

# **APPENDIX G: ENVIRONMENTAL COMMITMENTS**

**GEYSERS POWER COMPANY, LLC**  
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GWQ-10-076

April 5, 2010

Mr. Steve Blazek  
US Department of Energy  
1617 Cole Boulevard  
Golden, CO 80401

*RE: Environmental Commitments for the Calpine EGS project*

Dear Mr. Blazek,

Attached is a list of environmental protection measures that have been incorporated into the project description of the Calpine EGS Environmental Assessment (EA). Calpine agrees to implement all of these measures during implementation of the project. The measures have been incorporated into the project description of the EA prepared by RMT as part of the proposed action.

This letter serves to document the concurrence of Calpine to conduct the attached environmental protection measures as part of the project. If you have any questions, please contact me at (707) 431-6198.

Sincerely,

for 

Bruce Carlsen  
EHS Director  
Calpine-Geysers

Enclosure

## **Environmental Protection Measures for the Calpine EGS Project**

### **Air Quality**

1. Devegetated areas would be watered or other methods would be employed to entrain dust, in order to minimize any adverse impacts from particulate matter emissions during ground disturbance, including asbestiform minerals.
2. All trucks hauling soils or other dusty materials would be covered and two feet of freeboard would be maintained in the trucks
3. Inactive construction areas would be hydroseeded or covered with non-toxic soil stabilizers. "Inactive" areas are previously graded areas that are inactive for 10 days or more.
4. Traffic would be limited to 15 miles per hour on unpaved roads.
5. Painting of the steam pipelines and supports would conform to NSCAPCD Rule 485 for use of compliant architectural coatings.
6. The Asbestos Air Toxic Control Measure for construction, grading, quarrying and surface mining as approved by the California Air Resources Board (CARB) would be implemented to avoid adverse effects associated with the emissions of serpentine/asbestiform minerals.
7. All conditions of the ATC and temporary PTO from the NSCAPCD would be implemented.
8. Dust emissions from venting steam would be reduced by injecting water into the blowby line
9. H<sub>2</sub>S control would be accomplished through the installation of a NSCAPCD approved chemical abatement system
10. Calpine will implement all measures required in the Authority to Construct and Permit to Operate permits issued by the NSCAPCD (included in Appendix D of this EA).
11. Calpine will notify the NSCAPCD 24 hours prior to initiating any planned venting operations until such time that an emissions release protocol governing emissions and notifications for such operations is prepared and provided to the NSCAPCD

### **Geology**

12. The SRGRP pipeline spur would be constructed using Standard Engineering Methods for Expansive Soils, as necessary.
13. Calpine will comply with the DOE's "Protocol for Induced Seismicity Associated with Enhanced Geothermal Systems" (Majer et al. 2008).

14. The stanchions for the SRGRP pipeline will be constructed using Standard Engineering Methods for Expansive soils, as necessary.

#### **Biological Resources**

15. In order to protect yellow warblers and Common Yellowthroats, any work proposed within riparian woodland habitat between April 1 and August 31 would be surveyed by a qualified biologist. If a nest of either species is discovered within 200 feet of proposed construction activities, construction would be delayed until after August 31 or until a qualified biologist has determined the young have fledged.
16. In order to protect sharp-shinned hawks, any work proposed within riparian woodland series such as white alder or cattails series, between April 1 and August 31 would be surveyed by a qualified biologist. If an active nest is found within 500 feet of proposed construction activities, construction would be delayed until after August 31 or until a qualified biologist has determined the young have fledged.
17. If construction or re-drilling is to occur between April 1 and August 31 pre-construction surveys would be performed in all construction areas and the drilling area within 500 feet of suitable habitat for raptors. If active nests are found, work within these areas would be halted until after August 31 or a qualified biologist has determined the nest is no longer active and the young have fledged.
18. No trees would be removed during construction of the SRGRP pipeline.

#### **Water Resources**

19. Erosion control methods and Best Management Practices (BMPs) in accordance with a Stormwater Pollution Prevention Plan (SWPPP) would be utilized (such as certified weed-free straw waddle) to reduce erosion or siltation on or off-site during grading of the well pad and construction of the SRGRP pipeline spur.
20. No water would be released to the surface from the pipeline during testing or operation of the pipeline.
21. A SWPPP would be developed and a Notice of Intent submitted to the California State Water Resources Control Board, prior to grading or construction activities.
22. A Spill Prevention, Control, and Countermeasure Plan (SPCC) would be maintained on-site and implemented to contain incidental drips and/or spills. The plan will identify equipment and procedures used for containment and recovery of accidental spills

23. Contamination during construction along the pipeline corridor would be minimized through containment of any spills before they could be released into stormwater.
24. Containment berms will be constructed around all hazardous material or potentially hazardous material storage for both construction and operation.
25. A drainage system will be installed around the well pad to contain stormwater.
26. BOPE will be installed to minimize blowouts or contamination of the localized shallow aquifer as required by CDOGGR regulations.
27. Calpine will obtain an updated Waste Discharge Order that will address injection of effluent and condensate into the EGS wells. Calpine will submit injection reports to CDOGGR. Injection of water and disposal of waste discharge due to drilling will comply with all requirements outlined in the permit

#### **Cultural Resources**

28. A condition from the Wildhorse Development Project has been incorporated into the proposed action to further protect cultural resources. The condition requires placing the following note on all construction plans and providing the language to all contractors and superintendents on the job site:  
  
"Should any previously unknown historic or prehistoric resources, including but not limited to charcoal, obsidian or chert flakes, grinding bowls, shell fragments, bone, pockets of dark, friable soils, glass, metal, ceramics, wood or similar debris, be discovered during grading, trenching or other on-site excavation, earthwork in the vicinity of the find shall cease, and the County of Sonoma Permit and Resource Management Department (PRMD) staff shall be notified so that the find can be evaluated by a qualified archaeologist (i.e., an archaeologist registered with the Society of Professional Archaeologists). When contacted, a member of PRMD Project Review staff and the archaeologist shall visit the site to determine the extent of the resources and to develop proper mitigation measures required for the discovery. No earthwork in the vicinity of the find shall commence until a mitigation plan is approved and completed subject to the review and approval of the archaeologist and Project Review staff"
29. A qualified archaeological monitor will be present during pipeline construction along all of West Squaw Creek Road to the tie-in location to ensure that no construction activities occur outside of the existing disturbed road shoulder and to monitor for cultural materials during construction. If a resource is found during construction, the monitor shall have the authority to stop construction until it can be further evaluated. The pipeline would be installed above-ground on stanchions, such that ground disturbance is already minimized to only the stanchion foundations. Any resource found would be avoided by spanning over the resource and/or moving the pipeline to avoid any resource.

## Noise

30. Calpine would adopt the following measures to minimize noise from the drill rig during re-drilling and testing operations:
  - Shielding of drill rig motor and air compressors: When practicable, set up the drill rig so that it acts as a barrier to shield noise from the motor and compressors from receptors.
  - Buffer metallic surfaces: If needed, cover V-door and drill rig floor with rubber or wood to reduce impact noise from pipes against these metal surfaces.
  - Enclose Rig Floor: If needed, enclose rig floor with metal panels including the V-door opening.
  - Muffle connection equipment: Install mufflers around pipe connection equipment such as air tuggers and winches.
  - Install check valve: Install a check valve in the drill string to slowly bleed off air pressure and reduce high pressure release noise.
  - Bleed air pressure through cyclone muffler: Reduce pressure release noise by bleeding air pressure through the blooie line rather than the rig floor.
  - Pipe Handling: Implement procedures for handling drill pipe that minimize contact with metal surfaces (i.e., on the V-door and catwalk).
  - During air drilling, the rig will be outfitted with a blooie line and cyclonic separator/muffler designed to reduce noise from the release of steam. Similarly, during well testing a portable blooie line and muffler will be utilized to reduce steam release noise.
  - Rig Crew training: Train all rig crews in noise awareness.
31. Noise would be controlled in accordance with the standards set in the Noise Element of the Sonoma County General Plan.
32. If noise complaint investigations indicate the appropriate noise standard levels have been or may be exceeded, Calpine would be required to install, at their expense, additional professionally designed noise control measure(s).
33. Well pad, road, and pipeline construction/grading activities would not occur during the nighttime.

## Visual Resources

34. Pipelines would be painted in earth-tone colors.

35. Rig lights and any other temporary lighting would be shaded and focused downwards to reduce nighttime glare from the well pads during drilling operations. Temporary lighting would only be on for short periods of time, as necessary.

**Hazardous Materials, Waste Handling, Human Health and Safety, and Risk Management**

36. Fire hazards would be minimized through the maintenance of an on-site water supply that can be used to put out any potential fires. Other measures to reduce fire hazards would be implemented and include:
  - a. Fire extinguishers and shovels would be available on-site.
  - b. All brush build-up around mufflers, radiators, and other engine parts must be avoided; periodic checks must be conducted to prevent this build-up.
  - c. Smoking would only be allowed in designated smoking areas; all cigarette butts would be placed in appropriate containers and not thrown on the ground or out windows of vehicles.
  - d. Cooking, campfires, or fires of any kind would not be allowed.
  - e. Portable generators used in the Project Area would be required to have spark arresters.
37. Existing Calpine health and safety procedures provide plans that address prevention of fires in The Geysers. These plans would be implemented, including:
  - Fire Prevention Plan (HSP-60)
  - Hot Work Permit Procedure (No. 145)
  - The Calpine Geysers Emergency Preparedness and Response Plan
38. Calpine would remove and clear away dry, combustible vegetation from construction sites in the project area that contains substantial forest fire risks and hazards, or are very high fire hazard severity zones as defined by California Division of Forestry and Fire Protection. Grass and other vegetation less than 18 inches in height above the ground may be maintained where necessary to stabilize the soil and prevent erosion. Vehicles would not park in areas where exhaust systems contact combustible materials. Fire extinguishers would be available on the construction site when working in high fire hazard areas to assist in quickly extinguishing any small fires. The Construction Manager would have on site the phone number for the local fire department(s) and would have a phone available when working in high fire hazard areas should additional fire fighting capabilities be required.

39. Calpine would implement the Asbestos Air Toxic Control Measure for construction, grading, quarrying and surface mining as approved by CARB.
40. Workers would wear hearing protection and other personal protection equipment (PPE) as required by the Occupational Health and Safety Organization (OSHA) to prevent injuries.
41. Construction workers would comply with OSHA and CalOSHA asbestos removal worker requirements whenever serpentine rock containing over one percent asbestos is being excavated.
42. Calpine would implement its blowout prevention plan.
43. When cementing jobs are performed, excess cement slurry would be directed to a separate waste tank where it would be chemically retarded for later removal to Calpine's designated waste management unit