



California Regional Water Quality Control Board Lahontan Region



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INFORMATION NEEDED TO ADDRESS AGENCY COMMENTS ON PACIFIC GAS AND ELECTRIC COMPANY'S 2010 FEASIBILITY STUDY, HINKLEY COMPRESSOR STATION, SAN BERNARDINO COUNTY, INVESTIGATIVE ORDER NO. R6V-2011-0047

This letter summarizes the additional information needed from PG&E to address data gaps identified in the Department of Toxic Substances Control (DTSC) and United States Environmental Protection Agency (USEPA) reviews of PG&E's August 2010 Feasibility Study (FS). USEPA's comments on groundwater modeling issues are still outstanding, and those comments may result in additional data needs.

This request is made pursuant to California Water Code section 13267. The information is needed to fulfill requirements of Cleanup and Abatement Order No. R6V-2008-0002A2, Order 5.1, requiring PG&E to submit a feasibility study report proposing a final cleanup strategy for chromium pollution in groundwater in the Hinkley area.

1. Evaluation of best available technology and basis for alternative elimination

Additional information is needed to support the selection of the alternatives presented in the FS. The FS contains Table 6-1 showing a technology-screening matrix, which includes screening justifications for each technology. Some of the justifications are straightforward and require little additional explanation; for example, technologies like air sparging that aren't applicable to metals remediation.

However, other technologies that may work for chromium remediation should have additional justification for why they were not selected, or be re-examined for inclusion into the upcoming Alternative 4C. For example, some of these technologies may be appropriate to include in Alternative 4C as an element of a contingency plan to irrigation, to maintain year-round capture zones, and to hasten cleanup.

a. Ex-Situ Treatment Using Ion Exchange Units:

California Environmental Protection Agency

According to the FS, weak base anion (WBA) resins may be effective at the Hinkley site. This technology should be considered for use in the diffuse plume area to augment irrigation use and maintain year-round capture zones.

b. Ex-situ Anaerobic Bioreactor (e.g., Membrane Biofilm Reactor [MBfR]):
According to the FS, this technology showed promise in bench-scale tests at the Hinkley site. This technology should be considered for use in the diffuse or down-gradient plume areas as an element of a contingency plan to irrigation, and to maintain year-round capture zones.

c. Discharge/Injection—Discharge to Evaporation Ponds:
This approach should be considered as an element of a contingency plan to irrigation. Ponds could be used to store water for later irrigation use.

d. In-Situ Physical/Chemical Treatment—In-Situ Chemical Reductant:
Provide a detailed explanation why chemical reductants (e.g., calcium polysulfide, sodium dithionite, ferrous iron + sulfur-based reductant, nano-scale zero-valent iron) were excluded as part of the remedy for the source zone, and why the use of organic carbon amendments alone are considered more appropriate.

2. Define sectional or operable units for remediation purposes

- a. Propose operable units, rationales for units, remediation strategies and timeframes for each unit. Consider separate operable units based on remediation strategies, geography, or priorities for action. Consider operable units for targeted pumping efforts where supply wells are affected.
- b. Develop short-term Remedial Action Objectives to be met at 5- and 10-year review periods to inform adaptive management.

3. Additional details on alternatives

- a. Provide additional details for the proposed remedial alternatives that are backed by evidence from a calibrated flow model, with clearly defined assumptions used in the fate and transport evaluation associated with the site conceptual model.
- b. Provide particle tracking information to ensure that proposed alternatives would truly achieve stated outcomes.
- c. Provide data to support proposed hydraulic capture of plume, and the continuous pumping rate needed to sustain maximum year-round hydraulic plume capture, and maximum rate of plume remediation.
- d. More in-depth discussion is warranted to demonstrate through site studies how capture zones will be maintained year round.

- e. Consider decreasing distance between individual Central Area In-situ Remediation Zone (IRZ) wells for more effective remediation, or propose a monitoring program between Central Area IRZ wells to demonstrate area-wide remediation effectiveness from the SCRIA.

4. Contingency plan and additional information for agricultural units

- a. DTSC noted that the proposed use of contaminated water for agricultural use should be evaluated very carefully, due to potential for mounding in the agricultural use areas, which could spread contamination. Please provide seasonal information to demonstrate that irrigation water will be applied at rates which will not induce mounding, or spread contaminants.
- b. When irrigation is not feasible for use in containing or remediating the plume (e.g., during winter months), develop a contingency plan of alternate remedial methods(s) to maintain a year-round capture zone and to hasten cleanup of the entire chromium plume.
- c. Provide information regarding irrigation of groundwater containing nitrates and the potential for nitrate to "use up" the reducing capacity of the soil.
- d. Describe the range of nitrogen concentrations in groundwater and soils expected within the project area. How will these concentrations change in response to chromium remediation activities?
- e. What is the potential to mobilize soil nitrogen into groundwater and increase nitrate-nitrogen concentrations in the groundwater?
- f. What is the potential to transport nitrate to other areas of groundwater, causing nitrogen degradation in areas with low background concentrations of nitrogen?
- g. Propose a monitoring plan to measure soil nitrogen and nitrogen concentrations of the anticipated irrigation water.
- h. Propose a plan to assess each land treatment unit and propose contingency measures if nitrate applications or soil nitrogen concentrations exceed agronomic rates.

5. Health risks of chromium mass left in soil

- a. Describe all known sources of contamination, when and how each of these sources was remediated, and their disposition with confirmation analytical data.
- b. Provide information to support that soil sources are no longer a continuing threat to groundwater.
- c. If soil sources are a continuing threat to groundwater, describe how these sources will be addressed.

6. Potential impacts of remediation

- a. Provide information on bio-fouling related to IRZ operation and potential impacts to aquifer, including ability of IRZs to remain functional.
- b. Provide data on impacts from more aggressive in-situ remediation (closer well spacing, chemical reductants), including from by-product generation and bio-fouling.
- c. Provide quantitative data on the magnitude of significant and unavoidable impacts between alternatives for TDS and byproduct increases in the aquifer.

Pursuant to section 13267 of the California Water Code, PG&E is directed to submit the above information as an addendum to the August 2010 Feasibility Study. Enclosed with this Order is a Fact Sheet that contains information regarding the submittal of technical reports pursuant to Water Code section 13267. The addendum should be submitted by **September 15, 2011**. Please contact me at 530-542-5436 or Lisa Dernbach at 530-542-5424 with any questions.



Lauri Kemper, P.E.
Assistant Executive Officer

Enclosure: Water Code section 13267 Fact Sheet

cc: Kevin Sullivan, Hinkley Project Manager, PG&E
PG&E Mail List (technical letters tab only)

ALH/clhT: PGE Addl Info Letter (7 13 2011).doc
File under: 6B369107001

**Fact Sheet – Requirements for Submitting Technical Reports
Under Section 13267 of the California Water Code**

October 8, 2008

What does it mean when the regional water board requires a technical report?

Section 13267¹ of the California Water Code provides that "...the regional board may require that any person who has discharged, discharges, or who is suspected of having discharged...waste that could affect the quality of waters...shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires".

This requirement for a technical report seems to mean that I am guilty of something, or at least responsible for cleaning something up. What if that is not so?

Providing the required information in a technical report is not an admission of guilt or responsibility. However, the information provided can be used by the regional water board to clarify whether a given party has responsibility.

Are there limits to what the regional water board can ask for?

Yes. The information required must relate to an actual or suspected discharge of waste, and the burden of compliance must bear a reasonable relationship to the need for the report and the benefits obtained. The regional water board is required to explain the reasons for its request.

What if I can provide the information, but not by the date specified?

A time extension can be given for good cause. Your request should be submitted in writing, giving reasons. A request for a time extension should be made as soon as it is apparent that additional time will be needed and preferably before the due date for the information.

Are there penalties if I don't comply?

Depending on the situation, the regional water board can impose a fine of up to \$1,000 per day, and a court can impose fines of up to \$25,000 per day as well as criminal penalties. A person who submits false information is guilty of a misdemeanor and may be fined as well.

What if I disagree with the 13267 requirement and the regional water board staff will not change the requirement and/or date to comply?

Any person aggrieved by this action of the Regional Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of the Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

Claim of Copyright or other Protection

Any and all reports and other documents submitted to the Regional Board pursuant to this request will need to be copied for some or all of the following reasons: 1) normal internal use of the document, including staff copies, record copies, copies for Board members and agenda packets, 2) any further proceedings of the Regional Board and the State Water Resources Control Board, 3) any court proceeding that may involve the document, and 4) any copies requested by members of the public pursuant to the Public Records Act or other legal proceeding.

If the discharger or its contractor claims any copyright or other protection, the submittal must include a notice, and the notice will accompany all documents copied for the reasons stated above. If copyright protection for a submitted document is claimed, failure to expressly grant permission for the copying stated above will render the document unusable for the Regional Board's purposes, and will result in the document being returned to the discharger as if the task had not been completed.

If I have more questions, who do I ask?

Requirements for technical reports normally indicate the name, telephone number, and email address of the regional water board staff person involved at the end of the letter.

¹ All code sections referenced herein can be found by going to www.leginfo.ca.gov. Copies of the regulations cited are available from the Regional Board upon request.