

One Pointe Drive  
Suite 320  
Brea, CA 92821

714.388.1800 *tel*  
714.388.1839 *fax*  
www.projectnavigator.com

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John Izbicki, Ph.D.  
United States Geological Survey (USGS)  
4165 Spruance Road  
San Diego, CA 92106

**RE: The Hinkley CAC and IRP Manager Comments Regarding USGS Project Proposal on “*Occurrence of Natural and Anthropogenic Cr VI near a Mapped Plume, Hinkley, California*”, September 16, 2013**

Dear John:

The CAC and the IRP Manager have reviewed the United States Geological Survey (USGS) proposed scope of work (SOW) regarding the new Cr6 Background Study (BGS) for the Hinkley Valley. We thank you for providing us the opportunity to review the SOW. As you well know, the CAC and Community are very interested in your proposed program and understanding the role it will have in determining what the final Cr6 clean up goals are for the PG&E Cr6 discharge.

The new Cr6 background study is a key component of the Hinkley Groundwater Remediation Program. It will seemingly play a significant role in determining the final Cr6 groundwater cleanup number(s) in Hinkley, which will eventually be established<sup>1</sup> by the Lahontan Regional Water Quality Control Board. In our

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<sup>1</sup> The language for the cleanup of contaminated water can be found in State Water Resources Control Board Resolution No. 92-49 under section III. G. which states:

III. The Regional Water Board shall implement the following procedures to ensure that dischargers shall have the opportunity to select cost-effective methods for detecting discharges or threatened discharges and methods for cleaning up or abating the effects thereof. The Regional Water Board shall:

G. Ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible; in approving any alternative cleanup levels less stringent than background, apply Section 2550.4 of Chapter 15, or, for cleanup and abatement associated with underground storage tanks, apply Section 2725 of Chapter 16, provided that the Regional Water Board considers the conditions set forth in Section 2550.4 of Chapter 15 in setting alternative cleanup levels pursuant to Section 2725 of Chapter 16; any such alternative cleanup level shall:

1. Be consistent with maximum benefit to the people of the state;
2. Not unreasonably affect present and anticipated beneficial use of such water; and

opinion, the USGS Project Proposal is scientifically sound and it will address many of the concerns that the CAC and Hinkley Community have expressed during the monthly Community meetings.

An important feature of the USGS Project Proposal is that it is independent, but at the same time complementary, of proposed, parallel PG&E work on the same topic. For example, independently, USGS will be performing specialized groundwater analysis (tracer and isotopic analysis), under your own sample chain of custody. Those results will be interpreted by USGS and discussed with the BGS Technical Working Group (TWG). This recognition of the need for data quality and transparency, which will hopefully result in USGSs' conclusions being widely accepted by the Community stakeholders, is an important study component which the CAC and the Hinkley Community have long been advocating.

This said, below are the CAC and IRP Manager's questions and further clarifications regarding the USGS proposed work.

### **Task 1: Evaluation of Existing Data**

Will the evaluation of "existing data" include the review of all MWA and USGS historical data and field study reports? Does this task include the review and use of USGS and MWA historical databases, along with PG&E's database(s) which will be ultimately used for statistical calculations of Cr6 trends in the Hinkley Valley? What is the plan to integrate all data into one main database? Please discuss in greater detail how data from different sources (e.g. MWA and PG&E) will be integrated, evaluated and managed. As you know, data integrity and its blue-chip management have been pin-pointed by the IRP Manager and the CAC's independent facilitator<sup>2</sup> as key facets of the success of the program.

At the completion of the USGS evaluation of PG&E's existing data (or USGS, MWA and PG&E databases), the IRP Manager suggests that USGS prepares a report/memo summarizing key data trends, and makes interim recommendations regarding the installation of any additional monitoring wells required to fill data gaps for the background study.

### **Task 2: Sample Collection and Analysis of Rock and Alluvium**

How many readings per rock sample will be taken with the handheld XRF unit? Discuss how the surface concentrations of each XRF measurement be further "averaged" to arrive at a useable measurement? Does the handheld XRF unit require any special standards before calibration?

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3. Not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards

<sup>2</sup> Mindy Meyer from The Center of Collaborative Policy at Sacramento State University, Sacramento, CA

Will the planned thirty (30) core materials and cuttings to be subjected to analysis be from the saturated zone? Are any core materials and cuttings from the unsaturated zone planned to be analyzed?

Historical agricultural pumping and water rights adjudication has fluctuated the height of water table over the years. Therefore does this require to be considered when collecting samples at the interface between the saturated and non saturated zones?

### **Task 3: Sample Collection and Analysis for Water Chemistry, and for Multiple Chemical and Isotopic Tracers:**

How is the 60-field samples number estimated for the background study? Please provide some perspectives; perhaps from other programs you have been involved. Are the 60 field samples the minimum number of samples required to conduct the study? Will all the samples be collected in the same quarter, or will the sample be collected in different quarters?

Do you plan to measure the vertical age profiles at a few selected locations? How will these locations be selected?

Because of water injection, extraction and possibly remedy driven recharging could there be difficulties identifying what water comes from where? How do you see mixing affecting the outcome locally measured Cr6 from either the natural or anthropogenic sources?

We recommend that a comprehensive summary table, outlining all the analysis USGS plans to conduct along with the number of samples, individual/lab that will be performing the analysis, etc., should be included in the SOW.

### **Task 4: Evaluation of Local Geologic, Hydrologic, and Geochemical Conditions:**

Is the cost of reviewing and insuring that PG&E Work Plans are in alignment with the USGS SOW included in this Task?

### **Task 5: Evaluation of Historic and Present-Day Groundwater Movement:**

Will any updated forecasting via the MODFLOW model (with the current boundary conditions) be applied to the Northwest Freshwater Injection System area? After learning about the general concepts of groundwater modeling, the CAC has suggested that the computational grid for the MODFLOW model in the area of the Northwest Freshwater Injection System could be refined to evaluate the four Cr6 transport hypotheses for the area.

**Task 6: Evaluation of Occurrence of Natural and Anthropogenic Chromium:**

Will a decision tree (or related decision management approach) be employed to determine the location of the new monitoring wells planned specifically for the BGS? Can you discuss in the SOW the approximate minimum number of data points required to run the data pattern recognition and Principle Component Analysis software?

**Task 7: Estimation of Background Cr6 Concentrations:**

No comments.

**Task 8: Fate of Chromium During *In-Situ* Reduction:**

Does this Task include a literature review of any similar studies, or evaluation of information on Cr6 conversion kinetics as they could affect the long-term permanence of the Hinkley remedy?

**General Comments:**

Is one interim report going to be produced or will there be several interim reports?

Does the budget incorporate the cost of attending all BGS TEMs? Is the cost of producing presentations to the TWG and the Community included in the budget?

What is the USGS “change process” to manage and incorporate data from MWA, PG&E consultants, and early generated “new data” into subsequent program modifications?

Should you have any questions or comments, please feel free to contact either of the undersigned at [rsanchez@projectnavigator.com](mailto:rsanchez@projectnavigator.com) or [iwebster@projectnavigator.com](mailto:iwebster@projectnavigator.com) (714-388-1800 (PNL main number) or 714-388-1821 (RS) or 714-863-0483 (IAW mobile)).

Sincerely yours,



Raudel Sanchez, Ph.D.  
Project Manager



Ian A. Webster, Sc.D.  
IRP Manager

CC:

CAC Members

PNL Staff

Kevin Sullivan, PG&E

Devin Hassett, Keadjian and Associates

Lisa Dernbach, Lahontan Regional Water Quality Control Board

Anne Holden, Lahontan Regional Water Quality Control Board