or a road, the crossings would be underground.
4. Power and control cables for the wells would be installed in above-ground cable trays placed on the pipeline supports. Appurtenant facilities include pumps, tanks, valves, controls, and flow monitoring equipment.
5. 5.58 miles (8.98 km) of existing roads (4.97 miles of NFSR and County-maintained roads and 0.61 mile of non-NFSR (unauthorized road) would be improved. 0.77 mile (1.24 km) of new roads would be constructed. NFSR 03S129E would be closed to public access within the fence line of the proposed CD-IV power plant. Additional roads could be closed to the public temporarily during construction.

Alternative 1 was not selected because Alternative 3 reduced environmental impacts in comparison while achieving the same goals.

Alternative 2 (Plant Site Alternative)

Alternative 2 would locate the CD-IV power plant and related facilities to the east of the existing geothermal complex power plant facilities. Geothermal production and injection pipelines to Basalt Canyon that are located west of Highway 395 would be the same as the Proposed Action. East of Highway 395, the pipelines would proceed east to the Alternative Plant Site (rather than north as under the Proposed Action). Where pipelines must cross another pipeline, the crossings would be underground. Due to the alternate location of the power plant, approximately 5,000 feet of overhead electrical transmission line would connect the power plant substation to the existing SCE Casa Diablo Substation. Power plant and wellfield construction, operation and decommissioning would be the same as the Proposed Action. 5.84 miles (9.40 km) of existing roads (5.23 miles of NFSR and County roads and 0.61 mile of non-NFSR (unauthorized road) would be improved. 0.77 mile (1.24 km) of new roads would be constructed. This alternative would require the closure of a portion of NFST 28E207 and the closure and rerouting of a portion of NFSR 03S130. Additional roads could be closed to the public temporarily.

Alternative 2 was not selected because its impacts would be greater than the other action alternatives. Specifically under Alternative 2, Alternative Plant Site, the long-term operation and maintenance of the power plant would exceed the Mono County nighttime exterior noise standard at the nearby Chance Ranch residence¹. Because mitigation to reduce power plant operation noise would not be practicable or feasible, Alternative 2 would result in a significant unavoidable impact with respect to the generation of noise levels in excess of local standards. Under Alternative 2, the power plant would be at a similar elevation as the existing power plant facilities (MP-II and PLES I) and could be partially visible from local highways and roads. Furthermore, the new pipelines (spanning approximately 12 feet wide) and well facilities would be highly visible from scenic roads and resources. Even with implementation of PDMs and the landscaping mitigation measure, impacts on the visual character of the Project area would be significant and unavoidable.

Alternative 4 (No Action)

Under Alternative 4, the No Action Alternative, the CD-IV Project would not be constructed and no CD-IV-related geothermal production or injection wells, or new pipelines would be constructed in Basalt Canyon, Upper Basalt Canyon, or in areas east of Highway 395. In addition, the proposed geothermal power plant, substation and transmission line would not be constructed.

It is important to note that the operation of existing geothermal facilities would be unaffected by any final decision on the CD-IV Project. The three existing geothermal power plants (MP-I, MP-II and PLES-I), the pipeline from Basalt Canyon, and two existing production wells would continue operating in accordance with their respective permits. Similarly, under the No Action Alternative, geothermal exploration in Basalt Canyon and Upper Basalt Canyon previously approved would be expected to continue. Specifically, prior approvals authorized up to ten small diameter (slim hole) and six geothermal exploratory (large diameter) geothermal wells in the Basalt Canyon and Upper Basalt Canyon area.

There are a number of reasons for not selecting this alternative. The primary reason, however, is that it would not meet the stated purpose and need. Under this alternative, additional renewable energy would not be developed.

Environmentally Preferred Alternative

In accordance with 40 CFR 1505.2(b), I have identified Alternative 4, the No Action Alternative, as the environmentally preferred alternative because it would not create a disturbance in the near term and therefore would result in the least impact to the biological and physical environment in the project area.

Of the action alternatives, I have identified Alternative 3, the Modified Pipeline Alternative, as the environmentally preferred alternative because of the reduced environmental impacts on biological,

¹ LADWP has purchased Chance Ranch and it is speculated that no one currently lives there. However, for the purposes of this analysis, it is considered a sensitive receptor as individuals are not precluded from staying at the residence for extended periods of time.

cultural, and visual resources relative to both the Proposed Action and Alternative 2, the Plant Site Alternative.

Legal and Regulatory Compliance

My decision complies with the laws, policies, and executive orders listed below and described in Chapter 3 of the Final EIS/EIR and as summarized below.

Forest Plan Consistency

Because the federal geothermal leases are located on the Inyo National Forest, the BLM consulted with the USFS as it prepared the Final EIS/EIR. The BLM authorizations include Conditions of Approval for surface use and occupancy based on recommendations from the USFS to ensure consistency with the Land and Resource Management Plan (LRMP). Compliance with the LRMP is described in more detail of section 1.5.2.2 of the Final EIS/EIR.

The Selected Alternative would be consistent with the LRMP as it would not conflict with the management direction regarding applicable resource areas, including but not limited to mineral management, geology, recreation, riparian areas, vegetation and wildlife. As discussed in Section 4.18, *Visual Resources* of the Final EIS/EIR, there are mapped visual quality objectives (VQOs) in the CD-IV Project area. In addition, portions of leases CACA-14407 and CACA-14408 are designated as “No Surface Occupancy” areas to protect critical visual zones along U.S. Highway 395, SR 203, and Sawmill Cutoff Road (NFSR 03S08). Implementation of PDMs VIS-1 through VIS-4, and LU-1, would generally reduce the visibility of pipelines in scenic areas. Implementation of Mitigation Measures VIS-1: Landscape Plan, VIS-2: Underground Pipeline Crossovers, and VIS-4: Power Plant Landscape Plan would further reduce the visual effects of the CD-IV Project. However, even with implementation of these measures the CD-IV Project would remain inconsistent in some areas with VQOs designated as “retention.” In accordance with the LRMP (p. 93), the Forest Supervisor documented his approval of the deviation of the CD-IV Project area from the assigned Visual Quality Objective of Retention; the letter is included in the project record and available upon request.

Findings Required by Other Laws and Regulations

The National Environmental Policy Act at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft EIS concurrently with and integrated with ...other environmental review laws and executive orders.” Chapters 1 and 3 of the Final EIS/EIR include consideration of applicable laws, regulations, policies and Executive Orders that are relevant to the project. These laws include:

National Forest Management Act

See the Forest Plan Consistency section above.

Clean Water Act (CWA)

The Clean Water Act applies to “waters of the United States”, which have been determined by the Environmental Protection Agency (EPA) and the courts to apply only to surface water and

shallow groundwater directly tributary to surface waters. Full implementation of this decision is expected to have no effect to surface water quality and satisfy all Federal State water quality requirements. This finding is based on the minimal and ephemeral nature of surface water in the project area, as well as design measures and mitigations contained in the Final EIS/EIR (Sections 2.2.9 and 2.2.10), the application of State approved Best Management Practices specifically designed to protect water quality, and the discussion of water quality and beneficial uses contained in the Final EIS/EIR (Section 4.19). Examples include: (1) Development of a site runoff and drainage plan and obtainment of a California General Construction Storm Water Permit approved by the Forest Service and Lahontan Regional Water Quality Control Board (2) Roads will be properly constructed, graded and repaired to prevent enhanced erosion (3) All containment basins/sumps will be constructed so as to be able to contain anticipated drill cuttings, drilling mud, other drilling liquids, and on-site flows anticipated from a 100-year event with at least one foot of freeboard to prevent overtopping

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) (Public Law 93-523), passed in 1974, the regulates contaminants of concern to domestic water supply, including groundwater. Full implementation of this decision is expected to have have no negative effects to groundwater sourced domestic water supply. The finding is based on design measures and mitigations (Sections 2.2.9 and 2.2.10), and the discussion of groundwater and drinking water quality contained in the Final EIS/EIR (Section 4.7). Examples include (1) Measures designed to prevent spills of geothermal fluids, binary working fluids, other materials stored on site (2) Well boring methods to prevent mixing of geothermal groundwater and more shallow groundwater used for domestic supplies and (3) Development of “spill or discharge contingency plan” and “well blowout contingency plan”.

Endangered Species Act (ESA)

As the lead federal agency for the CD-IV Project, the BLM, in cooperation with the USFS, conducted a biological assessment and initiated informal consultation with the U.S. Fish and Wildlife Service (FWS) concerning the potential effects on the federally endangered Owens tui chub (*Siphateles bicolor snyderi*) that could occur from implementation of the Agency Preferred Alternative (Alternative 3, the Modified Pipeline Alternative). Based on the predicted effects of the proposed project, the biological assessment determined that implementation of the Agency Preferred Alternative “may affect, but is not likely to adversely affect” Owens tui chub or their designated critical habitat. In conformance with law and policy, the BLM requested concurrence from the FWS for this determination on July 12, 2013.

On August 2, 2013, the FWS concurred with the determination that the Agency Preferred Alternative for the CD-IV Project is not likely to adversely affect Owens tui chub or its designated critical habitat. The FWS found that implementation of the proposed project “will not directly affect either Owens tui chub or its critical habitat.” The FWS also found that “indirect effects to Owens tui chub would only occur through changes to the primary consistent elements” of its habitat and that the potential changes “would be so minor that we [FWS] could not

meaningfully measure, detect, or evaluate any change in the function of the primary consistent elements” at either AB and CD springs or the Little Hot Creek Pond.

Bald and Golden Eagle Protection Act (BGEPA), Migratory Bird Treaty Act, and Lacey Act

Based on a thorough review of the affected environment and environmental consequences contained in the Final EIS/EIR, it appears that the CD-IV Project will not affect golden eagles or their habitat, and no further action will be required by BLM to satisfy the BGEPA, Migratory Bird Treaty Act, or Lacey Act with regard to this species.

Executive Order 13112 Invasive Species 64 FR 6183 (February 8, 1999)

Consistent with this Order, the CD-IV Project has incorporated feasible and prudent mitigation measures in the Selected Alternative to minimize risk of harm caused by invasive species. The CD-IV Project includes several PDMs aimed at reducing impacts associated with noxious weed species (PDMs BIO-4, BIO-5, BIO-6, BIO-7, and BIO-8). The PDMs would help prevent new infestations from becoming established in the Project area and would help control the spread of existing populations. This would be accomplished through prevention of introduction from outside seed sources (BIO-4, BIO-5), eradication of new non-native species populations (BIO-6), monitoring (BIO-7), and removal of cheatgrass in specific areas (BIO-8). Mitigation Measure VEG-2 would also reduce impacts from noxious weeds by requiring the preparation of a comprehensive weed management plan. See Section 3.3, *Biological Resources-Vegetation* of the Final EIS/EIR.

National Historic Preservation Act (NHPA)

Section 106 of the National Historic Preservation Act (NHPA)(16 USC 470 et seq.) requires federal agencies to take into account the effects that their approvals and federally funded activities and programs have on significant historic properties. “Significant historic properties” are those properties that are included in, or eligible for, the National Register of Historic Places, and can include cultural resources.

The BLM and Inyo National Forest conducted intensive pedestrian surveys of the entire Area of Potential Effect (APE) for the CD-IV Project in order to identify Historic Properties that were located within the project area. This survey area included the footprint for all of the alternatives developed and considered during the NEPA process, including all proposed access routes, all proposed construction and staging areas, and a buffer sufficient to allow for flexibility during project implementation. After the survey was completed, the findings and recommendations were compiled into a cultural resource inventory report. The results of this report were then shared with the consulting tribal governments and the California Office of Historic Preservation.

As the lead federal agency for the CD-IV Project, the BLM in cooperation with the Inyo National Forest initiated consultation with the California State Historic Preservation Officer (SHPO) for the project pursuant to Section 106 of the NHPA. The basic steps in the Section 106 process are described in Section 3.6, Cultural Resources of the Final EIS/EIR. Additional information can

also be found in Chapter 6, Consultation, Coordination, and Public Participation in the Final EIS/EIR.

Section 4.6, Cultural Resources, of the Final EIS/EIR describes the potential effects of the applicant's proposed action and alternatives on historic and cultural resources. The Agency Preferred Alternative/Selected Alternative (Alternative 3, the Modified Pipeline Alternative) was designed specifically to avoid impacts to known cultural resources. Inadvertent effects on cultural resources will be resolved through compliance with the terms and conditions of the MOA developed and signed in accordance with Section 106 of the NHPA and its implementing regulations (36 CFR 800).

The MOA was prepared to resolve potential adverse effects associated with the CD-IV Project and to develop permit stipulations to avoid, minimize, or mitigate adverse effects to Historic Properties. The MOA for the project was executed by signature between the BLM Bishop Field Office, Inyo National Forest, and the applicant (ORNI 50, LLC) on August 8, 2013 and by the California SHPO the following day. The analysis of impacts in Final EIS/EIR and the execution of the MOA provide evidence of SHPO concurrence that the BLM and Inyo National Forest have satisfied their obligations under Section 106 of NHPA with respect to cultural resources and Historic Properties.

Administrative Review or Appeal Opportunities

This decision is subject to appeal pursuant to the regulation at 36 CFR 215. Appeals, including attachments, must be filed within 45-days of the publication date of the legal notice of decision in the Inyo Register, the newspaper of record. Attachments received after the 45-day period will not be considered. The publication date in the Inyo Register is the exclusive means for calculating the time to file an appeal. Those wishing to appeal this decision should not rely upon dates or timeframe information provided by any other source. Individuals or organizations who submitted comments during the comment period specified at 36 CFR 215.6 may appeal this decision. The notice of appeal must meet the appeal content requirements at 36 CFR 215.14.

The appeal must be submitted (regular mail, fax, email, hand-delivery, or express delivery) to the Appeal Deciding Officer: Randy Moore, Regional Forester, USDA Forest Service, Regional Office R5, 1323 Club Drive, Vallejo, CA 94592. Appeals may be submitted by FAX (707) 562-9229 or by hand delivery to the Regional Office at the address shown above. The office business hours for those submitting hand-delivered appeals are: 8:00 am to 4:00 pm Monday through Friday, excluding holidays. Electronic appeals must be submitted in a format such as an email message, plain text (.txt), rich text format (.rtf), or Word (.doc) to appeals-pacificsouthwest-regional-office@fs.fed.us [Subject: Casa Diablo IV Geothermal Project]. In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification.

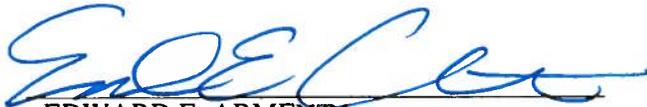
Implementation Date

If no appeals are filed within the 45-day appeal period, implementation of the decision may occur on, but not before, five business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition. I will coordinate authorization for implementation of my decision with both the BLM as lead agency and the GBUAPCD as a cooperating agency in their respective authorizations required for implementation of their decisions.

Contact Person

The CD-IV Project Final EIS/EIR and supporting documents are available for public review at the Inyo National Forest, Supervisor's Office, 351 Pacu Lane, Bishop, CA 93514, (760) 873-2400. For further information on this decision, contact Sarah Tomskey, Deputy District Ranger, Mammoth and Mono Lake Ranger Districts (sarahtomskey@fs.fed.us; (760) 647-3033).

Signature and Date



EDWARD E. ARMENTA
Forest Supervisor, Inyo National Forest

8/12/13
Date

Appendix A: BLM Record of Decision

Casa Diablo IV Geothermal Development Project

Mono County, California

Lead Agency:

*United States Department of the Interior
Bureau of Land Management*

Case File Number: CACA 054722

Casa Diablo IV Geothermal Development Project Decision to Approve Application for Geothermal Drilling, Commercial Use, Site License, and Construction Permit

*United States Department of the Interior
Bureau of Land Management
Bishop Field Office
351 Pacu Lane, Suite 100
Bishop, CA 93514*

August 12, 2013



Cooperating Federal Agency:

United States Forest Service, Inyo National Forest

Cooperating State Agency:

Great Basin Unified Air Pollution Control District

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1.0 Introduction

The purpose and need for action by the United States Department of the Interior (DOI), Bureau of Land Management (BLM), considered in this Record of Decision (ROD) is to respond to an application filed by Mammoth Pacific, L.P. (MPLP) to construct, operate and maintain, and decommission the Casa Diablo IV Geothermal Development Project (CD-IV Project) as described in the “Application for Geothermal Drilling, Commercial Use, Site License, and Construction Permit; Plan of Development (POD), Plan of Operation and Plan of Utilization (POU)” submitted to the BLM on February 17, 2010 and revised on June 5, 2012 (MPLP, 2010 and 2012). Subsequent to the application being filed, MPLP was acquired by Ormat Nevada Inc., which has formed a wholly owned subsidiary (ORNI 50, LLC) to implement the CD-IV Project. As proposed, the CD-IV Project would be constructed on BLM-administered federal geothermal leases located on National Forest System lands managed by the U.S. Forest Service, Inyo National Forest, in compliance with the Geothermal Steam Act of 1970, Section 103(c) of the Federal Land Policy and Management Act of 1976, as amended (FLPMA) and other applicable laws, policies, and regulations.

Specifically, ORNI 50, LLC is requesting authorization to construct, operate and maintain, and decommission the CD-IV Project, a proposed commercial geothermal power generation facility that would include a power plant, well field, pipelines, and associated infrastructure on portions of BLM-administered federal geothermal leases CACA-11667, CACA 11672, CACA-14407, and CACA-14408. The proposed CD-IV Project is located in the vicinity of the existing Casa Diablo geothermal complex near Mammoth Lakes in Mono County, California.

This ROD documents the decision of the BLM to allow geothermal development and related use and occupancy on the affected federal geothermal leases. This ROD approves the construction, operation and maintenance, and decommissioning of a 33 net megawatt (MW) binary power plant composed of two Ormat Energy Converters (OECs); the development of an expanded geothermal well field; and, the construction of pipelines to bring the geothermal brine to the power plant and pipelines to take the cooled brine to injection wells.

The analysis of potential effects of the applicant’s proposed action and alternatives on the human environment was documented in the Final Environmental Impact Statement/Environmental Impact Report (Final EIS/EIR) for the CD-IV Project prepared by the BLM Bishop Field Office, Inyo National Forest, and Great Basin Unified Air Pollution Control District. The cooperating agencies prepared the Final EIS/EIR in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), the FLPMA, the California Environmental Quality Act of 1970 (CEQA), and other applicable authorities. The selected alternative for implementation of the CD-IV Project is Alternative 3, the Modified Pipeline Alternative, which was analyzed as the Agency Preferred Alternative in the Final EIS/EIR.

The selected alternative will assist the BLM in meeting the following management objectives:

- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the “production and transmission of energy in a safe and environmentally sound manner.”
- The Energy Policy Act of 2005, which sets forth the “sense of Congress” that the Secretary of the Interior should seek to have approved non-hydropower renewable energy projects on the public lands with a generation capacity of at least 10,000 MW by 2015.
- Secretarial Order 3285A1, dated March 11, 2009, and amended on February 22, 2010, which “establishes the development of renewable energy as a priority for the Department of the Interior.”
- The President’s Climate Action Plan, released June 25, 2013, which is intended to reduce carbon pollution, prepare the U.S. for the impacts of climate change, and lead international efforts to address global climate change. To ensure America's continued leadership in clean energy, the Climate Action Plan set a new goal for the Department of the Interior to permit enough renewable electricity generation from the public lands to power more than 6 million homes by 2020. This goal will require the approval of 20,000 MWs of renewable energy projects on the public lands by 2020.

2.0 Overview of Alternatives

In the EIS/EIR, the BLM and cooperating agencies evaluated three action alternatives, each of which contemplated the construction of a 33-MW geothermal power plant, an expanded well field with up to 16 geothermal wells, and associated pipelines and infrastructure. The action alternatives differ in the location of the power plant and the location of one well and pipelines. A No Action alternative was also considered. Alternative 3, the Modified Pipeline Alternative, was identified as the Agency Preferred Alternative in the Final EIS/EIR.

The **Proposed Action** would consist of the following facilities:

1. A geothermal power plant consisting of two Ormat Energy Converter (OEC) binary generating units (21.2 MW gross each) with vaporizers, turbines, generators, air-cooled condensers, preheaters, pumps and piping, and related ancillary equipment. The gross power generation of the CD-IV plant would be 42.4 MW. The estimated auxiliary and parasitic loads (power used within the project for circulation pumps, fans, well pumps, loss in transformers and cables) is about 9.4 MW, thus providing a net power output of about 33 MW. Additional components of the power plant would include:
 - a) A motive fluid system consisting of motive fluid (n-pentane) storage vessels (either one or two vessels in the range of 9,000 to 12,000 gallons) and motive fluid vapor recovery systems (VRUs). Each VRU would consist of a diaphragm pump and a vacuum pump.

- b) A new substation that would be constructed on the power plant site and would be connected to the existing Southern California Edison (SCE) Casa Diablo Substation at Substation Road.
 - c) An overhead 33 kV transmission line approximately 650 feet (198 meters) long that would connect the power plant substation with the SCE Casa Diablo Substation.
2. Up to 16 geothermal wells are proposed. Fourteen (14) of the wells would be located in the Basalt Canyon area and 2 wells would be located southeast of the proposed power plant east of U.S. Highway 395. The specific locations for these wells would be selected out of 18 possible locations. The actual number of wells required may be less depending on the productivity of the wells. The final number and location of wells would be determined by modeling and actual drilling results. Approximately half of the wells would be production wells and the other half would be injection wells. Each production well would range in depth from 1,600 to 2,000 feet below ground surface (bgs) and each injection well would be drilled to approximately 2,500 feet bgs. Production wells would be equipped with a down-hole pump powered by a surface electric motor. Thirteen (13) of the 18 proposed well locations in the project area were analyzed and approved for exploratory well development during previous environmental reviews (BLM 2001 and BLM 2005). Two (2) of these previously approved exploratory wells were drilled in 2011.
 3. Piping would extend from the production wells to the power plant and from the power plant to the individual injection wells. Two main pipelines would parallel the existing Basalt Canyon pipeline and would cross beneath U.S. Highway 395 between the well field and the CD-IV power plant site. Where pipelines must cross another pipeline or a road, the crossings would be underground.
 4. Power and control cables for the wells would be installed in above-ground cable trays placed on the pipeline supports. Ancillary facilities would include pumps, tanks, valves, controls, and flow monitoring equipment.

Alternative 2, Plant Site Alternative, would have located the CD-IV power plant and related facilities to the east of the existing Casa Diablo geothermal complex power plant facilities. Geothermal production and injection pipelines to Basalt Canyon that are located west of U.S. Highway 395 would be the same as the Proposed Action. East of U.S. Highway 395, the pipelines would proceed east to the Alternative Plant Site rather than north as under the Proposed Action. Where pipelines must cross another pipeline, the crossings would be underground. Power plant and well field construction, operation and maintenance, and decommissioning would be the same as the Proposed Action.

Alternative 3, Modified Pipeline Alternative (Selected Alternative), modifies the geothermal production and injection pipeline alignments in Basalt Canyon, slightly alters the location of proposed well 26-30, and places pipeline crossings underground. The purpose of the pipeline alignment changes and the well location change under this alternative is to minimize and avoid potential effects on biological and cultural resources and to reduce potential visual effects. Power plant and well field construction, operation and maintenance, and decommissioning would be the same as the Proposed Action. This alternative was identified as the Agency Preferred Alternative in the Final EIS/EIR.

Alternative 4, No Action Alternative, would not authorize the construction, operation and maintenance, and decommissioning of the CD-IV Project. Therefore, no currently unauthorized CD-IV-related geothermal production or injection wells, or new pipelines, would be constructed in Basalt Canyon, Upper Basalt Canyon, or east of U.S. Highway 395. In addition, the proposed geothermal power plant, substation and transmission line would not be constructed.

It is important to note that the operation of existing geothermal facilities will be unaffected by any final decision on the CD-IV Project. The three existing geothermal power plants (MP-I, MP-II and PLES-I), the existing pipeline from Basalt Canyon, and two existing production wells will continue operating in accordance with their respective permits. Similarly, under the No Action Alternative, previously approved geothermal exploration in Basalt Canyon and Upper Basalt Canyon is expected to continue. Specifically, there are prior approvals that authorize up to 10 slim hole (small diameter) and 6 large diameter exploratory geothermal wells in Basalt Canyon and Upper Basalt Canyon.

2.1 Environmentally Preferred Alternative

In accordance with 40 CFR 1505.2(b), the BLM has identified Alternative 4, the No Action Alternative, as the environmentally preferred alternative because it would not create any new surface disturbance in the project area and therefore would not result in any adverse environmental impacts.

Of the action alternatives, the BLM has identified Alternative 3, the Modified Pipeline Alternative (Selected Alternative), as the environmentally preferred alternative because of the reduced environmental impacts on biological, cultural and visual resources relative to both the Proposed Action and Alternative 2, the Plant Site Alternative.

3.0 Decision

The BLM's decision is to approve Alternative 3, the Modified Pipeline Alternative, which was analyzed as the Agency Preferred Alternative in the Final EIS/EIR. This decision constitutes approval of the "Application for Geothermal Drilling, Commercial Use, Site License, and Construction Permit; Plan of Development (POD), Plan of Operation and Plan of Utilization (POU)" submitted by MPLP on February 17, 2010 and revised on June 5, 2012. This decision will allow for the construction, operation and maintenance, and decommissioning of the CD-IV Project on portions of BLM-administered federal geothermal leases CACA-11667, CACA 11672, CACA-14407, and CACA-14408 located on National Forest System lands managed by the Inyo National Forest in Mono County, California.

The authorized power plant site is located on federal geothermal lease CACA-11667 in Sections 29 and 32, of Township 3 South, Range 28 East, MDB&M, located northeast of the intersection of U.S. Highway 395 and California State Route 203, approximately 2 miles east Mammoth Lakes, California. The authorized geothermal resource well locations and pipeline alignments are located on portions of federal geothermal leases CACA-11667, CACA-11672, CACA-14407,

and CACA-14408 in Sections 25, 26, and 36 of Township 3 South, Range 27 East and Sections 30, 31, and 32 of Township 3 South, Range 28 East, MDB&M. Up to 16 wells (14 new and 2 existing), selected from 18 possible locations, could be developed for geothermal production and injection. Up to 14 wells could be located in Basalt Canyon west of U.S. Highway 395 and 2 wells could be located southeast of the authorized power plant site east of U.S. Highway 395. The authorized location of well 26-30 and the authorized alignment of production and injection pipelines shall conform to the specifications in Section 2.4 of the Final EIS/EIR. Figure 1 and Figure 2, provided in Appendix 1 of this ROD, show the approximate locations of authorized project facilities.

The approved CD-IV project is subject to the following measures, terms, and conditions:

- 1) All Project Design Measures (Section 2.2.9) and Mitigation Measures (Section 2.2.10) contained in the Final EIS/EIR and the Mitigation, Monitoring and Reporting Program attached to this ROD as Appendix 2;
- 2) The Memorandum of Agreement (MOA) between the BLM Bishop Field Office, Inyo National Forest, California State Historic Preservation Officer, and the applicant (ORNI 50, LLC) attached to this ROD as Appendix 3, as such may be amended over time;
- 3) The BLM Geothermal Leasing Regulations (43 CFR 3200 *et seq.*); and
- 4) The issuance of all other necessary local, state, and federal approvals, authorizations, and permits.

Prior to the initiation of construction for any phase or partial phase of the CD-IV Project, the applicant must obtain a Utilization Plan and Facility Construction Permit (43 CFR 3272) from the BLM. The applicant must also obtain a Site License (43 CFR 3273) and a Commercial Use Permit (43 CFR 3274) from the BLM prior to operation of the power plant. BLM approved Geothermal Drilling Permits (Form 3260-2) will be required for all drilling operations. BLM approved Geothermal Sundry Notices (Form 3260-3) will be required to conduct subsequent well operations or to make changes in any previously approved permit.

Construction would occur over 24 months. Phase I will begin within the soonest construction season after the permitting process is complete as weather allows. The start date of Phase II is uncertain until further well field testing and development has been completed. Construction of the power plant will require approximately 16 months, pending winter weather and snow conditions, in two phases (8 months each).

Construction of Phase I and well testing will occur first. If the approved project does not progress to construction and operation, or if it is modified to the extent that it appears to be a new project proposal, additional review under the NEPA could be required.

This ROD applies only to BLM authorizations for the CD-IV Project on the affected BLM-administered federal geothermal leases. It does not apply to other authorizations, or to private lands or other lands, that are not under jurisdiction of the BLM. Other agencies, including but

not limited to, the Inyo National Forest, Great Basin Unified Air Pollution Control District, and Mono County are responsible for issuing their own decisions and applicable authorizations associated with the CD-IV Project.

3.1 Management Considerations

Based on the analysis in the Final EIS/EIR, the BLM has determined that implementation of the Agency Preferred Alternative, described in the Final EIS/EIR as Alternative 3, the Modified Pipeline Alternative, will not cause unnecessary or undue degradation of public lands.

Authorization of the CD-IV Project will assist the BLM with implementation of Executive Order 13212, The Energy Policy Act of 2005, and Secretarial Order 3285A1. Authorization of the CD-IV Project will also assist the BLM in meeting the Department of the Interior goal to permit enough renewable electricity generation from the public lands to power more than 6 million homes by 2020 in accordance with the President's 2013 Climate Action Plan.

The CD-IV Project has been thoroughly analyzed and found to comply with the applicable requirements of Section 102(c) of the NEPA (42 USC 4321 *et seq.*) and its implementing regulations (40 CFR Parts 1500-1508 and 43 CFR Part 46). The NEPA process is intended to assist federal officials in making decisions that are based on an understanding of the environmental consequences of their decisions, and in identifying actions that protect, restore, and enhance the environment. The CD-IV Project is also consistent with Section 2 of the Mining and Mineral Policy Act of 1970 and Sections 102(a)(7), (8), and (12) of the FLPMA (43 USC 1701 *et seq.*), which encourage the development of mineral resources, including geothermal resources, on the public lands.

The BLM has decided to approve Alternative 3, the Modified Pipeline Alternative, because it reflects a careful balance of the varied and competing public interests in managing the public lands in accordance with the multiple use mandate and other agency obligations under the FLPMA. It is also based on a comprehensive environmental review and full public involvement in accordance with the NEPA.

The selected alternative includes all the primary components of the applicant's proposed action, but with a modified pipeline alignment to minimize environmental impacts. The modified alignment was developed in consultation with the cooperating agencies specifically to address concerns regarding biological, cultural and visual resources. The total length of the pipeline under the selected alternative would be 5.42 miles in comparison to 5.68 miles under the proposed action. In addition to having a shorter overall pipeline length, the selected alternative would also involve up to 3.7 miles of double pipeline in comparison to 3.5 miles of double pipeline under the proposed action.

Implementation of the selected alternative would result in reduced impacts to biological resources as a result of the reduced pipeline length and associated surface disturbance and vegetation removal (see Sections 4.3, Biological Resources - Vegetation and 4.4, Biological Resources - Wildlife of the Final EIS/EIR for a complete analysis of impacts). The total acreage

of impacts to native vegetation communities would decrease under the selected alternative as would impacts to special status plants. Potential impacts from the introduction, establishment and spread of noxious weeds would also be reduced as compared to the proposed action.

The selected alternative would have minimal effects on cultural resources and would avoid adverse effects to known Historic Properties (see Section 4.6, Cultural Resources of the Final EIS/EIR). Under the selected alternative, the location of well 26-30 would be moved slightly to avoid known cultural resources. While project facilities, primarily pipelines, may cross or overlap Historic Properties in some locations, engineering plans for the selected alternative have not been finalized, and adjustments to the project layout and design will be made to further avoid impacts to such resources. There is considerable flexibility of location and design for most project facilities (well pads, pipelines, new access roads, transmission line) that allows for avoidance of known cultural resources. Potential inadvertent effects on cultural resources would be resolved through compliance with the terms and conditions of the MOA (ROD Appendix 3) developed and signed in accordance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR 800).

Impacts to visual resources would also be reduced under the selected alternative as less geothermal piping would be constructed parallel to Sawmill Cutoff Road (NFSR 03S08) in comparison to the proposed action. In addition, at locations where a new pipeline must cross the existing pipeline, a production pipeline, or both, the pipeline crossings would be underground. In comparison to the proposed action, installation of new pipeline below-ground at specific pipeline crossings would reduce visual impacts. Specifically, under the selected alternative, the production pipeline from well 26-30 and well 77-25 would be moved to the south, connecting near well 81-36. In Upper Basalt Canyon, the production pipeline from well 12-25 would proceed south towards wells 14-25 and 15-25, rather than east and south to well 34-25. Furthermore, the production and injection pipeline corridor would be narrowed to the east of Sawmill Road (03S25) and well 81-36. As described in Section 2.4.3.2 of the Final EIS/EIR, if the 2 injection wells 55-32 and 65-32 are sufficient for reinjection of spent geothermal brine, the injection pipeline to Basalt Canyon would not be constructed at all. Consequently, wells and reinjection pipeline in the western portion of the project area may not be needed under the selected alternative.

Based on the foregoing, the BLM has determined that the selected alternative will best assist the agency in addressing several management and policy objectives while minimizing environmental impacts, particularly with regards to biological, cultural and visual resources. The CD-IV Project will generate up to 33 MW of electricity annually and is expected to provide climate, employment, and energy security benefits to California and the nation. The CD-IV Project will also provide clean electricity for homes and businesses and bring desirable jobs to the Eastern Sierra region. Employment of workers for project construction will have a beneficial effect in helping to reduce unemployment. As described in Section 2.2.6.3 of the Final EIS/EIR, construction employment is estimated to peak at a maximum of 120 workers on site at any one time. The total construction employment is anticipated to create the equivalent of 180 full time jobs, of which 46 are expected to be held by residents of Mono or Inyo counties (Final EIS/EIR Section 4.15, Socioeconomics and Environmental Justice).

4.0 Cooperating Agencies and Consultation

4.1 Cooperating Federal Agency

The Inyo National Forest was a cooperating federal agency with the BLM during the environmental review for the CD-IV Project. As a cooperating agency, the Inyo National Forest was involved in the development of both the Draft and the Final EIS/EIR prior to their publication. The Inyo National Forest will use the Final EIS/EIR to decide whether to approve a special use authorization(s) for road use, road construction, and road maintenance to access project facilities and for the construction of a transmission line between the new power plant and the existing SCE Casa Diablo Substation. The Inyo National Forest will issue a separate ROD specific to the surface use and occupancy of National Forest System lands for these aspects of the CD-IV Project.

4.2 Cooperating State Agency

The Great Basin Unified Air Pollution Control District (GBUAPCD) was the lead state agency and a cooperating agency with the BLM during the environmental review for the CD-IV Project. As the lead state agency for the environmental review, the GBUAPCD was responsible for ensuring compliance with the CEQA during the development of both the Draft and the Final EIS/EIR prior to their publication. The GBUAPCD is also responsible for reviewing applications and issuing air permits within the air basin. The GBUAPCD will use the Final EIS/EIR to decide whether to approve, approve with conditions, or deny an air permit for the project. The GBUAPCD will issue a separate authorization specific to an air permit for the CD-IV Project.

4.3 Tribal Consultation

The BLM and Inyo National Forest consulted with Indian tribes in the vicinity of the CD-IV Project on a government-to-government basis in accordance with several authorities including the NEPA, the National Historic Preservation Act (NHPA), the American Indian Religious Freedom Act, and Executive Order 13007 (Final EIS/EIR Chapter 6). The BLM and Inyo National Forest invited Indian tribes to consult on a government-to-government basis during the earliest stages of project planning, and the agencies and the applicant have followed up with additional correspondence, communication, and other information throughout the environmental review process.

Under Section 106 of the NHPA, the BLM and Inyo National Forest consulted with Indian tribes as part of our responsibilities to identify, evaluate and resolve potential adverse effects on cultural resources that may result from this undertaking. Tribes from Mono and Inyo counties were formally contacted based on the known extent and location of their aboriginal homeland, their involvement in earlier consultations related to the project area, and from interest expressed during phone calls. The Inyo National Forest sent scoping letters to these tribal governments in April 2010. These letters provided background information about the proposed project, detailed

the planned content of the EIS/EIR, and solicited tribal participation in the planning and environmental review process. The Tribal Governments and interested members were invited to consult at a meeting held on May 27, 2010 at the BLM/Inyo National Forest office. Tribes and interested groups present at the meeting included the Bishop Paiute, Benton Paiute, Mono Lake Kutzadikaä, Big Pine Paiute-Shoshone and Lone Pine tribes, and the California Indian Basketmakers Association.

After alternatives were developed during the NEPA process, the BLM sent certified letters to the Tribal Chairs and Tribal Historic Preservation Officers from the Bishop Paiute, Benton Paiute, Mono Lake Kutzadikaä, Big Pine Paiute-Shoshone and Lone Pine Paiute tribes. These letters detailed the proposed project and alternatives and asked the tribes to identify any cultural resources within the project area to which they attached cultural or religious affiliation. No replies to these letters were received. The letters were followed up with phone calls to each tribal office in order to continue the consultation process.

In August of 2012, the BLM and Inyo National Forest conducted a field trip to the project area to discuss the results of the cultural resource inventory and BLM recommendations for avoiding site impacts. Tribal leadership from the Bishop Paiute, Benton Paiute, Mono Lake Kutzadikaä, Big Pine Paiute-Shoshone and Lone Pine Paiute were invited via phone. Tribal leadership from the Bishop Paiute and the Mono Lake Kutzadikaä attended this outing. During this field review both tribal entities voiced approval of the efforts taken by the BLM to use resource avoidance as the primary measure to prevent impacts to cultural resources. Some concern regarding potential impacts to the geothermal reservoir was expressed. The BLM committed to holding an informational meeting to explain the binary geothermal process and to detail how the binary process differs from the flash process used at the Coso Geothermal facility located in Inyo County. That same evening the BLM met with the entire Bishop Paiute Tribal Council and the Vice-Chair of the Mono Lake Kutzadikaä to discuss the proposed project in detail. This meeting also addressed the findings of the cultural resource inventory report and the concerns that had been raised earlier.

On September 5, 2012, the BLM held a consultation meeting with the Bishop Paiute Tribe to provide project updates and to solicit further input on the environmental review. The focus of this meeting was to address the potential for negative impacts to the geothermal reservoir. No other concerns were elicited. The Vice-Chair and the Tribal Historic Preservation Officer again voiced their approval of BLM efforts to avoid cultural resource impacts.

On December 12, 2012, the BLM meet with the tribal council for the Big Pine Paiute-Shoshone. During this meeting the tribe was informed of the results of the cultural resource inventory and the proposed site avoidance measures. The council did not voice any concerns and stated that they would likely defer to the Bishop Tribe given the range of their aboriginal homeland.

On February 2, 2013 and May 14, 2013, the BLM met with the tribal council of the Bishop Paiute Tribe. The tribe was informed of the agreement to move well 26-30 to avoid a known cultural site and the determination that no known Historic Properties would be affected. The

council agreed to participate in the cultural resource Memorandum of Agreement (MOA) that was being developed for the project as a Concurring Party.

During development of the MOA to address cultural resource compliance, both the Bishop Paiute and Big Pine Paiute-Shoshone were invited to provide comments and to sign onto the MOA as Concurring Parties. The Bishop Tribe provided comments on the draft MOA and agreed to sign as a Concurring Party. The Big Pine Tribe provided a single comment regarding tribal monitoring and deferred to the Bishop Paiute Tribe. On August 8, 2013, the MOA was signed by the BLM, Inyo National Forest, and the applicant (ORNI 50, LLC). The Bishop Paiute Tribe and the Great Basin Unified Air Pollution Control District also signed onto the MOA as Concurring Parties.

Additional information can be found in Chapter 6, Consultation, Coordination, and Public Participation in the Final EIS/EIR.

4.4 Section 106 Consultation

Section 106 of the National Historic Preservation Act (NHPA)(16 USC 470 *et seq.*) requires federal agencies to take into account the effects that their approvals and federally funded activities and programs have on significant historic properties. “Significant historic properties” are those properties that are included in, or eligible for, the National Register of Historic Places, and can include cultural resources.

The BLM and Inyo National Forest conducted intensive pedestrian surveys of the entire Area of Potential Effect (APE) for the CD-IV Project in order to identify Historic Properties that were located within the project area. This survey area included the footprint for all of the alternatives developed and considered during the NEPA process, including all proposed access routes, all proposed construction and staging areas, and a buffer sufficient to allow for flexibility during project implementation. After the survey was completed, the findings and recommendations were compiled into a cultural resource inventory report. The results of this report were then shared with the consulting tribal governments and the California Office of Historic Preservation.

As the lead federal agency for the CD-IV Project, the BLM in cooperation with the Inyo National Forest initiated consultation with the California State Historic Preservation Officer (SHPO) for the project pursuant to Section 106 of the NHPA. The basic steps in the Section 106 process are described in Section 3.6, Cultural Resources of the Final EIS/EIR. Additional information can also be found in Chapter 6, Consultation, Coordination, and Public Participation in the Final EIS/EIR.

Section 4.6, Cultural Resources, of the Final EIS/EIR describes the potential effects of the applicant’s proposed action and alternatives on historic and cultural resources. The Agency Preferred Alternative/Selected Alternative (Alternative 3, the Modified Pipeline Alternative) was designed specifically to avoid impacts to known cultural resources. Inadvertent effects on cultural resources will be resolved through compliance with the terms and conditions of the

Memorandum of Agreement (MOA) developed and signed in accordance with Section 106 of the NHPA and its implementing regulations (36 CFR 800).

The MOA was prepared to resolve potential adverse effects associated with the CD-IV Project and to develop permit stipulations to avoid, minimize, or mitigate adverse effects to Historic Properties. The MOA for the project was executed by signature between the BLM Bishop Field Office, Inyo National Forest, and the applicant (ORNI 50, LLC) on August 8, 2013 and by the California SHPO the following day. The fully executed MOA is attached to this ROD as Appendix 3. The analysis of impacts in Final EIS/EIR and the execution of the MOA provide evidence of SHPO concurrence that the BLM and Inyo National Forest have satisfied their obligations under Section 106 of NHPA with respect to cultural resources and Historic Properties.

4.5 Section 7 Consultation

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended (ESA)(16 USC 1531 *et seq.*), a federal agency that “authorizes, funds, or carries out” a project that “may affect” a listed species or its designated critical habitat must consult with the U.S. Fish and Wildlife Service (FWS) to ensure the proposed agency action will not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat for any listed species.

As the lead federal agency for the CD-IV Project, the BLM in cooperation with the Inyo National Forest conducted a biological assessment and initiated informal consultation with the FWS concerning the potential effects on the federally endangered Owens tui chub (*Siphateles bicolor snyderi*) that could occur from implementation of the Agency Preferred Alternative/Selected Alternative (Alternative 3, the Modified Pipeline Alternative). In conducting the biological assessment, the BLM compiled and considered the best available data regarding Owens tui chub status and occurrence, designated critical habitat, and habitat suitability in the project area. The BLM also considered the best available information specific to the risk of changes in hydrologic characteristics that could result from implementation of the proposed project. Based on the Bureau’s assessment of the predicted effects of the proposed project, the BLM determined that implementation of the Agency Preferred/Selected Alternative “may affect, but is not likely to adversely affect” Owens tui chub or their designated critical habitat. In conformance with law and policy, the BLM requested concurrence from the FWS for this may affect, not likely to adversely affect determination on July 12, 2013.

On August 2, 2013, the FWS concurred with the Bureau’s determination that the Agency Preferred Alternative/Selected Alternative for the CD-IV Project is not likely to adversely affect Owens tui chub or its designated critical habitat. The FWS found that implementation of the proposed project “will not directly affect either Owens tui chub or its critical habitat.” The FWS also found that “indirect effects to Owens tui chub would only occur through changes to the primary consistent elements” of its habitat and that the potential changes “would be so minor that we [FWS] could not meaningfully measure, detect, or evaluate any change in the function of the

primary consistent elements” at either AB and CD springs or the Little Hot Creek Pond. The FWS concurrence memorandum is attached to this ROD as Appendix 4.

The purpose of the biological assessment and the associated consultation with the FWS was to ensure that the Agency Preferred Alternative/Selected Alternative developed and analyzed under the NEPA also conforms to the requirements of the ESA and the guidance provided by the Bureau’s special status species management policy. Consultation with the FWS concerning the CD-IV Project has been completed and further consultation pursuant to Section 7 of the ESA is not required at this time.

5.0 Mitigation and Monitoring

As required in the BLM *NEPA Handbook H-1790-1* and consistent with 40 CFR 1505.2(c), all practicable means to avoid or minimize environmental harm from the CD-IV Project have been adopted in this ROD. There are no project design measures, mitigation measures, or other terms and conditions identified in the Final EIS/EIR that have not been adopted.

The Mammoth Community Water District (MCWD) has expressed concern that uncertainty remains regarding the potential impact of the CD-IV project on their domestic water supply. As described in the Final EIS/EIR, currently available data indicate that the shallow Mammoth Groundwater Basin is physically isolated from the deeper geothermal system and therefore the project is unlikely to affect the quality or availability of shallow groundwater resources. Nonetheless, the BLM recognizes the importance of ongoing data collection and monitoring related to the municipal water supply for the Mammoth Lakes community. Therefore, as a condition of approval for the CD-IV Project, the BLM will require the development and implementation of a cooperative shallow ground water monitoring plan focused on detecting any direct or indirect effects on the municipal water supply that may occur from geothermal production and injection in coordination with the Long Valley Hydrologic Advisory Committee. The MCWD will be invited to participate in the development and implementation of this BLM required cooperative shallow groundwater monitoring plan.

Pursuant to 43 CFR 2805.10(a)(1), the BLM has determined that these measures, terms, and conditions are in the public interest. As the federal lead agency for the CD-IV Project, the BLM is responsible for ensuring compliance with the project design measures, mitigation measures, and other terms and conditions adopted in this ROD. Failure on the part of ORNI 50, LLC to adhere to these measures, terms, and conditions could result in various administrative actions up to, and including, the termination of all approvals and the requirement to remove the facilities and rehabilitate disturbances.

6.0 Public Involvement

6.1 Scoping

A Notice of Intent (NOI) for the proposed CD-IV Project was published in the Federal Register on March 25, 2011 (76 FR 1686). The NOI was also posted on the BLM website and notice of scoping meetings was sent to local agencies and community organizations, Indian tribes, and radio, television, print, and internet news sources. Public scoping meetings were conducted on April 18 and 19, 2011 and written scoping comments were accepted through May 9, 2011. Following the scoping period, a scoping report was prepared in July 2011 that compiled and summarized the issues, impacts, and potential alternatives suggested for consideration and analysis in the Draft EIS/EIR. The primary issues and concerns identified during public scoping focused on potential effects on air quality, archeological and cultural resources, biological resources, surface and groundwater hydrology, public health and safety, recreational resources, aesthetics and noise. These issues were considered and analyzed in the EIS/EIR.

6.2 Public Comments on the Draft EIS/EIR

A Notice of Availability (NOA) of the Draft EIS/EIR for the CD-IV Project was published in the Federal Register on November 16, 2012 (77 FR 68813) and the draft was distributed for a 60-day public and agency review and comment period scheduled to end on January 15, 2013. Following release of the Draft EIS/EIR, informational public meetings were also held on December 5 and 6, 2012 to provide an overview of the environmental review processes and to facilitate public comment on the draft document. In response to a request from the Mammoth Community Water District (MCWD) and others, the official comment period was extended for an additional 15 days until January 30, 2013. At the close of the 75-day comment period, 27 comment letters had been received. One additional comment letter, from the MCWD, was received after the close of the official comment period. All 28 comment letters were considered and incorporated into the environmental review and responses to all 28 comment letters (Appendix G) and each individual comment (Appendix H) were provided in the Final EIS/EIR.

The nature of comments received on the Draft EIS/EIR primarily pertained to the NEPA and CEQA process, project alternatives, and impacts to various resources and uses. The cooperating agencies also received comments in support of the proposal. Public comments on the Draft EIS/EIR were incorporated into the Final EIS/EIR and resulted in corrections and clarifying text but did not substantively change the impact analysis for any of the alternatives considered. Comments concerning decommissioning, recirculation, biological resource project design measures, hydrologic monitoring, and ground water resources were received from various agencies, organizations and individuals. These comments were grouped together and provided a common response in section 6.4.3 of the Final EIS/EIR.

6.3 Public Comments on the Final EIS/EIR

A Notice of Availability (NOA) of the Final EIS/EIR for the CD-IV Project was published in the Federal Register on July 5, 2013 (78 FR 40497). Pursuant to 40 CFR 1506.10(a)(2), the BLM is required to wait a minimum of 30 days following release of a Final EIS before issuing a decision on the action under environmental review. During this 30-day period, the BLM received comment letters from 6 separate entities on the Final EIS/EIR:

- Town of Mammoth Lakes Community and Economic Development Department, dated July 10, 2013;
- Jo Bacon, dated July 10, 2013;
- Adams Broadwell Joseph & Cardozo on behalf of the Coalition for Responsible Mammoth Development and the California Unions for Reliable Energy, dated July 12, 2013 (including attachments A-C);
- Mammoth Community Water District, dated July 12, 2013 (including attachments dated July 12, 2013 from Wildermuth and Schmidt);
- Lozeau Drury, LLP on behalf of Bishop residents Russell Covington, Robert A. Moore, Randy Sipes, and Randal Sipes ("Bishop Residents"), Laborers International Union of North America, Local Union 783, and its members living in Mono County ("LiUNA" or "Commenters"), dated July 15, 2013 (including exhibits A-D);
- U.S. Environmental Protection Agency Region IX, dated July 19, 2013;
- Lozeau Drury, LLP on behalf of Bishop residents Russell Covington, Robert A. Moore, Randy Sipes, and Randal Sipes ("Bishop Residents"), Laborers International Union of North America, Local Union 783, and its members living in Mono County ("LiUNA" or "Commenters"), dated July 23, 2013;
- Mammoth Community Water District, dated August 2, 2013 (including attachments dated July 12, 2013 from Wildermuth and Schmidt); and
- Lozeau Drury, LLP on behalf Bishop residents Russell Covington, Robert A. Moore, Randy Sipes, and Randal Sipes ("Bishop Residents"), Laborers International Union of North America, Local Union 783, and its members living in Mono County ("LiUNA" or "Commenters"), dated August 5, 2013 (including exhibits A-D).

Publication of the Final EIS/EIR did not include a formal comment period. Nonetheless, the BLM reviewed and considered these letters during the preparation of this ROD to the extent practicable. None of the letters identified significant new circumstances or significant new information relevant to environmental concerns that bear on the project and its effects.

Therefore, consideration of these comments did not result in any changes in the design, location, or timing of the project in a way that would cause significant effects to the human environment outside of the range of effects already analyzed in the Final EIS/EIR.

6.4 Availability of the Record of Decision

Electronic copies of this ROD are available on the Internet at www.blm.gov/ca/st/en/fo/bishop/casadiabloIV.html. Paper and electronic copies (CD ROM format) will also be available at the following locations:

BLM Bishop Field Office
351 Pacu Lane, Suite 100
Bishop, California 93514

Mono County Library
400 Sierra Park Road
Mammoth Lakes, California 93546

7.0 Final Agency Action

7.1 Authority

The authority for this decision is contained in the Geothermal Steam Act of 1970, the Federal Land Policy and Management Act of 1976, and the Code of Federal Regulations at 43 CFR 3200.

7.2 Administrative Remedies

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in strict compliance with the regulations contained in 43 CFR Part 4. The appellant must follow the procedures outlined in Form 1842-1, Information on Taking Appeals to the Interior Board of Land Appeals (Appendix 5). If an appeal is taken, your notice of appeal must be filed with the Bishop Field Office within 30 days from receipt of this decision. The appellant has the burden of showing that the decision being appealed is in error. If your notice of appeal does not include a statement of reasons, such statement must be filed with this office and the Interior Board of Land Appeals within 30 days after the notice of appeal is filed. Your notice of appeal and any statement of reasons, written arguments, or briefs must also be served upon the Regional Solicitor, Pacific Southwest Region, U.S. Department of the Interior, 2800 Cottage Way, Room E-1712, Sacramento, California 95825. Please consult the appropriate regulations (43 CFR Part 4 Subpart E) for further appeal requirements.

If you wish to file a petition pursuant to 43 CFR 4.21(b) for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Interior Board of Land Appeals, the petition for a stay must accompany your 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 (43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulations, 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.

7.3 Contact Person

For further information concerning the CD-IV Project or this decision, please contact:

Collin Reinhardt
Geologist/Project Manager
(760) 872-5024
creinhardt@blm.gov

U.S. Department of the Interior
Bureau of Land Management
Bishop Field Office
351 Pacu Lane, Suite 100
Bishop, CA 93514

7.4 Approval

It is my decision to approve the CD-IV Project. This 33-MW binary power plant, expanded geothermal well field, and associated pipelines and infrastructure will be on portions of BLM-administered federal geothermal leases CACA-11667, CACA 11672, CACA-14407, and CACA-14408 located on National Forest System lands managed by the Inyo National Forest in Mono County, California. The authorized project was described and analyzed under the Agency Preferred Alternative (Alternative 3) in the Final EIS/EIR, and is subject to the project design measures, mitigation measures, and other terms and conditions developed by the BLM and cooperating agencies during the environmental review as outlined in this ROD.

The effective date of this decision and the date initiating the appeal period will be the date this decision is posted on the BLM California website.

Approved by:

 /s/ Steven L. Nelson
Steven L. Nelson
Field Manager

 08/12/2013
Date

U.S. Department of the Interior
Bureau of Land Management
Bishop Field Office

APPENDIX 6

MITIGATION, MONITORING AND REPORTING PROGRAM

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Adopted Project Design Measures and Mitigation Measures

The table that follows presents a compilation of the Project Design Measures and Mitigation Measures adopted by the Bureau of Land Management (BLM), Bishop Field Office, in cooperation with the United States Forest Service (USFS), Inyo National Forest, and the Great Basin Unified Air Pollution Control District (GBUAPCD) for the Casa Diablo IV Geothermal Development Project (CD-IV Project). The table provides a single comprehensive list of the measures that will be implemented to avoid or reduce impacts of the CD-IV Project on the human environment, the timing for their implementation, and the related monitoring and reporting requirements.

ORNI 50, LLC is responsible for adhering to, and implementing, the adopted Project Design Measures and Mitigation Measures that will govern both construction and future operation of the CD-IV Project. All approvals and permits required by ORNI 50, LLC for implementation of the CD-IV Project shall be submitted to the BLM, Inyo National Forest, GBUAPCD, and/or other appropriate regulatory authority as denoted in the table below prior to commencing the activity for which the approval or permit is required.

The BLM will continue to act as the lead federal agency for the CD-IV Project. The Inyo National Forest will continue to act as a cooperating federal agency. The GBUPACD will continue to act as the lead state agency for the project.

The cooperating agencies are responsible for ensuring compliance with the provisions of this Mitigation, Monitoring and Reporting Program and have the primary responsibility for ensuring conformance to, and implementation of, the adopted Project Design Measures and Mitigation Measures as outlined in the table. In instances where the BLM is identified as the agency responsible for monitoring compliance for measures designed to avoid or reduce impacts to resources for which the Inyo National Forest is the responsible surface management agency, the BLM will coordinate compliance monitoring with the Forest Service.

The BLM, Inyo National Forest, and GBUAPCD may authorize qualified individuals and agencies to perform monitoring activities as deemed necessary. The agencies retain the authority to halt any activity associated with the CD-IV Project if the activity is determined to be a deviation from the approved project or the adopted Project Design Measures and Mitigation Measures listed herein.

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MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Adopted Project Design Measures and Mitigation Measures	Implementing Actions	Monitoring/Reporting Requirements	Timing
Air Resources			
<p>PDM AQ-1: ORNI 50, LLC will apply water during the construction and utilization of pads and access roads as necessary to control dust. Dust shall not be discharged into the air for a period or periods aggregating more than three minutes in any one-hour that is as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>GBUAPCD to monitor compliance.</p>	<p>During construction.</p>
<p>PDM AQ-2: ORNI 50, LLC shall comply with any requirements prescribed by the Great Basin Unified Air Pollution Control District (GBUAPCD) concerning emissions of air pollutants from construction engines or hydrogen sulfide from operating geothermal wells. The drilling rigs shall be registered in the California Air Resources Board (CARB) Portable Engine Registration Program.</p>	<p>ORNI 50, LLC and its contractors to implement and comply with prescribed construction and operation air emissions reduction procedures, and register drilling rigs with the CARB Portable Engine Registration Program.</p>	<p>GBUAPCD to review and approve required permits, and confirm drilling rig registration with CARB.</p>	<p>Prior to construction.</p>
<p>PDM AQ-3: ORNI 50, LLC shall utilize best available equipment and design to minimize emissions of n-pentane.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>GBUAPCD to review and approve a summary of proposed equipment and design.</p>	<p>At least 30 days prior to start of construction.</p>
<p>PDM AQ-4: ORNI 50, LLC shall apply for an air permit to construct and operate the wells and power plant. The project shall conform to GBUAPCD requirements for controlling emissions.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>GBUAPCD to monitor compliance.</p>	<p>At least 30 days prior to start of construction.</p>
<p>Mitigation Measure AQ-1: ORNI 50, LLC shall develop and implement a plan that demonstrates that the mobile off-road equipment (more than 50 horsepower) to be used for the CD-IV Project (i.e., owned, leased, and subcontractor vehicles) shall achieve a project wide fleet-average 20 percent NO_x reduction compared to the most recent CARB fleet average. The plan shall be approved by the GBUAPCD prior to the commencement of construction activities. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>GBUAPCD to review and approve submitted plan.</p>	<p>Submit plan to the GBUAPCD at least 30 days prior to the start of construction, and during construction if modified.</p>
<p>Mitigation Measure AQ-2: ORNI 50, LLC shall require that all drill rig engines meet either USEPA and CARB Tier 2 or higher emissions standards for off-road engines. Prior to commencement of drilling, ORNI 50, LLC shall provide documentation to the GBUAPCD that demonstrates that each drill rig shall be equipped with Tier 2 and Tier 3 engines.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>GBUAPCD to review and approve proposed drill rigs.</p>	<p>Submit documentation to the GBUAPCD at least 30 days prior to the start of drilling.</p>
<p>Mitigation Measure AQ-3: ORNI 50, LLC shall develop a Fugitive Dust Control Plan to be implemented during construction of the CD-IV Project. The plan shall be submitted to the GBUAPCD for review and approval prior to the commencement of construction activities. The plan shall include, but not be limited to, the following dust control measures:</p> <ul style="list-style-type: none"> • All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized to control dust emissions using water. • All ground disturbance, including land clearing, grubbing, scraping, excavation, grading, and cut & fill activities shall effectively control fugitive dust emissions by utilizing application of water or by presoaking. • Limit traffic speed on unpaved access roads to 15 miles per hour (mph) and post visible speed limit signs at construction site entrances. • Suspend excavation and grading activity when gusts produce wind speeds exceeding 20 mph. • Reduce land disturbance activities as much as possible so that natural, stable soil conditions remain. • The plan shall include provisions for monitoring fugitive dust based on the requirements of PDM AQ-1, and if the requirements identified in PDM AQ-1 are exceeded, construction activities shall cease until it can be determined that the requirements can be achieved. 	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>GBUAPCD to review and approve fugitive dust control plan.</p>	<p>Submit plan to the GBUAPCD at least 30 days prior to the start of construction and during construction if modified.</p>
<p>Mitigation Measure AQ-4: ORNI 50, LLC shall monitor hydrogen sulfide (H₂S) concentrations during all well drilling and testing at GBUAPCD-approved locations for each well location. If the well H₂S emissions exceed 2.5 kg/hr or the State's H₂S ambient air quality standard for one hour is exceeded, further venting shall be curtailed until an H₂S Abatement Plan, approved by the GBUAPCD, is implemented to reduce H₂S well emissions below 2.5 kg/hr and the ambient concentrations below the State standard of 0.03 parts per million. The plan shall include (1) a description of the abatement technology, the degree of control expected from such technology, and the test data indicating that such degree of control can be expected in a geothermal well application; and (2) air quality analysis showing that the use of such abatement technology shall not result in any violation of the State ambient air quality standard for H₂S.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>GBUAPCD to review H₂S concentrations and an H₂S abatement plan.</p>	<p>Submit monthly monitoring reports to the GBUAPCD. If H₂S concentrations exceed 2.5 kg/hr or the State's H₂S ambient air quality standard for one hour, the GBUAPCD must be notified within 24 hours. If an H₂S abatement plan is required, construction must halt until approved by the GBUAPCD.</p>

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Air Resources (cont.)			
<p>Mitigation Measure AQ-5: ORNI 50, LLC shall prepare and implement an Emission Management Plan for review and approval by the GBUAPCD Air Pollution Control Officer, which shall contain the following:</p> <ul style="list-style-type: none"> • A description of the method to determine the daily n-pentane volume in the plant. • An explanation of how to calculate n-pentane loss rates over a given period. • An action plan for detecting and reporting breakdown events under GBUAPCD Rule 403.B, when n-pentane leaks emit more than 410 pounds per day. • An action plan for repairing leaks associated with breakdown events. A maintenance plan for routine monitoring and prevention of n-pentane leaks. • A format for quarterly reports on n-pentane losses and purchases. The Emissions Management Plan shall be updated as necessary in order to ensure compliance with federal, state, and/or district rules and to incorporate management plan improvements if necessary. 	ORNI 50, LLC and its contractors to implement measure as defined.	GBUAPCD to review and approve submitted plan.	Submit plan to the GBUAPCD at least 30 days prior to the start of construction and during construction if modified.
<p>Mitigation Measure AQ-6: ORNI 50, LLC shall obtain a portable Volatile Organic Compound (VOC) leak detector capable of meeting the performance specifications described in USEPA's Source Test Reference Method 21. This instrument shall be properly maintained, calibrated, and made readily available at all times on the project site. The instrument shall be used at least on a monthly basis to assist ORNI 50, LLC personnel in detecting n-pentane leaks from all flanges, valves, pump seals, safety relief valves, n-pentane accumulator vessels, and turbine gland seals. Whenever a leak is detected that is greater than 10,000 parts per million by volume (ppmv) from any aforementioned equipment, ORNI 50, LLC shall initiate repairs as soon as practical. Once a leak is discovered, ORNI 50, LLC shall tag and log its location, record the leak concentration, record the date, and record the dates of each repair attempt. A report that includes the six-month average daily emission calculations and n-pentane purchases shall be submitted electronically to the GBUAPCD within 30 days from the end of each calendar quarter. A summary record of the leak repairs made shall also be submitted to the GBUAPCD when reporting n-pentane losses.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	GBUAPCD to review and approve the n-pentane emissions calculations and purchases report.	During operation, n-pentane leaks to be checked monthly. A report including the six-month average daily emission calculations and n-pentane purchases shall be submitted electronically to the GBUAPCD within 30 days from the end of each calendar quarter.
Biological Resources			
<p>PDM BIO-1: A qualified wildlife biologist shall walk the pipeline route once each year for the first three years following completion of construction to survey for any signs that the pipeline is impeding wildlife movement. If such evidence is found, the USFS may require ORNI 50, LLC to clear one or more areas under the pipeline of at least 16 inches height, or a height sufficient to allow wildlife to pass under the pipeline, at the points where movement is impeded.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	USFS to review annual survey summary report.	For the first three years after construction, within 30 days of completing the annual surveys a summary report shall be submitted to the USFS for review.
<p>PDM BIO-2: After construction is complete, erosion control measures including revegetation and periodic maintenance activities shall be implemented. Disturbed areas that will not be used after construction shall be revegetated with the proper seed mixture and planting procedures prescribed by the USFS. Any topsoils enriched in organic material stockpiled from previously disturbed areas (see GEO-1) may be applied to enhance areas to be reclaimed by revegetation.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance in coordination with the USFS.	After construction.
<p>PDM BIO-3: During construction, prior to entering and upon exiting the project area, all trucks and construction equipment that will operate off of previously existing roads shall be washed to remove soil and plant parts. A central washing facility shall be provided for this purpose, either at the ORNI 50, LLC equipment area at Casa Diablo on private land, or at a location approved by the authorized officer.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to and during construction.
<p>PDM BIO-4: All materials used in erosion control and/or rehabilitation efforts (e.g. straw bales, seeds, etc.) on the project shall be certified as being free of noxious weed materials.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to and during construction.
<p>PDM BIO-5: New non-native species introduced as a result of the project shall be eradicated (i.e., 0 percent cover). Where this standard is not met, appropriate weed control measures shall be implemented in order to comply with the standard for a period of three years following project completion.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance in coordination with the USFS.	Prior to, during, and after construction.
<p>PDM BIO-6: With the exception of cheatgrass, all non-native weed species already present in the project area may account for no more than 5 percent total of the relative cover of the disturbed areas, including roadsides at the end of the 3-year evaluation period following completion of revegetation measures. Weed control shall be implemented immediately following implementation of the project, and throughout the project life to meet this standard.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance in coordination with the USFS.	After construction and during operation.
<p>PDM BIO-7: Cheatgrass is largely absent from the forested portions of the project area. In order to maintain this condition, cheatgrass shall be removed from all areas where ground disturbance occurs west of drill sites 56-25, 57-25 or 58-25. Appropriate weed control measures shall be implemented as necessary, in order to prevent the invasion and spread of cheatgrass, throughout the life of the project, and for a period of three years following project completion.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance in coordination with the USFS.	Throughout the life of the project and for three years following project completion (decommissioning).

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Biological Resources (cont.)			
<p>Mitigation Measure VEG-1: ORNI 50, LLC shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to vegetation resources:</p> <ol style="list-style-type: none"> 1. Limit Disturbance Areas. The boundaries of all disturbed areas (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities. Spoils and topsoil shall be stockpiled in disturbed areas lacking native vegetation that do not provide habitat for special-status species. The stockpiles shall not be placed in areas with existing weed populations. All disturbances, CD-IV Project vehicles and equipment shall be confined to the flagged areas. All personal vehicles shall be parked off-site or at existing MPLP facilities. All above ground pipelines and transmission lines shall be installed using low pressure tracked equipment to minimize impacts on vegetation. Understory vegetation and surface soils may be trampled during pipeline and transmission line installation but not removed. All Jeffrey pine trees in the installation routes outside of the footprint of the power plant site and the well pad sites shall be preserved where feasible. For construction activities outside of the plant site (transmission line, pipeline alignments, well pad sites) access roads, pulling sites, and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. 2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around shall do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction. 3. Implement Erosion Control Measures. Standard erosion control measures shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes threatens to enter "Waters of the State". All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) that slope toward a drainage, shall be stabilized to reduce erosion potential. Water used for dust suppression purposes may not come from Casa Diablo power plant geothermal injection fluids. 4. Revegetation of Temporarily Disturbed Areas. Per PDM BIO-2, ORNI 50, LLC shall prepare and implement a Revegetation Plan to restore all areas subject to temporary disturbance to pre-project grade and conditions. The Revegetation Plan may not be implemented until it is approved by an Inyo National Forest botanist who is familiar with the project environment and the District Ranger. Temporarily disturbed areas within the project area include, but are not limited to: the transmission line corridor, construction staging areas for well pad sites, and temporary access roads. The Revegetation Plan shall include a description of topsoil salvage and seeding techniques and a monitoring and reporting plan. The following success standards shall be met at the end of the third growing season following seed application. <ol style="list-style-type: none"> a. Success standards for revegetation in the Jeffrey pine forest are as follows: <ol style="list-style-type: none"> i. At least 1 tree, 1 shrub, and 6 perennial native grasses and/or forbs per 4 square meters shall be established on site. ii. Perennial grasses shall account for at least 10 percent of the relative cover. iii. All non-native weed species that are already present in the area may account for no more than 5 percent total of the relative cover at the end of a three year evaluation period. New non-native species introduced as a result of the project shall be eradicated (i.e., 0 percent cover). b. Success standards for revegetation in the Sagebrush Scrub are as follows: <ol style="list-style-type: none"> i. At least 3 shrubs and 8 perennial native grasses and/or forbs per 4 square meters shall be established on site. ii. Perennial grasses shall account for at least 10 percent of the relative cover. iii. All non-native weed species that are already present in the area may account for no more than 5 percent total of the relative cover at the end of a three year evaluation period. New non-native species introduced as a result of the project shall be eradicated (i.e., 0 percent cover). 5. Landscaping. Any vegetation planted for landscaping or visual shielding purposes shall be reviewed by USFS personnel prior to installation. 6. Grazing. The USFS shall ensure that grazing in the Sherwin/Deadman Sheep and Goat Allotment avoids active or revegetation monitoring areas in Basalt Canyon and Upper Basalt Canyon, as required by the Revegetation Plan (see Mitigation Measure VEG 1.4, above). Avoid Grazing in Revegetation Areas. 	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>USFS, District Ranger, and BLM shall review the Revegetation Plan. The USFS and District Ranger will approve the Revegetation Plan.</p>	<p>ORNI 50, LLC to submit plan to the USFS and BLM at least 30 days prior to the start of construction and during construction if modified.</p>

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Biological Resources (cont.)			
<p>Mitigation Measure VEG-2: Weed Management Plan. ORNI 50, LLC shall implement a Weed Management Plan that meets the approval of the USFS. The objective of the Weed Management Plan shall be to prevent the introduction of any new weeds and the spread of existing weeds as a result of project construction, operation, and decommissioning. The Weed Management Plan shall include at a minimum the following information: specific weed management objectives and measures for each target non-native weed species; baseline conditions; a map of existing weed populations; weed risk assessment and measures to prevent the introduction and spread of weeds; monitoring and surveying methods; and reporting requirements. The Weed Management Plan shall include specific implementation requirements for each phase of the project.</p> <p>The plan shall be consistent with USFS practices and shall be implemented by ORNI 50, LLC to reduce the potential for the introduction of invasive species during construction, operation and maintenance, and decommissioning of the CD-IV Project. The draft plan shall be reviewed and approved by the USFS. The following measures are required in the plan and shall be implemented by ORNI 50, LLC to monitor and control invasive species:</p> <ol style="list-style-type: none"> 1. Preventative Measures During Construction. Equipment Cleaning: To prevent the spread of weeds into new habitats, prior to entering the project work areas, construction equipment and personal vehicles shall be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes. Equipment shall be inspected to ensure it is free of any dirt or mud that could contain weed seeds and the tracks, feet, tires, and undercarriage shall be carefully washed, with special attention paid to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g. pick-up trucks) and vehicles from different areas of the project that frequently enter and exit the site shall be inspected and washed on an as-needed basis. A vehicle log shall be maintained at the washing facility to document vehicle cleaning. <ol style="list-style-type: none"> a. All vehicles shall be washed off-site when possible. Should off-site washing prove infeasible, an on-site cleaning station shall be set up to clean equipment before it enters the work area. Either high-pressure water or air shall be used to clean equipment and the cleaning site shall be situated away from any sensitive biological resources. If possible, water used to wash vehicles and equipment shall be collected and re-used. Before re-using the vehicle wash water, any vegetative matter or soil shall be removed. b. Site Soil Management: Ground disturbance shall be limited to the minimum necessary for construction activities, using dust suppressants to minimize the spread of seeds. Disturbed vegetation and topsoil shall be re-deposited at or near the removal area to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes. Areas of topsoil removal shall be surveyed for weeds pre-project. If weeds are present, the topsoil may not be re-used for revegetation purposes. Use of BLM-approved dust suppressants (e.g. water) shall be minimized on the site as much as possible, but shall be used during construction to minimize the spread of airborne weed seeds, especially during very windy days. c. Weed-free Products: Any use of hay or straw bales on the project site shall be limited to certified weed-free material. Other products such as gravel, mulch, and soil may also carry weeds and these products, too, shall be certified weed-free. If needed, mulch shall be made from the local, on-site native vegetation cleared from the project area. Soil may not be imported onto the project site from off-site sources. 2. Containment and Control Measures. When project monitoring (see below) indicates that invasive species are spreading, invasive species shall be removed using mechanical or manual removal methods. During eradication activities, care shall be taken to have the least effect on native plant species. Chemical control is not included as part of these containment and control measures because site specific information on target weed species are not known at this time. 3. Monitoring. Baseline weed conditions shall be assessed during the pre-construction phase of the CD-IV Project, during pre-construction surveys and staking and flagging of construction areas. A stratified random sampling technique shall be used to identify and count the extent of weeds on the site. <p>Monitoring shall take place each year during construction, and annually for the lifespan of the project following the completion of construction. The purpose of annual monitoring will be to determine if weed populations identified during baseline surveys have increased in density or are spreading as a result of the CD-IV Project. With the exception of cheatgrass, all non-native weed species already present in the project area may account for no more than 5 percent total of the relative cover of the disturbed areas, including roadsides. Control methods shall be implemented when measurable weed increases, or visually verified increases occur that span two or more consecutive years of monitoring results collected at the end of the growing season.</p> <p>General management and monitoring of the project area shall be conducted by designated site personnel each year during both the germinating and early growing season (November through April) to eliminate new weed individuals prior to seed set. Throughout construction and long-term monitoring, personnel shall be trained to identify weedy and native species and work with a trained vegetation monitor to determine where elimination is necessary.</p> 4. Reporting. Results of monitoring and management efforts shall be included in annual reports. Copies of these reports shall be kept on file at the site. Copies of each annual report shall be sent to the BLM and USFS for review and comment. BLM and USFS shall use the results of these reports to determine if any additional monitoring or control measures are necessary. 	<p>ORNI 50, LLC and its contractors to prepare and implement a Weed Management Plan.</p>	<p>USFS and BLM to review and approve the Weed Management Plan. BLM to monitor compliance in coordination with the USFS.</p>	<p>ORNI 50, LLC to submit plan to the USFS and BLM at least 30 days prior to the start of construction and during construction if modified. Annual reports shall be submitted to the USFS and BLM.</p>

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Biological Resources (cont.)			
Mitigation Measure VEG-2 (cont.): Weed Management Plan			
<p>5. Success Criteria. Weed control shall be ongoing on the project site for the life of the CD-IV Project, but plan success will be determined by BLM and USFS after three years of operations monitoring through the reporting and review process. Success criteria shall be defined as the following:</p> <p>a. Non-native weed species that are already present in the area may account for no more than 5 percent total of the relative cover at the end of a three year evaluation period.</p> <p>b. New non-native species introduced as a result of the project shall be eradicated (i.e., 0 percent cover).</p>			
<p>Mitigation Measure VEG-3: This mitigation measure shall modify PDMs BIO-5, BIO-6, and BIO-7: All weed monitoring and weed control remediation efforts shall commence at the start of construction activities and shall continue for the duration of the permit.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to review and approve the Weed Management Plan. BLM to monitor compliance.	Prior to construction and during operation and maintenance.
<p>Mitigation Measure WIL-1: Avoid Active Nesting Season. To avoid and minimize impacts to tree and shrub nesting species, the following measures shall be implemented by ORNI 50, LLC according to the timeframes shown below:</p> <p>1. If feasible, conduct all tree and shrub removal and grading activities during the non-breeding season (generally September 1 through January 31).</p> <p>2. If grading and tree removal activities are scheduled to occur during the breeding and nesting season (February 1 through August 31), pre-construction surveys shall be performed prior to the start of project activities.</p> <p>Conduct Pre-construction Nesting Bird Surveys. If construction, grading or other project-related activities are scheduled during the nesting season (February 1 to August 31), pre-construction surveys shall be conducted prior to the initiation of construction by a qualified wildlife biologist to identify active hawk nests within ½-mile of proposed construction activities and nests of other species within 500 feet of proposed construction activities. The surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of each phase of construction. The results of the survey shall be emailed to the BLM, USFS, CDFW and USFWS at least three days prior to construction. Surveys shall be conducted by a qualified biologist in accordance with the following protocols:</p> <p>1. Surveys for northern goshawk shall include at least two preconstruction surveys (separated by at least two weeks). Surveys must include both stand search and broadcast acoustical survey methodologies as described in 2000 USDA Forest Service Protocol for the Northern Goshawk in the Pacific Southwest Region.</p> <p>2. Surveys for other migratory bird species shall take place no less than 14 days and no more than 30 days prior to the beginning of each phase of construction that would be located within 500 feet of suitable nesting habitat.</p> <p>If the pre-construction surveys do not identify any nesting raptors or other nesting migratory bird species within areas potentially affected by construction activities, no further mitigation will be required. If the pre-construction surveys do identify nesting raptors or other nesting bird species within areas that may be affected by site construction, the following measures shall be implemented:</p> <p>Avoid Active Bird Nest Sites. Should active nest sites be discovered within areas that may be affected by construction activities, additional measures shall be implemented as described below, prior to the initiation of construction:</p> <p>Northern Goshawk and other Migratory Birds: If active nests are found, project-related construction impacts shall be avoided by establishment of appropriate no-work buffers to limit project-related construction activities near the nest site. The size of the no-work buffer zone shall be determined in consultation with the BLM, USFS, CDFW and USFWS although a 500-foot buffer may be used initially prior to agency consultation. For northern goshawk nests, the buffer shall be 1/4 mile. The no-work buffer zone shall be delineated by highly visible temporary construction fencing. In consultation with BLM, USFS, CDFW and USFWS, monitoring of nest activity by a qualified biologist may be required if the project-related construction activity has potential to adversely affect the nest or nesting behavior of the bird. No project-related construction activity shall commence within the no-work buffer area until a qualified biologist and USFS, CDFW and USFWS confirm that the nest is no longer active.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	ORNI 50, LLC to submit survey results to the USFS and BLM. BLM to monitor compliance.	Submit survey results to USFS and BLM at least 30 days prior to the start of construction and during construction, if modified.
<p>Mitigation Measure WIL-2: Water which may accumulate in geothermal well site basins from precipitation shall be removed to a standing depth of 2 inches or less from the respective basins on a daily basis or as soon as operationally feasible; and liquids deposited into the basins shall either be removed daily to a standing depth of 2 inches or less, or the basins shall be made wildlife-escapable by creating earthen ramps at slopes of 1:3 or less at intervals of 100 feet apart or less around the perimeter of the standing depth of the liquid stored in the basin. The basins shall be monitored during well drilling to determine if these measures are effective, and monitored during spring months to ensure that water does not accumulate as snow melts. If monitoring determines that these measures are ineffective in preventing wildlife from drowning in the basins, an alternative deterrent or escape structure such as netting shall be implemented. Alternatives for providing equally effective measures which would allow wildlife to escape unharmed from the well site basins may be authorized subject to USFS, USFWS and CDFW approval. If indications of a hazardous materials release such as oils or surface films are observed in basins, netting or screening shall be used when basins are unstaffed to prevent access by birds and other wildlife.</p>	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance of mitigation measure. ORNI 50, LLC to submit documentation of wildlife drowning to USFS and BLM for review. If needed, ORNI 50, LLC shall propose plans for earthen ramps or other alternatives for review and approval by USFS and BLM.	During construction and operation.

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Biological Resources (cont.)			
<p>Mitigation Measure WIL-3: Within the Jeffrey pine forest habitat within the project area, retain as many snags, downed logs, coarse woody debris and brush piles as possible, and use cleared trees, woody vegetation, and brush materials to retain existing habitat and provide new Sierra marten hunting and denning opportunities.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>ORNI 50, LLC to summarize retention of Jeffrey pine forest habitat and reuse of woody material in a document for submittal to USFS.</p>	<p>During construction.</p>
<p>Mitigation Measure WIL-4: A new deer crossing shall be constructed over the proposed pipeline running south of the power plant site between the existing substation and the existing MP I power plant to enhance mule deer and other wildlife movement through the project area. The new crossing shall be designed with input from the CDFW but will resemble the existing crossing at the SCE easement.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>ORNI 50, LLC to submit crossing design to CDFW for input. USFS to monitor compliance in cooperation with CDFW.</p>	<p>Prior to and during construction.</p>
<p>Mitigation Measure WIL-5: The proposed pipelines running parallel to the existing Basalt Canyon pipeline shall be installed underground in alignment with the existing underground sections in order to provide a clear visual corridor for migrating deer. The underground sections shall be a minimum of 30 feet in length. In most cases these segments occur at existing roads, which mule deer habitually use for movement. Segments that are parallel to the existing Basalt Canyon pipeline in areas where there are currently no underground segments shall be installed underground at a prescribed frequency. These underground segments shall be located in alignment with suspected traditional migratory routes (see Figure 4.4-1). At this time, constructing underground segments in the existing Basalt Canyon pipeline is not proposed, as deer readily pass over the single pipeline. In addition to these underground segments, underground pipeline segments shall be installed at high movement areas identified to the immediate south of Highway 395 and between well pad sites 57-25 and 66-25 (see Figure 4.4-5). If used, overhead segments shall be of sufficient height to allow wildlife and people (or vehicles) to pass under the pipeline. Alternately, underground segments shall be a minimum of 30 feet in length. It should be noted that these proposed migratory crossing requirements should be viewed primarily as conceptual and should be used to guide final design of the pipelines.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>BLM and USFS to review and approve pipeline plans to ensure compliance with this measure. BLM and USFS to monitor compliance.</p>	<p>Prior to and during construction.</p>
<p>Mitigation Measure WIL-6: ORNI 50, LLC shall prepare and implement a Migratory Deer Monitoring Plan that meets the approval of BLM and USFS. The objective of the Migratory Deer Monitoring Plan shall be to monitor the pipeline routes for evidence of movement corridors not currently identified. The migratory deer monitoring shall follow the methodology used for the deer track crossing studies performed in 2011 (Paulus 2011a; 2012a; 2012b). If previously unidentified movement corridors are found during monitoring, remedial actions, such as installation of earthen ramps over the pipeline, shall be implemented in order to facilitate deer crossings. The monitoring plan shall also include details regarding methodologies to determine if the pipeline corridors are impeding wildlife movement (per PDM BIO-1) (e.g., if tracks do not cross designated crossing areas), and shall include remedial actions if impedance of wildlife movements is detected, or if the various measures proposed to promote deer crossings are not being utilized by migrating deer (e.g., installing at-grade or similar crossing structures). The monitoring plan shall also include performance measures for determining if the various deer crossing measures proposed are meeting their goals. At a minimum, monitored elements shall include: 1) a pre- and post- construction deer movement study that employs remote camera stations that are capable of determining whether or not deer use remains relatively constant or declines measurably following construction; 2) an assessment of available crossing sites to determine whether or not deer are using the provided above ground or underground sections; and 3) the success of any remedial actions, if needed (for example, the success of additional created at-grade structures), to facilitate deer movement through the Casa Diablo complex. As a result of post-project monitoring studies, any indications that changes to the environment resulting from the project result in significantly greater (e.g., >25 percent above baseline) vehicle-related mule deer mortality or significantly reduced on-site deer population size or habitat use that cannot otherwise be explained by environmental factors shall warrant the incorporation of additional measures such as the one-by-one construction of at-grade or similar deer crossing structures at key locations to reduce impacts on deer movement.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>BLM and USFS shall review and approve Migratory Deer Monitoring Plan. BLM and USFS to monitor compliance.</p>	<p>At least 30 days prior to construction.</p>
<p>Mitigation Measure WIL-7: The following measures are required to protect mule deer and general wildlife:</p> <p>a) External safety lighting associated with project construction and operations shall be designed to minimize effects to wildlife and lighting of natural habitat at night. Operational lighting at the plant site and well sites shall be directed downward and shielded, or directed inward away from natural habitat and wildlife movement corridors.</p> <p>b) To the maximum extent feasible, all noise-generating construction activities on project linear corridors shall be limited to daylight hours.</p> <p>c) During construction and decommissioning, solid waste materials (trash) shall be stored in containers that are inaccessible to wildlife. Trash shall be routinely collected and deposited at an authorized landfill to avoid attracting predators to the project area.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>USFS to review and approve safety lighting and monitor compliance with all safety lighting, noise, and waste requirements. BLM will also monitor during construction.</p>	<p>During construction and operation.</p>
<p>Mitigation Measure WIL-8: Conduct Pre-construction Bat Surveys. If construction, grading or other project-related activities are scheduled during the breeding season of native bat species (April 1 to August 31), pre-construction surveys shall be conducted prior to the initiation of construction by a qualified wildlife biologist to determine whether active roosts are present on site or within 50 feet of project activities. Field surveys shall be conducted early in the breeding season before any construction activities begin, when bats are establishing maternity roosts but before pregnant females give birth (April through early May). If no roosting bats are found, then no further mitigation is required. If roosting bats are found, then disturbance of the maternity roosts shall be avoided by halting construction until the end of the breeding season or a qualified bat biologist removes and relocates the roosting bats in consultation with CDFW.</p>	<p>ORNI 50, LLC and its contractors shall ensure the completion of required surveys to CDFW protocol standards.</p>	<p>CDFW to review and approve surveys, if necessary.</p>	<p>Prior to construction.</p>

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Biological Resources (cont.)			
<p>Mitigation Measure WIL-9: Conform to Avian Power Line Interaction Committee Guidelines. Electric distribution poles or towers being modified or integrated with the project shall be compliant with measures defined by the Avian Power Line Interaction Committee (APLIC).</p>	<p>ORNI 50, LLC and its contractors shall ensure that APLIC Guidelines are incorporated into construction plans, details, shop drawings and specifications.</p>	<p>USFS to review and approve all construction plans, details, shop drawings and specifications to ensure compliance.</p>	<p>Prior to and during construction.</p>
<p>Mitigation Measure WIL-10: Prior to commercial production or injection of geothermal resources, the applicant shall develop and implement an Owens Tui Chub Population and Habitat Monitoring Plan and amend the existing Remedial Action Plan, in coordination with the BLM and USFS. CDFW and USFWS will be invited to participate in the development and implementation of the plan. The Population and Habitat Monitoring Plan and amendment to the Remedial Action Plan shall be approved by BLM, CDFW, and USFWS prior to implementation. The plans are intended to identify and quantify potential changes to fish habitat and populations at AB and CD springs and Little Hot Creek Pond. The plans shall include the following measures:</p> <p>a) Conduct baseline (year zero) and ongoing fish surveys using CDFW and USFWS approved survey methods in portions of the AB/CD springs, and Little Hot Creek Pond where water quality changes could potentially affect Owens tui chub habitat or populations.</p> <p>b) Collect baseline (year zero) benthic macroinvertebrate (BMI) samples at the same sampling sites and dates as the fish surveys described above, and periodically concurrent with fish surveys after the initial collection.</p> <p>c) Conduct a baseline (year zero) and periodic stream habitat assessments in accordance with agency-approved survey protocols. These assessments shall include a quantitative evaluation of physical stream characteristics, and aquatic and riparian vegetation.</p> <p>d) Incorporate the collected population and habitat data into an analysis and discussion of water quality data collected in AB and CD springs, and Little Hot Creek Pond such as field measurements for air and water temperature, conductivity, dissolved oxygen (concentration and percent saturation), flow, turbidity, and hydrogen ion concentration (pH). Additional parameters may include, but are not limited to, sampling for total suspended solids (TSS), hardness, aluminum, and chromium to be collected, preserved, and sent to a certified analytical laboratory for analysis.</p> <p>e) Prepare an annual data report summarizing the current year's survey and sampling results, including analyses of trends and conditions. A draft report shall be made available for BLM review by December 31 of each year. The summary report shall include an analysis and discussion of water quality data. The report will be provided to CDFW and USFWS for review.</p> <p>f) Amend the existing Remedial Action Program to include measures specific to changes in Owens tui chub populations and primary constituent elements, such as aquatic vegetation, water quality, and an adequate insect prey base.</p>	<p>ORNI 50, LLC and its contractors shall integrate Tui Chub Population and Habitat Monitoring Plan measures into construction plans, details, shop drawings and specifications.</p> <p>ORNI 50, LLC and its contractors shall comply with Owens Tui Chub Population and Habitat Monitoring Plan measures.</p>	<p>BLM to approve Owens Tui Chub Population and Habitat Monitoring Plan in coordination with USFS, CDFW and USFWS. BLM to monitor compliance.</p>	<p>Prior to and during construction. Draft report submitted to USFS and BLM by December 31 of each year.</p>
Climate Change			
<p>Mitigation Measure GHG-1: ORNI 50, LLC shall put forth a good-faith effort to obtain and install hermetically sealed circuit breakers and gas insulated switches for all sulfur hexafluoride (SF₆) containing equipment associated with the CD-IV Project.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>ORNI 50, LLC to submit a summary of SF₆ containing equipment to GBUAPCD for review and approval. Where hermetically sealed equipment is not proposed include a detailed explanation of why not.</p>	<p>Prior to and during construction.</p>
Cultural Resources			
<p>PDM CUL-1: All grading and site construction activities shall avoid, to the extent possible, all cultural resource sites identified in the cultural resource survey report prepared for the project area. If identified cultural resource sites cannot be avoided, ORNI 50, LLC shall comply with all requirements of the BLM, USFS and California State Office of Historic Preservation (SHPO) prior to any grading or site construction activities which may affect the cultural resources.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>USFS and BLM to monitor compliance.</p>	<p>Prior to and during construction.</p>
<p>PDM CUL-2: If buried cultural deposits are discovered during site construction activities which were not identified in earlier cultural resource surveys for the project, grading and site construction activities in the vicinity of the cultural deposit will be evaluated by the Inyo National Forest archaeologist, or by a cultural resource specialist pursuant to the requirements of Memorandum of Agreement (MOA) with the SHPO.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined and to notify the Inyo National Forest and SHPO as required.</p>	<p>USFS and BLM to monitor compliance.</p>	<p>During construction.</p>
<p>PDM CUL-3: ORNI 50, LLC employees, contractors, and suppliers shall be informed about the sensitivity of the cultural resources in the project area and reminded that all cultural resources are protected and, if uncovered, shall be left in place and reported to the ORNI 50, LLC representative and/or their supervisor.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>USFS and BLM to monitor compliance.</p>	<p>Prior to and during construction.</p>

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Cultural Resources (cont.)			
Mitigation Measure CUL-1: A Memorandum of Agreement (MOA) shall be prepared and shall detail: 1) procedures to resolve adverse effects under Section 106 of the National Historic Preservation Act; 2) coordination between the CEQA process and Section 106 compliance; 3) procedures for treatment of inadvertent discoveries; 4) procedures for determining treatment and disposition of human remains; 5) compliance monitoring; 6) dispute resolution; 7) development of an Historic Properties Avoidance Plan; and 8) Tribal consultation and participation.	ORNI 50, LLC and its contractors to prepare the MOA.	USFS and BLM to review and approve the MOA.	At least 90 days prior to construction.
Mitigation Measure CUL-2: On the basis of preliminary National Register eligibility assessments made under the MOA, particularly concerning contributing resources to the Casa Diablo Obsidian Quarry District, the BLM and USFS may require the relocation of project components to avoid or reduce damage to cultural resource values. Where operationally feasible, potentially National Register-eligible resources shall be protected from direct project impacts by project redesign within previously surveyed and analyzed area.	ORNI 50, LLC and its contractors to comply with project component relocation requirements.	USFS and BLM to require the relocation of project components as needed.	At least 90 days prior to construction.
Mitigation Measure CUL-3: The CD-IV Project Alternative 3 design of September 19, 2012, was in part developed to avoid historic properties. Where the USFS and BLM decide that National Register-eligible or -listed cultural resources cannot be protected from direct impacts by project redesign, ORNI 50, LLC shall comply with appropriate mitigative treatment(s) that will be detailed in the MOA.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to ensure compliance with the MOA.	At least 90 days prior to and during construction.
Mitigation Measure CUL-4: A Historic Properties Avoidance Plan shall be developed and included in the MOA that defines and maps all known cultural resources within 150 feet of the project APE. That plan shall also detail how resources will be marked and protected as Environmentally Sensitive Areas during construction. The plan shall detail provisions for monitoring construction in locations deemed to be high-sensitivity areas for buried sites currently without surface manifestations. It shall also detail procedures for halting construction, making appropriate notifications to agencies, officials, and Native Americans, and assessing register-eligibility in the event that unknown cultural resources are discovered during construction. For all unanticipated cultural resource discoveries, the Historic Properties Avoidance Plan shall detail the methods, consultation procedures, and timelines for assessing register-eligibility, formulating a mitigation plan, and implementing treatment. Mitigation and treatment plans for unanticipated discoveries shall be approved by the USFS, BLM, and the SHPO prior to implementation.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS, BLM, and the SHPO shall review and approve plan.	At least 90 days prior to construction.
Mitigation Measure CUL-5: Archaeological monitoring shall be conducted by a qualified archaeologist familiar with the types of historic and prehistoric resources that could be encountered within the APE, and under direct supervision of a principal archaeologist. All cultural resources personnel shall be approved by the BLM and USFS. A Native American monitor may be required at culturally sensitive locations specified by the USFS following government-to-government consultation with Indian tribes. The Historic Properties Avoidance Plan shall indicate the locations where Native American monitors will be required and shall specify the tribal affiliation of the required Native American monitor for each location. ORNI 50, LLC shall retain and schedule any required Native American monitors.	ORNI 50, LLC to retain a qualified archaeologist, as described, to conduct the required archaeological monitoring.	BLM and USFS to approve cultural resources personnel and review monitoring results.	Prior to and during construction.
Mitigation Measure CUL-6: Prior to construction, the BLM shall ensure that the boundaries of historic properties for which project facilities appear to overlap are clearly marked on the ground with wood lathe and flagging set no more than 10 meters apart. Historic properties planned for avoidance and protection shall be designated as Environmentally Sensitive Areas (ESAs). Historic properties that are within 20 meters (65 feet) of the Direct APE will be identified and labeled as ESAs on engineering plans. ORNI 50, LLC shall retain a qualified archaeologist to conduct mandatory cultural sensitivity training for all project staff and contractors prior to construction activities associated with this undertaking.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to monitor compliance.	Prior to construction.
Mitigation Measure CUL-7: In the event of inadvertent discoveries during construction, operation and maintenance, or decommissioning, procedures outlined in the MOA and the HPTP shall be adhered to. At a minimum this shall include: 1) stop work orders in the vicinity of the find; 2) recordation and evaluation of the find by a qualified archaeologist; 3) notification of the find to BLM and USFS; 4) and implementation of appropriate treatment measures, such as avoidance or data recovery.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to monitor compliance.	During construction, operation, and decommissioning.
Mitigation Measure CUL-8: Following language developed in the MOA, the BLM shall continue to consult with Indian tribes to identify sacred sites, properties of traditional religious and cultural importance, and traditional use areas that might be affected by the CD-IV Project. If such places are identified, the BLM shall consult further with tribes to resolve access impediments or other identified impacts.	BLM to continue consultation with Indian tribes as described.	USFS and BLM to monitor compliance.	Prior to and during construction.
Geothermal Resources			
PDM HYD-8: The well bores shall be cased with steel casing to prevent interzonal migration of the fluids, protect groundwater, and reduce the possibility of uncontrolled well flow ("blowouts").	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to and during construction.
PDM HYD-9: Containment basins/sumps constructed at each drill site for the containment and temporary storage of all drilling fluid, drilling mud and cuttings and stormwater runoff shall be constructed to meet RWQCB requirements. Upon completion of drilling activities, the solids remaining in the pit will be dried and tested in accordance with the requirements of the SWRCB Water Quality Order No. 2003-0003 – Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality or the project-specific requirements of the LRWQCB and, if authorized by the Regional Water Quality Control Board, USFS and BLM, buried in the pit.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM, USFS, and RWQCB to monitor compliance.	Prior to, during, and after construction.

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Geothermal Resources (cont.)			
PDM HYD-10: The power plant site shall be constructed to prevent offsite discharge from accidental spills of geothermal fluid, binary working fluid, or other materials stored or used on the site. The plant and well pads shall be designed so that spills shall be contained on site.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to and during construction.
PDM HYD-11: Isolation valves shall be located within the pipeline to prevent any backflow of geothermal fluid, should a pipeline rupture or major leak occur.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to and during construction.
PDM HYD-12: In-line sensing equipment and automatic shutdown controls shall be installed to detect pipeline leaks or ruptures and shut in the wells in the event of an electric failure or detected sudden drop in pipeline pressure.	ORNI 50, LLC and its contractors to implement measure as defined.	GBUAPCD to monitor compliance.	During construction.
PDM HYD-13: ORNI 50, LLC shall prepare and implement a “Spill or Discharge Contingency Plan” and “Well Blowout Contingency Plan” to prevent, control, contain, clean up and mitigate the impacts of any large spills of geothermal fluid.	Prepare and implement a Spill or Discharge Contingency Plan and Well Blowout Contingency Plan	BLM and USFS to review and approve the “Spill or Discharge Contingency Plan” and “Well Blowout Contingency Plan”. BLM to monitor compliance.	Prior to and during construction.
Geologic, Soil and Mineral Resources			
PDM GEO-1: Topsoil shall be salvaged, as feasible, and stockpiled (no more than two feet high) for use during subsequent reclamation of the disturbed areas.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	During construction.
PDM GEO-2: Subsoils shall be de-compacted as part of reclamation prior to the replacement of topsoil.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	During construction.
PDM GEO-3: ORNI 50, LLC shall construct the project in conformance with recommendations by the geotechnical engineer.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to and during construction.
PDM GEO-4: ORNI 50, LLC commits to continuing to operate the existing geothermal projects in conformance with the Plans of Operation for Development, Injection and Utilization, approved by the BLM and USFS, as well as in conformance with monitoring through the Long Valley Hydrologic Advisory Committee, and remedial action programs, which are designed to prevent, or mitigate, potential hydrothermal impacts to Owens tui chub critical habitat, the Hot Creek Hatchery and Hot Creek Gorge springs from geothermal operations conducted on federal geothermal leases in the Mono-Long Valley area. ORNI 50, LLC also commits to operating the project in conformance with these requirements.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to monitor compliance.	Prior to and during operation.
PDM GEO-5: The CD-IV plant shall be constructed to handle the maximum credible earthquake in the project area. The power plant and all project construction shall comply with Seismic Zone D standards, the most stringent under the International Building Code.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to and during construction.
PDM GEO-6: The CD-IV power plant and pipelines shall be designed and constructed to reasonably minimize the potential for failure or rupture in the event of fault offset in these zones.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to and during construction.
PDM GEO-7: The Emergency Contingency Plans shall include actions to be taken in the event responsible agencies declare a volcanic hazard warning or alert, or in the event of a volcanic eruption.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to construction.
Mitigation Measure GEO-1: Soil Erosion Control Plan Review and Approval. PDM HYD-1, HYD-3, and HYD-5 shall be reviewed and approved by a USFS watershed specialist before implementation. Erosion control and drainage plans for new and existing roads to be utilized for the project shall be aimed at maintaining to the greatest extent feasible the soil quality objectives contained in the USFS Pacific Southwest Region (Region 5) Watershed and Air Management Manual (Supplement R5-2500-50-2012-1). In developing the plan, ORNI 50, LLC and/or its contractor shall consult with the USFS to determine the appropriate soil quality objective(s) to be met following construction (for temporary construction disturbances), and following decommissioning (for total site restoration). As part of the erosion control and drainage plans, ORNI 50, LLC and/or its contractor shall implement an appropriate combination of BMPs, selected from the USFS Water Quality Management Handbook (R5 FSH 2509.22, Chapter 10, Amendment 2509.22-2011-1), that are necessary to meet or exceed the applicable soil quality objective(s) (i.e., maintain or enhance soil quality and function).	ORNI 50, LLC and its contractors to prepare and implement an erosion control and drainage plan.	BLM and USFS to review and approve submitted plan. BLM to monitor compliance.	At least 30 days prior to construction.
Mitigation Measure GEO-2: Soils and Geotechnical Investigation. Prior to issuance of a grading permit or use permit, a qualified California-licensed geotechnical engineer shall prepare and submit to the BLM and USFS a final geotechnical investigation that provides recommendations to address seismic safety, including determination of the appropriate IBC Seismic Performance Category for the site, and design requirements for foundations, retaining walls/shoring and excavation. The scope of the geotechnical report shall include the plant site as well as the pipeline route and well sites. The geotechnical investigation shall identify and evaluate the presence of expansive, compressible or liquefiable soils and, if present, shall make recommendations for site preparation or design necessary to avoid or reduce adverse structural impacts. Structural foundations shall not be founded on engineered fill, nor on native soil, unless it is demonstrated that the soils will be adequate to support the foundation. A California-licensed geotechnical engineer shall be retained by ORNI 50, LLC to be present on the project site during excavation, grading, and general site preparation activities to monitor the implementation of the recommendations specified in the geotechnical investigation. When/if needed, the geotechnical engineer shall provide structure-specific geologic and geotechnical recommendations that shall be documented in a report approved by the permitting agency.	ORNI 50, LLC shall retain a qualified California-licensed geotechnical engineer to prepare a final geotechnical investigation, as described.	BLM to review and approve the final geotechnical investigation, and monitor compliance.	At least 30 days prior to construction.

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Geologic, Soil and Mineral Resources (cont.)			
Mitigation Measure GEO-3: <i>Subsidence Monitoring and Mitigation.</i> The existing subsidence monitoring program conducted by the USGS shall be reviewed by the USGS and LVHAC to ensure adequate subsidence monitoring is conducted for the CD-IV project. Based on recommendations by the USGS and LVHAC, the subsidence monitoring program may be expanded to include additional monitoring in the CD-IV Project area and any areas outside the project area that may be impacted by the expanded geothermal development. If additional subsidence monitoring is deemed necessary, the project applicant shall develop a monitoring plan. The monitoring plan shall include subsidence and uplift tolerances for potential impacts to infrastructure and resources, and shall prescribe particular actions (e.g., require discontinued or reduced pumping rates) in the event tolerances are exceeded. Additional monitoring may include installation of new or updated monitoring equipment and use of current methods that can detect small-scale changes (for example utilizing InSAR data or high precision leveling methods).	USGS and LVHAC to review the existing subsidence monitoring program. The existing program will be expanded to include additional monitoring, as appropriate and necessary.	BLM to monitor compliance.	At least 30 days prior to construction.
Mitigation Measure GEO-4: <i>Surface Fault Rupture Hazard Investigation.</i> ORNI 50, LLC shall include in PDM GEO-7 a requirement to provide the BLM and USFS the results and findings of the surface fault rupture hazard investigation and demonstrate that such findings have been incorporated where necessary into the final layout and design of the project. The Surface Fault Rupture Hazard Investigation shall conform to California Geological Survey Note 49, Guidelines for Evaluating the Hazard of Surface Fault Rupture (CGS, 2002) and shall be prepared and certified by a California-licensed geotechnical engineer.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to review the surface fault rupture hazard investigation and approve, if adequate, the applicant's demonstration that findings were incorporated into the final layout and design of the CD-IV Project.	At least 30 days prior to construction.
Grazing, Wild Horses and Burros			
Mitigation Measure GRZ-1: To facilitate livestock management, upon submission of the Utilization Plan, the USFS Authorized Officer shall review the affected grazing allotments and recommend appropriate locations for additional under-crossings, if any, in any continuous segment of above-ground pipeline extending one-half mile or longer.	ORNI 50, LLC and its contractors to prepare a Utilization Plan.	BLM and USFS to review and approve, if adequate, the Utilization Plan.	Prior to construction.
Mitigation Measure GRZ-2: The USFS may seek reimbursement from the geothermal lessee for the permanent loss of 15.3 acres of grazing habitat and for the costs of implementing the livestock escape management plan if it is demonstrated that the lessee's project operations directly result in stray livestock. The USFS Authorized Officer shall coordinate with the Term Grazing Permittee to mitigate the loss.	USFS to monitor livestock for stray animals.	USFS to determine if a livestock escape management plan and/or reimbursement is required.	During construction and operation.
Land Use			
PDM LU-1: Geothermal exploration and development projects shall be carried out with the fewest visual intrusions reasonably possible (consistent with Mono County Conservation/Open Space Element, Goal I, Objective F).	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to monitor compliance.	Prior to and during construction.
PDM LU-2: Prior to operation of the project, ORNI 50, LLC shall prepare a Site Abandonment-Reclamation Plan in conformance with BLM and USFS requirements. When project operations are complete, ORNI 50, LLC shall restore the site to approximate pre-Project land uses according to the plan requirements.	ORNI 50, LLC to prepare and implement a Site Abandonment-Reclamation Plan.	USFS and BLM to monitor compliance.	Prior to decommissioning.
Noise			
PDM NOI-1: Mufflers shall be used on all drilling rig engines.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	During construction.
PDM NOI-2: Construction noise shall be minimized through operational practices which avoid or minimize those practices which may typically generate greater noise levels, or generate distinctive impact noise.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	During construction.
PDM NOI-3: Prior to commencing any construction activity associated with the project, ORNI 50, LLC shall submit, and secure the approval of the BLM and USFS, a program designed to adequately respond to noise complaints. As part of the program, ORNI 50, LLC shall publish a telephone number for use by individuals for filing of complaints or inquiries regarding the level of noise from construction operations. A designated representative of the permittee shall be available 24 hours a day to record any filed complaints or inquiries, and ORNI 50, LLC shall make reasonable efforts to investigate and respond to any such complaint or inquiry within 24 hours of the complaint or inquiry. ORNI 50, LLC shall record each filed complaint or inquiry, and the results of its investigation and response, on a form, a copy of which shall be delivered to the BLM and USFS staff designated to receive these forms within 24 hours of the complaint or inquiry.	ORNI 50, LLC and its contractors to implement measure as defined. USFS and BLM to review and approve noise complaint response program.	ORNI 50, LLC to ensure compliance.	Prior to and during construction. Submit copy of complaint/inquiry to USFS and BLM within 24 hours of receipt of complaint /inquiry.
Mitigation Measure NO-1: ORNI 50, LLC shall prepare and implement a Noise Management Plan to ensure that operational noise levels associated with CD-IV Project well pumps do not increase ambient noise levels at Shady Rest Park by more than 3 dBA. The plan shall be submitted to the BLM and USFS for review and approval prior to the commencement of well pump operations. The plan shall include a proposal designed by an acoustical engineer to perform baseline noise measurements at Shady Rest Park at locations developed through consultation with USFS and the Town of Mammoth Lakes. The plan shall include a requirement for an acoustical engineer to collect additional measurements at the same locations as the baseline survey once the well pumps are operational to verify that well pump noise levels do not increase ambient noise levels by more than 3 dBA.	ORNI 50, LLC to prepare and implement a Noise Management Plan as described.	BLM and USFS to review and approve Noise Management Plan, and monitor compliance.	Within 30 days of operation commencing.

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Noise (cont.)			
<p>Mitigation Measure NO-1 (cont.): The plan shall identify specific acoustical engineer-recommended measures to be implemented by ORNI 50, LLC in order to reduce noise levels to within 3 dBA of baseline conditions if the measurements that include pump operations exceed the baseline measurements by more than 3 dBA. Noise control techniques may include, but not be limited to: locating the well pump within an enclosed concrete building, use of noise walls or equivalent sound attenuation structures, and the use of pumps and equipment with special noise control specifications designed to specifically achieve the desired noise reductions.</p> <p>The plan shall require an acoustical engineer to take additional noise measurements after the noise reduction improvements are implemented to ensure the required noise level is met. In the event that the measured noise levels still exceed the baseline level by more than 3 dBA, additional noise control techniques shall be initiated to correct the violation.</p>			
Population and Housing			
No Mitigation Measures	N/A	N/A	N/A
Public Safety, Hazardous Materials and Fire			
PDM HAZ-1: ORNI 50, LLC shall comply with all local, state, and federal regulations regarding the use, transport, storage, and disposal of hazardous materials and wastes. Its Hazardous Materials Business Plan shall be updated to incorporate the new power plant.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to review the Hazardous Materials Business Plan and monitor compliance.	During construction and operation.
PDM HAZ-2: N-pentane usage and storage at the CD-IV facility shall be incorporated into ORNI 50, LLC's Risk Management Plan and Process Safety Management program.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	Prior to operation.
PDM HAZ-3: All construction equipment shall be equipped with spark arresters. All vehicles shall be equipped with fire extinguishers and shovels.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to monitor compliance.	Prior to and during construction.
PDM HAZ-4: Fire extinguishers shall be available during all construction activities. Water that is used for construction and dust control shall be available for fire fighting.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to monitor compliance.	Prior to and during construction.
PDM HAZ-5: The power plant shall have an emergency fire pump to provide water for fire suppression.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to monitor compliance.	Prior to operation.
PDM HAZ-6: Cooking, campfires, or fires of any kind shall not be allowed.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and BLM to monitor compliance.	During construction and operation.
PDM HAZ-7: Personnel shall be allowed to smoke only in designated areas, and they shall be required to follow applicable Inyo National Forest regulations regarding smoking.	ORNI 50, LLC and its contractors shall enforce measure.	USFS to monitor compliance.	During construction and operation.
PDM HAZ-8: Any special permits required for welding or other similar activities shall be applied for through, and received from, the District Ranger before these operations are conducted.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS to monitor compliance.	Prior to construction.
PDM HAZ-9: ORNI 50, LLC shall prepare an Emergency Plan to provide guidance to field personnel and management in the event of an uncontrolled well flow, pipeline break or other field related emergency. The plan shall address the various hazards or problems that might be encountered and it will specify appropriate preventive or anticipatory actions, equipment requirements, as well as specific responses, notifications and follow up procedures in the event of such a field emergency. The plan shall include emergencies such as accidents and injuries.	ORNI 50, LLC to prepare and implement an emergency plan.	BLM and USFS to review and approve the emergency plan. BLM to monitor compliance.	Prior to construction.
PDM HAZ-10: ORNI 50, LLC and/or its contractors shall conduct daily routine visual inspections of the construction areas during construction to identify and correct any operational problems that could lead to a hazardous materials release. ORNI 50, LLC operators stationed at the Casa Diablo operations center shall continuously monitor the well and pipeline operations through the data transmitted to the center by the well and pipeline monitoring sensor. In addition, these operators shall also conduct regular, routine visual inspections of the well sites and pipeline.	ORNI 50, LLC and its contractors to implement measure as defined.	ORNI 50, LLC to submit bi-monthly report to BLM and USFS for review.	During construction and operation.
PDM PSU-1: Solid waste materials generated during project construction shall either be collected by a licensed waste hauler or transported by ORNI 50, LLC and deposited at a facility authorized to receive and dispose of these materials. Portable chemical sanitary facilities shall be used by all personnel. These facilities shall be maintained by a local contractor.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM to monitor compliance.	During construction.

MITIGATION, MONITORING AND REPORTING PROGRAM FOR THE CASA DIABLO IV PROJECT

Public Safety, Hazardous Materials and Fire (cont.)			
<p>Mitigation Measure PHS-1: ORNI 50, LLC shall prepare emergency contingency plans, including a Spill or Discharge Contingency Plan, a Hazardous Gas Contingency Plan, and an Injury Contingency Plan, and submit these plans for technical review to the USFS, the BLM, the LVFPD, and the MLFPD prior to construction. The Spill or Discharge Contingency Plan shall be designed to apply to spills or other releases at all project facilities where potential water quality pollutants shall be utilized or stored, including geothermal fluid pipelines, the power plant, the substation, and other facilities where fuels, oils, and other chemicals may be stored or utilized. In consultation with the local agencies, the BLM and USFS shall determine any additional measures that shall be included in the emergency contingency plans and these measures shall be implemented by ORNI 50, LLC. The emergency contingency plans shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. Identification of blowout prevention equipment and emergency containment equipment that shall be maintained and readily accessible at all times. Equipment could include construction equipment, water trucks, tanks, and absorbents. 2. Specific procedures to shut-in or control the flow, and appropriate control procedures if the means to control the flow is lost. 3. Specific procedures and equipment to construct sumps, dikes and contain flows, spills or leaks of geothermal fluid, drilling mud, and petroleum products. 4. Hazardous gas monitoring, action levels, and emergency procedures. 5. Identification of emergency response providers and appropriate regulatory agencies to be notified in the event of an emergency. 6. Training of all site personnel and construction workers in emergency contingency procedures described in the plans and maintenance of records of worker training. 	<p>ORNI 50, LLC to prepare and implement an emergency contingency plans.</p>	<p>ORNI 50, LLC to submit emergency contingency plans to the USFS, BLM, LVFPD, and the MLFPD for review and approval.</p>	<p>Prior to construction.</p>
<p>Mitigation Measure PHS-2: ORNI 50, LLC shall prepare a Fire Protection and Prevention Plan for construction, operation, and maintenance activities. The Fire Protection and Prevention Plan must be submitted to and approved by the Inyo National Forest, the LVFPD, and the MLFPD prior to construction. In consultation with the local agencies, the USFS shall determine any additional BMPs that shall be implemented. The Fire Protection and Prevention Plan shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. A requirement for the number and size of water trucks equipped with 50 feet of fast response hose with fog nozzles that shall be maintained on-site during construction for immediate response to fire incidents. 2. Training of all construction workers on fire prevention methods, the proper use of firefighting equipment and procedures to be followed in the event of a fire. 3. Maintenance of fire extinguishers and fire-fighting equipment at each construction site sufficient to extinguish small fires. 4. Definition of appropriate defensible spaces that shall be maintained around permanent structures for acceptable wildland fire protection 	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>USFS, the LVFPD, and the MLFPD to review and approve submitted plan.</p>	<p>Prior to construction.</p>
Recreation			
<p>PDM REC-1: Sections of the pipeline route not located next to existing roads shall be monitored for evidence of use by off-highway vehicles (OHVs). If such evidence is found, ORNI 50, LLC shall notify the USFS and comply with its requirements for funding or implementation of actions to prevent use by OHVs, such as the posting of signs and the physical blocking of access.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined and notify USFS if evidence of OHV use is observed in areas where the pipeline route is not located adjacent to existing roads.</p>	<p>USFS to ensure that ORNI 50, LLC implements measure if evidence of OHV use is observed in areas where the pipeline route is not located adjacent to existing roads.</p>	<p>During construction and operation.</p>
<p>PDM REC-2: ORNI 50, LLC shall prepare and implement a Winter Access Contingency Plan in accordance with the requirements of the USFS. The plan shall be designed to ensure that there is at least one location along Sawmill Road which is maintained to provide a safe and easy crossing by cross country skiers.</p>	<p>ORNI 50, LLC and its contractors to prepare and implement a winter access contingency plan upon USFS approval.</p>	<p>USFS to review and approve submitted plan.</p>	<p>Prior to construction.</p>
<p>PDM REC-3: For public safety, an appropriate temporary fence shall be constructed around each drilling sump/pit when the associated drill site is not continuously staffed by personnel and until the pit is backfilled. See also TR-6.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>BLM to monitor compliance.</p>	<p>During construction.</p>
<p>Mitigation Measure REC-1: ORNI 50, LLC shall post informational materials about the CD-IV Project at, but not limited to: nearby recreation sites/campgrounds, access points, the Mammoth Lakes Trail System website, and the Mammoth Welcome Center. This material shall include construction schedules and safety information regarding trucks and other heavy equipment use on local roads and NFSRs, and identify route closures. Signage shall be designed to function during winter and non-winter conditions, and shall be consistent with USFS and Town of Mammoth signage requirements, as appropriate. In addition, construction vehicle speed shall be limited to 15 miles per hour; with temporary signage warning construction vehicles to reduce speeds in areas with blind corners, narrow roads, or hills.</p>	<p>ORNI 50, LLC and its contractors to prepare and distribute interpretive materials upon USFS review and approval.</p>	<p>USFS and Town of Mammoth Lakes to review and approve informational materials.</p>	<p>Prior to and during construction.</p>

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Recreation (cont.)			
Mitigation Measure REC-2: ORNI 50, LLC shall monitor all pipeline routes for evidence of OHV use and if such use is identified, further OHV use shall be prevented through posting of signs and the physical blocking of access, or other restriction measures. ORNI 50, LLC shall also monitor revegetation of pipeline alignments and replant vegetation if necessary.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS to monitor compliance.	During construction and operation.
Mitigation Measure REC-3: ORNI 50, LLC shall provide information regarding pipeline crossing locations and road closures at, but not limited to: nearby recreation sites/campgrounds, access points, the Mammoth Lakes Trail System website, and the Mammoth Lakes Visitor Center. Signage shall be designed to function during winter and non-winter conditions, and shall be consistent with USFS and Town of Mammoth signage requirements, as appropriate. In addition, operational vehicle speed shall be limited to 15 miles per hour and road and signage shall be installed, consistent with USFS and County requirements. ORNI 50, LLC shall also coordinate with the Town of Mammoth Lakes and the USFS to ensure that a Shady Rest OSV staging area and access to the staging area is plowed to provide winter access. In addition, banks formed by road plowing shall be shaped such that crossing grade changes are gradual in areas where cross country use is prevalent. In addition, implement Mitigation Measures VIS-1 through VIS-3 .	ORNI 50, LLC and its contractors to prepare and distribute interpretive materials after USFS, Town of Mammoth Lakes, and County approvals. ORNI 50, LLC shall coordinate with USFS and Town of Mammoth Lakes to provide winter access and snow plowing.	USFS, Town of Mammoth Lakes, and County to review and approve informational signage. USFS and Town of Mammoth Lakes will review and approve winter access activities.	Prior to and during construction.
Socioeconomics and Environmental Justice			
No Mitigation Measures	N/A	N/A	N/A
Traffic/Access/Circulation			
PDM TR-1: ORNI 50, LLC shall meet Caltrans' encroachment permit requirements in order to construct the pipeline under U.S. Highway 395.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS and Caltrans to monitor compliance.	Prior to construction
PDM TR-2: project vehicles shall not block Sawmill Road (03S25) or Sawmill Cutoff Road (03S08) by either waiting or parking on either road.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to monitor compliance during construction. USFS to monitor during operation.	During construction and operation
PDM TR-3: Where the pipeline shall be constructed under existing roads by open trench construction and restricting public access, appropriate traffic control measures shall be established to warn traffic of temporary road closures.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to monitor compliance.	Prior to and during construction.
PDM TR-4: For those sections of the pipeline not immediately adjacent to an access road, pipeline construction equipment shall "catwalk" over the top of the existing vegetation without removing it to avoid the need to grade the pipeline route or an access road and minimize both ground disturbance and visual impact. Vehicle access to these off road construction areas shall be limited to that specifically necessary for construction. No vehicles shall be allowed to turn or drive in any area beyond a 20 foot wide temporary construction corridor along the pipeline route.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to monitor compliance.	During construction.
PDM TR-5: ORNI 50, LLC shall attempt to work with the Town of Mammoth Lakes and the USFS to plow the road to and the parking lot at Shady Rest Park in the winter to better accommodate recreational traffic and parking for cross-country skiers and snowmobilers. This plan shall provide the majority of the winter access for the new well pads for the project.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS to monitor compliance.	During construction and operation.
PDM TR-6: All vehicle traffic shall be restricted to designated access roads. project-related vehicles shall be restricted to travelling no faster than 25 mph on Sawmill Cutoff Road (03S08) and on other unimproved roads in the project area.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to monitor compliance during construction. USFS to monitor during operation.	During construction and operation.
Mitigation Measure TRA-1: Prior to construction and/or decommissioning, ORNI 50, LLC shall develop a Coordinated Transportation Management Plan and work with Mono County to prepare and implement a transportation management plan for roadways adjacent to and directly affected by the planned CD-IV Project facilities, and to address the transportation impact of the overlapping construction projects within the vicinity of the CD-IV Project in the region. The transportation management plan shall include, but not be limited to, the following requirements: 1. Coordination of individual traffic control plans for the project and nearby projects. 2. Coordination between the contractor and Mono County in developing circulation and detour plans that include safety features (e.g., signage and flaggers). The circulation and detour plans shall address: a. Full and partial roadways closures. b. Circulation and detour plans to include the use of signage and flagging to guide vehicles through and/or around the construction zone, as well as any temporary traffic control device. c. Bicycle/Pedestrian detour plans, where applicable. d. Parking along public roadways.	ORNI 50, LLC to prepare and implement a Coordinated Transportation Management Plan.	Mono County and USFS to review and approve Coordinated Transportation Management Plan. Mono County, USFS, and BLM to monitor compliance.	Prior to construction and/or decommissioning.

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Traffic/Access/Circulation (cont.)			
Mitigation Measure TRA-1 (cont.):			
e. Haul routes for construction trucks and staging areas for instances when multiple trucks arrive at the work sites.			
f. Repairing and restoring affected roadway rights-of way to their original condition or better after construction and decommissioning are completed, where applicable.			
Protocols for updating the transportation management plan to account for delays or changes in the schedules of individual projects.			
Utilities and Public Services			
No Mitigation Measures	N/A	N/A	N/A
Visual/Aesthetics			
PDM VIS-1: Any pipeline route selected within the pipeline corridor shall be located at least 300 feet from the developed portions of Shady Rest Park or substantially screened from view from the developed portions of the park by topography or vegetation.	ORNI 50, LLC and its contractors to integrate measure into the construction plans, details, drawings and specifications.	USFS to monitor compliance.	Prior to construction.
PDM VIS-2: In sections of the project area with a USFS Visual Quality Objective (VQO) of "partial retention," ORNI 50, LLC shall, with the approval of the USFS, locate the pipeline so that it is not immediately adjacent to existing roads where possible, and takes advantage of existing vegetation or terrain screening opportunities to reduce the visibility of the pipeline from these roads.	ORNI 50, LLC and its contractors to integrate USFS VQO of "partial retention" and topographical mapping into construction plans, details, drawings and specifications to identify screening opportunities. ORNI 50, LLC to implement measure upon USFS approval.	USFS to review and approve pipeline alignment.	Prior to construction.
PDM VIS-3: The pipeline segments to be constructed (a) in areas with a VQO of "retention" in the vicinity of Sawmill Cutoff Road, and (b) in Inyo National Forest managed-land in areas with the VQO of "retention" and visible from State Route 203 and/or U.S. Highway 395 shall use texture and color or colors (approved by the authorized officer) selected to blend with the color and texture of the characteristic landscape.	ORNI 50, LLC and its contractors to integrate USFS VQO of "retention" into the construction plans, details, drawings and specifications to identify pipeline segments at which this measure will be implemented. ORNI 50, LLC to implement measure upon USFS approval.	USFS to approve of texture and color(s) to be used for pipeline segments in areas identified in the measure.	Prior to construction.
PDM VIS-4: All power plant and well pad facilities shall be painted a neutral color to blend in with the environment, using a color that was approved and used for the existing Basalt Canyon facilities and/or another color scheme approved by the USFS.	Use USFS-approved paint on all power plant and well pad facilities. ORNI 50, LLC to implement measure upon USFS approval.	USFS to confirm paint color. ORNI 50, LLC to implement measure upon USFS approval.	During construction and operation.
Mitigation Measure VIS-1: Landscape Plan. Prior to construction, ORNI 50, LLC shall prepare, submit for approval by the USFS, and implement a landscape plan that includes planting of native trees and shrub vegetation at select locations to further screen well site facilities and the geothermal pipeline from view from Sawmill Cutoff Road (NFSR 03S08), Sawmill Road (03S25), Shady Rest Park, U.S. Highway 395, SR 203, and the Knolls Loop. The landscape plan shall be coordinated with the revegetation plan (refer to Mitigation Measure VEG-1) including a monitoring and reporting plan. Permanent fencing shall be precluded to reduce potential barriers to wildlife. To minimize adverse visual effects from the above mentioned roads and park, ORNI 50, LLC shall landscape the following areas such that direct views and corners of the well facilities and pipeline are at least 65% obstructed from any location within a ten-year period. Monitoring at the end of the third growing season shall be conducted to determine if success standards are being met. If it is determined that success standards are not being met, ORNI 50, LLC shall take immediate action to re-implement the Landscape Plan to ensure compliance by the tenth-year period. At the following sites, ORNI 50, LLC shall also surround landscaped sites during construction with dark colored protective fencing: a. The northern side of well facility site 38-25 (near Shady Rest Park). b. Along Sawmill Cutoff Road (NFSR 03S08) (between well facility sites 15-25 and 14 25, and at the pipeline crossing near well facility site 34-25). c. Along Sawmill Road (03S25) (between well facility sites 81-36, 12A-31, 23-31, 35 31, and 55-31). d. At pipeline crossover near the Knolls Loop (approximately 700 feet southeast of well facility site 34-25). e. At pipeline crossovers adjacent to Sawmill Road (03S25) and Pole Line Road (NFSR 03S123) (near well facility sites 56-25,66-25, 77-25, 81-36, 12A-31, 23-31, 35-31, and 55-31). Once the locations of crossovers and expansion loops are determined, the need for implementing this measure shall be determined.	ORNI 50, LLC to prepare and implement a Landscape plan. ORNI 50, LLC to implement measure upon USFS approval. If landscaping does not meet success standards by the end of the third growing season, ORNI 50, LLC to re-implement measure.	USFS to review and approve submitted plan. USFS to monitor landscaped areas to determine success of measure at the end of the third growing season.	Prior to and after construction.

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Visual/Aesthetics (cont.)			
<p>Mitigation Measure VIS-2: Pipeline Crossovers and Expansion Loops. At locations where one pipeline crosses over another adjacent to Sawmill Road (03S25) and Pole Line Road (NFSR 03S123) (near well facility sites 56-25,66-25, 77-25, 81-36, 12A-31, 23-31, 35-31, and 55-31) and where the terrain is not a constraining factor, ORNI 50, LLC shall reduce the height of crossovers and expansion loops by:</p> <p>a. Lowering the existing pipeline or new pipeline (whichever is easiest) belowground or within a 3-foot deep trench and design the pipeline crossover with pairs of 30, 45 or 90 degree ells to ensure that the overall height of the crossover is at or below 5.5 feet aboveground.</p> <p>b. All expansion loops shall be horizontal to minimize overall height of installed pipelines to less than 5.5 feet aboveground.</p>	<p>ORNI 50, LLC and contractor to integrate measures into the construction plans, details and specifications to identify locations of pipeline crossovers. ORNI 50, LLC to implement measure as defined.</p>	<p>USFS to review plans and specifications of pipeline crossovers.</p>	<p>Prior to construction.</p>
<p>Mitigation Measure VIS-3: Power Plant Landscape Plan. Prior to construction, ORNI 50, LLC shall prepare, submit for approval by the USFS, and implement a landscape plan that includes planting of native trees, shrubs, and perennial vegetation to screen views from Antelope Springs Road (03S05). The landscape plan shall be coordinated with the revegetation plan (refer to Mitigation Measure VEG-1) including a monitoring and reporting plan. ORNI50, LLC shall landscape the area immediately adjacent to Antelope Springs Road and at select locations such that direct views and corners of the power plant are at least 65% obstructed from any location within a ten-year period. Monitoring shall be conducted at the end of the fifth growing season to determine whether success standards are being met. If it is determined that success standards are not being met, ORNI 50, LLC shall take immediate action to re-implement the landscape plan to ensure compliance by the tenth-year period.</p>	<p>ORNI 50, LLC to prepare and implement a landscape plan for the power plant. Upon USFS approval, ORNI 50, LLC to implement measure. If landscaping does not meet success standards by the end of the third growing season, ORNI 50, LLC to re-implement measure.</p>	<p>USFS to review and ensure landscape plan is consistent with Mitigation Measure VEG-1. USFS to monitor landscaped areas to determine success of measure at the end of the third growing season.</p>	<p>Prior to and after construction.</p>
Water Resources			
<p>PDM HYD-1: Appropriate erosion control measures shall be used to control any offsite discharges, and the project shall adopt any relevant Lahontan Regional Water Quality Control Board (LRWQCB) and USFS best management practices to prevent soil erosion, including the preparation of a Storm Water Pollution Prevention Plan.</p>	<p>ORNI 50, LLC and its contractors to implement measure as described.</p>	<p>BLM and USFS to monitor compliance.</p>	<p>Prior to and during construction.</p>
<p>PDM HYD-2: To the extent possible, the pipeline route and any access roadways shall be located outside of any riparian conservation areas (RCAs) delineated by the USFS.</p>	<p>ORNI 50, LLC and its contractors to implement measure as described.</p>	<p>BLM and USFS to monitor compliance.</p>	<p>Prior to and during construction.</p>
<p>PDM HYD-3: Existing roads shall be evaluated and properly graded and repaired in areas that show evidence of enhanced erosion.</p>	<p>ORNI 50, LLC and its contractors to implement measure as described.</p>	<p>BLM and USFS to monitor compliance.</p>	<p>During construction and operation.</p>
<p>PDM HYD-4: Exposed, disturbed soils in construction areas shall be watered to minimize wind erosion and dust. Topsoil piles shall be covered to minimize erosion during wind storms. See also AQ-1.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>BLM and USFS to monitor compliance.</p>	<p>During construction.</p>
<p>PDM HYD-5: A site drainage and runoff management plan shall be prepared. All new access roads shall comply with the plan to minimize erosion and off-site sedimentation. Off-site stormwater shall be intercepted in ditches and channeled around the well sites to energy dissipaters as necessary to minimize erosion.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>BLM and USFS to monitor compliance.</p>	<p>Prior to construction.</p>
<p>PDM HYD-6: The pipeline route shall not be cleared or graded to minimize soil disturbance.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>BLM and USFS to monitor compliance.</p>	<p>During construction.</p>
<p>PDM HYD-7: The project shall obtain coverage under, and comply with, the California Construction General Storm Water Permit.</p>	<p>ORNI 50, LLC and its contractors to implement measure as defined.</p>	<p>BLM and USFS to monitor compliance.</p>	<p>Prior to construction.</p>
<p>Mitigation Measure SW-1: Comprehensive Site Drainage and Runoff Management Plan (Drainage Plan). According to PDM HYD-5, the applicant shall prepare a Drainage Plan. Additionally, the applicant shall ensure that the prepared plan adheres to the following:</p> <p>The applicant shall prepare and submit to the LRWQCB, BLM and USFS for review a Drainage Plan that shall encompass all project facilities. The Drainage Plan shall evaluate potential changes in stormwater flow that may result from implementation of the project, to the extent required to determine implementation of appropriate measures to minimize, avoid, retain, or otherwise prevent increases in stormwater runoff from leaving the site, and minimize potential for associated erosion or sedimentation. The Drainage Plan shall also delineate the location and sizing for stormwater retention facilities, on-site drainages, and other required facilities as warranted to ensure that stormwater facilities are sized appropriately. All stormwater and drainage facilities shall be sized to ensure that the implementation of the project shall result in no net increase in stormwater discharge from the site during at least a 20-year, 24-hour storm event. With respect to decommissioning, a Drainage Plan shall be included in the reclamation plan, which shall be submitted to relevant agencies for approval prior to the initiation of the decommissioning process. This shall ensure that final post-decommissioning grading reflects natural site contours and minimizes potential for concentration of stormwater flows, erosion, and sedimentation. All facilities shall comply with the all aspects of the Drainage Plan as indicated here and in PDM HYD-5, including existing and new access roads and roads that shall be plowed during the winter due to project operations.</p>	<p>ORNI 50, LLC and its contractors shall develop and implement a Site Drainage and Runoff Management Plan.</p>	<p>LRWQCB, BLM and USFS to review and approve Drainage Plan and monitor compliance.</p>	<p>At least 30 days prior to construction.</p>

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Water Resources (cont.)			
Mitigation Measure SW-2: To ensure that sediment and other pollutants contained in well construction period containment basins/sumps shall not be released into downstream waters, the applicant shall ensure that all containment basins/sumps are constructed so as to be able to contain anticipated drill cuttings, drilling mud, other drilling liquids, and on-site flows anticipated from a 100-year event with at least one foot of freeboard to prevent overtopping. Upon completion of drilling activities and disposal of drill cuttings, all containment basins/sumps shall be backfilled and graded to match natural topography.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to monitor compliance.	During construction.
Mitigation Measure SW-3: Following well completion, in the event that coverage under the Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality cannot be acquired in support of disposal of drill cuttings, the applicant shall remove all drill cuttings from each well site where on-site disposal is not available. Removed drill cuttings shall be disposed of in a landfill or other facility approved to accept hazardous wastes (or in accordance with classification of drill cutting waste from the site), in accordance with local and state law. Remaining pits on-site shall be filled and graded to match natural conditions.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to monitor compliance.	Following well completion.
Mitigation Measure SW-4: During well testing, the applicant shall ensure that all storage tanks and piping for geothermal fluid storage and conveyance at the well pad site shall be contained within a temporary facility that would contain spilled fluid on-site. Containment structures may include berms, containment basins, sumps, or other structures with sufficient capacity to contain the maximum volume of geothermal fluid stored on-site, with sufficient freeboard to prevent accidental release.	ORNI 50, LLC and its contractors to implement measure as defined.	BLM and USFS to monitor compliance.	During construction.
Mitigation Measure SW-5: Prior to the initiation of operations, the applicant shall ensure that spill containment facilities at the power plant site incorporate measures to prevent the infiltration to groundwater of spilled fluids at the plant site, including geothermal fluid and n-pentane. In accordance with the Mono County General Plan, the capacity of containment facilities shall be equal to at least twice the volume of the entire fluid contents of the power plant facility, including pipeline capacity and the amount that would flow onto the site until automatic shutdown devices would stop the flow. Spill containment facility design shall be reviewed by the USFS and BLM prior to the initiation of construction activities for the power plant.	ORNI 50, LLC and its contractors to implement measure as defined.	ORNI 50, LLC to submit to BLM and USFS the spill containment facility design for review and approval.	Prior to operation.
Mitigation Measure SW-6: During project operation, the applicant shall ensure that equipment and vehicles are routinely inspected for fluid leaks. Equipment and vehicles shall be maintained so as to prevent equipment leaks from infiltrating into soils or being washed off-site during storm events. When discovered, the applicant shall repair fluid leaks prior to use on the project site. If fluids do leak onto the project site, contaminated soil shall be removed immediately and disposed of at an approved facility, in accordance with federal, state, and local requirements.	ORNI 50, LLC and its contractors shall routinely inspect equipment and vehicles for fluid leaks for fluid leaks.	BLM and USFS to monitor compliance.	During operation.
Mitigation Measure SW-7: This mitigation measure shall modify PDM HYD-2 – To the extent feasible, the pipeline route and any access roads shall avoid RCAs. Any additional action, requirements, and/or designations with respect to RCAs shall be based upon guidance from USFS staff and consistent with the relevant USFS policy.	ORNI 50, LLC and its contractors to implement measure as defined.	USFS to review and approve final plans for the pipeline route and proposed access roads, which shall clearly indicate all RCAs and avoidance measures.	At least 60 days prior to construction.

