

February 28, 2013

Patty Kouyoumdjian
Executive Officer
California Regional Water Quality Control Board
Lahontan Region
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150

Re: Hinkley Groundwater Remediation Project: Clarifying Comments from the Independent Review Panel (IRP) Manager Regarding PG&E's Petition (dated 2/7/13) of the Chromium-6 Further Plume Definition Cleanup and Abatement Order (CAO) No.R6V-2008-0002-A4 (dated 1/8/13).

Keywords: Water Board's Cr6 Plume Definition Order of January 8, 2013; PG&E's Petition of Same; Petition's Quotation of IRP Manager's Opinions at Footnote 3; Explanation of Why Quotation Applies to Draft CAO and Not Current CAO.

Dear Executive Officer Kouyoumdjian:

The Independent Review Panel (IRP) Manager has reviewed Pacific Gas and Electric Company's (PG&E) request for immediate and emergency stay to petition "the Petition" for review of Cleanup and Abatement Order (CAO) No.R6V-2008-0002-A4 "the Order" issued by the Water Board (WB) on January 8, 2013. PG&E submitted the Petition to the WB on February 7, 2013. The main reason of this letter, submitted at the request of the Community Advisory Committee (CAC), is not to provide detailed comments¹ on the Petition, but to elaborate and clarify on a reference made by PG&E in their Petition regarding the IRP Manager's professional opinion on a certain issue pertaining to Cr-6 plume definition.

Specifically, on page 5, lines 10 to 13 of the Petition, PG&E stated the following:

"In addition, PG&E believes that the newly ordered monitoring and delineation activities are unnecessary because PG&E has offered both interim replacement (bottled water service) and whole house replacement water to every resident within one mile of the current chromium plume boundary."³

The following is then stated in Footnote 3, page 5:

¹ Detailed comments will be submitted separately, henceforth.

“The independent technical expert hired by the Hinkley Community Advisory Committee (referred to as the “IRP Manager”), also questioned the need for the CAO when commenting on the draft CAO: “However, the IRP Manager is uncertain, at the time of writing, and to the extent of his own internal data review, if this apparent desire for increased accuracy is warranted or needed, in light of plume delineation, plume management, and ongoing whole house water supply actions underway in parallel actions within the project. In short, the IRP Manager does not understand what is driving the present need for the draft CAO; given that the plume management, replacement water supply and remedy assessment tasks currently underway would appear to be well served, from an environmental engineering perspective, by the accuracy inherent in the present plume delineation practices.”

The IRP Manager’s opinions regarding the CAO were submitted after review of the Draft CAO² of July, 2012 and not the Final CAO of January, 2013...which PG&E is now petitioning. The IRP Manager’s comments in the August 10, 2012 letter were offered in the context of the multiple ongoing programs ongoing at the time the draft CAO was issued, and an evaluation of the practical implementability of the Draft CAO, leading the IRP Manager to determine that the draft CAO was seemingly infeasible to respond to, given its requirement to possibly install scores of monitoring wells in a very short time period.

The IRP Manager was also questioning the extent of work required for further plume delineation, at the appropriate confidence level, in accordance to the requirements from the Draft CAO. As stated in the IRP Manager’s comments letter³: *“The IRP Manager agrees with the need for appropriate plume delineation but not at the expense of PG&E and the Water Board becoming distracted from work of greater importance. Quite frankly, the IRP Manager is concerned about the dilution of project management and field staff time, as they turn to focus on the requirements of the draft CAO.”*

It is still the IRP Manager’s belief that improved delineation of the plume needs to occur to decide upon the final remedy, but at an appropriate degree of accuracy and confidence consistent with the final remedies which have been proposed in the Final Remedy Feasibility Study⁴. The new vehicle for Cr6 plume definition is the Water Board’s CAO of January 8, 2013, which has been petitioned by PG&E, and will be further commented on by the CAC and IRP Manager.


³ IRP Manager Letter to the Water Board, *Re: Comments from the Hinkley Groundwater Site Independent Review Panel (IRP) Manager on behalf of the Community Advisory Committee (CAC) Regarding the Draft Amended Cleanup and Abatement Order (CAO) No.R6v-2008-0002A4 Issued for Public Comment on July 25, 2012.* August 10, 2012.

⁴ Final Remedy Feasibility Study, Addendum No.3, Prepared by Haley & Aldrich, Inc., for PG&E, September 15, 2011.

To clarify, Footnote 3 in the Petition was taken out of context and refers to the IRP Manager's comments on the draft CAO, and not the current final CAO.

Should you have any questions or comments please feel free to contact me at 714-388-1800 or by email at iwebster@projectnavigator.com.

Respectfully Submitted,

A handwritten signature in black ink that reads "Ian A. Webster". The signature is written in a cursive, flowing style.

Ian A. Webster, Sc.D.

IRP Manager,

Hinkley Groundwater Remediation Project

Attachment:

IRP Manager Letter Regarding Draft CAO Submitted August 10, 2012

cc:

Hinkley Community Advisory Committee

California State Water Resources Control Board Members

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August 10, 2012

Ms. Lauri Kemper
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Lahontan Region
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150



Re: Comments from the Hinkley Groundwater Site Independent Review Panel (IRP) Manager on behalf of the Community Advisory Committee (CAC) Regarding the Draft Amended Cleanup and Abatement (CAO) No. R6V-2008-0002A4 Issued for Public Comment on July 25, 2012.

Summary & Overview: The draft proposed CAO, first, permits Pacific Gas and Electric (PG&E) the use of additional "hydraulic plume volume" for the purposes of improved overall plume hydraulic control, and second, requires that PG&E perform more activities (employing domestic well data and newly installed monitoring well data) to improve the program's understanding of the definition of the chromium plume in the upper aquifer.

On the first topic, the CAC is always concerned about allowances which permit plume expansion. However, in this specific case, after reviewing the expansion allowance in the broader context of the general improved hydraulic controls the action delivers elsewhere within the plume, the IRP Manager is comfortable with the new flexibility provided by this draft CAO.

Regarding the second topic of the proposed use of domestic wells for further plume characterization; the CAC is typically in favor of efforts which improve the definition of the chromium plume, however, we are also very much mindful of a project management need to optimize the degree to which the plume needs to be defined, bearing in mind the uses to which the plume definition information will be applied. This "best-use-of-effort-thinking" is especially true at the present time. For example, irrespective of possible changes in the plume shape which could arise from the draft CAO's requirements, the shape changes may be no more than academic, by comparison to the large acreage that will soon be serviced by the Whole House Replacement Water (WHRW) Program, which decouples residents from the plume, no matter how its shape could be reasonably modified under the draft CAO.

The IRP Manager is concerned that, while the draft CAO further plume program may seem valuable in concept, in reality, it could simply distract

the program from far more important initiatives, such as installing the WHRW Systems, completing the EIR, starting up additional in-situ treatment systems, finalizing the remedy feasibility study and initiating the 2-year long comprehensive background study.

The IRP Manager is recommending that, given the effort which the new CAO will entail, that before the draft CAO is finalized, Order visioning/planning technical exchange meetings take place. The IRP Manager recommends that these discussions should include GIS-driven reviews of the confidence and limitations on the present data to determine if the new draft CAO's plume definition demands are valuable, or as mentioned earlier, academic.

Dear Lauri:

The Hinkley Community Advisory Committee (CAC) and the Independent Review Panel (IRP) Manager have reviewed the Draft Amended Cleanup and Abatement Order (CAO) Number R6V-2008-0002A4, which was released for public comment on July 25, 2012.

The draft CAO addresses two issues which are important to the Hinkley Community. The draft CAO proposes to amend two previous cleanup and abatement orders¹ (**Attachments A and B**). The two main items that the draft CAO proposes to amend (or forward-manage) from the previous two orders are the following:

1. Allows for the additional lateral migration of the 3.1 ppb (previous 4.0 ppb) hexavalent chromium on the eastern plume boundary to spread no more than 2,000 ft (previous 1,000 ft) for the purposes of implementation of cleanup actions to contain chromium expansion on the downgradient boundary in the northwest direction.
2. Requires the submission of a Work Plan proposing sampling locations in the upper aquifer to allow the definition of the hexavalent chromium plume in the southern, eastern and northern plume boundaries. Along with the required

¹ The Draft CAO amends CAO No.R6V-2008-0002 and CAO No.R6V-2008-0002A2. CAO No.R6V-2008-0002 required Pacific Gas & Electric (PG&E) to define the hexavalent chromium plume in the upper aquifer in the Hinkley Valley. A Water Board letter dated September 29, 2011 addressed to PG&E outlines the requirements for contouring the affected area pursuant to CAO No.6V-2008-0002A2. CAO No.R6V-2008-0002A2 allowed the lateral migration of the 4.0 ppb hexavalent chromium plume boundary east of the South Central Reinjection Area (SCRIA) from discharges to groundwater piped from extraction wells in the northwest plume area. CAO No.R6V-2008-0002A2 allowed lateral plume expansion of 1,000 feet as long as PG&E showed that the hexavalent chromium would be captured by the existing groundwater extraction system.

Work Plan the draft CAO also describes proposed revised requirements² for contouring the hexavalent chromium plume. The proposed revisions to the contouring include the following:

- a. Where access to private property or endangered species habitat has not been granted for six months or more, the chromium plume boundary is proposed to be drawn around any domestic well containing chromium concentrations exceeding 3.1 ppb hexavalent chromium or 3.2 ppb total chromium for at least two consecutive quarters and within one-half mile distance of the prior quarter's plume boundary.
- b. Where plume monitoring wells are unable to replicate chromium concentrations in nearby domestic wells within 0.5ppb Cr6, the chromium plume boundary shall be drawn around any domestic well having concentrations exceeding 3.1 ppb hexavalent chromium or 3.2 ppb total chromium for at least two consecutive quarters, and within one-mile distance of the monitoring.

In general comment, first, the CAC and IRP Manager would like to acknowledge the Water Board's commitment, made at the June 28, 2012 TEM in Barstow with PG&E and the CAC, allowing the CAC and Community the ability to comment on draft Cleanup and Abatement Orders.

Second, the CAC also wishes to restate comments made over the past six months by Mr. Jon Quass in the role of CAC Co-Chair. Jon has stated that it is the CAC's general opinion that progress on the overall clean up of the Hinkley groundwater plume is best achieved via cooperative, open technical dialog leading to safely implemented field operations and monitoring...in contrast to management by an "Order-driven approach." The latter appears to be less efficient, leading to nonproductive efforts, which are not in the Community's best interests.

The IRP Manager's comments on the draft CAO are as follows:

1. With respect to Item 1 (above), the IRP Manager is in general agreement of permitting the expansion of the chromium plume boundary on the east side in the vicinity of Acacia Street from the currently permitted 1,000 ft to a new distance of 2,000 ft, as long as per the draft Order's requirements at Section II.A., PG&E can demonstrate that the area's chromium is being subsequently captured by the downgradient extraction system. One of the CAC's overall goals is to advocate for faster cleanup of the aquifer. In the IRP Manager's opinion, the new proposed

² Current Hexavalent Chromium Map Contouring is in accordance with Water Board Letter, "Re: Investigation Order R6V-2011-0079 Quarterly Groundwater Monitoring Reports, PG&E Compressor Station, Hinkley, San Bernardino," September 29, 2011.

allowance of 2,000 ft is consistent with this goal, in that, simply, more water can be pumped for plume management prior to selection of the final remedy.

2. With respect to plume investigation in the upper aquifer, and the draft CAO's requirement to employ domestic well data in the delineation of the plume boundaries, the IRP Manager offers the following perspectives and comments:

The CAC understands that to decide upon a final remedy, the Hinkley chromium plume needs to be defined to an *appropriate* degree of accuracy. The new draft CAO *implies* that the present Cr6 plume is not defined with sufficient accuracy to work the immediate path-forward remedial activities, and proposes to improve the delineation accuracy via the use of domestic wells and further new monitoring wells. Per the draft CAO, these wells are to be proposed and installed via a new Work Plan. However, the IRP Manager is uncertain, at time of writing, and to the extent of his own internal data review, if this apparent desire for increased accuracy is warranted or needed, in light of plume delineation, plume management, and ongoing whole house water supply actions underway in parallel actions within the project. In short, the IRP Manager does not understand what is driving the present need for the draft CAO; given that the plume management, replacement water supply and remedy assessment tasks currently underway would appear to be well served, from an environmental engineering perspective, by the accuracy inherent in the present plume delineation practices.

The IRP Manager is therefore recommending that before the draft CAO is finalized more time is allowed to examine and understand the implications of the draft CAO, and its benefit to the entire remediation program. The IRP Manager recommends that "draft Order visioning, scoping and value-added discussions" take place between the Water Board, PG&E, CAC representatives and the IRP Manager.

More specifically, topics which validate the need for further, discussion, understanding and consideration before the draft Order is issued are:

1. The IRP Manager agrees with the need for *appropriate plume delineation* but not at the expense of PG&E and the Water Board becoming distracted from work of greater importance. Quite frankly, the IRP Manager is concerned about the dilution of project management and field staff time, as they turn to focus on the requirements of the new CAO.
2. Further effort in field plume definition should only be commenced after a rigorous desk top evaluation³ of plume contouring confidence has been

³ The IRP Manager recommends that GIS techniques are employed.

performed. The IRP Manager recommends that the following issues are considered in this evaluation:

- a. *Appropriate* plume definition accuracy should be the goal so that the final remedy conceptual design can be expeditiously formulated. The questions the IRP Manager cannot evaluate, or answer at this moment, are "what is the appropriate degree of plume definition accuracy?" and "what is the appropriate scope of a plume definition effort?" It maybe that a possible positive action for all, triggered by the issuance of this draft CAO, is a constructive, longer term dialog between the parties discussing plume definition, and the associated accuracy required at any particular stage to advance the project.⁴
 - b. The Whole House Replacement Water Systems⁵ will soon be operational for Community members whose properties would be located within the potentially expanded-contoured bounds of the plume resulting from the draft CAO's required use of domestic wells at Ordered Section I.A. Given the possibility of this scenario, which should be verified using mapping techniques, further plume investigation efforts as described in the draft CAO, contribute little value to the process of developing the overall Hinkley groundwater solution.
3. As history has shown from the first background study in 2007, the use of domestic wells with poorly known construction details⁶, to collect upper aquifer Cr6 impacts data, is a questionable decision.
 4. The IRP Manager requests further clarification as to how the Water Board determined the 0.5ppb "delta value" that is referenced in draft CAO Section I. The CAC and the IRP Manager are unclear as to how the 0.5ppb metric was determined, and especially how its use during plume contouring work

⁴ The CAC and the IRP Manager understand that plume definition accuracy is required to advance on work on future parts of the project including the Remedy Feasibility and Design Phases. We also understand that the plume needs to be defined accurately enough to insure that Community members are not affected by any possible health effects. Such activities, and thereby the appropriate degree of plume definition accuracy, given the stage of the project, appear to be progressing satisfactorily under the present work and management systems. (What concerns the IRP Manager (and this is a pure professional judgment call) is that ever increasing attempts for plume accuracy become very much akin to counting the number of angels dancing on the head of a pin. With the need to drive the project to a remedy phase foremost in the CAC's minds, the IRP Manager is not really too concerned if there are 980 angels or 1,020 angels on the proverbial pinhead, when he knows that an answer of 1,000 +/- 2% is an accurate enough answer, given the problem.)

⁵ As required by CAO No.R6V-2011-0005A2

⁶ That is materials and methods of construction, well's present structural integrity, and screen location and length.

would translate to improved protectiveness for Community members, when they will soon be sitting behind the "protection" of a Whole House Water Treatment System⁷ in areas where the 0.5ppb criterion would possibly be applied.

5. At time of writing, the CAC and IRP Manager have just received the 2nd Q, 2012 plume monitoring data, with its derived plume contours. (see **Attachment C.**) The 3.1ppb Cr6 plume contour, in a significant (positive) change from the 1st Q, 2012 maps, has now been drawn showing an apparent Cr6 "plume break" in the vicinity of Thompson Road. If verified by future data, the IRP Manager believes this "break" is consistent with what one would see as a result of the water table gradient reversal actions undertaken by PG&E in response to a March, 2012 CAO⁸, resulting from the February 2012 Settlement Agreement⁹. The IRP Manager recommends that the apparent success of this event is taken into consideration when now Ordering PG&E to further delineate the northern plume boundary.

The CAC and IRP Manager have a long-term interest in seeing that the analytical science associated with Cr6 isotope speciation improved and applied to the Hinkley project. The CAC has previously documented its opinions on this subject in a letter¹⁰ to the Water Board and discussed at Water Board Public Meetings¹¹. The topic of Cr6 speciation (natural Vs man-made Cr6) was initially Ordered by the Water Board in connection with an earlier version of the Replacement Water CAO¹². This CAO has recently been amended¹³ to "suspend" the need for speciation. The CAC continues to believe that "Cr6 isotope speciation" is an important technical issue for the Hinkley groundwater clean up program, and recommends, as previously documented, that Cr6 speciation science should continue to be reviewed for its applicability to Hinkley groundwater cleanup.

Given the seeming short fuse on this draft Order, the CAC and IRP Manager look forward to immediately discussing these topics with the Water Board and PG&E,. Please feel free to contact the IRP Manager at 714-863-0483.

⁷ Or new deeper well, as appropriate.

⁸ CAO No.R6V-2008-0002A3.

⁹ California Regional Water Quality Control Board, Lahontan Region. *Settlement Agreement and Stipulation for Entry Order Board Order No. R6V-2012-0013*, February 1, 2012

¹⁰ Letter to Mr. Harold J. Singer previous Executive Officer of Lahontan Regional Water Quality Control Board Dated April 20, 2012 prepared by the CAC *Regarding Lahontan Water Board's Consideration of Amendment of Order No. 6V-2011-0005A1 (Order) Issued to Pacific Gas and Electric Company (PG&E), as Described in Your "Comments Request by April 23, 2012" Letter of March 22, 2012.*

¹¹ For further information regarding the June 13-14, 2012 Lahontan Water Board Meeting can be found at http://www.waterboards.ca.gov/rwqcb6/water_issues/projects/pge/index.shtml

¹² CAO No.R6V-2011-0005A1

¹³ CAO No.R6V-2011-0005A2

Sincerely yours,



Ian A. Webster, Sc.D.
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CC:
CAC Members
Jason Keadjian

Attachments

- Attachment A:** Amended Cleanup and Abatement Order NO.R6V-2008-0002A4
- Attachment B:** Water Board Letter Dated September 29, 2011 Re: Investigation Order R6V-2011-0079 Quarterly Groundwater Monitoring Reports, PG&E Compressor Station, Hinkley, San Bernardino
- Attachment C:** 2nd Quarter, 2012 Chromium Plume Map, PG&E, August 2012.

ATTACHMENT A

Amended Cleanup and Abatement Order NO.R6V-2008-0002A