CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

MEETING OF MARCH 12-13, 2014
BARTSOW

ITEM: **5**

SUBJECT: **STATUS REPORT ON ACTIVITIES CONCERNING CHROMIUM CONTAMINATION FROM PACIFIC GAS AND ELECTRIC COMPANY'S HINKLEY COMPRESSOR STATION, SAN BERNARDINO COUNTY**

CHRONOLOGY: This chronology lists Water Board actions related to the cleanup of chromium in groundwater.

Aug. 6, 2008	Cleanup and Abatement Order (CAO) No. R6V-2008-0002 directed PG&E, among other things, to continue interim remedial actions and to develop and implement a comprehensive cleanup strategy for chromium in groundwater.
Jan. 7, 2011	CAO No. R6V-2011-0005 and amendments directed PG&E to provide interim water supply (i.e., bottled water) and permanent replacement water supply to Hinkley residents having chromium in domestic wells within the affected area.
Jan. 6, 2013	Amended CAO R6V-2008-0002A4 directed PG&E to implement additional investigations for defining the full extent of chromium in groundwater.
July 17, 2013	Adopted final EIR for comprehensive cleanup of chromium in groundwater.

STATUS: This is a routine standing item for southern board meetings.

The February 2014 Status of Actions sheet distributed to the Hinkley Community Advisory Committee is enclosed (Enclosure 1) describing Water Board activities in that month.

Water Board staff will also provide an update on the following topics:

- Interim water program (Enclosure 2)
- Executive Officer's response to PG&E request for reduced sampling frequency (Enclosure 3)
- Manganese investigation (Enclosure 4)
- Action Plan for chromium in Western Area (Enclosure 5)
- Further chromium investigations (Enclosure 6)
- Background study progress
- Next actions

PG&E staff will briefly update the Board on its plans this year and next year to expand agricultural treatment units. They will also summarize a field trip they conducted with the Mojave Water Agency.

The Community Advisory Committee Independent Review Project (IRP) Manager will discuss the changing dynamics of his role in increasing community engagement. Initially in 2012 and part of 2013, he discussed and provided technical outreach and assistance on many topics. Now because of the number of residents choosing PG&E's property acquisition, the community and its interests have changed. The IRP Manager now sees the remaining, committed/interested/motivated stakeholders are more interested in moving on, seeing the remedy perform, and look towards what the future of Hinkley can be. He will discuss the current focus:

- Plume definition
- What Cr6 is PG&E's vs Background?
- PG&E's remedy and its components
- The schedule to a remediated aquifer

Lastly, the IRP Manager will share lessons learned and recommendations for adjustments in technical support and outreach for the future. He plans to share his latest 3 dimensional physical model of the chromium plume.

RECOMMMENDA-TION

This is an information item only. The Water Board may provide direction to staff as appropriate.

ENCLOSURES:

ENCLOSURE	ITEM	BATE NUMBER
1	February 2014 Status of Actions Sheet	**5-7**
2	February 18, 2014 Amended CAO R6V-2011-005A3	**5-13**
3	February 19, 2014 Response to reduce sampling frequency	**5-41**
4	February 19, 2014 Comments on manganese investigation	**5-45**
5	February 25, 2014 Comments on Action Plan for western area	**5-55**
6	February 25**,** 2014 Conditional acceptance of workplan for chromium investigation	**5-61**
7	Water Board Staff Presentation	**5-67**
8	PG&E Presentation	**5-83**
9	CAC IRP Presentation	**5-89**

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ENCLOSURE 1

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Status of Actions for PG&E Hinkley Chromium Contamination
February 2014

Enforcement

1. **Supplemental Environmental Project (SEP):** The ACL settlement adopted by the Board on March 14, 2012 allows PG&E to spend at least $1.8 million to update the drinking water system at the Hinkley School by the end of 2017. PG&E has reported that construction started in October on the Hinkley School water upgrade project. Pipeline installation along Santa Fe Road to the school has been completed. Other project tasks, such as a new supply well, a backup supply well, and water system upgrades, will progress through the next summer. The project is scheduled to be handed over to the Barstow Unified School District by end of 2014.

2. **Cleanup and Abatement Order for Whole House Water (WHW) Supply:** Revised Order (R6V-2011-0005A2) was issued on June 7, 2012 directing PG&E to provide whole house replacement water to residences in the affected area.

   According to PG&E, WHW systems are in operation at 32 residences. Water samples collected from the ion exchange systems were all of good quality--no exceedances for chromium or other metals. However, in December, PG&E reported that total chromium concentrations exceeded the standard of 1.0 ppb from reverse osmosis systems at two residences and hexavalent chromium concentrations exceeded the standard of 0.06 ppb at 10 residences. In addition, nitrate concentrations from reverse osmosis systems exceeded the standard of 10 ppm at one residence. In a January 3 letter by the Water Board, PG&E is required to conduct re-sampling of the reverse osmosis systems having exceedances and report those results and potential corrective actions. On January 31, 2014, the Water Board received follow-up sampling results from PG&E. Nitrate concentrations in recent samples show level less than the 10 ppm drinking water standard in the domestic wells that previously had high detections. Follow-up sampling for chromium in other domestic wells will be reported to the Water Board at the end of March 2014.

3. **Cleanup and Abatement Order for Plume Definition:** Amended Order (R6V-2008-0002A4) issued on January 8, 2013 requires PG&E to delineate the extent of the chromium plume in groundwater and determine threats to domestic wells. PG&E has petitioned the Order to the State Water Board. Until the State Board makes a decision, PG&E is obligated to comply with tasks and deadlines in the CAO.

   On January 17, PG&E submitted a workplan for further plume delineation in the north Hinkley Valley and in the Harper Dry Lake Valley. The workplan proposed investigations using monitoring wells in six northern areas. In addition, domestic wells in the Harper Dry Lake Valley will be sampled and residents will be offered reverse osmosis systems when chromium is detected. All proposed work is dependent upon access to private

property. The Water Board provided our comments on the workplan to PG&E on **February 26**, and requires submittal of an investigation status report within 60 days.

4. **Amended Cleanup and Abatement Order for bottled water:** The Water Board Executive Officer on February 18 issued an amended CAO that revised the hexavalent chromium level in bottled water provided to Hinkley residents. The new level of 1.2 ppb Cr6 represents the average background value in Hinkley. All bottled water provided to residents has met this level.

Investigative and Reporting Orders

1. **Chromium Plume Boundary**
   The fourth quarter 2013 chromium plume map is posted on the Water Board website at: www.waterboards.ca.gov/lahontan, on the "PG&E Hinkley Chromium Cleanup" page, at the bottom of page. The 1st quarter 2014 plume map is due at the end of April.

2. **Chromium Detections in the West**
   On February 25, the Water Board provided comments on PG&E's January 10 report describing corrective actions for chromium in groundwater west of Serra Road. The Water Board concurred with PG&E's recommendations to extract groundwater from the western area and dispose of it to land either at the former Heifer Ranch or as dust control for off-site projects. Extracted water exceeding 3.1 ppb Cr6 or 3.2 ppb CrT must be treated, such as with ion exchange, prior to disposal to land. If chromium concentrations in groundwater continue to exceed background levels through June 30, 2014, PG&E shall implement a longer term action. PG&E has proposed piping the extracted water to the expanded Ranch agricultural treatment unit on Highway 58.

3. **Chromium Plume Containment**
   Pursuant to the amended March 2012 CAO, PG&E submitted the monthly Plume Capture Report on February 14, 2014 evaluating chromium capture south of Thompson Road. The report states that overall data indicates the chromium plume capture was maintained at all monitoring points during the reporting period. This means that the main chromium plume associated with groundwater from beneath the Compressor Station is being contained from further migration at Thompson Road.

4. **Manganese Plume Investigation & Cleanup - Investigative Order (R6V-2012-0060)**
   On February 19, the Water Board provided comments on PG&E's November 20, 2013 report for manganese investigation. The Water Board's review of the report finds that elevated manganese created by in-situ remediation actions (i.e. the injection of ethanol), is contained within the in-situ remediation project area. The results of two tracer tests however are too preliminary to make determinations about the fate and migration of tracers. PG&E is required to continue sampling for tracers and reporting the results in quarterly IRZ reports. The Water Board reduced the sampling frequency at some monitoring wells within the IRZ project area. The Water Board also asked PG&E to evaluate effectiveness of the in-situ remediation and supports rehabilitation of injection wells and installation of new wells. Finally, the Water Board has asked PG&E to update its groundwater mathematical model to revise the time estimates for interim cleanup to below 50 ppb and to achieve below 10 ppb Cr6 throughout the project site.

Status of Actions for Comprehensive Cleanup

March 12, 2014: Water Board meeting in Barstow to consider adopting a permit for expanded agricultural treatment units.
Spring 2014: PG&E submit Report of Waste Discharge and monitoring plans for new and existing agricultural treatment units (ATUs).
Early Summer 2014: Baseline monitoring in water supply wells, construction of new ATUs. Planting and irrigation begin at new ATUs in Fall.
Fall 2014: Water Board staff will develop a new Cleanup and Abatement Order that will set dates to achieve interim cleanup such as dates to achieve less than 50 ppb Cr6, and 10 ppb Cr6 as well as dates to complete construction of expanded remediation efforts. The Order will also include a revised monitoring program. Water Board staff expects to hold workshops to receive public input on the draft Order.
September 10, 2014: Next Water Board Meeting in Barstow. Anticipate a workshop on the draft Cleanup and Abatement Order.
November 2014 and/or February 2015: Board Meeting and Public Hearing where Board may consider adopting new Cleanup and Abatement Order for comprehensive cleanup at Hinkley.

Status of Revised Chromium Background Study

Dr. Izbicki of the US Geological Survey presented his proposal for a revised background study at the January 8, 2014 Water Board meeting in Barstow. Board members, the Community Advisory Committee, and PG&E staff all expressed strong support for Dr. Izbicki's proposal. Implementing Dr. Izbicki's background study proposal will involve Lahontan staff developing and executing an approximately 4.5 million dollar/4-year contract. Because of the large dollar amount and length of the contract, special approval to begin the contracting process is needed from the State Water Board. This approval will be sought at the State Board's March 4, 2014 meeting. Following that meeting, Lahontan staff can finalize and submit the contract to the State Water Board for review and execution. State Board staff estimate the time needed to review and execute the contract after submittal is 3 to 5 months. In order to allow continued preliminary work on the background study, Water Board staff submitted an amendment to Dr. Izbicki's existing contract in mid-February. This amendment will allow further planning, meetings, and preliminary data gathering with Dr. Izbicki and the Background Study Technical Working Group.

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ENCLOSURE 2

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February 18, 2014

Sheryl Bilbrey
Director, Remediation Program Office
Pacific Gas and Electric Company
77 Beale Street, B28A
San Francisco, CA 94105
S4BD@pge.com

CLEANUP AND ABATEMENT ORDER NO. R6V-2011-0005A3 FOR PACIFIC GAS AND ELECTRIC COMPANY (PG&E) COMPRESSOR STATION, HINKLEY, SAN BERNARDINO COUNTY

I have enclosed for your attention an amendment to Cleanup and Abatement Order No. R6V-2011-0005A3 (Order) allowing the interim replacement bottled water that PG&E supplies to residents of Hinkley, California that meet the requirements of the Whole House Replacement Water Program to contain concentrations of up to 1.2 µg/L of hexavalent chromium, instead of less than 0.02 µg/L. On May 9, 2013 I sent a letter to PG&E and the community revising the interim replacement bottled water concentration level (determination 4) and the attached revised Order makes the appropriate technical corrections.

As required by section 13304(f) of the California Water Code, and as stated in Finding No. 4 in the attached Order, the replacement water must be of comparable quality to that which the residents had prior to the discharge of waste that adversely affected the water supply. Because the average background concentration of hexavalent chromium in the Hinkley community is 1.2 µg/L, providing bottled water with concentrations of hexavalent chromium not exceeding that amount meets the requirements of section 13304(f) the Water Code. The water quality requirement for the permanent replacement water supply remains unchanged.

If you have any questions regarding the enclosed Order, please call Doug Smith at (530) 542-5453 or me at (530) 542-5412.

Patty Z. Kouyoumdjian

PATTY Z. KOUYOUMDJIAN
EXECUTIVE OFFICER

Enclosures: CAO R6V-2011-0005A3
May 9, 2013 Letter

cc: PG&E Hinkley Lyris List (and web posting)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

AMENDED CLEANUP AND ABATEMENT ORDER NO. R6V-2011-0005A3
WDID NO. 6B369107001
REQUIRING PACIFIC GAS AND ELECTRIC COMPANY
TO CLEAN UP AND ABATE WASTE DISCHARGES OF
TOTAL AND HEXAVALENT CHROMIUM TO THE
GROUNDWATERS OF THE MOJAVE HYDROLOGIC UNIT

San Bernardino County

The California Regional Water Quality Control Board, Lahontan Region (Water Board), finds:

1. The Pacific Gas and Electric Company (PG&E) owns and operates the Hinkley Compressor Station located southeast of the community of Hinkley in San Bernardino County.

2. On October 11, 2011, the Water Board issued Cleanup and Abatement Order R6V-2011-0005A1 (Order) to PG&E. The Order required, in part, that PG&E provide interim and whole house ("permanent") replacement water service to those served by domestic or community wells that are within the affected area and determined to be impacted by its discharge. PG&E has provided interim replacement water service in the form of bottled water delivered to residents in the affected area that are determined to be impacted by its discharge.

3. The Order requires that bottled water provided as the interim replacement water must meet primary and secondary drinking water standards. Because there is currently no drinking water standard specifically for hexavalent chromium, the Order required that interim replacement water not exceed the public health goal of 0.02 ug/L[1], or the final Maximum Contaminant Level (MCL), once that standard is adopted by the California Department of Public Health (CDPH).

4. In a letter dated February 7, 2013, to the Water Board, PG&E requested "that the order requirements for interim water replacement (bottled water) be satisfied by PG&E's provision of commercially available bottled drinking water." PG&E stated that the requirement that bottled water have non-detectable levels of hexavalent chromium is challenging to meet and creates unnecessary uncertainty and alarm in the community about the quality of bottled water service.

5. Water Code 13304(f) requires that replacement water be of comparable quality to that which it was provided by the well prior to the adverse effect to the water supply by the discharge. For the purposes of interim water supply, the average background concentration of hexavalent chromium is considered "comparable water quality." The

[1] Because this is below the reporting limit, for purposes of this standard, drinking water must test below the reporting limit of 0.06 ug.L due to the limitationof laboratory analysis to accurately detect lower levels of chromium.

average background concentration of hexavalent chromium is 1.2 µg/L, as established in Cleanup and Abatement Order No. R6V-2008-0002A1. The hexavalent chromium water quality requirement for the permanent, whole house replacement water supplyis unchanged.

6. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provision of the California Environmental Quality Act (CEQA) (Public Resources Code section 21000 et seq.), pursuant to California Code of Regulations (CCR), title 14, section 15321, subdivision (a)(2). In addition, CEQA includes a "common sense exemption" in CCR title 14, section 15061, subdivision (b)(3), which states that where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. It can be seen with substantial certainty that the issuance of this order, which amends Order R6V-2011-0005A1, would not have a significant effect on the environment.

IT IS HEREBY ORDERED, pursuant to Water Code section 13304 that Order No. R6V-2011-0005A1 is amended as follows:

CAO R6V-2011-0005A1, paragraph 1.b, fourth sentence reads:

"The report must include documentation to show that interim water supply meets state primary and secondary drinking water standards and hexavalent chromium levels of less than 0.02 µg/L[1] or the final MCL, once that standard has been adopted by CDPH."

[1] For the purposes of the 0.02 µg/L standard, drinking water must test below the reporting limit of 0.06 µg/L due to the limitation of laboratory analysis of low levels of chromium.

CAO R6V-2011-0005A1, Paragraph 1.b., fourth sentence is amended to read:

"The report must include documentation to show that interim water supply meets state primary and secondary drinking water standards and hexavalent chromium levels of up to 1.2 µg/L or the final MCL, once that standard has been adopted by CDPH."

Previous Orders

All other Orders in CAO R6V-2011-0005, CAO R6V-2011-0005A1, CAO R6V-2011-0005A2, and CAO R6V-2013-0001 remain in effect unless later modified by the Water Board, the Water Board's Executive Officer, or his/her designated representative.

Right to Petition: Any person aggrieved by this action of the Lahontan 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 this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, of 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.

Ordered by: Patty Z. Kouyoumdjian Dated: 02-18-14

PATTY Z. KOUYOUMDJIAN
EXECUTIVE OFFICER

May 9, 2013

Sheryl Bilbrey
Director, Remediation Program Office
Pacific Gas and Electric Company
3401 Crow Canyon Road
San Ramon, CA 94105-1814

Dear Ms. Bilbrey:

In letters dated January 10, and February 7, 2013, you made several requests on behalf of Pacific Gas and Electric Company (PG&E) for modifications of existing California Regional Water Quality Control Board, Lahontan Region (Water Board) Orders. Your first letter requested modifications to monitoring of the whole house replacement water (WHRW) ion exchange (IX) and under-sink reverse osmosis (RO) systems. These requests were reiterated in a letter of March 11, 2013, and supplemented with several additional requests, including increasing the minimum hexavalent chromium concentration from the IX effluent from 0.06 to 2 µg/L, and moving the compliance point from the effluent from each RO unit to the IX treated water. Your February 7 letter set out an additional four requests: 1) a 90-day extension of the deadlines for the WHRW program, in order to reexamine the options for providing water to eligible homes in Hinkley; 2) an ability for residents to decline the RO systems; 3) ability to meet requirements for interim replacement (bottled) water by providing commercially available bottled drinking water; and 4) re-evaluation of the need to expand the 1-mile buffer zone in the future.

After considering comments from the Community Advisory Committee (CAC), through its technical advisors at Project Navigator; four individual members of the public; and the Lahontan Regional Water Board's prosecution team, I have made the following determinations.

1. Requests of January 10 and March 11 for Changes to Monitoring of IX and RO Systems

Your January 10, 2013 letter requested two specific modifications to its permanent replacement water supply monitoring plan that is required under Order 2.c.8 of Cleanup and Abatement Order No. R6V-2011-0005A1 (referred to hereafter as the CAO): 1) monitor leachates from the IX resin on a batch basis, rather than at each home during start up, and 2) monitor each RO unit during start-up and then every six months

thereafter rather than the biweekly or as needed basis stated in its current plan.[1] PG&E in its March 11, 2013 letter reiterated its request #2, above, and additionally requested that the compliance point should be the IX treated water and not at each RO unit effluent.

In addition to reviewing the comments from the Water Board Prosecution Team and from other interested stakeholders, the Regional Board advisory team has reviewed Exhibit 1, Reverse Osmosis Investigation Report by Arcadis, enclosed in the March 11, 2013 letter. I am providing the following rulings on PG&E's requested modifications to its permanent replacement water supply monitoring program:

A. **I am denying the request for IX resin leachate monitoring at each property.** Although batch testing may provide useful information, batch testing is unable to collect data specific to each IX unit and, therefore, cannot be used to determine if each IX unit is working properly.

B. **I accept the proposal to monitor each RO unit at start-up then every six months thereafter.** The start-up testing is critical to ensure the RO unit is well-flushed and working properly. The reduced monitoring after start-up should be less inconvenient to each residence and provide assurance that each RO unit is working properly.

C. **For those households that decline installation of the RO unit, I am accepting the compliance point to be the water treated from the IX unit. However, if an RO unit is accepted by the residence, then PG&E must perform the required monitoring, and compliance will be at the outlet of each RO unit.** This is a reasonable solution to accommodate the individual household needs while still ensuring water quality compliance.

2. Request from February 7 for 90 Day Extension to Reexamine WHRW Options

You had requested a 90 day extension of all applicable deadlines contained in the WHRW Program in order to address community concerns, evaluate technologies analyzed in the June 2012 Feasibility Study, and incorporate lessons learned during WHRW Program startup and implementation. You propose to issue a Feasibility Study Addendum that will identify and address changes required for the WHRW program.

I am denying your request for a 90 day extension of all applicable deadlines contained in the WHRW Program, but I would be willing to accept your Addendum and continue discussions about effective ways to provide alternative drinking

[1] Two pages of text and a two-page table from PG&E's June 6, 2012 Replacement Water Feasibility Study contain all elements of PG&E's current monitoring plan (PDF copy enclosed for reference) for its permanent replacement water supply.

water supplies to the community. As a practical matter, 90 days has already passed since your initial request. I believe, however, that it is still important to re-examine the WHRW Program and incorporate lessons learned and feedback from the community. Moreover, I have already granted a five month extension for those properties that have not signed an access agreement in my April 18, 2013 letter.

3. Request from February 7 Letter to Allow Residents to Decline an RO Unit

With respect to your request for residents who have elected a WHRW system, which consists of an IX and under-sink RO unit, to be allowed to decline installation of the RO unit, **I have decided to grant this request conditioned on the provision that PG&E provide the resident(s) with clear information regarding how this decision may affect the quality of the water delivered inside their homes through the IX system alone.** It is important that residents understand that although hexavalent chromium should be removed by the IX system, other constituents found in their domestic well may not be removed without the operation of the RO unit.

4. Request from February 7 Letter that Provision of Interim Replacement Water be Satisfied with Commercially Available Bottled Water

You have requested that the CAO requirements for interim replacement water (bottled water) be satisfied by PG&E's provision of commercially available bottled drinking water, without the requirement of further testing to ensure that the bottled water is non-detect for hexavalent chromium. **This request is denied; however, I am willing to change the requirements for replacement water quality from non-detect for hexavalent chromium to 1.2 ppb, which is the average background of hexavalent chromium for the Hinkley Valley, established by the Water Board in Amended CAO R6V-2008-0002A1.** I believe that this change will meet the requirements of Water Code section 13304, which requires that the replacement water not only meet all applicable federal, state, and local drinking water standards, but that it also have a comparable quality to that pumped by the private well owner prior to the discharge of waste. Recognizing that there is no drinking water standard for hexavalent chromium, and that bottled water, which is regulated by the Food and Drug Administration (FDA), may have up to 100 ppb total chromium (see http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm203620.htm#EnsuringQualityandSafety), requiring bottled water to meet 1.2 ppb of hexavalent chromium would give the community replacement water of a comparable quality to that pumped by the well owner, in the absence of a more restrictive drinking water standard. Although I understand that the additional testing and warehousing of water provides additional and challenging order requirements, PG&E is currently meeting those requirements, and has established a monitoring program to ensure that the water they are providing does not have levels of hexavalent chromium that exceed what residents may naturally have in their wells.

5. Request from February 7 Letter to Re-evaluate the 1 mile buffer

Lastly, you are requesting approval from the Water Board to re-evaluate the need to expand the 1-mile buffer zone in the future. You have based this request on your assessment that the chromium plume is not continuing to migrate to the west. **At this time I will not change the 1-mile buffer, but I am willing to consider all relevant scientifically-based technical information to establish a buffer zone. As additional relevant data becomes available, PG&E should disseminate that information to stakeholders, including the Water Board and the CAC and its technical consultant, for subsequent review and analyses under a technical exchange meeting process**.

In closing, I would like to acknowledge the work that PG&E has done to meet the requirements of the Water Board's orders, including the Order to provide WHRW to all residences within one-mile up-gradient or cross-gradient of the plume whose wells have detections of hexavalent chromium. I believe that we are on our way to providing the community a safe, reliable, and convenient source of water for their homes. I do believe, however, that we still have a lot of work to do. I encourage PG&E to keep working to find ways to make this process convenient for the residents of Hinkley, and welcome additional suggestions that you or the community may have. Although the Water Board's jurisdiction is over water quality and related nuisance, we don't want solutions to the existing water quality problems to be blind to the effect that they have on the community at large, and encourage you to work with the community to find solutions that not only address water quality, but also help the community to remain whole.

Sincerely,

Patty Z. Kouyoumdjian

Patty Z. Kouyoumdjian
Executive Officer

Enclosures: January 10, 2013 PG&E Letter
February 7, 2013 PG&E Letter
March 11, 2013 PG&E Letter
April 18, 2013 Lahontan Water Board Letter

ecc: Jeffrey McCarthy, Remediation Site Manager –Hinkley, PG&E
Hinkley CAC Members
Craig Dishmon, Hinkley Resident
Lauri Kemper, Assistant Executive Officer, Lahontan Water Board

January 10, 2013

Ms. Patty Kouyoumdjian
Executive Officer
California Regional Water Control Board, Lahontan Region
2401 Lake Tahoe Blvd.
South Lake Tahoe, CA 96150

Re: Whole House Replacement Water (WHRW) Monitoring
Proposal to Amend Reverse Osmosis and Ion Exchange Leachate Monitoring

Dear Ms. Kouyoumdjian:

Pacific Gas and Electric Company (PG&E) has installed WHRW ion exchange (IX) and undersink reverse osmosis (RO) systems at two eligible properties and has been monitoring these systems according to the monitoring plan included in the June 2012 Replacement Water Supply Feasibility Study Update ("Feasibility Study"). Based on our experience to date, there are two changes to the monitoring plan we feel would be beneficial for the overall effectiveness of the program and to minimize the inconvenience to Hinkley residents. The proposed modifications are detailed below.

Ion Exchange Resin Leachates Monitoring

The monitoring plan includes sampling at specified locations for ion exchange resin leachate constituents during startup of the WHRW system. The objective of IX resin leachate monitoring is to ensure that the vendor's resin does not leach constituents in excess of State or Federal maximum contaminant levels (MCLs). The current monitoring plan requires testing for resin leachates at three different locations in the WHRW system during the system start-up. There is no requirement to perform subsequent resin leachate testing.

PG&E procures National Sanitation Foundation (NSF) certified IX resin in batches to fill multiple WHRW IX treatment vessels used throughout the program. Each resin shipment is accompanied by a vendor Certificate of Analysis that includes the batch identification number, resin capacity, moisture content, and resin integrity. Since resin leachates will be specific to each batch, PG&E proposes that leachates be monitored on a batch basis, rather than at each home during startup. PG&E will work with the resin supplier to establish protocols for collecting representative samples and performing laboratory analysis consistent with the leachate constituents identified in the Feasibility Study monitoring plan. The batch test results will be included in future quarterly WHRW Monitoring Reports required under CAO RGV-2011-0005A1, Paragraph 2.g.

The benefits associated with monitoring leachates on a batch basis include:

- Resin would be tested throughout the program life rather than only at system start-up. While start-up testing provides confidence that the resin does not contain leachates above MCLs, testing each batch would provide greater certainty that all the resin used in subsequent media replacements would also comply with water quality standards.

- Start-up and sampling of the WHRW systems and inconveniences to Hinkley residents would be significantly reduced. The current monitoring plan calls for obtaining IX resin leachate samples downstream of both IX vessels and at each under-sink RO unit in the home. Monitoring for resin leachates takes between one and two hours per location. With up to five RO units installed in the homes, leachate monitoring can add up to 5 hours to the start-up process in each home.

Under-sink RO Unit Monitoring

As representatives of PG&E discussed with the Water Board on December 18, 2012, monitoring of the internal RO units at each installed location has proven to be a significant inconvenience to Hinkley residents. PG&E has made every effort to accommodate the residents preferred schedule for sampling the undersink RO units, including sampling after-hours and on weekends. One resident has already requested that no further sampling of the RO units be conducted. The monitoring plan proposed in PG&E's Feasibility Study called for bi-weekly monitoring of hexavalent chromium, total chromium and parameters that exceed 90 percent of State and Federal MCLs/SMCLs for the first six months and then quarterly for the remainder of the program. Depending on the number of RO systems installed in each home and the water quality parameters that need to be monitored, the time to collect under-sink RO samples for each home may vary between 30 and 60 minutes per unit. Per the current monitoring plan, the sampling technicians could be spending between 1 to 3 hours inside the homes on bi-weekly basis for the first six months.

PG&E is proposing the following changes to the monitoring plan to reduce inconvenience to homeowners:

- Monitor each under-sink RO unit during start-up for hexavalent chromium, total chromium and other water quality constituents of concern (above 90 percent of State and Federal MCLs/SMCLs as described in the Monitoring Plan). Sampling during start-up will confirm that the units are operating in accordance with their State certification before they are turned over to the residents.
- Monitor the under-sink RO unit in the kitchen every six months for hexavalent chromium, total chromium and water quality constituents of concern (above 90 percent of State and Federal MCLs/SMCLs as described in the Monitoring Plan). At the time of sample collection, PG&E will also service all of the units, replacing necessary cartridges per the manufacturer recommendations in an effort to minimize further disturbances to Hinkley residents.

In addition to minimizing the inconvenience to residents, justification for streamlining under-sink RO monitoring includes:

- **Under-sink RO Systems are State Certified** – The under-sink RO systems are certified by the State of California. The certification tests the system's ability to treat water containing elevated concentrations of constituents commonly found in drinking water. One of the intents of the State certification program is to provide residents reasonable assurance that a water treatment device can perform as indicated without burdening the homeowner with regular sampling. As part of State requirements, systems must be equipped with shutdown capabilities after a set amount of water has been processed. The indicator light and shutdown measures allow delivery of water of consistent quality that meets the drinking water standards for which the unit was certified.

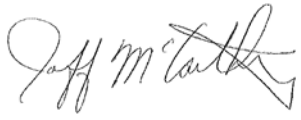
- **Servicing the Under-sink RO Units in the Future** – Based upon concerns expressed to date, PG&E is concerned frequent monitoring during the first six months may jeopardize the relationship between PG&E and the resident. As water is consumed from these units, they will require periodic maintenance in order to maintain State certification. As a proactive measure, PG&E wishes to maintain a relationship with residents so units can be serviced in the future to ensure they are continually performing in accordance with State requirements and manufacturer claims.

- **Consistent Water Quality of Under-sink RO Systems** – For the recent installations, the individual under-sink RO systems were sampled and monitored to demonstrate consistent performance of the RO systems. To date, all under-sink RO units have met State and Federal MCLs/SMCLs for respective constituents of concern. Monitoring of the installed systems has shown infrequent and inconsistent detections of low concentrations of hexavalent chromium above 0.06 µg/L. As reported to the Water Board, PG&E will continue to investigate the potential sources of hexavalent chromium utilizing various bench and full scale testing protocols at a PG&E owned, unoccupied residence and undertake appropriate measures to further reduce any detections.

PG&E would appreciate receiving the Water Board's approval of PG&E's proposal to modify the monitoring program for resin leachates and under-sink RO units by January 24, 2013 so that we can incorporate the changes in the next group of WHRW units scheduled for startup in late January 2013. Thank you for your consideration. Please do not hesitate to contact me at 760-253-7822 if you have any questions regarding this report, or if you need additional information.

I hereby certify that I have examined this report, and based on my examination and my inquiries of those individuals who assisted in the preparation of the report, I believe the report to be true, complete and accurate.

Sincerely,



Jeff McCarthy

Pacific Gas and Electric Company®

Sheryl Bilbrey
Director
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February 7, 2013

Patty Kouyoumdjian
Executive Officer
Lahontan Regional Water Quality Control Board
2501 Lake Tahoe Blvd
So. Lake Tahoe, CA 96150

Re: Formal Request for Modification of Replacement Water Orders

Dear Executive Officer Kouyoumdjian,

Pacific Gas and Electric Company (PG&E) takes its responsibility for chromium contamination in the Hinkley community seriously and remains committed to continuing our significant progress on the cleanup. Working cooperatively with the California Regional Water Quality Control Board, Lahontan Region (Regional Board), the Independent Review Panel (IRP) Manager and the community of Hinkley, PG&E has implemented significant interim remedial actions to clean-up the groundwater contamination resulting from PG&E's historical operations at the Hinkley Compressor Station while also addressing the community's concerns about their drinking water. PG&E's bottle water program, launched in November 2012, and its voluntary Whole House Replacement Water (WHRW) program, launched in April 2012, successfully decoupled issues related to the groundwater cleanup from the concerns regarding the drinking water. The purpose of this letter is to request a 90-day period for PG&E to conduct an evaluation of the current WHRW program to incorporate what we have heard from the community. This evaluation will afford us the opportunity to take another look at the technologies that were originally analyzed in the Feasibility Study (June 2012) and incorporate lessons learned during the implementation and startup process. We strongly believe that taking the time now to assess the WHRW program will allow us to meet our shared commitment of ensuring that the WHRW program continues to meet the needs of the community.

In community meetings which both PG&E and the Regional Board attended in 2011, we heard two main messages from the community. Many community members asked for replacement water for household uses; but we also heard others wanted the option of having PG&E purchase their property. In response, last April, PG&E launched an unprecedented program to voluntarily provide WHRW treatment systems or property purchase for any resident that lived within 1-mile of the hexavalent chromium plume that had any detection of hexavalent chromium. To date, over 300 eligible residents (or roughly half of the town of Hinkley) have

elected to participate in our program. Further, just this week we expanded our program based on data collected during the 4th quarter of 2012 as presented in the February 6, 2013 Quarterly Monitoring Report. The newly potentially eligible residents (as reported in Attachment 1) have been notified of their potential eligibility for WHRW treatment systems and those not already receiving it have been offered interim bottled water.

While our WHRW program successfully met its objective of addressing concerns of residents whose domestic wells may be impacted by contamination potentially attributable to PG&E's historic releases, we have also heard feedback from residents that some aspects of our program, in particular the frequency of the ion exchange/reverse osmosis systems sampling, maintenance and monitoring requirements, are too intrusive. These concerns were raised by residents during the Regional Board meeting on January 15th in Barstow. Further, when we originally studied the feasibility of providing a permanent replacement water supply that would meet the Public Health Goal of 0.02 parts per billion (ppb) we assumed that most eligible residents would elect the water treatment option over property purchase. That assumption has proven to be inaccurate. To date, less than 15% of eligible households have elected to receive the water treatment option. This is an important change from the original scope of the Feasibility Study when we assumed 300 residents as part of our analysis. Having fewer residents may change the outcome of the comparative analysis and recommendation on the best replacement water technology.

From community feedback and our experience in implementing the program, there are legitimate concerns that ongoing system analysis, monitoring, maintenance and testing of the treatment systems pose an unreasonable burden on residents. PG&E seeks to modify the program in order to ensure that eligible residents have acceptable and effective replacement water options that will provide reasonable assurance that the quality of the water they have available in their homes in Hinkley is as good, or better, than they might find in nearby communities. It is important to note that we understand that many Hinkley residents who elected to have PG&E purchase their property are planning to move to Barstow and Apple Valley, where low levels of hexavalent chromium are regularly detected in available drinking water sources.

Given all of the factors listed above, PG&E believes that this is the right time to thoughtfully re-examine our program and incorporate lessons learned and feedback from the community. Further, taking the time now will not put anyone at risk given that all eligible residents who have requested bottled water are receiving interim bottled water. We will continue to implement the existing program for all residents identified to date, including those newly identified based on the 4th quarter 2012 plume map. However, it would be prudent at this point to take time to allow the Regional Board and the community to consider the changed circumstances set out above and to allow all residents that have elected the whole house replacement water option (36 residents have elected this option to date) the opportunity to avail themselves of acceptable improvements to our program.

As such, PG&E is proposing the following modifications to our Whole House Replacement Water Program:

1) PG&E requests a 90-day extension of all applicable deadlines during which it will re-examine the whole house replacement water options originally considered in the Replacement Water Supply Feasibility Study revised June 2012 and will present the results and recommendations to the Board in a Feasibility Study Addendum. This addendum will include an evaluation of a range of additional replacement water options, including, but not limited to: a) finding a new source of water south of PG&E's Compressor Station and b) trucking in water from Golden State Water in Barstow. During this time, PG&E would contact residents that have already elected a WHRW system and inform them of the evaluation and time frame for a Feasibility Study Addendum. If upon hearing of the evaluation, residents want to wait to have their WHRW unit installed, PG&E respectfully requests relief from applicable implementation deadlines currently applicable to the WHRW Program in order to provide the Regional Board and the community time to consider these additional options. Proposed modifications to relevant ordering provisions to accomplish this are set for on Attachment 4.

2) As to those residents who have elected an Ion Exchange-Reverse Osmosis Unit and do not want to wait for the Feasibility Study Addendum, PG&E requests that residents be allowed to decline the Reverse Osmosis (RO) units, which are designed to improve taste and odor but do not treat hexavalent chromium. As noted above, many residents have objected to the intrusive nature of these units and required sampling and monitoring. At a minimum, PG&E requests that the Regional Board approve the proposed modifications to the Ion-Exchange Leachate and Reverse Osmosis monitoring programs requested on January 10, 2013 in order to improve the effectiveness of the current program and reduce the inconvenience experienced by residents to date.

3) PG&E requests that the order requirements for interim water replacement (bottled water) be satisfied by PG&E's provision of commercially available bottled drinking water. It has been PG&E's experience that providing bottled water from prominent nationwide commercial vendors of bottled water service is an effective way of providing high quality water to meet drinking water needs and allay any concerns about drinking water quality. It is unfortunate that the additional and challenging order requirements, such as the requirement that bottled water have non-detectable levels of hexavalent chromium, creates unnecessary uncertainty and alarm in the community about the quality of bottled water service, which is no different from the bottled water they can purchase off the shelf from their local grocer.

4) PG&E requests approval to re-evaluate the need to expand the 1-mile buffer zone in the future. When we proposed our voluntary program in early 2012, we opted to offer our programs to residents living within a mile of the groundwater plume until such time that we had sufficient hydrogeologic data to provide certainty on the plume boundary. By extending our replacement water programs well beyond the plume boundary, it was intended to create a buffer to permit evolving data and analysis to inform the remediation process. As we discussed in our Western Investigation Report and Technical Memorandum (Attachment 2), PG&E believes that we now have sufficient data to demonstrate that the plume is not continuing to migrate to the West (as further discussed in Attachment 3).

PG&E has achieved several technical milestones in the past year, including the ability to demonstrate plume capture at Thompson Road as reported to the Regional Board beginning in April 2012. We have also sought to enhance our community engagement efforts to allow more information sharing and collaboration between PG&E, the Regional Board, the Community Advisory Committee (CAC), the IRP Manager and the United States Geological Survey (USGS) through technical working meetings. These meetings allow for all parties to transparently share information, openly discuss issues and find mutually agreeable solutions to various technical challenges associated with the project. The recent meetings on the Revised Background Study Work Plan and the series of meetings on the Manganese issue are excellent examples of this process. PG&E understands that the all parties have agreed to the path forward on the Background Study; and as such, we look forward to receiving your approval of the Revised Background Study Work Plan which updates the February 2012 Background Study Work Plan. PG&E strongly believes that implementation of a revised, peer reviewed Background Study is a critical step to ensuring that major project decision-making is based on sound science.

We share the mutual goal of ensuring safe, reliable drinking water for the residents of Hinkley and easing concerns about the quality of the water in their homes. While we believe the program has been extremely successful, we also believe that now is the time to re-examine the program, taking into account all that we have learned and heard from the community. We are committed to continuing to implement a program that meets the needs of the community and assures that the water in their homes is of comparable quality to the water available in other residential areas in the State of California. PG&E is bringing this urgent matter to your attention and is requesting administrative action and relief. In order to provide PG&E the opportunity to modify the WHRW Program in response to community feedback, we respectfully request relief from the relevant ordering provisions in the Cleanup and Abatement Orders R6V-2011-0005 A1 and A2 as specified in Attachment 4. Through this modification request, we hope to resolve our concerns at the Regional Board level. If PG&E's request is not granted, PG&E will seek relief under California Water Code Section 13320.

We look forward to your response and appreciate your timely consideration of our request. Please contact me directly if you have any questions regarding this request.

Sincerely,

Sheryl Bilbrey

Sheryl Bilbrey
Director, Chromium Remediation

Pacific Gas and Electric Company

Jeff McCarthy, P.E.
Hinkley Site Manager

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March 11, 2013

Ms. Patty Kouyoumdjian
Executive Officer
California Regional Water Quality Control Board, Lahontan Region
2401 Lake Tahoe Blvd.
South Lake Tahoe, CA 96150

Subject: PG&E's Reverse Osmosis Investigation Report Under Ordering Paragraph 4 of Investigative Order No. R6V-2013-0001

Dear Ms. Kouyoumdjian,

Pacific Gas and Electric Company (PG&E) submits the following information pursuant to Ordering Paragraph 4 of Investigative Order No. R6V-2013-0001, issued January 11, 2013 (January 2013 Order) for the Hinkley Compressor Station. Ordering Paragraph 4 requires that PG&E submit a report within 60 days from the date of the Order, presenting results of investigations of the reverse osmosis (RO) system and household plumbing/fixtures at whole house replacement water (WHRW) treatment systems to "…evaluate potential sources of chromium that have been detected between the ion exchange (IX) and RO systems." As reported to the Water Board on December 18, 2012, some sporadic low level hexavalent chromium detections have been observed in water produced from the undersink RO units installed at two properties.

At the request of PG&E, ARCADIS implemented a systematic approach to investigate potential sources of hexavalent chromium at the WHRW treatment systems (Exhibit 1 – Reverse Osmosis Investigation Report). The potential sources of chromium were assessed via literature reviews, discussions with vendors and technical experts, desktop evaluations of laboratory data and WHRW system performance data, limited bench-scale testing, and full-scale assessments.

The investigation focused on four potential explanations for low-level hexavalent chromium detections in water produced from the undersink RO units:

- False positives resulting from laboratory analysis – *the results do not support this as a source of low-level detections.*
- Contribution from chemicals / materials used in the WHRW treatment system or household plumbing – *the results indicate this can occur and is likely broadly occurring in water systems throughout the U.S., especially at the low-level chromium levels applied at Hinkley.*

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- Oxidation of trivalent chromium to hexavalent chromium as a result of chlorine addition, aeration, and/or biological activity – *the results indicate this is not a likely source at Hinkley.*
- RO system not providing reliable polishing treatment to remove chromium introduced downstream the IX treated water to the low levels applied at Hinkley – *the results indicate that chromium containing components within the RO unit are a possible source of low-level hexavalent chromium at Hinkley. The RO units are functioning within expected performance parameters.*

The WHRW systems incorporate two best available technologies identified by the U.S. Environmental Protection Agency for chromium removal, IX and RO, and are operated according to manufacturer-recommended procedures. RO systems are performing as intended, meeting all primary and secondary drinking water standards for monitored constituents of concern. Results from the investigation indicate that equipment leaching can contribute enough chromium to inhibit routine achievement of the 0.06 µg/L target. This can occur despite use of NSF certified plumbing materials and process components.

As discussed in PG&E's letter to the Water Board dated January 10, 2013, monitoring of the internal RO units at the two installed locations has proven to be a significant inconvenience to the residents. One resident has already requested that no further sampling of the RO units be conducted. The monitoring plan proposed in PG&E's Feasibility Study called for bi-weekly monitoring of hexavalent chromium, total chromium, and parameters that exceed 90 percent of State and Federal MCLs/SMCLs for the first six months and then quarterly for the remainder of the program. Depending on the number of RO systems installed in each home and the water quality parameters that need to be monitored, the time to collect undersink RO samples for each home may vary between 30 and 60 minutes per unit. Thus, in accordance with the current monitoring plan, sampling technicians could spend between 1 to 3 hours inside the homes on bi-weekly basis for the first six months. The enclosed WHW Monitoring Resident Communication Log (Exhibit 2) which documents communications with residents relating to bi-weekly monitoring events for two WHRW systems, demonstrates the significant burden that bi-weekly in-home monitoring imposes on residents.

Based on these findings, PG&E recommends the following:

- The Water Board-mandated compliance level for the WHRW treatment systems should be reconsidered taking into account the multiple factors that contribute hexavalent chromium to drinking water in applications such as the Hinkley WHRW systems. NSF-approved chemicals typically applied at water treatment plants, and process and plumbing components used to treat and distribute potable water can add residual levels of hexavalent chromium to domestic water supplies under certain conditions. The NSF/ANSI 60 and 61 single product allowable concentration (SPAC) of 2 µg/L for

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hexavalent chromium provides a good reference point for a reasonable treated water hexavalent chromium concentration at all points beyond the immediate IX effluent orifice.

- The point of compliance for hexavalent chromium should be the IX treated water. The undersink RO units are designed to achieve primary and secondary drinking water standards without any ongoing active monitoring.
- To ensure that the undersink RO units are operating consistent with performance standards, and to reduce unnecessary inconvenience to homeowners, the monitoring program for the undersink RO units should be modified as follows:
    - Monitor each undersink RO unit during start-up for hexavalent chromium, total chromium, and other water quality constituents of concern (above 90 percent of State and Federal MCLs/SMCLs as described in the Monitoring Plan). Sampling during start-up will confirm that the units are operating in accordance with their State certification before they are turned over to the residents.
    - Monitor the undersink RO unit in the kitchen every six months for hexavalent chromium, total chromium and water quality constituents of concern (above 90 percent of State and Federal MCLs/SMCLs as described in the Monitoring Plan). At the time of sample collection, PG&E will also service all of the units, replacing necessary cartridges per the manufacturer recommendations in an effort to minimize further disturbances to Hinkley residents.

Further justification for streamlining undersink RO monitoring is provided in PG&E's letter to the Water Board dated January 10, 2013.

I hereby certify that I have examined this report, and based on my examination and my inquiries of those individuals who assisted in the preparation of the report, I believe the report to be true, complete and accurate.

Please do not hesitate to contact me if you have any questions regarding this report, or if you need additional information.

Sincerely,

Jeff McCarthy, P.E.

Enclosures:

Exhibit 1 - Reverse Osmosis Investigation Report
Exhibit 2 - WHW Monitoring Resident Communication Log

6.3 Contingency Plan for Meeting Standards and Replacing Supply

Currently, PG&E has been providing interim replacement water to impacted households, required as part of Ordering Paragraph 1. Additionally, PG&E continues its voluntary provision of bottled water to any resident who lives within 1 mile from the outermost boundary of the plume. During construction of any replacement water supply, properties with impacted wells will continue to receive interim replacement water. After the infrastructure has been constructed, tested, and commissioned, the replacement water supply should be tied into the household water supply.

Community water systems have their own safeguards and redundancies to ensure continued water service. Backup generators, wells, and treatment are standard and are required by Title 22 regulations for CWSs. Whole-house water treatment systems are more susceptible to temporary loss in water supply. Whole-house water treatment systems should be equipped with storage tanks to mitigate the potential for loss of water resulting from a well or treatment system failure.

The contingency plan for the evaluated alternatives is to haul water until the replacement water supply is back in service or a new replacement water supply is developed. Bottled water could also be provided on a short-term basis to meet domestic water needs until the replacement water is back in service.

6.4 Monitoring Plan

The monitoring plan of the whole house water treatment systems will include initial monitoring and routine monitoring. Initial monitoring will be performed to demonstrate that the whole house water treatment system is removing hexavalent chromium and nitrate to very low levels, meeting MCLs for contaminants found in the initial monitoring for drinking water and also to demonstrate that there are no leachates from the system/resin being introduced into the water. This will be compared against the modeling results. Monitoring of the lead and lag IX vessels and the undersink RO treated water for the parameters that exceed 90 percent of the MCLs will be performed on biweekly (once every two weeks) basis for the first six (6) months or until a correlation has been developed with modeling that includes at least one change out for both the IX and RO systems. Routine monitoring will commence and be performed to assess the IX resin and RO membrane replacement frequency after the first six (6) months or establishment of the IX resin and RO membrane replacement timelines. Routine monitoring of the lead and lag IX vessels will be performed at time periods

when the driver contaminant reaches 50 and 80 percent of the maximum bed volumes on the lead vessel.

The monitoring plan for the undersink RO will include routine process monitoring to demonstrate the removal of water quality parameters such as TDS, chloride, and sulfate to meet drinking water standards.

Table 9 summarizes the monitoring plan. The proposed water quality monitoring includes:

- Initial start-up monitoring of parameters identified by the California guidance for private domestic well owners (A Guide for Private Domestic Well Owners, April 2011; See Attachment E) and any potential releases from ion exchange resin.
- Biweekly monitoring (once every 2 weeks) of the lead and lag IX vessels and the undersink RO treated water for the first six (6) months for total chromium, hexavalent chromium, nitrate, and contaminants that exceed 90 percent of the MCLs. Monitoring frequency for these parameters can be reduced (monthly or quarterly) after 6 months of obtaining the initial performance data for each individual well (e.g., resin replacement timelines).
- Constituents in the raw water that are below their respective MCLs/SMCLs do not need to be sampled routinely.
- Additional performance monitoring of whole house IX and undersink RO treatment systems as shown in the following table. The undersink RO treatment performance will be monitored for parameters such as TDS (which is a good indicator of membrane performance). For well waters with TDS greater than 1,000 mg/L, the RO treated water TDS will be monitored on a monthly basis to confirm system performance. For well waters with TDS less than 1,000 mg/L, the RO treated water TDS will be monitored on a quarterly basis. The RO membrane will be replaced at the manufacturer recommended frequency or whenever monitoring shows the RO treated water TDS exceeds 500 mg/L (50 percent of the maximum SMCL range), whichever occurs earlier.

Table 9 Proposed Monitoring Plan for Whole House Ion Exchange and Undersink RO

Parameter	Units	Method	Method Reporting Limits (MRLs)	Groundwater (Raw)	Whole House Ion Exchange System Treated Water	Undersink RO Treated Water
Tier 1 Parameters						
Hexavalent Chromium	µg/L	EPA 218.6	0.02	Quarterly	Biweekly or As Needed[1]	Biweekly or As Needed[1]
Total Chromium	µg/L	EPA 200.8	0.1	Quarterly	Biweekly or As Needed[1]	Biweekly or As Needed[1]
pH	SU	EPA 150.1	0.1	Quarterly	Quarterly	Quarterly
Alkalinity	mg/L as $CaCO_3$	SM 2320 B	10	Annual	Annual	Annual
Bicarbonate	mg/L as $CaCO_3$	SM 2320 B	10	Initial Start-up	Initial Start-up	Initial Start-up
Total Dissolved Solids (TDS)	mg/L	SM 2540 D	10	Quarterly	Quarterly	Monthly for TDS >1,000 mg/L; Quarterly for TDS <1,000mg/L[2]
Total Organic Carbon	mg/L	5310C	0.25	Initial Start-up	Initial Start-up	No Sampling
Metals						
Arsenic	µg/L	EPA 200.8	2	Quarterly	Quarterly	Quarterly
Aluminum	µg/L	200.7	25	Initial Start-up	Initial Start-up	Initial Start-up
Barium	µg/L	200.8	2	Initial Start-up	Initial Start-up	Initial Start-up
Boron	µg/L	200.8	0.05	Initial Start-up	Initial Start-up	Initial Start-up
Calcium	µg/L	200.7	1	Initial Start-up	Initial Start-up	Initial Start-up
Chromium	µg/L	200.8	2	Initial Start-up	Initial Start-up	Initial Start-up
Copper	µg/L	200.8	2	Initial Start-up	Initial Start-up	Initial Start-up
Iron	µg/L	200.7	0.05	Initial Start-up	Initial Start-up	Initial Start-up
Lead	µg/L	200.8	0.5	Initial Start-up	Initial Start-up	Initial Start-up
Magnesium	µg/L	200.8	0.1	Initial Start-up	Initial Start-up	Initial Start-up
Manganese	µg/L	200.8	2	Initial Start-up	Initial Start-up	Initial Start-up
Nickel	µg/L	200.8	5	Initial Start-up	Initial Start-up	Initial Start-up
Potassium	µg/L	200.7	1	Initial Start-up	Initial Start-up	Initial Start-up
Silica, Total	µg/L	200.7	0.5	Initial Start-up	Initial Start-up	Initial Start-up
Sodium	µg/L	200.7	1	Initial Start-up	Initial Start-up	Initial Start-up
Strontium	µg/L	200.8	0.3	Initial Start-up	Initial Start-up	Initial Start-up
Uranium	µg/L	200.8	1	Initial Start-up	Initial Start-up	Initial Start-up
Zinc	µg/L	200.8	5	Initial Start-up	Initial Start-up	Initial Start-up
Anions						
Chloride	mg/L	EPA 300.0	1	Annual	Annual	Annual
Nitrate (as N)	mg/L	EPA 353.2	0.1	Quarterly	Biweekly or As Needed[1]	Biweekly or As Needed[1]
Sulfate	mg/L	EPA 300.0	0.5	Annual	Annual	Annual

Table 9 Proposed Monitoring Plan for Whole House Ion Exchange and Undersink RO

Parameter	Units	Method	Method Reporting Limits (MRLs)	Groundwater (Raw)	Whole House Ion Exchange System Treated Water	Undersink RO Treated Water
Biological Parameters						
Total w/ Ecoli Coliform	MPN/100 mL	Quanti-Tray/2000	1	Annual	Annual	Annual
Fecal Coliform	MPN/100 mL	SM 9222 D	1	Annual	Annual	Annual
Heterotrophic Plate Counts (HPCs)	MPN/mL	Simplate	2	Annual	Annual	Annual
Ion Exchange Resin Leachates3						
VOCs and TICs	µg/L	524.2		Initial Start-up	Initial Start-up	Initial Start-up
BNA SVOCs	µg/L	526 and 525.2Ext		Initial Start-up	Initial Start-up	Initial Start-up
Nitrosamines	µg/L	521		Initial Start-up	Initial Start-up	Initial Start-up
Aldehydes/ Ketones	µg/L	556		Initial Start-up	Initial Start-up	Initial Start-up
Radiologicals						
Gross Alpha	pCi/L	7110B	3	Annual	Annual	Annual
Gross Beta	pCi/L	7110B	4	Annual	Annual	Annual
Radium-226	pCi/L	7500 Ra B	1	Annual	Annual	Annual
Radium-228	pCi/L	7500 Ra D	1	Annual	Annual	Annual
Radon-222	pCi/L	7500 Rn B	25	Annual	Annual	Annual

Notes:
1. Biweekly monitoring (once every two (2) weeks) of the lead and lag IX vessels and the undersink RO treated water for the first six (6) months for total chromium, hexavalent chromium, nitrate, and contaminants that exceed 90 percent of the MCLs. Monitoring frequency for these parameters can be reduced (monthly or quarterly) after six (6) months of obtaining the initial performance data for each individual well (e.g., IX resin and RO membrane replacement timelines).
2. Based on initial sampling.
3. System and resin leachates will be monitored after flushing (at factory) and installation at homes.

April 18, 2013

Sheryl Bilbrey
Director, Remediation Program Office
Pacific Gas and Electric Company
3401 Crow Canyon Road
San Ramon, CA 94105-1814

Dear Ms. Bilbrey,

You have requested that the Regional Water Quality Control Board for the Lahontan Region (Regional Water Board) clarify statements, attributed to Regional Board staff at the February 28, 2013 Community Advisory Committee (CAC) meeting, alleging that PG&E could not require a written access agreement as a condition for the installation of a treatment system, and that even without an access agreement, PG&E would be required to install the Whole House Water (WHW) systems by August 13, 2013, or be in violation of the WHW Order.

In general, I agree that the requirement for an access agreement is a reasonable prerequisite to installing a WHW system, and is a common practice to set out expectations and protect the rights of both parties. The Regional Water Board stated previously, however, that it would not provide a form access agreement or mediate disputes between PG&E and the homeowners. In addition, I would caution PG&E that it cannot avoid its obligations under the WHW Order by including unreasonable, unfair or coercive terms in the access agreement. The shortened version of the access agreement appears reasonable and PG&E may require it to be signed before it installs a system without violating the WHW Order, as long as PG&E demonstrates a good faith effort to address any homeowner objections to the agreement. As I have indicated previously, it is important for you to document your efforts to meet your obligations under the WHW Order, including working out issues with the community.

You have also expressed concerns about your ability to meet the requirement to provide WHW systems by August 31, 2013 to those that have chosen to participate in the WHW program, rather than be bought out, when you have not yet received a signed access agreement from the homeowner. Based on that concern you have requested that you be allowed to extend the deadline for all properties that have not yet submitted a signed access agreement to six months from the date of receiving such an agreement. Although I sympathize with the dilemma PG&E has in meeting its requirements under the Board's WHW Order, I do not believe a six-month delay would be appropriate. **I would, however, be willing to grant a 5 month extension for those properties that by May 10, 2013 have not provided you a signed access agreement.** This would mean that for properties that have access agreements signed by May 10, you must still meet the August 31, 2013 deadline. For any properties that did not have a signed agreement by May 10, 2013, you would have 5 months from the date of the signed agreement to provide a WHW system.

You have also expressed concerns about what the deadline would be for providing WHW systems to those whose properties that were eligible for WHW systems by the August 31, 2013 deadline, but had chosen instead to be bought out, and then changed their minds, deciding instead to stay in Hinkley and be provided a WHW system. For those people, I would also believe that a 5 month extension should be sufficient, and I would expect that PG&E would do all that it could to provide a system earlier, if it is possible. Until a system is provided, you would be required to continue to provide that homeowner with bottled water.

I am sure that there are situations that I have not addressed here that we will be required to address in the future. Where disagreement, uncertainty or confusion exist, I encourage you to approach the community and attempt to work out those issues. The Regional Water Board does not want to be in the middle of disagreements between PG&E and the Hinkley community, especially when the issues of concern are outside of, or only tangential to, our authority, such as with the access agreements. Where the Regional Water Board must intervene, our focus will be to do what is fair to the community, reasonable to request of PG&E and is protective of public health and the environment.

Sincerely,

Patty Z. Kouyoumdjian
Executive Officer

cc: Hinkley CAC Members (electronic copy only)

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ENCLOSURE 3

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February 19, 2014

Sheryl Bilbrey
Director, Remediation Program Office
Pacific Gas and Electric Company
77 Beale Street, B28A
San Francisco, CA 94105

REQUEST TO REDUCE SAMPLING FREQUENCY OF MONITORING WELLS FOR THE PACIFIC GAS AND ELECTRIC (PG&E) COMPRESSOR STATION, HINKLEY, SAN BERNARDINO COUNTY (WDID 6B369107001)

Lahontan Water Board staff has reviewed PG&E's September 13, 2013 "Plan for Reducing Monitoring Well Sampling Frequency (Plan)." PG&E has identified 51 monitoring wells which meet criteria PG&E believes justify reducing monitoring frequency at certain well locations. PG&E proposes to modify the sampling frequency of these wells from four times per year to once per year. All of the proposed wells are associated with the site-wide quarterly Groundwater Monitoring Program and Desert View Dairy monitoring and reporting program (the current agricultural WDR); no wells associated with the in-situ remediation zone (IRZ) or other agricultural treatment units (ATU) monitoring programs are proposed for reduced sampling frequency. The 51 wells are shown on an figure in the Plan as being located in four areas: in the migrating plume in the north Hinkley Valley, between the northern and southern Hinkley Valley plumes, between the southern plume and Dixie Road, and on the southern Compressor Station property. PG&E's criteria for selecting these wells include:

- Being classified as 'monitoring' wells rather than injection, extraction, or other well types,
- Having a minimum of six quarters of sampling data,
- No recorded chromium concentration equal to or above 3.1 ppb for Cr(VI) and/or 3.2 ppb for Cr(T), and
- Not be specified for compliance sampling under a Board Order.

Upon careful consideration, the Water Board has decided not to make changes to the existing monitoring frequency requirements at this time for the proposed monitoring wells. Our review indicates that only about eight monitoring wells are considered to be in low risk locations to justify reducing the sampling frequency. These low risk locations include the southern compressor station property and the lower aquifer. Proposed monitoring wells located in the downgradient groundwater flow direction of the chromium plume are needed in the long term to verify plume boundaries and containment. In addition, proposed monitoring wells located between the southern

plume and Dixie Road are needed to monitor the eastern plume boundary. These latter wells will especially be needed upon implementation of future ATUs. So while some proposed wells are considered to be in low risk locations, we are reluctant to modify sampling frequency for wells on an individual basis at this time.

Given the large number of monitoring wells associated with the site, approximately 600, the Water Board is not opposed to a reduced frequency for low risk monitoring wells. For instance, monitoring wells located in the upgradient or cross gradient groundwater flow direction, with several years of data verifying stable or reduced chromium concentrations, and which are not needed for future remedial action monitoring would meet our criteria. We prefer to look at this issue from a holistic point-of-view for the entire site-wide groundwater monitoring program while considering all current and planned corrective actions. Water Board staff is willing to meet with PG&E and the community to discuss reduced sampling frequency of monitoring wells in the site-wide program that does not conflict with other monitoring requirements, such as for mitigation required as part of the Environmental Impact Report. We will consider the proposed monitoring wells believed to be low risk, mentioned above, as part of this process along with other locations.

Please contact me at (530) 542-5436 or lkemper@waterboards.ca.gov, or Lisa Dernbach at (530) 542-5424 or ldernbach@waterboards.ca.gov, to further discuss this matter.

LAURI KEMPER
ASSISTANT EXCUTIVE OFFICER

cc: PG&E Hinkley Lyris List (and web posting)

Filename: PG&E request to reduce monitr freq 12-13
File Under: WDID (VVL) 6B369107001

ENCLOSURE 4

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February 19, 2014

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COMMENTS ON MANGANESE INVESTIGATION TECHNICAL REPORT, PACIFIC GAS AND ELECTRIC (PG&E), HINKLEY COMPRESSOR STATION, SAN BERNARDINO COUNTY

This letter provides the Water Board comments to PG&E's Manganese Investigation Technical Report evaluating byproducts in groundwater from in-situ corrective actions. This letter also requests PG&E submit additional technical information and reports.

Background

Lahontan Water Board staff has reviewed PG&E's November 19, 2013 Manganese Investigation Technical Report (Report) in response to Investigative Order No. R6V-2013-0026. The Report, prepared by Arcadis, contains sampling data from 16 new and 149 existing monitoring wells in the In-situ Remediation Zone (IRZ) and initial results from two tracer tests. In-situ remediation is being conducted to convert hexavalent chromium dissolved in groundwater to solid trivalent chromium. Based upon the data collected, the Report states that manganese generated from IRZ activities moves in the direction of groundwater flow and attenuates with distance. The Report concludes that manganese is contained within the project area and is not migrating towards private domestic wells. Intermittent manganese detections in the deep zone of the upper aquifer and in nearby domestic wells is cited as being indicative of background conditions.

The Report also describes the start of tracer tests in July 2013 in the Source Area and the South Central Reinjection Area (SCRIA). In the first three months of monitoring, tracer was detected in only one monitoring well in the IRZ area. This information suggests there are no preferential groundwater flow cross gradient from the IRZ injection points. PG&E will continue to collect tracer test data and report that information in future IRZ quarterly monitoring reports.

The Report makes two recommendations: replace nine IRZ injection wells that are no longer effective and modify the sampling frequency of the IRZ monitoring program. Ethanol injection wells are clogged from biofouling which is limiting the amount of chromium remediation in the Source Area. The Report recommends replacing the injection wells with new wells over a period of 12 to 15 months. Since data in the

Report verify that manganese has not migrated out of the project area, the Report states a reduced sampling frequency from quarterly to annual for certain monitoring wells (137 out of 245) is warranted. Lastly, Appendix A2 discusses the manganese extraction system and concludes manganese in groundwater is being effectively contained from further migration.

COMMENTS

Manganese

The Water Board agrees with the Report's preliminary conclusion that manganese concentrations at and greater than 390 parts per billion[1] (ppb) are contained within the project boundaries described in the Notice of Applicability dated July 7, 2010. Manganese is detected in monitoring wells in three areas: Source Area, Central Area, and SCRIA. The largest manganese plume is concentrated mostly in the shallow zone of the upper aquifer in the Central Area and extends approximately 2,200 feet to the northwest. Monitoring well data along with preliminary tracer test data do not indicate that manganese concentrations above 390 ppb have migrated from the project area or cross gradient to groundwater flow.

The Water Board however is not completely convinced that intermittent manganese detections in the deeper zone of the upper aquifer reflect background conditions. Rather, some manganese detections could be from IRZ reactions that have been pulled downward into the deeper zone of the upper aquifer by pumping from nearby water supply wells. For instance, manganese detected up to 100 ppb in MW-177D, located on the western property line of the compressor station, may be influenced by the combined pumping of domestic wells 02-02A and 02-02B, located within 1,000 feet. Furthermore, manganese detected at 80 ppb in MW-17D, located near the southern compressor station property line, could be influenced by pumping from multiple nearby compressor station water supply wells (but not shown on figures) that are screened in the upper aquifer. The results of the tracer tests should shed more light on whether nearby water supply wells are causing manganese detections in directions contrary to the groundwater flow direction.

Furthermore, manganese created from IRZ activities potentially threatens other water supply wells. Manganese concentrations up to 310 ppb were detected in monitoring wells MW-155D, SA-MW-16S, and SA-MW-27S, all located near the western chromium plume boundary. Such concentrations could signify past migration towards nearby water supply wells along Mountain View Road. Manganese above the drinking water standard of 50 ppb poses a threat to water supplies from domestic wells 34-38 and 34-50. However, some domestic wells that previously detected manganese levels are no longer in use. Domestic well 35-04, located within 1,600 feet of a monitoring well having manganese detection, is now an inactive well and no longer in use. Once again, the results of the tracer tests should help in the evaluation of groundwater movement.

[1] The manganese criteria of 390 ppb in Board Order R6V-2008-0014 is the baseline concentration (not background) in groundwater following in-situ pilot testing.

Tracer Tests

The Water Board agrees that the three months of tracer data collected is limited and not complete enough to make any conclusions at this time. Therefore, the Water Board will review the results of the completed tracer test anticipated in summer or fall 2014. In the meantime, quarterly IRZ monitoring reports required by Investigative Order No. R6V-2013-0026 shall describe tracer detections during that quarterly sampling, how the detections compare to past quarters, and provide interpretation of the results.

The Water Board however is also interested in the detection of fluorescein dye in groundwater prior to the start of the July 2013 tracer tests. While the Report mentions the detection of fluorescein dye in one monitoring well (4.96 ppb in SC-MW-32S) before the start of tracer testing, it failed to mention fluorescein detection in a second monitoring well. Table 6 shows that 13.5 ppb fluorescein was also detected in monitoring well SA-SM-10S on June 19, 2013. The Report attributes the detection of fluorescein in baseline sampling to historic fluorescein injections at the site. Yet, no details of those historic injections were provided. The Water Board understood from past technical reports that fluorescent dyes dilute with time and had disappeared from groundwater. Therefore, we need additional information and more details about "historic fluorescein injections" conducted at the site to explain the two detections seen in baseline sampling.

Other Byproducts

While the Report does not discuss byproducts other than manganese, the Fourth Quarter 2013 In-situ Remediation Monitoring Report does. The Monitoring Report states that arsenic was detected above the criteria of 13 ppb in just one monitoring well within the IRZ project area during quarterly sampling. Similarly, the Monitoring Report states that iron was detected above the criteria of 471 ppb in two monitoring wells within the IRZ project area during quarterly sampling. Byproducts exceeding their respective criteria were not found outside the project area. This information indicates that arsenic and iron are not a migration risk or potential health hazard for nearby domestic wells.

COMMENTS ON RECOMMENDATIONS

1. Replacing Injection Wells

Appendix A2 in the Report discusses the replacement of nine IRZ injection wells in the Source Area that are no longer effective due to biofouling. A schedule shows a timeline of approximately 12 to 15 months to complete the design, installation, and pipeline construction. The Water Board concurs with replacement of the proposed injection wells to improve efficiency or return efficiency to original conditions of chromium remediation. We consider this to be a maintenance action within the permitted project area under Board Order R6V-2008-0014.

Water Board staff has also determined the amount of and distance of chromium remediation from IRZ activities that has occurred to date is less than had been predicted in models submitted in the past. For example, monitoring data from the Fourth Quarter 2013 Groundwater Monitoring Report shows that chromium concentrations have significantly increased in Source Area monitoring well SA-MW-05D from 4,300 ppb to

7,300 ppb hexavalent chromium. This monitoring well is located near one of the injection wells to be replaced. Based on recent data from SA-MW-05D and other locations and modified operations of the IRZ activities, we are requiring that PG&E provide updated information to the 2010 Feasibility Study and Addenda that predicted site-wide chromium cleanup to less than 50 ppb within 6 years. Updated information may include a revised/updated groundwater model run or other technical justification to support a current prediction for chromium cleanup. Estimates should include dates to obtain site-wide chromium cleanup to below 50 ppb, and cleanup to below 10 ppb.

Furthermore, Water Board staff requests that additional injection wells (expanded IRZ activities), besides the nine that are proposed, be installed to improve remediation in areas not adequately addressed by existing IRZ actions. For instance, chromium concentrations greater than 100 ppb are not being remediated in the southwest area of the shallow zone in the Source Area. Chromium concentrations greater than 1,000 ppb in the deep zone of the SCRIA reflect only limited remediation. Therefore, PG&E should evaluate and develop a plan to add injection wells in the Source Area either west of SA-SM-07S or SA-SM-08S to address this deficiency. New or replacement injection wells are also needed near SC-IW-24, -25, -26 and at closer distances between injection wells than currently exist in the SCRIA. Since these areas are within the permitted project area of Board Order R6V-2008-0014 (General Permit) and on compressor station property, no new board orders will be required for implementation of these recommendations.

In the Report, PG&E proposed injection well replacement within 15 months. We question the length of time scheduled to obtain biological clearances since the location of activities is within areas previously disturbed. Additionally, the five month time for design seems excessive since existing injection well systems are in operation. However, since we are requesting additional injection wells be constructed, we will accept the PG&E schedule. Therefore, the Water Board will expect the project consisting of proposed and additional injection wells to be completed and in operation by **May 15, 2015**. This deadline may be proposed in a new cleanup and abatement order anticipated to be issued in late 2014, along with a deadline for a project completion technical report.

2. Reduced Monitoring Program

The Water Board has reviewed PG&E's request to reduce the monitoring frequency of wells in the IRZ project area. We believe that certain wells within the interior of the IRZ area can be reduced in frequency, so long as they are not near areas where injection wells will be replaced. Yet, we do not believe it is prudent to reduce the sampling frequency for monitoring wells along the southern, western, and northern chromium and manganese plume boundaries, at least until the tracer tests are completed and the results do not indicate chromium or byproduct migration. The table enclosed to this letter shows the revised monitoring program for the IRZ project area that Water Board staff will propose to the Water Board Executive Officer in an amended Monitoring and Reporting Program (MRP), (anticipated in April 2014). Until the amended MRP is issued, PG&E is required to continue the current monitoring program in place.

REQUESTS FOR ADDITIONAL INFORMATION

Cleanup and Abatement Order R6V-2008-0002, amended, requires PG&E to continue implementing full-scale in-situ corrective actions in the Source and Central Areas of the plume to remediate elevated chromium concentrations in groundwater.

In conjunction with Cleanup and Abatement Order R6V-2008-0002, amended, and Investigative Order R6V-2013-0026, submit the following additional information to the Water Board:

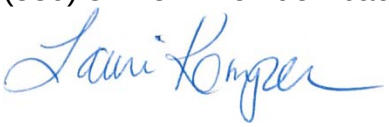
1. Continued quarterly IRZ monitoring reports that describe tracer detections during that quarterly sampling, how the detections compare to past quarters, and provide interpretation of the results.

2. In the First Quarter 2014 IRZ Monitoring Report **due by April 15, 2014**, discuss past data and the history of fluorescein dye injections in the Source Area. The discussion shall provide an explanation for pre-July 2013 fluorescein detections in SC-MW-32S and SA-SM-10S. The report shall also describe and/or estimate the fate and transport of this historic fluorescein from the likely injection point. Provide sampling results for monitoring wells located to the north and northwest (downgradient flow direction) of SC-MW-32S and SA-SM-10S.

3. **On June 1, 2014** and **December 1, 2014**, submit status reports on the replacement and additonal new IRZ injection wells in the Source Area and SCRIA as discussed above in this letter. The reports shall describe in detail all tasks completed, on-going, and planned for the project. The reports shall use site maps showing plume boundaries of chromium concentrations of 3.1 ppb, 10 ppb, 50 ppb, and 500 ppb Cr6/CrT, existing monitoring wells, and planned monitoring wells. The June 1, 2014 report shall contain a narrative on improvements to current maintenance activities for injection well rehabilitation. This narrative shall describe the method and manner of maintenance actions, frequency of maintenance actions, character (constituents and volume) of waste water from injection wells, fate of waste water, and how these actions are an improvement from past maintenance actions.

4. **By July 1, 2014,** describe the results from a 2014 updated groundwater model run evaluating cleanup effectiveness. The model results shall provide an updated estimate for site-wide chromium cleanup time to achieve less than 50 ppb, and the time to achieve less than 10 ppb based upon the chromium cleanup projects permitted to date and including those anticipated to be permitted over the next 18 months. Water Board staff will evaluate this information when developing interim cleanup requirements to be proposed in a draft cleanup and abatement order later this year. Without updated modeling information and estimated cleanup times, the Water Board would have to rely on the timeframes given in the 2010 Feasibility Study and addenda for setting deadlines concerning interim chromium cleanup goals.

If you should have any questions about this request, please contact me at (530) 542-5436 or Lauri.Kemper@waterboards.ca.gov or Lisa Dernbach at (530) 542-5424 or ldernbach@waterboards.ca.gov.



Lauri Kemper, P.E.
Assistant Executive Officer

Enclosure: Revised Monitoring Program Table

cc: PG&E Hinkley Lyris List (and web posting)
PG&E Technical Mail List
Danielle Starring, PG&E
Kevin Sullivan, PG&E
Tom Wilson, PG&E

LSD/adw/T: PG&E Mn invest resp and request
File Under: WDID (VVL) 6B369107001

TABLE 1

IRZ AREA MONITORING PROGRAM

PACIFIC GAS AND ELECTRIC COMPANY HINKLEY COMPRESSOR STATION

Sentry Monitoring Network (Quarterly)	Dose Response Wells (Quarterly)	Performance Monitoring Wells (Semiannually)	Performance Monitoring Wells (Annually)	Removed from Program
CA-MW-301	CA-MW-101D	CA-MW-101D	CA-MW-109S	CA-MW-101
CA-MW-312D	CA-MW-107D	CA-MW-102D	CA-MW-201	CA-MW-102S
CA-MW-313	CA-MW-108D	CA-MW-103D	CA-MW-202	CA-MW-103
CA-MW-412S	CA-MW-109D	CA-MW-104D	CA-MW-203	CA-MW-106S
CA-MW-412D		CA-MW-104S	CA-MW-204S	CA-MW-107S
CA-MW-501S	PMW-03	CA-MW-105	CA-MW-305	
CA-MW-501D	PMW-05	CA-MW-105D	CA-MW-306S	
CA-MW-506S		CA-MW-106D	CA-MW-307S	
CA-MW-510D	SA-SM-01S	CA-MW-108S	CA-MW-307D	
CA-MW-511	SA-SM-01D	CA-MW-110	CA-MW-308	
CA-MW-601	SA-SM-02S	CA-MW-204D	CA-MW-309	
CA-MW-602	SA-SM-08D	CA-MW-302S	CA-MW-311	
CA-MW-603		CA-MW-302D	CA-MW-314	
		CA-MW-303S	CA-MW-315S	
MW-03A		CA-MW-303D	CA-MW-316	
MW-11B		CA-MW-304	CA-MW-317S	
MW-17		CA-MW-306D	CA-MW-402D	
MW-20		CA-MW-310S	CA-MW-403S	
MW-36		CA-MW-310D	CA-MW-403D	
MW-38B		CA-MW-315D	CA-MW-404D	
MW-39D		CA-MW-317D	CA-MW-405S	
MW-67A		CA-MW-401	CA-MW-407	
MW-67B		CA-MW-402S	CA-MW-409S	
MW-73S		CA-MW-404S	CA-MW-411D	
MW-73D		CA-MW-405D	CA-MW-503D	
MW-74		CA-MW-406	CA-MW-508S	
MW-75S		CA-MW-408	CA-MW-509	
MW-75D		CA-MW-409D	CA-MW-510S	
MW-78S		CA-MW-410		
MW-155S		CA-MW-411S	MW-01	
MW-155D		CA-MW-502	MW-06	
MW-177D		CA-MW-503S	MW-11A	
MW-178S		CA-MW-504	MW-12B	
MW-178D		CA-MW-505	MW-13	
MW-179D		CA-MW-506D	MW-16	
MW-180RS		CA-MW-507		
MW-180RD		CA-MW-508D	PMW-06	
MW-182S				
MW-182D		MW-04	PT2-MW-08	
MW-183S		MW-14A		
MW-183D		MW-14S	SA-MW-02D	
		MW-17D	SA-MW-03S	
PMW-05		MW-18	SA-MW-03D	
PT1-MW-04		MW-38A	SA-MW-05S	
PT2-MW-10		MW-39	SA-MW-09D	
		MW-46	SA-MW-13D	
SA-MW-01S		MW-61	SA-MW-15S	

TABLE 1

SA-MW-02S		MW-78D	SA-MW-21S	
SA-MW-05D		MW-177S	SA-MW-22S	
SA-MW-06S		MW-179S	SA-MW-22D	
SA-MW-07S		MW-181S		
SA-MW-07D		MW-181D	SA-SM-01D	
SA-MW-08D			SA-SM-02D	
SA-MW-09S		PMW-02	SA-SM-03S	
SA-MW-10D		PMW-04	SA-SM-03D	
SA-MW-11S			SA-SM-04S	
SA-MW-12S		PT1-MW-01	SA-SM-05S	
SA-MW-13S		PT2-MW-09	SA-SM-06D	
SA-MW-16S		PT2-MW-11	SA-SM-07S	
SA-MW-16D			SA-SM-07D	
SA-MW-17S		SA-MW-01D	SA-SM-08S	
SA-MW-18S		SA-MW-04S	SA-SM-09D	
SA-MW-20D		SA-MW-04D	SA-SM-10S	
SA-MW-25S		SA-MW-06D	SA-SM-10D	
SA-MW-25D		SA-MW-08S	SA-SM-11S	
SA-MW-26S		SA-MW-10S		
SA-MW-26D		SA-MW-11D	SC-MW-17	
SA-MW-27S		SA-MW-12D	SC-MW-21D	
SA-MW-27D		SA-MW-14S	SC-MW-22S	
SA-MW-28D		SA-MW-14D	SC-MW-22D	
		SA-MW-15D	SC-MW-23S	
SA-SM-02S		SA-MW-17D	SC-MW-23D	
SA-SM-08D		SA-MW-18D	SC-MW-26S	
		SA-MW-20S	SC-MW-32S	
SC-MW-01S		SA-MW-21D	SC-MW-38S	
SC-MW-01D		SA-MW-24S		
SC-MW-02S		SA-MW-24D	X-11	
SC-MW-02D			X-15	
SC-MW-03S		SA-SM-06S	X-16	
SC-MW-03D		SA-SM-09S		
SC-MW-04S		SA-SM-11D		
SC-MW-04D				
SC-MW-05D		SC-MW-05S		
SC-MW-06S		SC-MW-07D		
SC-MW-06D		SC-MW-08S		
SC-MW-07S		SC-MW-08D		
SC-MW-09D		SC-MW-09S		
SC-MW-10S		SC-MW-14S		
SC-MW-10D		SC-MW-15S		
SC-MW-11S		SC-MW-16S		
SC-MW-11D		SC-MW-17D		
SC-MW-12S		SC-MW-21S		
SC-MW-12D		SC-MW-32D		
SC-MW-13S		SC-MW-38D		
SC-MW-13D				
SC-MW-14D		X-10		
SC-MW-15D		X-12		
SC-MW-16D		X-17		
SC-MW-26D				
X-13				

ENCLOSURE 5

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February 25, 2014

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COMMENTS ON ACTION PLAN FOR AREA WEST OF THE NORTHWEST FRESHWATER INJECTION SYSTEM, PACIFIC GAS AND ELECTRIC (PG&E), HINKLEY COMPRESSOR STATION, SAN BERNARDINO COUNTY (CLEANUP AND ABATEMENT ORDER NO. R6V-2008-0002-A4)

This letter provides the Lahontan Regional Water Quality Control Board (Water Board) comments to PG&E's Implementation of Action Plan West of the Northwest Freshwater Injection System (Action Plan), dated January 10, 2014. The Action Plan was submitted to comply with directives in Board Order No. R6V-2013-0087 for implementing corrective actions west of the Northwest Freshwater Injection System (NFIS). In addition, this letter requires PG&E to submit technical information and a status report for implementing additional corrective actions.

Background

Water Board staff has reviewed PG&E's January 17, 2014 Action Plan, prepared by Arcadis. The Action Plan summarizes initial corrective actions implemented west of the NFIS for reducing chromium concentrations in groundwater. Water sampling was conducted on the agricultural well 27-03 at the former Heifer Ranch (Ranch). Results show chromium concentrations ranging from 1.6 ppb to 2.0 ppb Cr6/CrT, which are slightly less than chromium concentrations when the well operated for the active ranch. Various pumping tests were completed in December 2013 to evaluate hydrogeologic properties of the shallow aquifer. The pumping tests at well 27-03 revealed that detectable drawdown was measured out to the NFIS, approximately 1,500 feet to the east, in the deep zone of the upper aquifer during pumping rates of 11 and 31 gallons per minute (gpm). A total of 188,000 gallons of water from the pumping test was stored onsite in Baker containers. Stored water from the pumping tests was discharged to the ground at the Ranch following confirmation water samples showed chromium concentrations less than 3.1 ppb Cr6 and 3.2 ppb CrT.

To reduce chromium concentrations in groundwater, the Action Plan discusses two projects: a short-term one to be implemented during the first half of 2014 and a longer-term one, if needed, to be implemented during the second half of 2014. For the short-term project, the Action Plan recommends pumping water from a new extraction well to be installed near MW-153. Extracted water will either be used for dust control at PG&E off-site projects or on the Ranch property or applied to ground at the Ranch. If chromium concentrations in stored water exceed 3.1 ppb Cr6 and 3.2 ppb CrT, the water would be treated using an ion exchange modular unit prior to discharge. For the longer-term project, the Action Plan discusses piping extracted water east and applying it to existing, new or expanded agricultural treatment units. Lastly, the Action Plan states PG&E is moving forward with installing two new injection wells within the NFIS to improve the freshwater barrier.

Comments

The Fourth Quarter 2013 Groundwater Monitoring Report shows that chromium concentrations increased from 2.9 ppb to 7.6 ppb Cr6 in monitoring well MW-153, located just west of well 27-03 and close to Hinkley Road. This information confirms the Water Board's position in Board Order No. R6V-2013-0087 for the need to reduce chromium concentrations in the western area and prevent potential impact to nearby domestic wells.

Maps in Figures 1-1, 4-1, 4-2, and 4-3 show the chromium plume lines drawn from the NFIS to MW-153, towards Hinkley Road. However, the geologic cross section shown in Figure 5-1 shows chromium plume lines that are inconsistent with the other figures in the Action Plan. Water Board staff does not concur with the site conceptual model displayed in Figure 5-1, which shows the chromium plume in the western area drawn as isolated (not connected) circles at each monitoring well cluster and none at well 27-03. As stated in previous Water Board letters, PG&E has not demonstrated conclusively that chromium detected in the west is not from background conditions instead of from the plume on the east side of the NFIS. We therefore believe that the two separated chromium plumes drawn west of the NFIS need to be drawn as one continuous plume from monitoring well MW-169S2 and MW-121D to MW-153. Water samples showing chromium less than 3.1 ppb Cr6 and 3.2 ppb CrT at well 27-03 likely represents the diluted chromium plume due to pumping from the long-screen agricultural well drilled 40 feet into bedrock. Since water samples at well 27-03 are not from a monitoring well, that point should be ignored when drawing chromium plume boundaries in future technical reports.

Action Plan Recommendations

As was discussed at our February 21, 2014 meeting in South Lake Tahoe, the Water Board concurs with the Action Plan short-term recommendation to extract water from the western area during the first half of 2014 and either dispose to land at the Ranch or use for dust control off site. During first quarter 2014, these activities will account for approximately 9,000 gallons per day (gpd) or 6 gpm and during second quarter 2014 will increase up to possibly 17,000 gpd, or 12 gpm. If chromium concentrations exceed 3.1 ppb Cr6 or 3.2 ppb CrT, water will be treated using ion exchange before being applied to land or used for dust control.

From reading the Action Plan, it appeared to the Water Board that PG&E was proposing to implement the remedial action in first half 2014 by pumping from well 27-03 and installing a new extraction well if remedial actions were necessary in the second half of 2014. However, at our February 21, 2014 meeting, PG&E clarified that it is prepared to immediately install the new extraction well for remedial actions during the first half of 2014 and not use well 27-03. This proposal is acceptable to the Water Board with the comment that the new extraction well be located closer to well 27-03, which is nearer to the center of the chromium plume in the western area and where the upper aquifer is thicker compared to that where MW-153 is located. PG&E stated at the February 21, 2014 meeting that this change in location is acceptable. Furthermore, the Water Board recommends that pumping at the new extraction well be at a rate of no more than 11 gpm in the shallow zone so as to not potentially act on chromium on the east side of the NFIS.

If reduced chromium concentrations to background levels are not achieved in the western area by June 30, 2014, PG&E will need to implement one of the longer-term actions discussed in the Action Plan. Doing so should be effective enough to adequately protect nearby domestic wells.

Reporting

PG&E shall fully discuss and describe all corrective actions implemented in the western area to reduce chromium concentrations in groundwater.

1. As required in Board Order No. R6V-2013-0087, corrective actions implemented in the western area shall be fully discussed and described in quarterly monitoring reports for the NFIS and In-situ Remediation Zone (IRZ). Water samples for verifying chromium concentrations shall be collected prior to disposal to land for every Baker tank capacity of 20,000 gallons when the average daily pumping rate is 6 gpm or less. When the average daily pumping rate is greater than 6 gpm, water samples shall be collected for every 40,000 gallons. The location and volume of water disposal must also be described and shown on maps. Maps must depict chromium plume boundaries out to 3.1 ppb, 10 ppb, 50 ppb, and 1,000 ppb Cr6/CrT, based upon monitoring well data.

2. If chromium concentrations in western monitoring wells continue to exceed 3.1 ppb Cr6/3.2 ppb CrT through June 30, 2014, PG&E must submit a status report by **July 25, 2014** for implementing long-term continuous corrective actions. The status report shall describe in detail all tasks completed, ongoing, and planned for the project. All site maps in the report must draw the chromium plume boundaries out to 3.1 ppb, 10 ppb, 50 ppb, and 1,000 ppb Cr6/CrT, based upon monitoring well data.

If you should have any questions about this conditional approval of the Action Plan or the required technical report, please contact Lisa Dernbach at (530) 542-5424 or ldernbach@waterboards.ca.gov.

Lauri Kemper

LAURI KEMPER
ASSISTANT EXECUTIVE OFFICER

cc: PG&E Hinkley Lyris List (and web posting)
PG&E Technical Mail List
Kevin Sullivan, PG&E

LSD/adw/T: PG&E Hinkley PG&E 13267 Cr invest comments 2-14
To be filed: WDID (VVL) 6B369107001

ENCLOSURE 6

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February 26, 2014

Sheryl Bilbrey
Director, Remediation Program Office
Pacific Gas and Electric Company
77 Beale Street, B28A
San Francisco, CA 94105
S4BD@pge.com

CONDITIONAL ACCEPTANCE OF NORTHERN AREAS INVESTIGATION PROPOSAL, PACIFIC GAS AND ELECTRIC HINKLEY COMPRESSOR STATION, SAN BERNARDINO COUNTY (CLEANUP AND ABATEMENT ORDER NO. R6V-2008-0002-A4)

This letter provides the Water Board's comments on and conditional acceptance of Pacific Gas and Electric's (PG&E) Northern Areas Investigation Proposal (Proposal), dated January 17, 2014, which was updated on February 25 with new maps that provide overlays of the plume map over the proposed sampling locations, and which removed the generalized groundwater flow arrows. The Proposal was submitted to comply with directives in Cleanup and Abatement Order (CAO) No. R6V-2008-0002-A4 to fully define the extent of the chromium plume in the upper groundwater aquifer.

Summary of Proposal

The Proposal identifies areas for additional chromium investigation in the north Hinkley Valley and the Harper Dry Lake Valley (also called Water Valley), based upon the Water Board's December 12, 2013 letter. Figure 2 in the Proposal shows six areas north of Thompson Road targeted for groundwater sampling. The Proposal states that monitoring wells may be installed as part of the investigation to better define chromium plume boundaries in groundwater. PG&E will attempt to contact private property owners to gain access to properties for conducting groundwater investigations. If requests for access to properties are denied or not responded to, and no reasonable alternate properties exist, PG&E may request assistance by the Water Board in gaining access to properties. To expedite investigation north of Grasshopper Road (also called May Road on maps) in the Harper Dry Lake Valley, the Proposal recommends collecting samples from active domestic wells instead of installing monitoring wells. Sampling of active domestic wells north of Grasshopper Road will be conducted during first and second quarters 2014, pending property owner approval.

The Proposal also states that during the proposed investigation, additional information will be collected as part of the United States Geological Survey (USGS) Background Study. For example, during drilling activities, samples of saturated and unsaturated sediment and rock will be collected, along with groundwater. All samples and collection will be coordinated with the USGS.

Lastly, the Proposal recommends installing reverse osmosis systems in residences with active domestic wells in the Harper Dry Lake Valley (as shown in Figure 1). This recommendation is being made for residents who are not eligible for PG&E's Whole House Replacement Program. After obtaining access and permission from resident owners, PG&E indicates that it can install reverse osmosis systems within four to six weeks.

Comments

High levels of chromium have been reported in a new monitoring well in the Harper Dry Lake Valley. The Fourth Quarter 2013 Groundwater Monitoring Report shows that 125 ppb Cr6 was detected in MW-193S3 in October 2013 and 143 ppb Cr6 was detected in the re-sample collected in November 2013. Previously, up to 150 ppb Cr6 was detected in the same well during September 2013. MW-193S3 is located on Hinkley Road, approximately one-quarter mile north of the Roy Road intersection. The Fourth Quarter 2013 Monitoring Report states that these detections are anomalous.

The high detections of chromium in MW-193S3 are of concern to the Water Board. First, they underscore the need to further investigate the groundwater conditions to the east and west for defining the lateral boundaries of chromium in groundwater. This should be achieved by groundwater sampling proposed in Investigation Areas Nos. 2 and 3 in the Proposal. Thus, we encourage completing these investigations as soon as possible. And second, if high chromium levels begin migrating to locations north or northwest, in the downgradient groundwater flow direction, they would threaten seven domestic and agricultural water supply wells in the Sunset Road area (also called Halsted Road on maps). The proposed reverse osmosis systems will protect the water supply of the residences from further spread of elevated chromium concentrations, but prompt completion of the investigations is necessary to minimize the potential spread of elevated chromium concentrations in groundwater.

If high chromium detections in MW-193S3 are indeed anomalous, we would expect them to decrease with time and not migrate. However, if increasing chromium concentrations are detected in downgradient monitoring wells during future monitoring events, it may warrant localized and immediate remedial actions to protect receptors. For the time being, PG&E should continue quarterly sampling of all monitoring wells in the Harper Dry Lake Valley and to report to the Water Board increasing chromium detections as they become known.

Conditions of Acceptance

The Water Board accepts the Proposal in its entirety provided PG&E adheres to the following conditions:

1. Install proposed monitoring wells wherever access has been granted by the property owner or by San Bernardino County on rights-of-way in proposed investigation areas south of Grasshopper Road.

2. When access to properties for chromium investigation is not provided by property owners, propose an alternate investigation area to the Water Board. If no alternate parcels are available, such as in Area 5, provide documentation of denial including for County right-of-way. Water Board staff is willing to provide assistance in gaining access to private properties where property owners have previously denied access and no reasonable alternative groundwater sampling locations exist.

3. Perform the sampling of all active domestic wells in the eastern area of the Harper Dry Lake Valley, as shown in Figure 1, in conformance with sampling and monitoring requirements in Cleanup and Abatement Orders R6V-2011-0005, amended, and R6V-2008-0002, amended, and subsequent investigative orders for chromium plume boundary delineation. Continue sampling active domestic wells each quarter after the proposed investigation is completed.

4. Within 60 calendar days of the date of this notice, provide a status report to the Water Board on the following items:

    a. The progress for obtaining access to private properties north of Grasshopper Road to sample active domestic wells and install reverse osmosis systems. Cite the well numbers where access has been provided, if applicable, and when well sampling is planned.

    b. The progress for obtaining access to private properties for the six investigation areas south of Grasshopper Road for installing monitoring wells. Cite the properties where access has been provided, if applicable, and where access is in progress, or has been denied.

    c. When access to properties for chromium investigation is not provided by property owners or San Bernardino County for right-of-way, provide supporting documentation and an alternate investigation area, if feasible.

    d. Map of proposed monitoring well locations. Follow the chromium plume map specification listed in CAO R6V-2008-0002-A4 and further clarified in our December 12, 2013 letter, including showing the extent of chromium plume boundaries drawn out to 3.1 ppb, 10 ppb, 50 ppb, and 1,000 ppb Cr6/CrT.

    e. A schedule for installing and sampling monitoring wells.

5. Within 10 calendar days of receiving validated laboratory reports, submit information to the Water Board, identifying any increasing chromium detections in monitoring or domestic wells to the north or northwest of MW-193S3 during any sampling event or re-sampling event. Increasing concentrations is defined for the purposes of this letter as being 30 percent or greater compared to the previous quarter.

6. Starting with the first quarter 2014, when active domestic wells are sampled north of Grasshopper Road, the well location and sample results shall be included on chromium plume maps and chromium plume boundaries shall be drawn as dashed lines out to 3.1 ppb, 10 ppb, 50 ppb, and 1,000 ppb Cr6/CrT.

The Water Board eagerly anticipates PG&E commencing the proposed work. Thank you for your cooperation and we look forward to the results. If you have any questions about this letter, please contact Lisa Dernbach at either ldernbach@waterboards.ca.gov or (530) 542-5424.

Patty Z. Kouyoumdjian

PATTY Z. KOUYOUMDJIAN
EXECUTIVE OFFICER

ecc: PG&E Hinkley Lyris List (and web posting)
Danielle Starring, PG&E
Kevin Sullivan, PG&E
Tom Wilson, PG&E

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ENCLOSURE 7

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AGENDA ITEM #5

Status Report:
Activities Concerning Chromium Contamination, PG&E Hinkley Compressor Station
March 12, 2014

Lauri Kemper, PE
Assistant Executive Officer

Outline

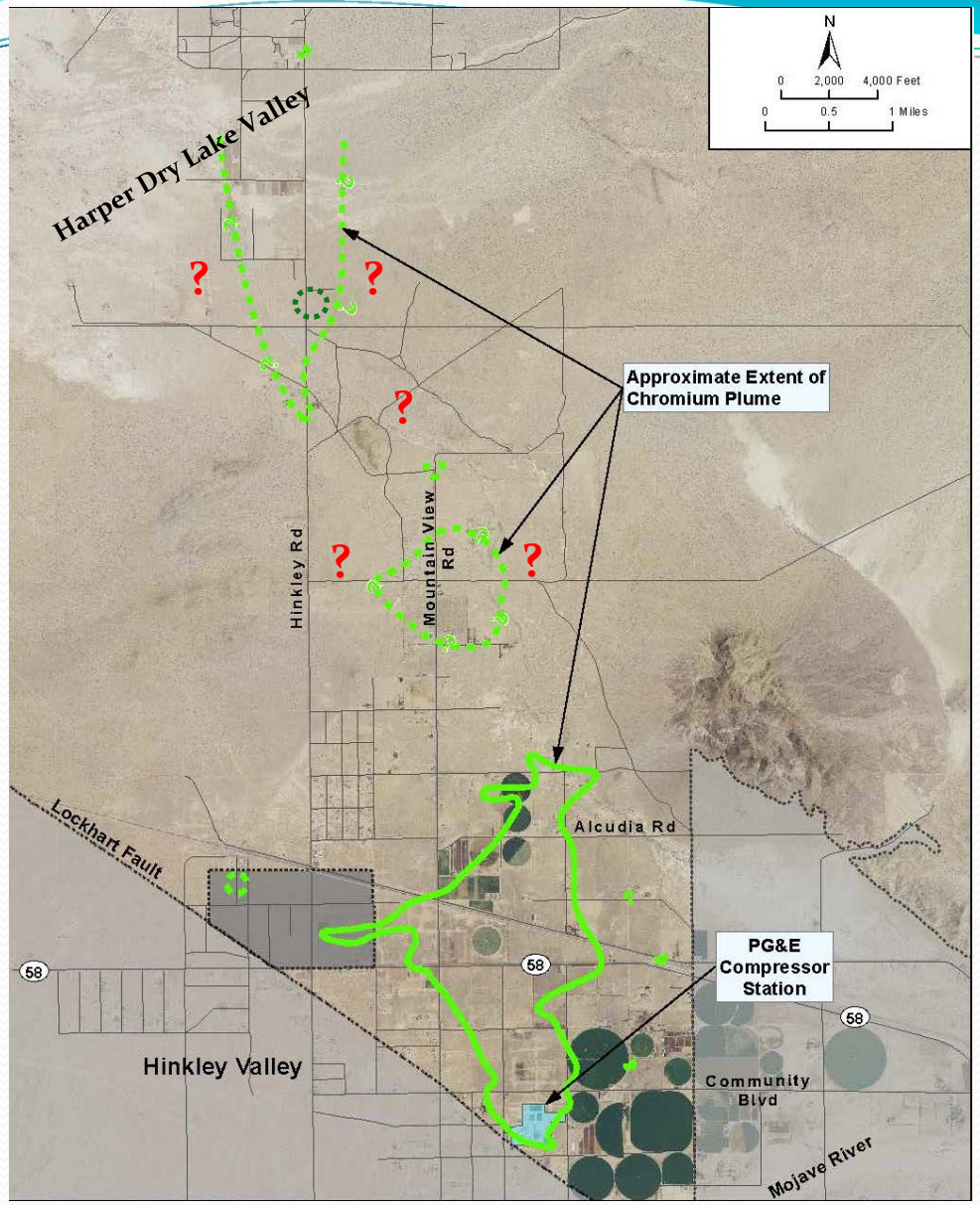
1. Chromium plume status
   - Workplan for investigation
2. Request to reduce sampling frequency
3. Action Plan for western area
4. Manganese investigation results
5. Interim water program
6. Whole house replacement water
   - Fate of program when Cr6 MCL set
7. Next actions

Chromium Plume Extent
4th Quarter 2013

CAO R6V-2008-0002A4 (issued on Jan. 6, 2013):

Current chromium plume facts (Upper Aquifer):

- 8+ miles long
- 2+ miles wide
- Undefined boundaries:
  - Northern Hinkley Valley
  - Harper Lake Dry Valley



Plume Extent for 4th Quarter 2013

? = plume not defined

Proposed Chromium Investigation

PG&E's Jan. 17 2014 workplan:

- Install monitoring wells in six investigation areas
- Sample all active domestic wells in eastern area of Harper Dry Lake Valley
  - 15 to 20 domestic wells
  - offer reverse osmosis systems to be operated by resident
- Conditional acceptance letter on February 26, 2014

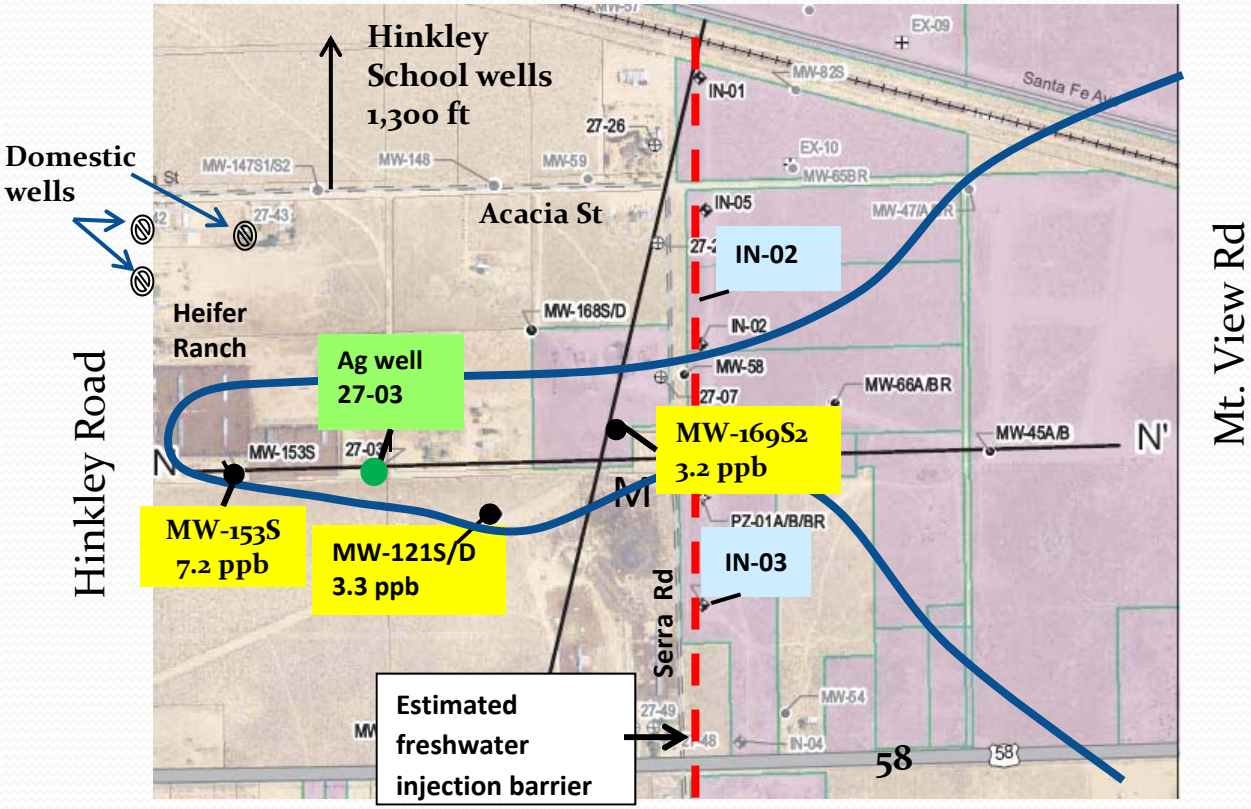
Request to Reduce Monitoring Frequency (CAO R6V-2008-0002)

PG&E requested to reduce the sampling frequency from quarterly to annually at 51 monitoring wells.

Executive Officer 's February 19, 2014 letter denied the request stating that only 8 wells considered to be in low risk locations to justify reducing the sampling frequency.

Instead, Board staff will meet with PG&E and the community to discuss reduced sampling frequency of monitoring wells in low risk locations for entire site-wide program.

Chromium in Western Area



13267 Investigative Order for Western Area (Oct. 30, 2013)

PG&E's Jan. 10 2014 report:

- Pumping test results at Heifer Ranch agricultural well
- Proposed installing new extraction well in upper aquifer:
  - If Cr less than background values, water is used for dust control at other projects,
  - If Cr more than background values, water is treated first by ion exchange, before used for dust control,
  - If Cr more than background values through June 30, pipe water to expanded ag operations at Ranch field on Hwy 58.
- Install two replacement injection wells for Northwest Freshwater Injection System
- Water Board comment letter dated Feb. 25.

Manganese Investigation

PG&E's Nov. 20, 2013 report:

1. Mn plume detected only within defined project area
2. Two tracer tests still on-going to evaluate threats to domestic wells
3. Proposed replacing clogged ethanol injection wells having reduced efficiency
4. Requested reduced sampling frequency of monitoring wells

Water Board's Feb. 19 comments:

1. Concurred with Mn plume delineation
2. Report tracer test info in quarterly IRZ monitoring reports
3. Accepted proposal to replace clogged injection wells and added more injection wells.
4. Reduced sampling frequency in **166** monitoring wells to either semiannually or annually.
5. Required updated model results by July 1 for achieving Cr cleanup to 50 ppb and 10 ppb.

Request to Modify CAO R6V-2011-0005 (Alternate Water Supply)

Water Board received request from PG&E to increase the limit of Cr6 in bottled water, set at 0.06 ppb, due to occasional exceedance by bottle water companies (max detection at 0.28 ppb).

Executive Officer issued May 9, 2013 letter that changed the Cr6 limit in bottle water served to Hinkley residents to **1.2 ppb**, the average background value for the Hinkley Valley.

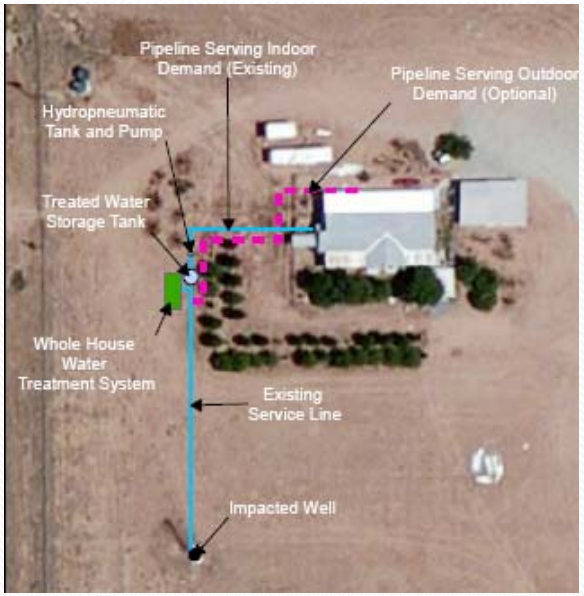
Executive Officer issued amended CAO on February 18, 2014 formalizing the change in Cr6 limit.

CAO R6V-2011-0005A2
(Whole House Water Order)

Amended CAO issued in June 2012.

Of **368** eligible residences in Order:

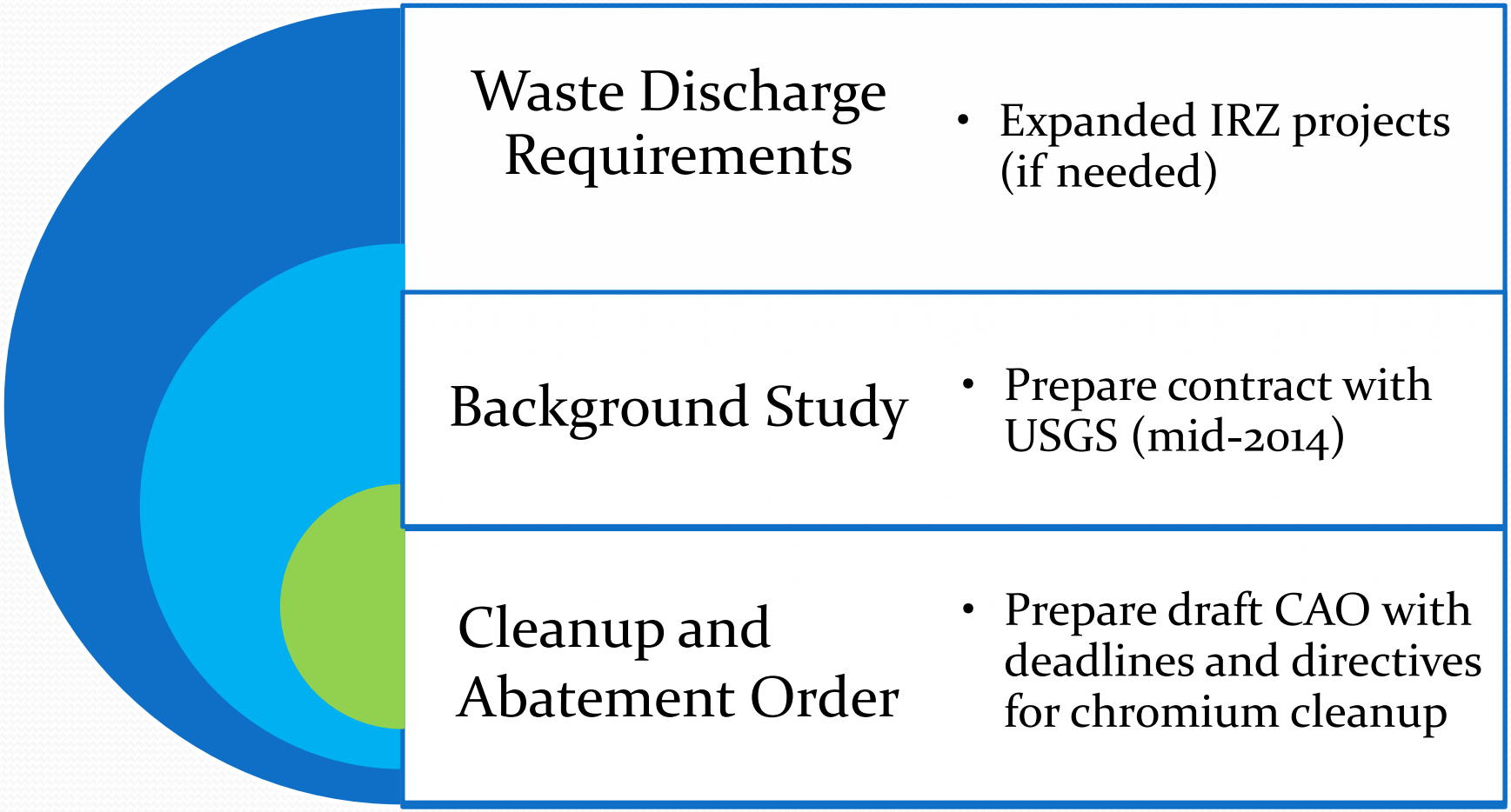
- 32 residences have operating water filter systems
- 3 residents requested water filter system be removed (Caltrans buyout)
- 263 chose property purchase
  - 82 property owners in negotiation (completion date unknown)
- 70+ property owners opted out of the entire program.



Fate of WHW Program

- Cr6 MCL may be issued at 10 ppb on **Apr. 15** by Dept. of Public Health
- If not at 10 ppb, Cr6 may be issued on **June 15** at another number.
- Water Board staff in discussions with PG&E about fate of WHW systems at 32 residences:
  - PG&E issued letter to each resident with info on utility and maintenance costs.
  - Residents will have option to keep entire system, just reverse osmosis, or none of system.
  - No date set for transfer or removal of systems

Next Actions



Questions?

ENCLOSURE 8

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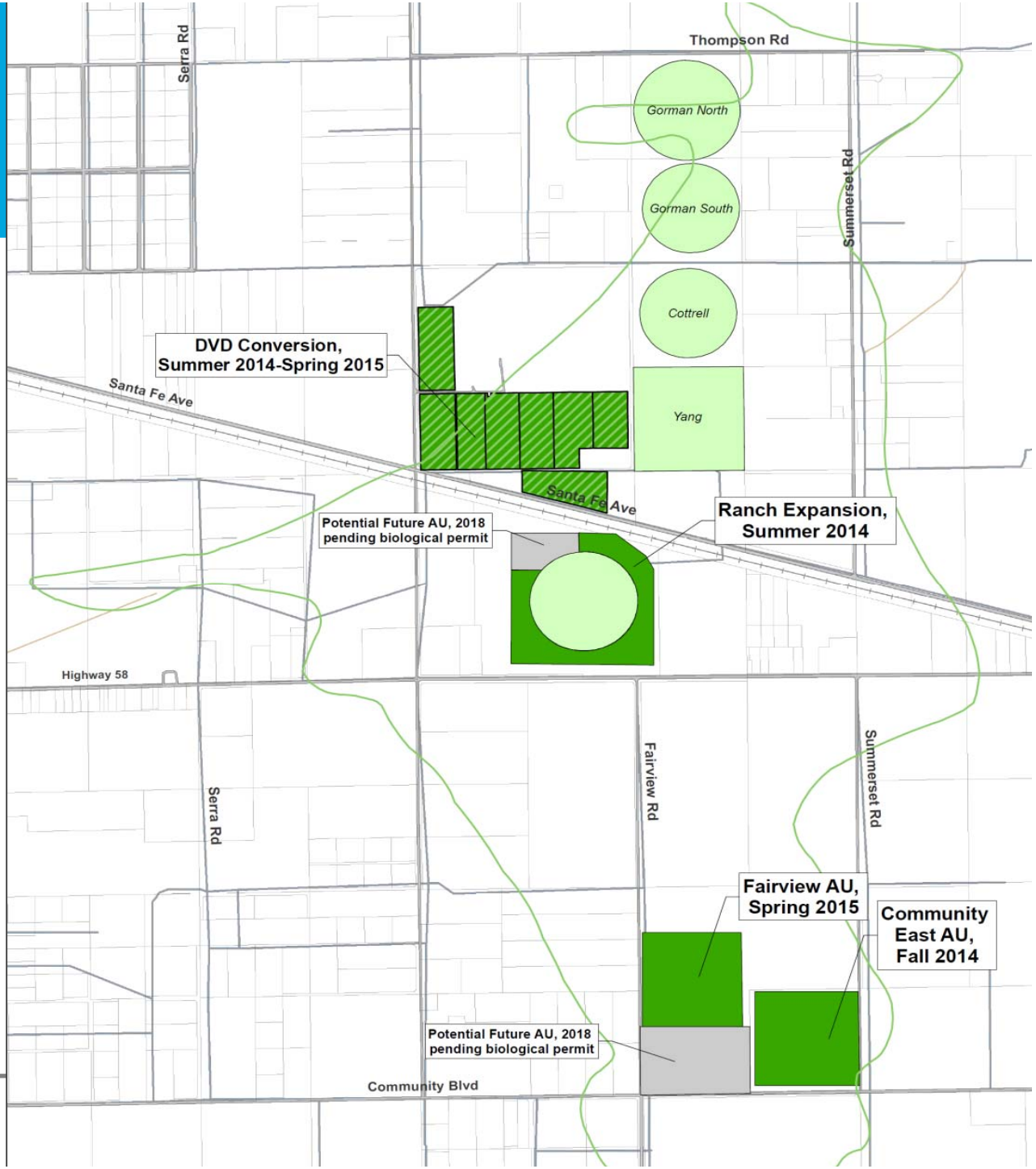
PG&E Update
Lahontan RWQCB
March 2014 Meeting
Barstow, CA

Planned AU Expansion 2014-2015



Legend

- Existing Agricultural Units
- Areas for Potential Future Agricultural Units
- Approximate outline of Cr(VI) and Cr(T) in the Upper Aquifer exceeding 3.1 and 3.2 micrograms per liter, respectively, Third Quarter 2013
- Dashed where inferred

Drag-drip Agricultural Treatment

- **February 2014 - Treatment system site visit with MWA**

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ENCLOSURE 9

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PG&E's HINKLEY GROUNDWATER REMEDIATION PROJECT

IRP Manager Remarks at the Lahontan Regional Water Quality Control Board Meeting. Insights into Community Perspectives.

March 12, 2014
Barstow, California

Prepared for

Lahontan Regional Water Quality Control Board

Prepared by

Dr. Ian A. Webster
Project Navigator, Ltd.
iwebster@projectnavigator.com

www. ProjectNavigator.com | www.SafetyMoment.org

The Hinkley Community's Thirst for Project Information Remains High.

PROJECT NAVIGATOR, LTD.

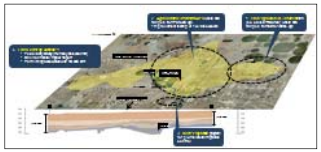
Almost 200 Residents Attended an IRP Manager-CAC Hosted BBQ in mid-2013.

Hinkley School Monthly Community Meetings Attract Up to 80 People.

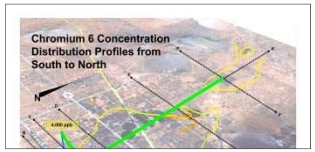
Two Years of IRP Manager Assistance. Every Facet of the Project Discussed.

Supplementary Environmental Program

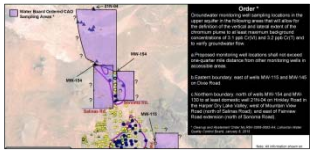
Engineering Interim Actions



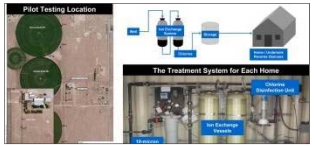
Plume Monitoring



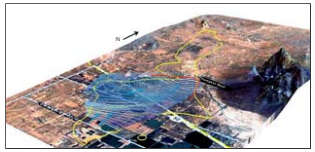
Plume Investigation



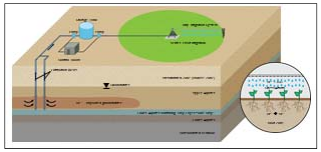
Whole House Replacement Water



Thompson Road Hydraulic Controls



Agricultural Treatment

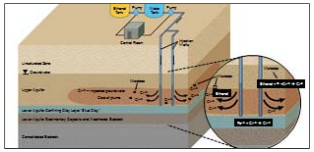


Cr6 to Cr3 Reaction

Cr-6 ➡ Cr-3

- Hexavalent Chromium (Cr-6) Conversion to Trivalent Chromium (Cr-3) Occurs in the Presence of a Reducing Agent or Reducing Environment
- The Reaction is Very Fast, Compared to Times Associated with Groundwater Movement
- That is, "Establish the Reducing Subsurface Environment, and the Cr-6 Will be Immediately Knocked Out of Solution."

<u>*In Situ*</u> Reactive Zone (IRZ)

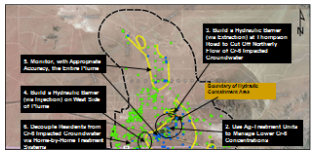


Cr6 MCL Adoption by State

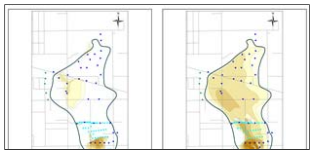
Manganese Investigation Program

Project Schedules

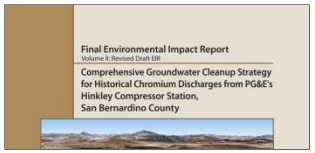
PG&E's Cr6 Clean Up Strategy



Final Remedy Components



Environmental Impact Report (EIR)

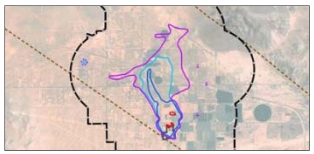


Plume Monitoring in the Far North

Permitting the Agricultural Treatment Units (ATUs)

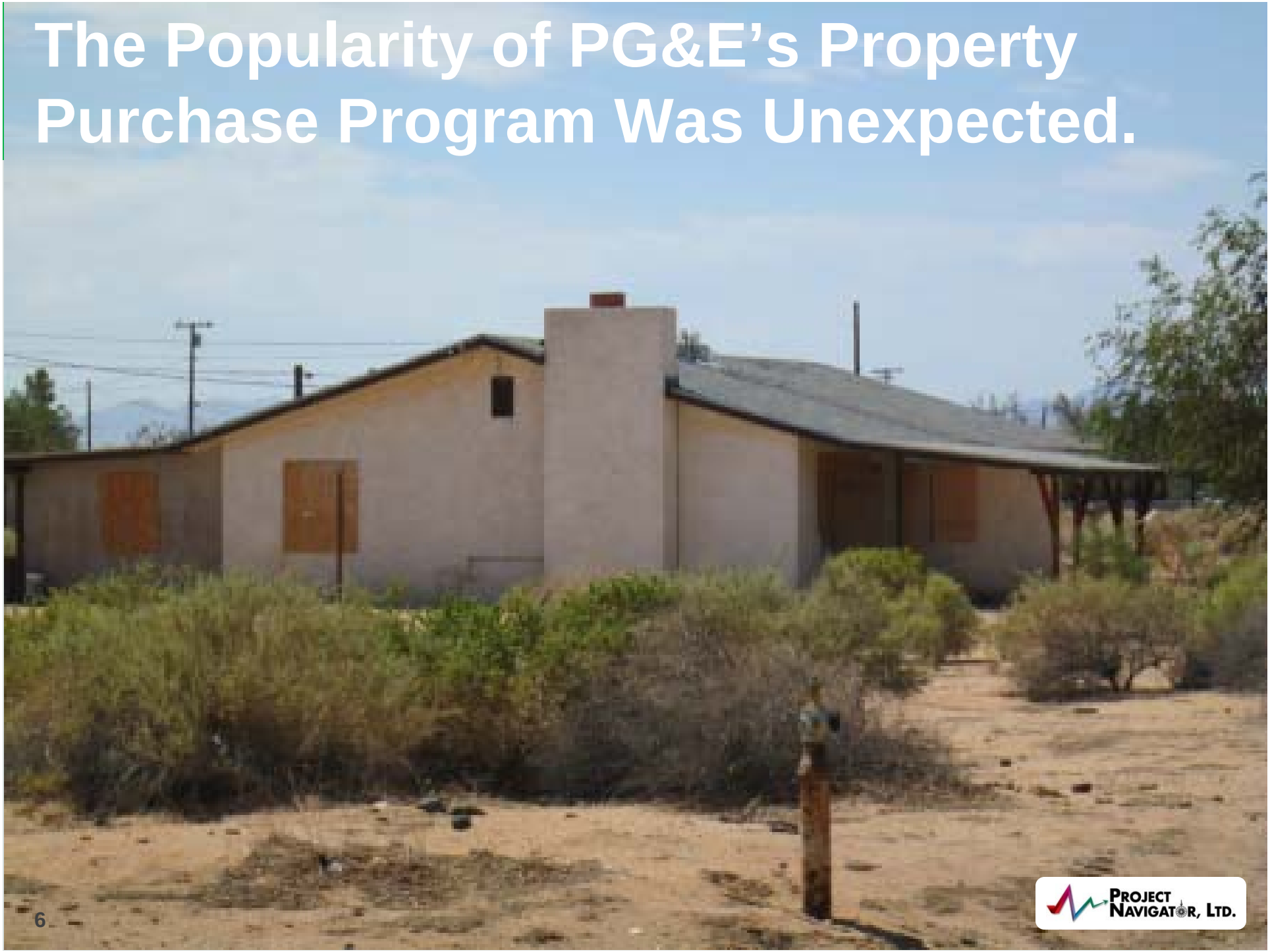
Background Study (BGS) by USGS

Quarterly Plume Maps



Northwest Freshwater Injection (NWFI) System

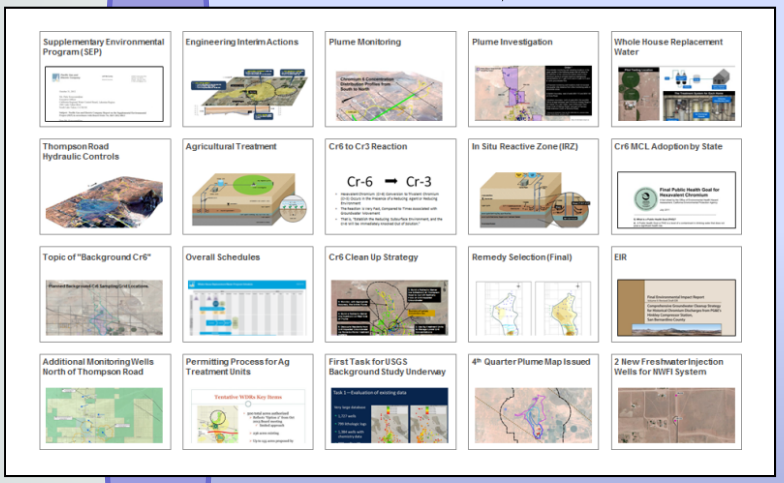
The Popularity of PG&E's Property Purchase Program Was Unexpected.



The Loss of Homes and Residents is Changing and Refocusing Interests.

Homes & Residents Lost

2012 / 2013



2014

Remaining Community Members Want to "Move On - See Progress":

1. Drinking Water
2. Northern Plume
3. Farming Solution
4. Background Study
5. Treatment Systems
6. PG&E in Hinkley

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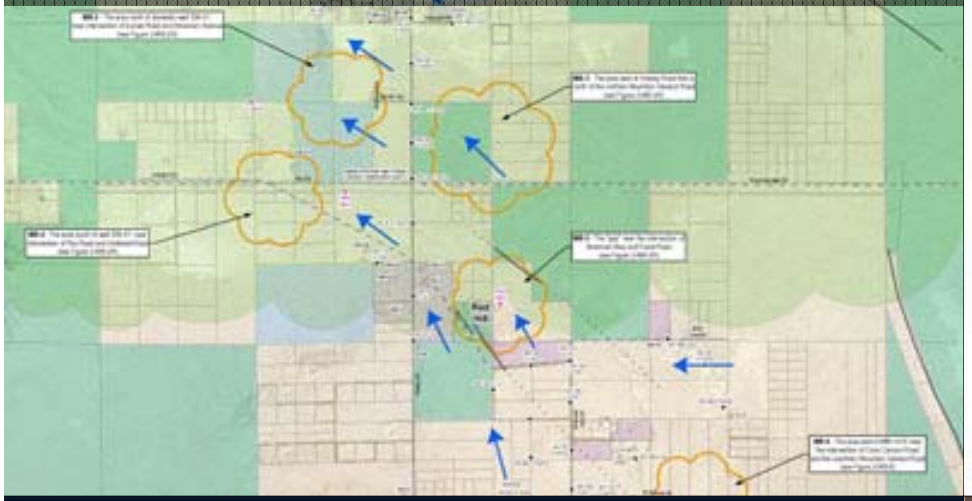
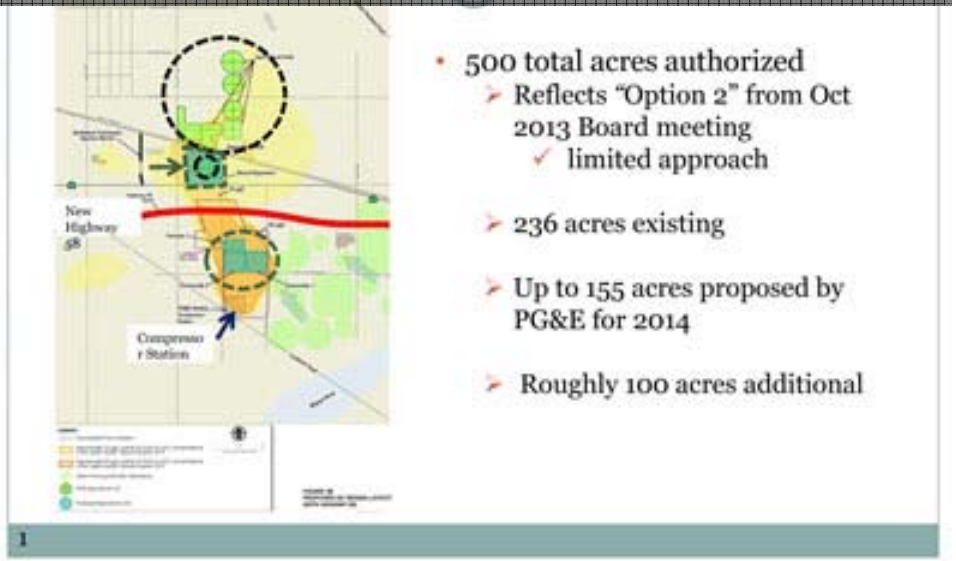
Continued Plume Definition; e.g. in North



New Ag. Treatment Units

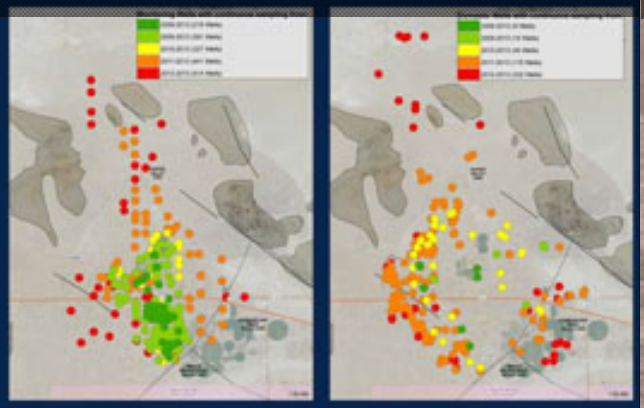


Task 1—Evaluation of existing data

USGS's Background Study

Very large database

- 1,727 wells
- 799 lithologic logs
- 1,384 wells with chemistry data
- 880 wells with Water-level data
- 273 well owners with data not in database

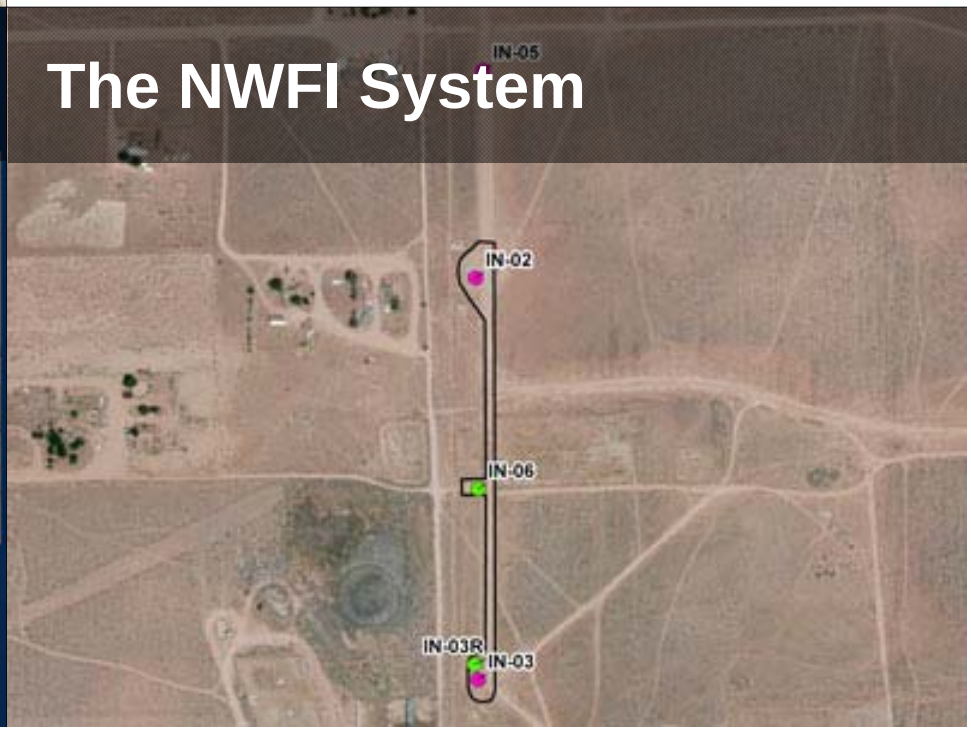


Monitoring wells Domestic wells

Quarterly data from 2011 to 2013

USGS

The NWFI System



Technical Outreach: Mid-Course Adjustment.

2012 / 2013

- **Outreach and Teaching**
  - **Via CAC**
  - **Monthly Community Meetings**
- **Style**
  - **Tough to separate technical from politics**
- **Techniques**
  - Slide decks
  - Some models
  - Web site (suffers from "content overload")
- **Use of External Expertise**
  - Two entities
    - One for toxicology/risk
    - One for EIR review and comment

2014 Vision

- **IRP Manager's "Independent" Perspective Emphasized**
  - Refocus on technical education
- **Meetings**
  - Many, many more "one-on-ones"
  - Workshop format to replace lecture style Community meetings
- **Techniques**
  - Table top models for workshops
  - Videos of similar work elsewhere
  - Back to basics style
  - Mail delivered newsletter
  - Top 4 things (in simple bullets) as website entry splash page
- **Improved Use of External Experts**
  - As simple as introducing a "new technical face"
  - "Guest speaker concept"

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