

**GRANT REQUEST FORM (GRF)**

CEC-270 (Revised 02/13)

CALIFORNIA ENERGY COMMISSION



New Agreement \_\_\_\_\_ (To be completed by CGL Office)

| Division        | Agreement Manager: | MS- | Phone        |
|-----------------|--------------------|-----|--------------|
| Choose Division | Cheryl Closson     | 45  | 916-651-0315 |

| Recipient's Legal Name | Federal ID Number |
|------------------------|-------------------|
| Ormat Nevada, Inc.     | 88-0278853        |

| Title of Project                                                                |
|---------------------------------------------------------------------------------|
| Initiate Groundwater Monitoring Program for CD IV Geothermal Development Projec |

| Term and Amount | Start Date    | End Date      | Amount     |
|-----------------|---------------|---------------|------------|
|                 | 3 / 13 / 2015 | 3 / 31 / 2017 | \$ 631,620 |

| Business Meeting Information                                                            |                |                                  |                                                |
|-----------------------------------------------------------------------------------------|----------------|----------------------------------|------------------------------------------------|
| <input type="checkbox"/> ARFVTP agreements under \$75K delegated to Executive Director. |                |                                  |                                                |
| Proposed Business Meeting Date                                                          | 2 / 11 / 2015  | <input type="checkbox"/> Consent | <input checked="" type="checkbox"/> Discussion |
| Business Meeting Presenter                                                              | Cheryl Closson | Time Needed:                     | 5 minutes                                      |
| Please select one list serve. Geothermal                                                |                |                                  |                                                |

| Agenda Item Subject and Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Proposed resolution approving Agreement GEO-14-004 with Ormat Nevada, Inc. in the amount of \$631,620 for a project to initiate a groundwater monitoring program for the Casa Diablo IV geothermal development near Mammoth Lakes, California. Two new groundwater monitoring wells will be drilled and baseline data will be collected from those wells. A flow test will then be conducted for up to 30-days using two existing geothermal wells with the monitoring wells used to check for any connectivity between the shallow cold groundwater and the deeper geothermal reservoir to be used by the Casa Diablo IV development. (GRDA Funding) Contact: Cheryl Closson. (Staff presentation: 5 minutes) . |

| California Environmental Quality Act (CEQA) Compliance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Is Agreement considered a "Project" under CEQA?<br><input checked="" type="checkbox"/> Yes (skip to question 2) <input type="checkbox"/> No (complete the following (PRC 21065 and 14 CCR 15378)):<br>Explain why Agreement is not considered a "Project":<br>Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because _____ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2. If Agreement is considered a "Project" under CEQA:<br><input checked="" type="checkbox"/> a) Agreement <b>IS</b> exempt. (Attach draft NOE)<br><input checked="" type="checkbox"/> Statutory Exemption. List PRC and/or CCR section number: _____ Mono County determined that the monitoring wells are exempt under 14 CCR 15268 - Ministerial Exemption<br><input type="checkbox"/> Categorical Exemption. List CCR section number: _____<br><input type="checkbox"/> Common Sense Exemption. 14 CCR 15061 (b) (3)<br>Explain reason why Agreement is exempt under the above section:<br>As the CEQA lead agency over Agreement's new monitoring well drilling activity, Mono County has made the determination that the drilling of the monitoring wells is exempt under CEQA. For the Agreement's flow testing of existing geothermal wells, the Great Basin Unified Air Pollution Control District (GBUAPCD) reviewed the environmental impacts of that activity as part of the Upper Basalt Geothermal Exploration Project. GBUAPCD determined that the activities associated with the Upper Basalt Geothermal Exploration Project would not have a significant effect on the environment and issued a Negative Declaration for the project on February 15, 2005 (State Clearinghouse No. 2004112073).<br><input checked="" type="checkbox"/> b) Agreement <b>IS NOT</b> exempt. (Consult with the legal office to determine next steps.)<br>Check all that apply<br><input type="checkbox"/> Initial Study <input type="checkbox"/> Environmental Impact Report<br><input checked="" type="checkbox"/> Negative Declaration <input type="checkbox"/> Statement of Overriding Considerations<br><input type="checkbox"/> Mitigated Negative Declaration |

| List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary) |           |
|----------------------------------------------------------------------------------------------------------|-----------|
| Legal Company Name:                                                                                      | Budget    |
| Mammoth Disposal                                                                                         | \$ 10,000 |
| Ancon                                                                                                    | \$ 50,000 |
| ChemTreat, Inc.                                                                                          | \$ 8,000  |

| List all key partners: (attach additional sheets as necessary) |
|----------------------------------------------------------------|
|                                                                |

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CALIFORNIA ENERGY COMMISSION



|                     |
|---------------------|
| Legal Company Name: |
|                     |
|                     |

| Budget Information                |                               |                      |           |
|-----------------------------------|-------------------------------|----------------------|-----------|
| Funding Source                    | Funding Year of Appropriation | Budget List No.      | Amount    |
| GRDA                              | 2014/2015                     | 0497-3360-101-10     | \$631,620 |
| Funding Source                    |                               |                      | \$        |
| R&D Program Area:                 | N/A                           | TOTAL:               | \$631,620 |
| Explanation for "Other" selection |                               |                      |           |
| Reimbursement Contract #:         |                               | Federal Agreement #: |           |

| Recipient's Administrator/ Officer |                     |      |              | Recipient's Project Manager |                    |      |              |
|------------------------------------|---------------------|------|--------------|-----------------------------|--------------------|------|--------------|
| Name:                              | Bob Sullivan        |      |              | Name:                       | Charlene Wardlow   |      |              |
| Address:                           | 6225 Neil Road      |      |              | Address:                    | 6225 Neil Road     |      |              |
| City, State, Zip:                  | Reno, NV 89511      |      |              | City, State, Zip:           | Reno, NV 89511     |      |              |
| Phone:                             | 775-356-9029        | Fax: | 775-823-5401 | Phone:                      | 775-336-0155       | Fax: | 775-823-5401 |
| E-Mail:                            | bsullivan@ormat.com |      |              | E-Mail:                     | cwardlow@ormat.com |      |              |

| Selection Process Used                                        |                            |
|---------------------------------------------------------------|----------------------------|
| <input checked="" type="checkbox"/> Competitive Solicitation  | Solicitation #: PON-13-507 |
| <input type="checkbox"/> First Come First Served Solicitation |                            |

| The following items should be attached to this GRF  |                                                                           |
|-----------------------------------------------------|---------------------------------------------------------------------------|
| 1. Exhibit A, Scope of Work                         | <input checked="" type="checkbox"/> Attached                              |
| 2. Exhibit B, Budget Detail                         | <input checked="" type="checkbox"/> Attached                              |
| 3. CEC 105, Questionnaire for Identifying Conflicts | <input checked="" type="checkbox"/> Attached                              |
| 4. Recipient Resolution                             | <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Attached |
| 5. CEQA Documentation                               | <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Attached |

|                            |               |                         |               |                          |               |
|----------------------------|---------------|-------------------------|---------------|--------------------------|---------------|
| _____<br>Agreement Manager | _____<br>Date | _____<br>Office Manager | _____<br>Date | _____<br>Deputy Director | _____<br>Date |
|----------------------------|---------------|-------------------------|---------------|--------------------------|---------------|

# Exhibit A SCOPE OF WORK

## TECHNICAL TASK LIST

| Task # | Task Name                                                                           |
|--------|-------------------------------------------------------------------------------------|
| 1      | Administration                                                                      |
| 2      | Drill Two Groundwater Monitoring Wells                                              |
| 3      | Flow Test Geothermal Well 14-25 and Perform Injection Test in Geothermal Well 12-25 |

## KEY NAME LIST

| Task # | Key Personnel    | Key Subcontractor(s)          | Key Partner(s) |
|--------|------------------|-------------------------------|----------------|
| 1      | Charlene Wardlow |                               |                |
| 2      | Charlene Wardlow | EGS, Inc., USGS               |                |
| 3      | Assaf Weinberg   | NSCI, Ancon, Thomas Petroleum |                |

## GLOSSARY

*Specific terms and acronyms used throughout this scope of work are defined as follows:*

| Term/<br>Acronym  | Definition                                                                                                     |
|-------------------|----------------------------------------------------------------------------------------------------------------|
| BLM               | Bureau of Land Management                                                                                      |
| CAM               | Commission Agreement Manager                                                                                   |
| CAO               | Commission Agreement Officer                                                                                   |
| CD IV             | Casa Diablo IV Geothermal Development                                                                          |
| CPR               | Critical Project Review                                                                                        |
| Energy Commission | California Energy Commission                                                                                   |
| GBUAPCD           | Great Basin Unified Air Pollution Control District                                                             |
| GRDA              | Geothermal Resources Development Account; also used as a short title for the Geothermal Grant and Loan Program |
| MCWD              | Mammoth Community Water District                                                                               |
| Recipient         | Ormat Nevada Inc.                                                                                              |
| RED               | Renewable Energy Division                                                                                      |
| USFS              | United States Forest Service – Inyo National Forest                                                            |

# Exhibit A SCOPE OF WORK

| Term/<br>Acronym | Definition                      |
|------------------|---------------------------------|
| USGS             | United States Geological Survey |

**Problem Statement:**

Geothermal development in Long Valley Caldera has occurred in the context of extensive geological, geophysical, and hydrologic studies, in part from Long Valley Hydrologic Advisory Committee monitoring and the United States Geological Survey (USGS) volcanic hazards research, as well as other geothermal exploration and evaluations of direct-use potential. Existing monitoring has established that the hydrologic system is affected by variations in precipitation, recharge, geothermal production, non-thermal groundwater withdrawals, earthquakes, magmatic activity and crustal deformation. However, there is no consistent evidence for hydrologic connections between thermal and non-thermal groundwater beneath the western part of Long Valley Caldera. In addition, there is no current monitoring evidence to suggest that the relatively shallow ground water well production zone is hydraulically connected with the deeper geothermal reservoir, or that more than two decades of stable continuous geothermal production has affected groundwater quality.

**Goals of the Agreement:**

The goal of this Agreement is to expand the existing groundwater monitoring program to gather additional evidence concerning any hydrologic connectivity between the groundwater well production zone and the deeper geothermal reservoir beneath the western part of Long Valley Caldera.

**Objectives of the Agreement:**

The objectives of this Agreement are to:

- 1) Drill and complete two new groundwater monitoring wells at locations suggested by the USGS and agreed to by the Bureau of Land Management (BLM), United States Forest Service – Inyo National Forest (USFS), Great Basin Unified Air Pollution Control District (GBUAPCD) (collectively “the regulatory agencies”), Mammoth Community Water District (MCWD) and Ormat Nevada Inc. (Recipient);
- 2) Collect baseline data from the new monitoring wells; and
- 3) Perform flow and injection tests on two existing idle geothermal wells to determine if there is any immediate connectivity between the shallow groundwater used by the MCWD and the geothermal reservoir to be utilized for the Casa Diablo IV Geothermal Development (CD IV) proposed by the Recipient, which is not part of this agreement.

# **Exhibit A SCOPE OF WORK**

## **TASK 1 ADMINISTRATION**

### **Task 1.1 Attend Kick-off Meeting**

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement. The Commission Agreement Manager (CAM) shall designate the date and location of this meeting and provide an agenda to the Recipient prior to the meeting.

#### **The Recipient shall:**

- Attend a “Kick-Off” meeting with the CAM, the Commission Agreement Officer (CAO), and a representative of the Energy Commission Accounting Office. The Recipient shall bring its Project Manager, Agreement Administrator, Accounting Officer, and others designated by the CAM to this meeting.
- Discuss the following administrative and technical aspects of this Agreement:
  - Agreement Terms and Conditions
  - Critical Project Review (Task 1.2)
  - Match fund documentation (Task 1.6) No reimbursable work may be done until this documentation is in place.
  - Permit documentation (Task 1.7)
  - Subcontracts needed to carry out project (Task 1.8)
  - The CAM’s expectations for accomplishing tasks described in the Scope of Work
  - An updated Schedule of Products and Due Dates
  - Monthly Progress Reports (Task 1.4)
  - Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
  - Final Report (Task 1.5)

#### **Recipient Products:**

- Updated Schedule of Products
- Updated List of Match Funds
- Updated List of Permits

#### **CAM Product:**

- Kick-Off Meeting Agenda

### **Task 1.2 Critical Project Review (CPR) Meetings**

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

## **Exhibit A SCOPE OF WORK**

The CAM may schedule CPR meetings as necessary, and meeting costs will be borne by the Recipient.

Meeting participants include the CAM and the Recipient and may include the CAO, Renewable Energy Division (RED) or other Energy Commission staff and management, as well as other individuals selected by the CAM to provide support to the Energy Commission.

### **The CAM shall:**

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the Energy Commission, but they may take place at another location, by telephone, or by WebEx.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. Prepare a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see section 8 of the Terms and Conditions). If the CAM concludes that satisfactory progress is not being made on the Agreement tasks, this conclusion will be reported to the RED Deputy Director for his or her concurrence, and may be reported to the Lead Commissioner for Renewables.
- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were discussed in the CPR.

### **The Recipient shall:**

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work on the project. This report shall be submitted along with any other products identified in this scope of work that are due. The Recipient shall submit these documents to the CAM and any other designated reviewers at least 15 working days in advance of each CPR meeting.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

### **CAM Products:**

- Agenda and a list of expected participants
- Schedule for written determination
- Written determination

### **Recipient Product:**

- CPR Report(s)

# Exhibit A SCOPE OF WORK

## **Task 1.3 Final Meeting**

The goal of this task is to closeout this Agreement.

### **The Recipient shall:**

- Meet with Energy Commission staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

This meeting will be attended by, at a minimum, the Recipient, the CAO, and the CAM. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, and may, at the discretion of the CAM, be addressed in two separate meetings.

The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, along with findings, conclusions, recommended next steps (if any) for the Agreement, and recommendations for improvements. The CAM will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the CAM and the CAO about the following Agreement closeout items:

- What to do with any equipment purchased with Energy Commission funds (Options) (if applicable)
- Energy Commission requests for specific “generated” data (not already provided in Agreement products)
- Documentation of Recipient’s disclosure of “subject inventions” developed under the Agreement (if applicable)
- “Surviving” Agreement provisions (if applicable)
- Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement.

### **Products:**

- Written documentation of meeting agreements
- Schedule for completing closeout activities

## **Task 1.4 Monthly Progress Reports**

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the objectives of this Agreement on time and within budget.

## **Exhibit A SCOPE OF WORK**

The objectives of this task are to summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, and to form the basis for determining whether invoices are consistent with work performed.

### **The Recipient shall:**

- Prepare a Monthly Progress Report which summarizes all Agreement activities conducted by the Recipient for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the CAM within 10 days of the end of the reporting period. The recommended specifications for each progress report are contained in Section 6 of the Terms and Conditions of this Agreement.

### **Product:**

- Monthly Progress Reports

### **Task 1.5 Final Report**

The goal of the Final Report is to assess the project's success in achieving the Agreement's goals and objectives.

The objectives of the Final Report are to clearly and completely describe the project's purpose, approach, activities performed, and results.

The Final Report shall be a public document. If the Recipient has obtained confidential status from the Energy Commission for any project tasks and will be preparing a confidential version of the Final Report as well, the Recipient shall perform the following activities for both the public and confidential versions of the Final Report.

### **The Recipient shall:**

- Prepare an Outline of the Final Report, if requested by the CAM.
- Prepare a Draft Final Report following the latest version of the Final Report guidelines which will be provided by the CAM. The CAM shall provide written comments on the Draft Final Report within fifteen (15) working days of receipt. The Draft Final Report must be submitted at least 60 days before the end of the Agreement Term.
- Prepare and submit a Final Report that addresses any comments from the CAM.
- Submit a hardcopy and electronic files (in both MS Word and .pdf formats) of the Final Report to the CAM for final review and formatting prior to Energy Commission publication of the report.
- Work with the CAM as necessary to address any questions about the Final Report or any formatting requirements necessary for Energy Commission publication of the Final Report.

## **Exhibit A SCOPE OF WORK**

### **Products:**

- Outline of the Final Report, if requested
- Draft Final Report
- Final Report

### **Task 1.6 Identify and Obtain Matching Funds**

The goal of this task is to ensure that the match funds planned for this Agreement are obtained and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the Energy Commission budget for this task will be zero dollars, the Recipient may utilize match funds for this task. Match funds shall be spent concurrently or in advance of Energy Commission funds for each task during the term of this Agreement. Match funds must be identified in writing and the associated commitments obtained before the Recipient shall incur any costs for which the Recipient will request reimbursement.

### **The Recipient shall:**

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the CAM at least 2 working days prior to the kick-off meeting. Provide in the letter a list of the match funds that identifies the:
  - Amount of each cash match fund, its source, including a contact name, address and telephone number, and the task(s) to which the match funds will be applied.
  - Amount of each in-kind contribution, a description, documented market or book value, and its source, including a contact name, address and telephone number, and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located.
- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured. For match funds provided by a grant, a copy of the executed grant shall be submitted in place of a letter of commitment.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the CAM if during the course of the Agreement additional match funds are received.
- Notify the CAM within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR meeting.

# Exhibit A SCOPE OF WORK

## Products:

- A letter regarding match funds
- Copy(ies) of each match fund commitment letter(s)
- Letter(s) for new match funds (if applicable)
- Letter that match funds were reduced (if applicable)

## Task 1.7 Identify and Obtain Required Permits

The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. Although the Energy Commission budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient shall make any expenditure for which a permit is required.

### The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the CAM at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
  - A list of the permits that identifies the:
    - Type of permit
    - Name, address and telephone number of the permitting jurisdictions or lead agencies
  - The schedule the Recipient will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the CAM.
- As permits are obtained, send a copy of each approved permit to the CAM.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 working days. Either of these events may trigger an additional CPR.

# Exhibit A SCOPE OF WORK

## Products:

- Letter documenting the permits or stating that no permits are required
- A copy of each approved permit (if applicable)
- Updated list of permits as they change during the term of the Agreement (if applicable)
- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable)
- A copy of each final approved permit (if applicable)

## Task 1.8 Obtain and Execute Subcontracts

The goal of this task is to ensure quality products and to procure subcontractors required to carry out the tasks under this Agreement consistent with the Agreement Terms and Conditions and the Recipient's own procurement policies and procedures. It will also provide the Energy Commission an opportunity to review the subcontracts to ensure that the tasks are consistent with this Agreement, and that the budgeted expenditures are reasonable and consistent with applicable cost principles.

### The Recipient shall:

- Manage and coordinate subcontractor activities.
- Submit a draft of each subcontract required to conduct the work under this Agreement to the CAM for review.
- Submit a final copy of the executed subcontract.
- If Recipient decides to add new subcontractors, then the Recipient shall notify the CAM.

## Products:

- Draft subcontracts
- Final subcontracts

## TECHNICAL TASKS

### TASK 2 Drill Two Groundwater Monitoring Wells

The goal of this task is to drill two new groundwater monitoring wells (one on a previously existing geothermal well pad) in the area between the well field for CD IV, called Basalt Canyon, and the MCWD's well field, as agreed upon by the regulatory agencies, the MCWD and the Recipient.

### The Recipient shall:

- Prepare a *Well Drilling, Testing and Completion Plan* for the two new groundwater monitoring wells ("USFS Junkyard" and "Well 14-25"), including how the wells will be

## Exhibit A SCOPE OF WORK

drilled and completed and any groundwater chemistry analysis and/or gas sampling and analysis that may be collected during the drilling operation.

- Provide a *Written Notification of Groundwater Monitoring Well Drilling Commencement* to the CAM. The notification letter shall include, but not be limited to, written documentation that the drilling rig is ready to mobilize and the date drilling shall begin, and shall include photographs of the rig when it is at the first site.
- Drill one dual completed groundwater monitoring well at the USFS “junk yard” location near the USFS visitor center, in accordance with the *Well Drilling, Testing and Completion Plan*. The cold groundwater completion will be to a depth not to exceed 600 feet and the warm water completion to a depth not to exceed 1,000 feet or 100 degrees Fahrenheit. If the well is dry, plug and abandon while the drilling rig is in place.
- Drill one groundwater monitoring well to a depth not to exceed 600 feet on the Geothermal Well 14-25 well pad, in accordance with the *Well Drilling, Testing and Completion Plan*. If the well is dry, plug and abandon while the drilling rig is in place.
- Pump and sample the water from each monitoring well for constituents applicable to cold groundwater and geothermal geochemistry, as set forth in the *Well Drilling, Testing and Completion Plan*.
- Prepare a *Groundwater Monitoring Well Drilling Report – USFS “Junkyard” Location* on the groundwater monitoring well at the USFS “junkyard” location. The report shall include, but not be limited to, the well completion report which will be/has been submitted to the Department of Water Resources, mud log/cuttings analysis, geophysical logs, temperature log(s) and conclusions drawn from the well related to the groundwater and geothermal system in the area.
- Prepare a *Groundwater Monitoring Well Report – Geothermal Well 14-25 Location* on the groundwater monitoring well at the Geothermal Well 14-25 well pad location. The report shall include, but not be limited to, the well completion report submitted to the Department of Water Resources, mud log/cuttings analysis, geophysical logs, temperature log(s) and conclusions drawn from the well related to the groundwater and geothermal system in the area.
- Prepare a *Groundwater Monitoring Wells Water and Gas Analyses Report* for the groundwater monitoring wells. The report shall include, but not be limited to, a summary of the water and gas analyses results and conclusions of the first baseline chemistry analysis.

### Products:

- *Well Drilling, Testing and Completion Plan* (no draft)
- *Written Notification of Groundwater Monitoring Well Drilling Commencement* (no draft)
- *Groundwater Monitoring Well Drilling Report – USFS “Junkyard” Location* (no draft)

## Exhibit A SCOPE OF WORK

- *Groundwater Monitoring Well Drilling Report – Geothermal Well 14-25 Well Pad Location* (no draft)
- *Groundwater Monitoring Wells Water and Gas Analyses Report* (no draft)

### **TASK 3 Flow Test Geothermal Well 14-25 and Perform Injection Test in Existing Geothermal Well 12-25**

The goal of this task is to create and measure pressure transient in the Basalt Canyon production reservoir area and determine if there is connectivity with the recently drilled groundwater monitoring wells and the geothermal reservoir. The 14-25 geothermal well will be flowed for up to 30-days and the geothermal fluid injected into geothermal well 12-25. Pressures and temperatures will be monitored on these wells during the test. Additionally, the two new groundwater monitoring wells will be monitored to see if there are any changes observed in the monitoring wells during the flow and injection tests that might indicate a connection to the geothermal reservoir.

#### **The Recipient shall:**

- Prepare a *Flow Test and Injection Test Plan and Procedure* that includes test preparation requirements and testing procedures, as well as fluid and gas sampling plans and constituents.
- Provide a *Written Notification of Flow Test Commencement* to the CAM. The notification letter shall include, but not be limited to, written documentation that the flow test equipment is ready to mobilize and the date the flow test shall begin, and shall include photographs of the equipment when it is set up at the Geothermal Well 14-25 well pad.
- Prepare for and conduct the flow test at Geothermal Well 14-25 and the injection test at Geothermal Well 12-25, in accordance with the *Flow Test and Injection Test Plan and Procedure*.
- Collect geothermal fluid and gas samples at Geothermal Well 14-25 for testing and geochemistry analysis, in accordance with the *Flow Test and Injection Test Plan and Procedure*.
- Prepare a *Flow Test and Injection Test Report* analyzing the results of the flow and injection tests specifically for any pressure transients observed in the new groundwater monitoring wells. The report shall address whether any connectivity between the cold, warm and hot geothermal systems was seen during the flow and injection tests.
- Prepare an *Earthquake Activity Report* summarizing earthquake activity in the Long Valley Caldera during the flow and injection tests using data from the USGS Volcano Hazards program ([http://volcanoes.usgs.gov/volcanoes/long\\_valley/long\\_valley\\_monitoring\\_1.html](http://volcanoes.usgs.gov/volcanoes/long_valley/long_valley_monitoring_1.html)).

## **Exhibit A SCOPE OF WORK**

- Prepare a *Geothermal Well 14-25 Geochemistry Report* summarizing the geochemistry results for Geothermal Well 14-25. The report will also include discussion of any chemistry changes that might indicate possible connectivity between the groundwater and geothermal systems, such as any chemistry changes that could be the result of downward flow of cold groundwater into the hot geothermal system as a result of the pressure drawdown during the flow test.

### **Products:**

- *Flow Test and Injection Test Plan and Procedure* (no draft)
- *Written Notification of Flow Test Commencement* (no draft)
- *Flow Test and Injection Test Report* (no draft)
- *Earthquake Activity Report* (no draft)
- *Geothermal Well 14-25 Geochemistry Report* (no draft)

STATE OF CALIFORNIA

STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: ORMAT NEVADA, INC.

**RESOLVED**, that the State Energy Resources Conservation and Development Commission (Energy Commission) adopts the staff CEQA findings contained in the Agreement Request Form; and

**RESOLVED**, that the Energy Commission approves Agreement GEO-14-004 with Ormat Nevada, Inc. for a \$631,620 grant for a project to initiate a groundwater monitoring program for the Casa Diablo IV geothermal development near Mammoth Lakes, California. Two new groundwater monitoring wells will be drilled and baseline data will be collected from those wells. A flow test will then be conducted for up to 30 days using two existing geothermal wells, with the monitoring wells used to check for any connectivity between the shallow cold groundwater and the deeper geothermal reservoir to be used by the Casa Diablo IV development; and

**FURTHER BE IT RESOLVED**, that the Executive Director or his/her designee shall execute the same on behalf of the Energy Commission.

**CERTIFICATION**

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the California Energy Commission held on February 25, 2015.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

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Harriet Kallemeyn,  
Secretariat