

April 20, 2012

Mr. Harold J. Singer
Executive Officer,
Lahontan Regional Water Quality Control Board,
2501 Lake Tahoe Blvd.,
South Lake Tahoe, CA 96150

Regarding Lahontan Water Board's Consideration of Amendment of Order No. R6V-2011-0005A1 (Order) Issued to Pacific Gas and Electric Company (PG&E), as Described in Your "Comments Requested by April 23, 2012" Letter of March 22, 2012.

Comments submitted by the Community Advisory Committee (CAC.)

Dear Mr. Singer,

Your letter of March 22, 2012¹ solicits input regarding decision-making you may enter into regarding PG&E's assertions that it is not possible² to comply with the Ordered Section 3.a., wherein the Water Board ordered PG&E to formulate and submit a methodology to determine if individual domestic wells, located within one mile of the quarterly contoured plume and showing less than 3.1µg/l of hexavalent chromium (Cr6), were either in whole, or in part, impacted by PG&E's discharge from the compressor station.

Locations:

The geographic locations of interest are depicted in **Figure 1**. From a lateral extent of impacts perspective, it is worthwhile to note that the acreage internal to 3.1µg/l Cr6 plume is approximately 3,000 acres, while the "1 mile outer annulus," area where the Order's Paragraph 3.a. is focused, is approximately 10,000 acres. In a broad sense then, as Cr6 issues affect the Hinkley Community, PG&E's obligations to devise plume assessment and interpretation methodologies, and source of Cr6 differentiation methodologies, which address the impacts of their Cr6 releases external to the somewhat arbitrarily defined 3.1µg/l contoured plume³, are equally important to the Hinkley Community as efforts focused internal to the 3.1µg/l plume contour.

¹ A copy of Mr. Harold J. Singer's letter of March 22, 2012 is appended to this letter as Attachment 1.

² The CAC's assumption is that PG&E's position is that the Water Board's Ordered demands, pursuant to the Water Code sections 13267 and 13304, are not possible to comply with, at this time.

³ All parties (Water Board, PG&E, and the Community) seem to be in agreement that the 2007 Groundwater Background Study Report had some deficiencies. This report, however, did compute a Cr6 background, 95 percent upper tolerance limit, of 3.1µg/l, which is used today as a "marker tool" for quarter-to-quarter plume mapping and definition. The number is subject to change.

How We Got Here: The Key Points from Some Recent Communications:

During the 4th Quarter of 2011, PG&E is on record of repeatedly responding⁴ to the Water Board regarding the Order's Paragraph 3.a. by stating that "PG&E has found no technically sound and implementable methodology for determining impacts to domestic wells below naturally occurring background levels⁵", and "PG&E believes that the current background level for hexavalent chromium of 3.1µg/l, in the absence of a new peer reviewed background study, is the only appropriate concentration to compare to for determining impacts.⁶"

The technical debate over the Order's Section 3.a., and the feasibility of PG&E being able to comply with it, has recently continued with your receipt of a letter⁷ from your Water Board staff responding to PG&E's assertions that Section 3.a. is impossible to perform. The Water Board staff, with input from Dr. Neil Willits of University of California, Davis, Statistical Laboratory, disagrees with PG&E's reasoning. Your staff believes that two of the data-analysis statistical methods⁸, when supported by other information such as groundwater flow direction knowledge, isotopic analysis and physical proximity to the Cr6 plume, would meet the requirements of Section 3.a.

However in a far more positive light, PG&E *has complied* with Sections 1 and 2 (pp. 9 to 12) of the Order which require interim replacement water supply, and the preparation of a Feasibility Study (FS)⁹ to evaluate new whole house water supply methods for residences. The FS was submitted for Water Board Review on April 9, 2012. Additionally, PG&E briefed the Community Advisory Committee (CAC) and the Independent Review Panel (IRP) Manager on the FS at a meeting in Barstow on April 12, 2012. We hope and expect that these valuable meetings will continue.

PG&E's April 2012 Replacement Water Feasibility Study:

It is the CAC's assessment that PG&E's FS has been carefully formulated to be consistent with the Company's prior exchanges with the Water Board in the 4th Quarter 2011, pertaining to how to respond to Cr6 detects at domestic wells located in the previously referred to "1 mile outer annulus" or "affected area." Basically, PG&E has responded to the Order's Paragraph 2.c., via a **two-part program**, where one component (that is, whole house water supply to residences within the 3.1µg/l contour) is essentially labeled as "compliant with the Order," while in addition, (and very positively from a CAC perspective), "PG&E is also developing a **voluntary program** to

⁴ Via two letters from Robert C. Doss (PG&E) to Harold J. Singer dated November 23, 2011, and December 22, 2011, and also in "Request for Immediate and Emergency Stay; Petition for Review; and Memorandum of Points and Authorities in Support Thereof," submitted by Thomas C. Wilson (PG&E) to State Water Resources Control Board on October 25, 2011.

⁵ Robert C. Doss letter of November 21, 2011, p.2, 2nd paragraph.

⁶ *ibid*, 5th paragraph.

⁷ Comments on Consideration of Amendment of Order No. R6V-2011-0005A1 (Order) Issued to Pacific Gas and Electric Company (PG&E), Letter to Harold J. Singer (Water Board), from Lauri Kemper (Water Board), April 12, 2012.

⁸ Spearman or Man-Kendall statistical correlation tests.

⁹ PG&E's Replacement Water Feasibility Study Under Ordering Paragraph 2.c., Amended Cleanup and Abatement Order No. R6V-2011-005A1, Submitted by Robert C. Doss, April 9 2012, Prepared by Arcadis U.S., Inc, San Francisco, CA

provide a replacement water supply to those households within the affected area that have ***detections in their domestic wells below the current background values for hexavalent chromium, or total chromium, and above non-detect¹⁰*** (emphasis added by CAC.)

PG&E notes that their proposed voluntary program is the most expeditious way to address Community concerns regarding the quality of water delivered to homes from domestic wells in the vicinity of the Hinkley plume¹¹.

The CAC agrees with PG&E, and is thankful for this proactive step the Company has taken to restore clean water supplies, and equally importantly, the quality of life in affected Hinkley homes.

The Technical and Programmatic Issue of Differentiating PG&E's Cr6 from Nature's Cr6:

With the above background and perspective we can now return to the solicitation posed by your letter of March 22, 2012 about what to do regarding further scientific exploration, data driven decision-logic thinking and the formulation of programmatic methodologies to define (and separate and quantify) what is PG&E-discharged Cr6 in the groundwater, versus naturally occurring Cr6. Especially in the "affected area," where Cr6 is in the lower concentration ranges of 0.02µg/l to 3.1µg/l¹².

Water Board recommended guidance and recommendations of how to tackle this problem was provided in the Order¹³, and included a number of factors, such as:

- Changes in Cr6 levels as a function of time at a given well,
- Location of the impacted well in relationship to the plume, as defined by PG&E quarterly produced plume maps,
- Groundwater flow direction,
- Isotopic analysis of Cr6, and,
- The application of a variety of statistical tests and methods to the collected data.

PG&E, in turn, has asserted that the application of these methods, both singly, or in combination is not feasible, and would add no value.

Now, however, PG&E's voluntary program to supply whole house replacement water to homes whose domestic wells have measured detectable Cr6, first within the 3.1µg/l contoured plume and then, secondly, further laterally, within the 1 mile annulus, at first glance, seemingly removes the hurdle of needing to address the challenge posed in the preceding paragraph. PG&E has in fact referred to their voluntary whole house water program as rendering Ordered Section 3.a. "moot." (See footnote 16.)

¹⁰ FS Report cover letter, by Robert C. Doss, p.1., 3rd paragraph.

¹¹ *ibid*, FS Report cover letter, by Robert C. Doss, p.1., 3rd paragraph.

¹² 0.02µg/l is the CA DPH established Public Health Goal (PHG) for Cr6 in water, while 3.1µg/l is a Cr6 concentration metric which was computed specifically for the Hinkley Groundwater Project by PG&E in 2007 Groundwater Background Study. The number has been controversial and, by agreement between PG&E and the Water Board, is subject to change. However, for the moment the number is accepted by both PG&E and the Water Board as a "measurement metric" for defining the lateral extent of the PG&E release to groundwater. The 3.1µg/l number was computed as the 95% upper tolerance limit (UTL) of the Cr6 data collected in the 2006-2007 study.

¹³ Water Board Cleanup and Abatement Order No. R6V-2011-0005A1, p.7, Finding 26.

CAC's Evaluation on Behalf of the Hinkley Community, and Our Recommendations:

While the CAC is also hopeful and inclined to believe the "moot point" is true, we also feel compelled, from a "project execution, risk management perspective," to continue to *advocate conservatively* for the Hinkley Community.

Our position is that we wish to see an evergreen Hinkley Groundwater Remediation "project requirement" that "the identification and application of technical methodologies to separate PG&E's Cr6 from natural background Cr6" become a continuous, and evolving technical component of the project. The overall remediation project is still yet forecast to have a long execution horizon, and the CAC expects, but cannot specifically identify at this moment, that the fundamental issue of parsing apart the relative Cr6 contributions from PG&E and nature, at low Cr6 concentrations, (which are in the order of magnitude of the current PHG at 0.02µg/l), could once again become of importance; especially, when an MCL is established, which uses the current PHG as a point of departure, and the newly planned Background Study is completed, say within two to three years. An overall Cr6 cleanup goal (or goals) for the Hinkley groundwater plume has yet to be addressed, and we suspect when that time comes, having improved knowledge, procedures, protocols and capabilities on how to differentiate the different sources of Cr6, will be of value.

It seems logical to state that as the entire project team's collective knowledge and understanding grows with time, in the future, there will be a reasonable chance that PG&E's engineers, geologists and scientists will be better positioned to perform the aforementioned Cr6 differentiation, supplemented by input from your staff and U.C. Davis resources. An objective, "at-face-value-review" of the record suggests that PG&E only had months in the 4th Quarter of 2011 to investigate and formulate, impacted well, Cr6 differentiation methodologies. While the CAC will always promote speed and efficiency of execution on tasks associated with the assessment and remediation of the Hinkley groundwater plume, this is one topic which we believe may take years of continuous evaluation and revision, to finally arrive at a functional, practical Cr6, differentiation methodology.

For example, with respect to the use and improvements of Cr6 isotopes (at lower concentrations than has been applied at present), we note that the recently submitted draft PG&E Workplan for an evaluation of background chromium, notes that "isotope data generally supports the hypothesis that natural Cr6 has a higher isotopic signature than anthropogenic sources," and "chromium isotopes maybe useful in the differentiation of chromium from different sources"¹⁴. It is to be expected that the isotopic Cr6 differentiation method will improve with time simultaneous with the execution of the newly proposed background study.

In summary, Mr. Singer, the CAC respectfully requests that you consider and act on the following recommendations we are making with respect to your March 22, 2012 solicitation regarding the Order's Section 3.a:

¹⁴ *Workplan for the Evaluation of Background Chromium in the Groundwater of the Upper Aquifer in the Hinkley Valley, Submitted to Water Board by Kevin Sullivan (PG&E), 22 February 2012, p. 29. Prepared by Stantec.*

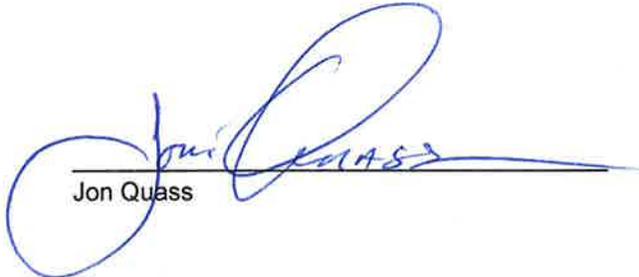
1. The CAC requests that the requirement of the Order's Section 3.a. *be maintained in spirit, but modified in detail*. That is, we think that the scientific and engineering thinking, studies, evaluations and testing associated with devising a method to which differentiates Cr6 impacts at the Hinkley project to PG&E or nature, should be Ordered, but that the planning, sampling, interpretation, roll out and application of the findings of the studies specifically to the Hinkley project, as for example, defined in the Order's Section 3.b. should be suspended, until an appropriate time is defined for use of the findings. In the meantime, value and knowledge pertaining to the Cr6 differentiation issue, and in effect adding another tool to the technical toolbox, could be accrued by approaches such as:
 - a. Requiring PG&E to report every 6 months on the status of their improved technical knowledge regarding Cr6 differentiation methodologies. At our direction, the CAC's IRP Manager would then advise us of any progress which has been made in the "Cr6 differentiation process," and its potential usefulness to the Hinkley remediation project, as PG&E ultimately strives towards creating a long-term groundwater condition which will be compliant with the final cleanup standards.
 - b. Working with PG&E to define an area, or a limited subset of wells, for data gathering, from which the Cr6 differentiation science (and statistical methods¹⁵) could be "pilot tested."
2. The actions which PG&E has just taken with its proposed voluntary whole house water program, as discussed above, remove the *immediate*¹⁶ need for a definitive answer on devising methods to differentiate between PG&E's Cr6 and nature's Cr6. CAC is universally pleased, and encouraged with the actions which PG&E has just taken with their Whole House Water replacement initiative. Despite the enforcement capabilities which you have at the Water Board, we also feel it is important that PG&E be further encouraged, in a non-Order fashion, to continue to perform proactively, (...as they have exhibited with the Whole House Water program.) PG&E's front line project team needs to be able to relate positive success stories back to senior decision-makers in San Francisco...which in turn, the CAC believes, will result in further proactive actions, now, with respect to plume clean up. We, at least, would like to test this "new CAC-Community-PG&E-Hinkley project" cleanup hypothesis, and improving relationship. To initiate this improved form of CAC oversight and interaction with PG&E, we request that, per your March 22, 2012 letter of solicitation, you amend the Order at Section 3.a., more narrowly, as described above, thereby permitting the Water Board and its Prosecution Team to reassess the condition of PG&E's compliance with the amended Order as just discussed by PG&E in a letter to you¹⁷.

¹⁵ We wish to note that we have little belief that the proposed statistical methods can be improved. We think the greatest improvements and increased knowledge will occur in identifying scientific methodologies to quantify anthropogenic Cr6 from geogenic Cr6 at concentrations less than the currently defined Cr6 background of 3.1µg/l.

¹⁶ The "immediate need" was reflected in the speedy time schedule associated with the Order's Section 3.a.

¹⁷ Sheryl Bilbrey (PG&E) has written to Harold J. Singer (Water Board) in a letter entitled "PG&E Voluntary Whole House Replacement Water Program," dated April 16, 2012, stating PG&E's belief that the newly proposed Whole House Water Replacement Program, and the area over which it would be implemented (up

Please feel free to contact any of the undersigned CAC Members, or our IRP Manager, Dr. Ian A. Webster at 714-388-1800 (office) or 714-863-0483 (mobile), to discuss.


Jon Quass


James Dodd


Joel Valenzuela


Lester White



Ian A. Webster, Sc.D.
IRP Manager,
Community Advisory Committee,
Hinkley Groundwater Remediation Program.

cc: Community Advisory Committee Members
Attachments:

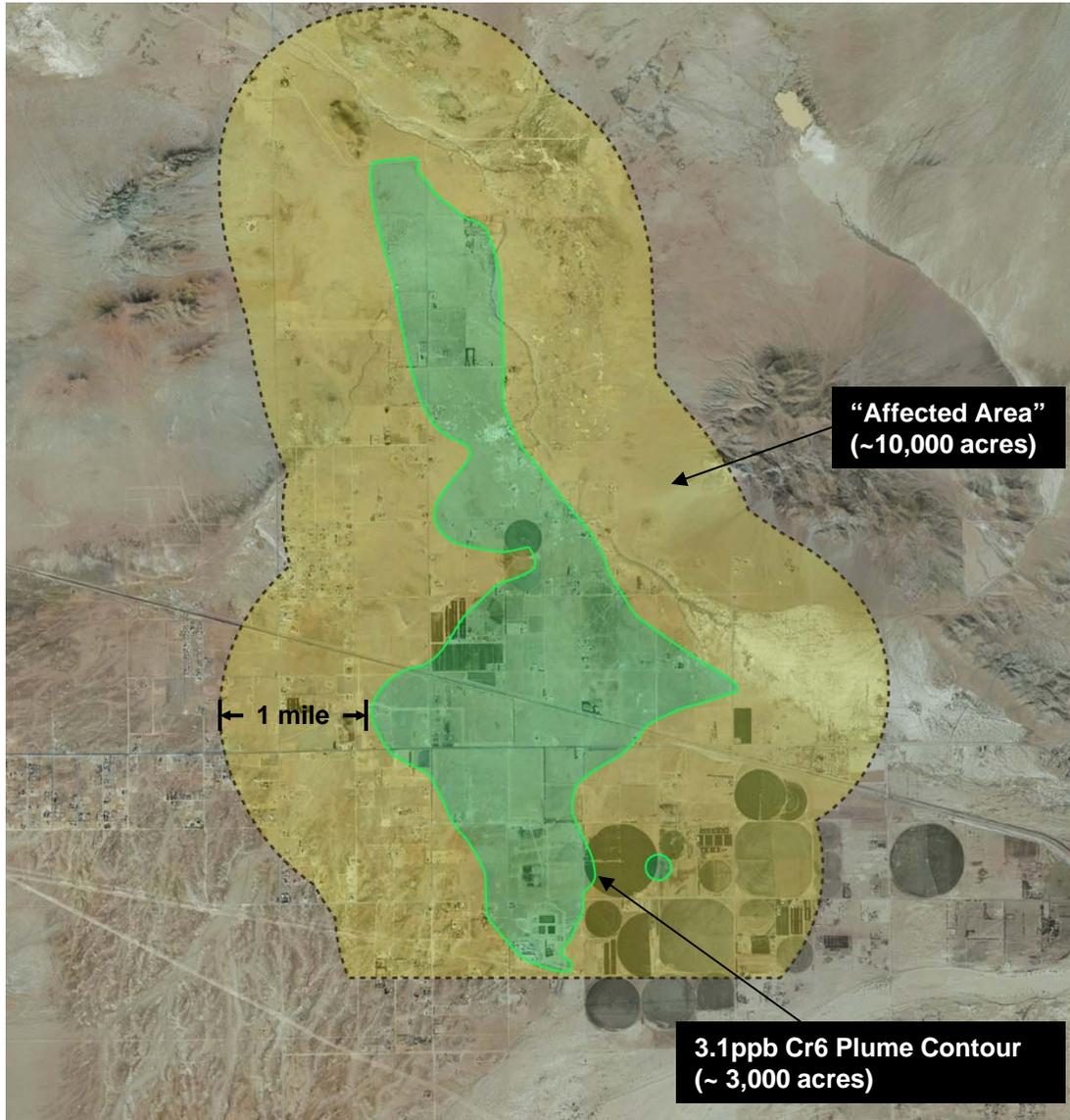
Figure 1: Lahontan RWQCB Order No. R6V-2011-0005A1 Issued to PG&E. Harold J. Singer's March 22, 2012 Solicitation of Comments Regarding the Order's Section 3.a.

Attachment 1: Letter by Harold J. Singer, Lahontan Water Board to "Interested Persons" regarding Order No. R6V-2011-0005A1 issued to Pacific Gas and Electric, March 22, 2012.

to 1 mile from the 3.1µg/l Cr6 plume contour), "...significantly expands and fully meets the intent of Paragraph 3 of the 2011 Order, making this provision moot."

FIGURE 1

Lahontan RWQCB Order No. R6V-2011-0005A1 Issued to PG&E. Harold J. Singer's March 22, 2012 Solicitation of Comments Regarding the Order's Section 3.a.



Key Background Facts to Future Decision Making Regarding Order Section 3.a.

- "Impacted Wells" are those containing Cr6 greater than 3.1ppb in the "Affected Area," or, wells within the "Affected Area" with Cr6 greater than 0.02ppb, where the Cr6 is proven to have been discharged by PG&E.
- "Affected Area" is defined as all domestic wells located laterally within 1 mile, down gradient or cross gradient of the 3.1ppb Cr6 plume.
- The Order's Section 3.a. requires PG&E to submit a methodology to determine if Cr6 in domestic wells in the "Affected Area" were caused, in whole or in part, by PG&E's discharge.
- PG&E has responded (23 Nov 2011, and 22 Dec 2011) by stating that they have "found no technically sound and implementable methodology for determining impacts to domestic wells below naturally occurring background levels, as required by Ordering paragraph 3.a."
- The Water Board has concluded (April 12, 2012) that "at least two of the statistical methods discussed by PG&E would meet the requirements of Section 3.a. of the Order," and therefore "Water Board staff disagree with PG&E's reasons."

Graphic created by Project Navigator, Ltd., is approximate, and is not intended to be used for compliance determination purposes.

Lahontan Regional Water Quality Control Board

March 22, 2012

Interested Persons

COMMENTS REQUESTED BY APRIL 23, 2012 – CONSIDERATION OF AMENDMENT OF ORDER NO. R6V-2011-0005A1 (Order¹) ISSUED TO PACIFIC GAS AND ELECTRIC COMPANY (PG&E)

In October 2011, the Lahontan Water Board ordered Pacific Gas and Electric (PG&E) to provide replacement water to persons in the Hinkley area whose domestic wells contain levels of hexavalent chromium that exceeded 3.1 µg/L due to PG&E's discharge. PG&E was also required to submit a methodology to determine if levels of hexavalent chromium in individual domestic wells below 3.1 µg/L that are within one mile from the delineated plume were due, in part, to its discharge (see section 3.a. of the Order¹).

In letters dated November 23, 2011 and December 22, 2011 (both enclosed), PG&E provided its position that developing a methodology as required in section 3.a. of the Order was not possible. I am soliciting comments on whether this position is justified. Based on PG&E's position and comments received in response to this letter, I may consider amending the Order to, among other things: (1) eliminate the requirement for PG&E to provide replacement water to persons whose wells contain hexavalent chromium at levels less than 3.1 µg/L, based on PG&E's position; (2) require PG&E to consider specific methodologies included in comment letters; or, (3) impose a methodology that PG&E must use to determine its obligation to provide replacement water to those persons whose wells contain hexavalent at levels less than 3.1 µg/L.

Comments on this matter must be submitted to me, either by hard copy or electronically, by April 23, 2012. Based on comments received, I may take action, including amending the Order or requesting additional comments on a methodology that may be incorporated into an amended order. Please contact me at (530) 542-5412 or hsinger@waterboards.ca.gov if you have any questions.



Harold J. Singer
Executive Officer

Enclosures

PG&E Letters dated November 23, 2011 and December 22, 2011

¹ The Order can be viewed at:

http://www.waterboards.ca.gov/lahontan/water_issues/projects/pge/docs/r6v_2100_0005a1.pdf