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April 1, 2011

Jack Clark  
Regional Water Quality Control Board  
2501 Lake Tahoe Blvd.  
South Lake Tahoe, CA 96150-7704

Re: March 9, 2011 Hinkley – Lahontan Regional Water Quality Control Board Meeting  
Response Letter

Dear Chairman Clarke,

On March 9, 2011, the Lahontan Regional Water Quality Control Board (“Water Board”) conducted a public workshop and a status report pertaining to PG&E’s remediation activities in Hinkley, California. Water Board staff and consultants presented materials to the Water Board for approximately two hours and the public provided additional comment for over two hours. Because PG&E was asked to keep its remarks to approximately five minutes, PG&E is concerned that the Water Board did not receive the information that it needs as it makes decisions pertaining to PG&E’s Hinkley Remediation Project. The attached letter provides important information on the key issues that arose at the March 9 meeting, including:

Issue #1: PG&E has not violated the 2008 Cleanup and Abatement Order (“CAO”) requiring plume containment and respectfully requests that the Water Board reconsider its direction to staff to pursue an administrative civil liability claim. The 2008 CAO did not consider pre-2008 domestic and agricultural well data demonstrating that the plume was already on the Gorman property and in the Summerset Road area prior to 2008.

Issue #2: PG&E will address its concern regarding the Water Board’s lack of legal authority to require replacement water to residents whose wells meet the state drinking water standard with the Water Board’s counsel. Nevertheless, PG&E is voluntarily providing bottled drinking water to all interested residences within one-half mile of the plume, as well as to the Hinkley School and Senior Center. In addition, PG&E is actively seeking to purchase the ten properties with chromium levels above background.



Issue #3: Agricultural land treatment is an effective, cutting-edge method of plume containment, even though it does not operate at high levels during the winter months. The strong levels of pumping during three quarters of the year more than make up for the reduced pumping during the winter months.

Issue #4: The proper final clean-up level for the Hinkley plume is the maximum natural background value of 3.1 ppb Cr6 and 3.2 ppb CrT. Requiring a clean up to average background levels is infeasible, not supported by California law, and would be unprecedented.

Issue #5: PG&E welcomes a further peer review of the chromium background study. It is well established that natural background levels of Cr6 in groundwater are common in the Mojave Desert and in most areas throughout the world.

Issue #6: PG&E also welcomes a peer review of PG&E's Feasibility Study ("FS") regarding final remedial options in Hinkley. However, PG&E believes the Water Board should be aware that 36 remedial technologies were evaluated as part of the FS in the process of selecting PG&E's preferred remedial option, including technologies raised during the March 9 meeting.

Issue #7: Properly constructed monitoring wells should be used for collection of ground water data and plume map creation rather than data from domestic or agricultural wells.

Issue #8: Prior and ongoing sampling at the Hinkley School demonstrates that the Hinkley School wells have not been affected by the PG&E plume. Nevertheless, to alleviate public concerns, PG&E is now providing bottled water to the school, as a public service.

Issue #9: There is no indication that there is an ongoing source of chromium in the shallow soil near the compressor station. This finding is based on the highest chromium concentrations in monitoring wells being found near the compressor station only in deep wells while lower concentrations found in shallow wells.

Issue #10: There is no basis for Mr. Bowcock's assertion that contaminated water was injected into domestic wells in Hinkley.

Issue #11: No cross-screened wells remain in the area of lower aquifer impacts. The closest remaining cross-screened well will be destroyed by summer 2011.

The attached letter also requests an opportunity to provide the Water Board with a presentation at the June 2011 Board meeting. PG&E would like to discuss the subjects outlined in the attached letter, to fully describe the Feasibility Study, including the 36 technologies that were evaluated, and to provide the Board with other important information regarding the issues raised at the March 9 meeting.



Thank you for taking the time to review the enclosed letter and we look forward to the opportunity to further discuss these issues at the June meeting.

Very truly yours,

A handwritten signature in cursive script that reads "David A. Gilbert". The signature is written in black ink and is positioned above the printed name.

David A. Gilbert  
Director, Remediation

cc: Don Jardine, Vice Chair  
Mike Dispenza  
Keith Dyas  
Amy Horne, Ph.D  
Peter C. Pumphrey  
Eric Sandel  
Harold Singer  
Laurie Kemper  
Lisa Dernbach



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Regional Water Quality Control Board  
2501 Lake Tahoe Blvd.  
South Lake Tahoe, CA 96150-7704

Re: Response to Issues Raised at March 9, 2011 Public Workshop

Dear Mr. Clarke:

The purpose of this letter is two-fold. First, PG&E formally requests the opportunity to provide a presentation to the Water Board during its June meeting in Barstow, California. Our presentation will focus on PG&E's on-going investigation and remediation efforts, including the alternatives considered and the final remedy proposed in PG&E's Feasibility Study. Our presentation will also respond to the key issues raised by the public and Water Board staff at the March 9, 2011 meeting.

Second, this letter responds to the potential for the Regional Board to issue administrative civil liability (ACL) for violations of the 2008 Cleanup and Abatement Order (CAO). We respectfully request that Water Board staff defer the preparation of an ACL complaint until after our presentation at the June 2011 meeting. As discussed below, the plume was larger in 2008 than the boundaries that defined the plume in the 2008 CAO. There is no data to support that the footprint of the plume has been meaningfully expanding and, therefore, there is no basis for administrative civil liability.

The March 9, 2011 meeting was a public workshop and status report and, therefore, no formal action or decision was made by the Water Board. Nevertheless, the Water Board did provide several specific directions to Water Board staff based on claims made during the meeting. Many of these directives were significant steps on which PG&E requests the opportunity to provide input. PG&E believes that the Water Board direction would have been very different if the Water Board had the benefit of more complete information on many of the subjects raised at the meeting.

This letter provides important information pertaining to some of the key issues raised at the meeting. In addition, as stated above, PG&E requests that the Water Board allow PG&E to



make a formal presentation on these issues to the Water Board at the Board's next southern area meeting in June 2011. PG&E further requests that the Water Board direct staff to avoid taking steps that prejudice PG&E until PG&E has an opportunity to make a full presentation to the Water Board.

**Issue #1: PG&E has not violated the 2008 Cleanup and Abatement Order ("CAO") requiring plume containment and respectfully requests that the Water Board reconsider its direction to staff to pursue an administrative civil liability claim.**

The 2008 CAO required PG&E to achieve containment of the plume by December 31, 2008. The key provision in the 2008 CAO defined "containment" as "no further migration or expansion of the chromium plume to locations where hexavalent chromium is below the background level." Unfortunately, the 2008 plume depiction was based only on monitoring well data and, therefore, did not completely depict all locations where hexavalent chromium was already above background levels in 2008.

#### **Data Excluded From the 2008 CAO Plume Boundary**

The 2008 CAO was based on the direction of Board staff that monitoring-well data alone should be used to define the plume in all areas, and that this data would accurately define the area containing hexavalent chromium above natural background levels (i.e., the plume). However, that direction lacked the benefit of previously collected data from agricultural wells on the Gorman property as well as domestic wells in the Summerset Road area that established the presence of chromium at concentrations above natural background levels. Moreover, at Water Board staff direction, the 2008 plume boundary level was drawn at 4 parts per billion (ppb) hexavalent chromium (Cr6). Water Board staff later directed PG&E to draw the plume boundary at 3.1 ppb Cr6 and ultimately at the combined 3.1 ppb Cr6 and 3.2 ppb CrT line. Each change to a lower plume boundary concentration made the data above that concentration outside the plume more significant.

Prior to 2008, there was evidence of chromium-affected groundwater outside the 2008 plume boundary, particularly to the north (Gorman property) and northeast (Summerset Road area). These data were all reported to Water Board staff at the time the data were collected. The attached Figure 1 illustrates these conditions, which are summarized as follows:

**Gorman Irrigation Wells-** The data for the former Gorman irrigation wells G1 (23-10), G2 (23-02), G3 (23-11), G4 (23-09) and G5 (23-15) clearly indicate the presence of chromium at concentrations above background levels on the Gorman property dating as far back as 2002. These data indicate that the plume boundary did not expand to the Gorman property after 2008.

**Summerset Road Area Wells** –Several long screen domestic wells along Summerset Road were sampled in 2006 and showed chromium concentrations exceeding background conditions (wells



25-07, 26-49, and 26-50). These data clearly demonstrate the presence of chromium at concentrations above natural background levels extending east beyond the limits of the 2008 plume boundary.

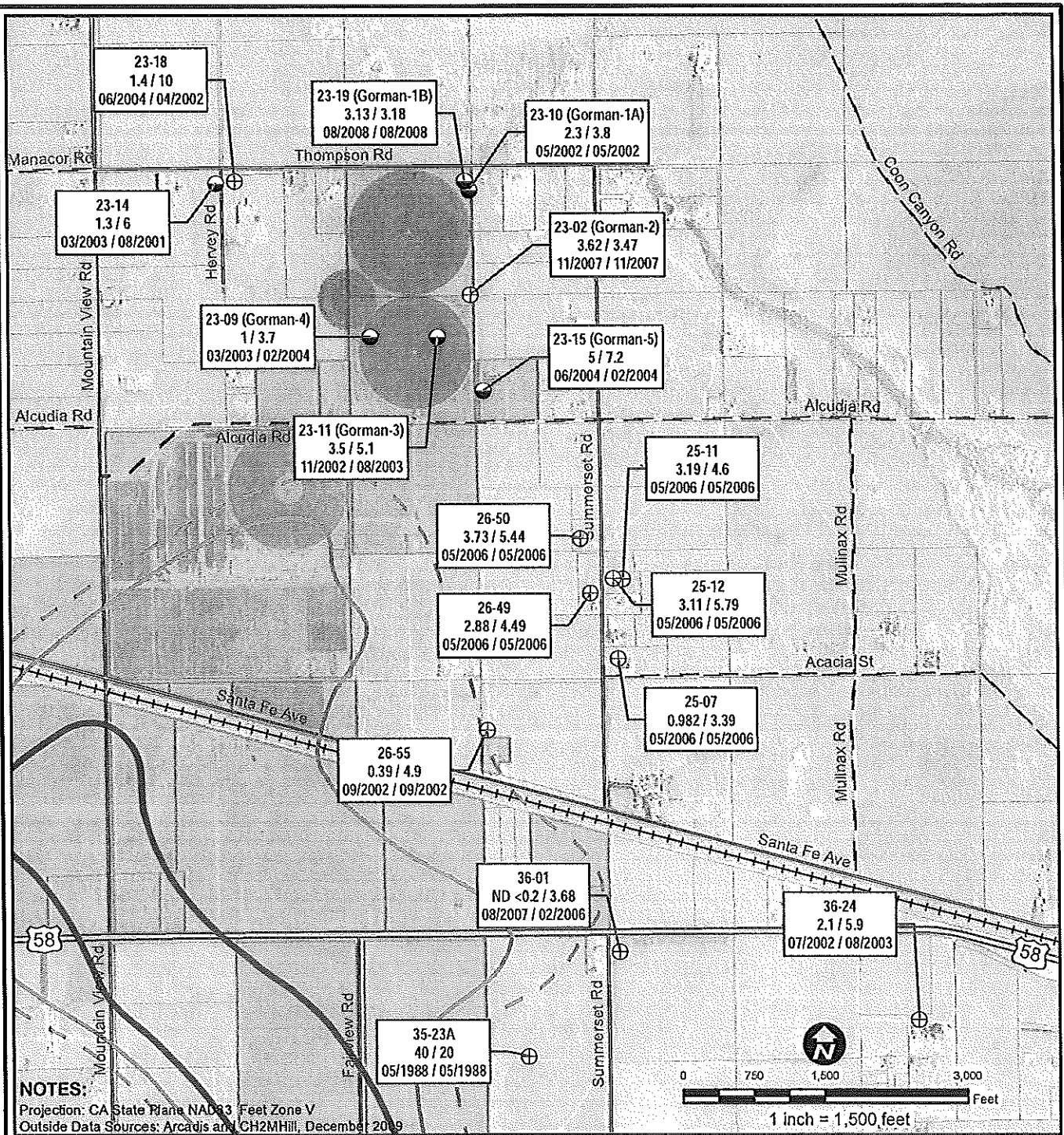
Since March 2010, PG&E has conducted additional investigations on the Gorman property and in the Summerset Road area, including re-sampling the referenced domestic wells that exceeded background limits in 2006 and installing additional monitoring wells. The results suggest similar concentrations in the new monitoring wells compared to the historic data from the Gorman pumping wells and the 2006 data at the three referenced domestic wells along Summerset Road. These data support a conclusion that the plume boundary extended further north and east than depicted in the 2008 plume boundary, and the plume boundary did not expand to these areas after 2008.

Given that chromium was found in groundwater at both the Gorman and Summerset locations prior to the December 31, 2008 compliance deadline found in the 2008 CAO, the current plume depictions and monitoring wells showing chromium levels above background in these locations do not demonstrate a violation of the primary requirement of the 2008 CAO. Using the key terms of the CAO, there has not been “further migration or expansion of the chromium plume to locations where hexavalent chromium [was] below background.”

The 2008 CAO also defines compliance based on a specific list of monitoring wells that are not to increase above “control limits” set based on monitoring results through the third quarter of 2008. Water Board staff point to increased chromium levels in MW-62A as a violation of this technical term. While it is true that chromium levels in MW-62A are higher than they were in early 2008, this observation ignores the data showing that chromium in wells down gradient of MW-62A were above background levels prior to the issuance of the 2008 CAO and well before the CAO compliance date. In addition, MW-62A itself contained chromium concentrations above background levels before the 2008 CAO compliance date. MW-62A exceeded 3.1 ppb Cr6 in August 2008 and exceeded 4 ppb Cr6 in November 2008, both prior to the December 31, 2008 CAO compliance date. As a result, MW-62A chromium levels are not in violation of the CAO.

But, even if the groundwater data collected at monitoring well MW-62A since the 2008 timeframe were construed as a technical violation of the CAO, the historic and new data down gradient of MW-62A demonstrate that the plume has not suddenly and dramatically grown.

Z:\P&E\EMXD\_Files\March 2011\Analytical\Figure 1 (NON WW Analytical) (2011-3-28)8x11.mxd



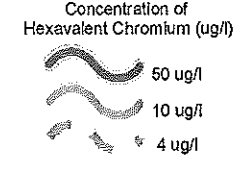
**NOTES:**

Projection: CA State Plane NAD83 Feet Zone V  
 Outside Data Sources: Arcadis and CH2MHill, December 2009

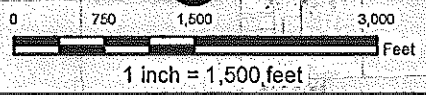
**Wells by Well Type**

- Groundwater Monitoring Well
- ⊕ Domestic Supply Well
- ⊖ Agricultural Supply Well
- Groundwater Extraction Well
- ⊞ Multi-Use, Test Well, Inactive Groundwater Extraction Well
- ⊕ Freshwater Injection Well
- Other Supply Well
- ⊕ Soil Boring
- PGE Property Boundaries

**Chromium Plume (February 2008)**



36-25  
 3.9 / 5.2  
 05/2001 / 10/2001  
 Maximum Result (2008 and Older Data)  
 Cr6 / CrT



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FOR:  
**Pacific Gas & Electric  
 Groundwater Remediation Project  
 Hinkley, California**

JOB NUMBER: 185702221  
 DRAWN BY: TF  
 CHECKED BY: BD  
 APPROVED BY: CM

**2008 And Older Chromium Data  
 Outside the 2008 Plume Boundary**

FIGURE:  
**1**  
 DATE: 03/28/11



With our new understanding of what the plume actually looked like in 2008, it is technically infeasible for PG&E to bring chromium levels at MW-62A below natural background in the immediate future. PG&E will continue to aggressively implement remedial activities in these areas, but it is not realistic to assume the plume will reduce in size to the 2008 illustration for a considerable period of time. PG&E believes it is appropriate for the Regional Board to recognize the inaccuracy of the benchmarks put forth in the 2008 CAO, and to recognize the responsible efforts put forth by PG&E to adapt to the evolving understanding of site conditions.

During 2009 and 2010, Water Board staff correctly exercised their discretion to not issue a notice of violation (NOV) or recommend administrative civil liability (ACL) for the conditions observed at well MW-62A. PG&E believes that the CAO and its related compliance tools should have been updated during this timeframe as the new data clearly indicated the 2008 plume boundary used in the CAO was incorrect. We would like to work with Water Board staff to develop a revised approach to demonstrate control of the plume boundary as we understand it today. We welcome a revised Order that more clearly reflects past and current site conditions. Regardless, the Water Board should now continue to exercise its discretion in not issuing an NOV or ACL.

### **Chromium Found to the North and Northeast of the DVD is the Result of Pumping by Others**

The increased chromium levels in MW-62A were caused by aggressive nearby agricultural pumping on the Gorman property, which was outside of PG&E's control. During 2009 and 2010, PG&E made numerous requests to the Water Board staff to intervene and address the pumping by Mr. Gorman. When no action was taken, PG&E moved quickly to purchase the Gorman property in mid-2010 to stop the "tug" on the plume from Gorman's agricultural pumping. PG&E has since installed new targeted pumping wells on the property and installed drag drip irrigation that will be used to more effectively control the plume. PG&E is also adding more extraction wells south of the former Gorman property, including wells in close proximity to MW-62A to help control the plume. PG&E's current modeling indicates that these measures should achieve containment of the plume as it is currently depicted, despite the fact that it is substantially larger than depicted three years ago. As an added measure of safety, PG&E is also in the process of adding additional extraction wells to feed new agricultural pivots to the south of this area, which will further enhance plume containment.

PG&E has installed numerous additional groundwater monitoring wells to the north and northeast of the Desert View Dairy (DVD) to further define the extent of the chromium plume in the areas that were not accounted for in the 2008 CAO process. With the exception of MW-62A on the DVD, the data collected from the new wells do not suggest substantial expansion of the plume is occurring in these areas. It is likely that pumping on the Gorman property over the last several years resulted in limited migration of chromium from the DVD to the north. However, as discussed above, chromium was already present in groundwater on the Gorman property for at least a decade and this portion of the plume will shortly be captured by new extraction wells.



In summary, the Water Board directed staff to consider an ACL for 2008 CAO violations. PG&E believes that the fact that chromium was found above background concentrations in the areas in question prior to 2008, that chromium did not migrate to these areas between 2008 and 2011, and that PG&E has aggressively responded with increased pumping, all demonstrate that an ACL complaint is unwarranted. PG&E respectfully requests that the Water Board reconsider its prior direction to staff. PG&E also understands that Water Board staff are now drafting a new CAO concerning plume containment. Given the pre-2008 data showing that the plume was significantly larger in 2008 than understood based on monitoring well data alone, it makes little sense to require PG&E to attempt to pull the plume back to the smaller 2008 plume footprint separately from the final overall remedy. Instead, PG&E should be required to remediate the newly recognized areas of the plume along with the remainder of the plume as part of PG&E's final remedy. PG&E respectfully requests that the Water Board direct staff to take into account all prior chromium data and draft a containment order that acknowledges that the plume was larger in 2008 than recognized. The order should accordingly require containment of that larger plume and should authorize PG&E to perform those actions necessary to accomplish that goal.

**Issue #2: While the Water Board's legal authority to require replacement water to residents whose wells meet the state drinking water standard is questionable, PG&E welcomes the opportunity to discuss all appropriate responses to the concerns raised by residents with domestic water supplies in excess of background levels. In the interim PG&E is voluntarily providing bottled drinking water to all residences within one-half mile of the plume, as well as to the Hinkley School and Senior Center. In addition, PG&E is actively seeking to purchase the ten properties with chromium levels above background, a potential solution to the concerns in and of itself.**

PG&E appreciates the Water Board's and residents' concerns, including the requests for total potable water replacement, and wishes to inform the Board of the steps PG&E has already taken voluntarily to respond. First, while all wells in Hinkley meet the state drinking water standard for chromium, there are ten properties that have wells with chromium levels above natural background. All but one of the ten properties with chromium levels above background now receive bottled drinking water from PG&E, and the one exception receives bottled drinking water from other sources. PG&E is also supplying bottled drinking water to over 53 properties with chromium levels below natural background, but who live within the remediation project boundary (defined as the area of the plume and all properties within one-half mile from the plume edge). PG&E is also supplying bottled water to the Hinkley School and to the Hinkley Senior Center even though their wells do not contain chromium levels above background. Finally, PG&E has offered to supply bottled water to any resident who lives within one-half mile of the plume, regardless of chromium levels in their wells. PG&E will discuss its concerns regarding the Board's regulatory authority to require provision of potable water to residents whose supplies contain less chromium than the limit specified by the California drinking water standard with the Water Board's legal counsel. Hopefully this will lead to a common understanding of the standards to be applied in these circumstances.



Second, PG&E has offered to purchase all 126 properties in the vicinity of the chromium plume, including each of the ten properties with wells that exhibit chromium above background levels. PG&E instructed the appraisers to appraise all residences as if the chromium plume was not present, and to use comparable sales to establish appraised values from communities outside of Hinkley. Contrary to unfounded assertions by certain members of the public at the March 9 meeting that PG&E was buying homes “for pennies on the dollar,” all of PG&E’s purchase offers are significantly higher than appraised values.

Finally, while public concern regarding water safety is completely understandable, the Board should be aware that at public meetings held by Water Board staff in Hinkley on January 26 and 27, Dr. Robert Howd, then a Section Chief for California’s Office of Environmental Health Hazard Assessment (OEHHA), repeatedly stated that the levels of chromium in Hinkley do not pose a risk to human or animal health, including use for drinking, for livestock and pets, for bathing/showering, and even for lawn watering and use in swamp coolers. Perhaps it would be helpful to invite Dr. Howd to address the Water Board directly in the future so that the Board could hear from him directly.

**Issue #3: Agricultural land treatment is an effective, cutting-edge method of plume containment, even though it does not operate at high levels during the winter months**

Agricultural land treatment is an effective and sustainable remedy at Hinkley. It makes good, beneficial use of local groundwater that contains low levels of chromium (*i.e.*, below the drinking water standard). And, it is consistent with surrounding land use. Agricultural land treatment operates at high levels during the warm summer months when most of the water is consumed by the plants and the balance of the water slowly percolates through the root zone soils where organic matter rich in carbon removes the chrome from the water. However, agricultural land treatment does not operate at high levels during the winter months because applied water could pond during the winter rainy season due to lower rates of water uptake by the crops. The reduced water uptake rate is the result of less vigorous rates of plant growth in the cooler winter temperatures. The rate of water percolation through the soil for treatment can be the same year round but the rate of water application in winter is reduced to match percolation with lower plant water consumption.

To provide full containment of the newly defined larger plume, containment pumping must be implemented on a larger scale than merely at the DVD. PG&E is in the process of adding significant additional containment pumping via five additional agricultural pivots. This will increase the total amount of water pumped to agricultural fields from 345 gallons per minute (gpm)<sup>1</sup> in 2008 to over 1200 gpm by later this year, or a factor of nearly four times as much containment pumping. This increase will be more than enough pumping to provide robust

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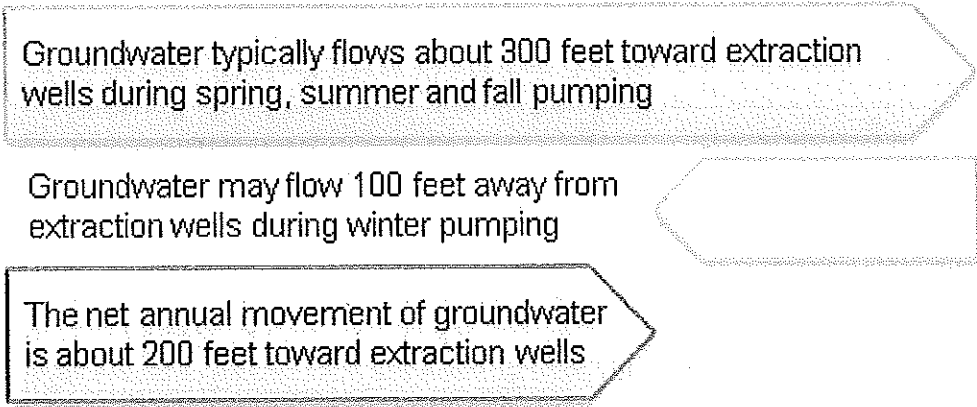
<sup>1</sup> All flow rates given are average rates over all four seasons.



capture of the plume as it is currently understood, even though the containment pumping will operate at lower levels during the winter months.

PG&E's technical consultants have prepared numerous computer simulations of groundwater flow in the plume. These computer simulations track the path that a single particle of water (or chromium) would take in the subsurface under various pumping scenarios. These computer simulations are used to estimate the 'area of capture' of a single pumping well, or a system of pumping wells. Particles that flow into a containment well are captured; particles that are not pulled into the well are not captured and flow away. The line that separates these two areas is called the capture zone. We have modeled the capture zone using both annual average flows, and using 'stepped' flows, which conservatively assume that there is high flow in the summer and NO flow in the winter. In reality, the agricultural units are operated with some rate of flow in the winter, so these estimations are conservative.

The "no flow in the winter" modeling shows that, although particles move away from the containment wells when the wells are not pumping in the winter, the spring, summer, and fall pumping more than makes up for the winter reduction in pumping. The plume cannot 'run away' in a few months during the winter - the particles on the edge of the capture zone can only move about 100 feet down gradient during the winter, before they are pulled back on the order of 300 feet or more during the spring, summer, and fall, and are eventually pulled into the well. By pumping at an adequate rate during the growing season, the entire plume can be contained and remediated. In fact, it is possible to capture an area much larger than the currently defined plume using seasonal pumping.



Contrary to statements made by some members of the public at the March 9 meeting, agricultural application of chromium-containing water is a cutting edge technology that makes good, beneficial use of local groundwater that contains low levels of chromium. The addition of drip irrigation technology in agricultural fields ensures that the applied water does not spray into the air. Many years of robust testing at the Desert View Dairy land treatment unit demonstrate that



this technology removes chromium and nitrates, and creates a robust capture zone in spite of lower flows during the winter months.

**Issue #4: The proper final clean-up level for the Hinkley plume is the maximum natural background value of 3.1 ppb Cr6 and 3.2 ppb CrT. It is infeasible, not supported by California law, and would be unprecedented to require clean up to average background levels.**

Water Board staff and the Water Board's EIR consultant repeatedly asserted at the March 9, 2011 meeting that average background has been set as the cleanup goal for the plume. This is simply incorrect. The current orders only require PG&E to evaluate whether it is even possible to achieve average background levels.

Specifically, CAO No. R6V-2008-0002 required PG&E to submit a feasibility study that assessed final remedial strategies for the plume. CAO R6V-2008-0002A1 established the following background concentrations against which remediation strategies were to be assessed:

Maximum background hexavalent chromium = 3.1 ppb  
Maximum background total chromium = 3.2 ppb  
Average background hexavalent chromium = 1.2 ppb  
Average background total chromium = 1.5 ppb

The CAO further required that the feasibility study must "include an evaluation of achieving average concentrations within the cleanup area that meet the average background concentrations established here, with discrete samples within the cleanup area not exceeding the maximum background concentrations established here."

Importantly, neither CAO set average background as the cleanup level. In fact, in response to concerns over the use of an average background goal expressed by PG&E at the time the average background number was established by the CAO, the Board's Executive Officer assured PG&E that average background was not being set as a cleanup level. The Executive Officer emphasized that PG&E was only being asked to evaluate the potential for using average background as a cleanup level.

As required by the CAOs, PG&E's Feasibility Study (FS) included a thorough evaluation of the possibility of using average background as a cleanup level. The FS concluded that using average background would be unprecedented in California, that there is no regulatory basis for using average background, and that it would be infeasible to cleanup to average background.

A search of available information reveals no sites in California that use average background as the cleanup level, nor any precedent that requires cleanup to an average background



concentration. Instead, all sites in California require cleanup to maximum background levels or higher.

PG&E's background study determined statistical upper tolerance concentrations (UTL's) of Cr6 and Cr(T) that could be present in groundwater throughout the Hinkley valley groundwater basin. The 95 percent UTL concentrations proposed in the background study provide a technically defensible upper limit (or maximum background level) of what could exist from natural sources in any given well sampled throughout the Hinkley valley.

When a UTL is calculated, California law supports using that UTL or maximum background as the cleanup level. Resolution 92-49 requires cleanup to background water quality and refers to 23 CCR section 2550.4 to define background. As outlined by the State Water Resources Control Board Office of Chief Counsel, "Section 2550.4 refers to Section 2550.7(e) which provides the methodology for determining background levels for ground water." (Q&A SWRCB Resolution 92-49, Feb. 16, 1995). Section 2550.7(e) makes it very clear that when a background study is performed that produces a UTL (or maximum background level), just as PG&E did at this site, that monitoring data are to be compared to the UTL (and not to some other value such as average background). "[T]he value for each constituent of concern or monitoring parameter at each monitoring point is compared to the upper tolerance or prediction limit." (23 CCR section 2550.7 (e) (8) (C)). Thus, California law states that maximum background is the appropriate comparison level in this situation and not some other cleanup level such as average background.

In addition, remediation of groundwater to average background concentrations is unreasonable because it would require the treatment and removal of naturally occurring chromium from groundwater. That is, PG&E would have to remove naturally occurring chromium from groundwater to "offset" areas where residual concentrations are above the average but less than the maximum. This is contrary to the specific language of Resolution 92-49: "[U]nder no circumstances shall these provisions be interpreted to require cleanup and abatement which achieves water quality conditions that are better than background conditions." (Resolution 92-49 III.F.1.).

As the plume remediation progresses, different portions of the aquifer may be cleaned up at different rates. Cleanup rates will be a function of several factors, including proximity to locations where remediation activities, such as groundwater pumping and in-situ treatment, are being conducted. If average background were the required cleanup level, PG&E would be required to continue remediation even when all wells were below the UTL or maximum background level.

The average concentrations for Cr6 and Cr(T) presented in PG&E's background study provided nothing more than an overall median concentration of the chromium concentrations naturally present in groundwater over an area comprised of several square miles. After submission of the Feasibility Study, Water Board staff asked PG&E to provide theoretical modeling of the time and expenses required to achieve average background concentrations in the plume. As



requested, PG&E provided the theoretical modeling results. Nevertheless, PG&E repeatedly noted that these modeling results were based on unproven assumptions that such cleanup levels were achievable in reality. To be clear, PG&E does not believe it is feasible to achieve average background chromium levels in the Hinkley plume.

Since there is no regulatory basis or precedent and it would be infeasible to clean up to average chromium background concentrations, the proper background cleanup level for this site is the statistical upper tolerance level or maximum background levels established by PG&E's background study. Because the final cleanup goal has not yet been set, PG&E believes that there would be less confusion if public presentations avoided stating that the cleanup level has been set at average background. PG&E requests that at the appropriate time the Water Board set the cleanup level in Hinkley at the maximum background level established by the background study.

**Issue #5: PG&E welcomes a further peer review of the background study. It is well established that natural background levels of Cr6 in groundwater are common in the Mojave Desert and in most areas throughout the world.**

PG&E supports further peer review of the Background Study approach and results. In November 2003, the Water Board sent PG&E's initial Background Study proposal to three University of California professors for peer review. All three reviewers agreed that the planned study was appropriate and provided several suggestions and recommendations that were incorporated into the revised background study work plan (CH2M HILL, 2004).

The Background Study (CH2M HILL, 2007) sampled wells that were outside of the plume area to identify levels of naturally occurring background Cr6 in the groundwater. Wells were chosen for the background study based on their location far outside of the plume in areas where no effects from the plume could impact the natural chromium levels in the wells. It should be noted that the Background Study was very conservative and likely produced an estimated maximum background that is less than the actual maximum background concentrations in the Hinkley area. Almost all of the wells used in the study were long-screened (often 75 to 150+ feet screen length) domestic or supply wells and were screened across large sections of the upper and lower aquifers. In contrast, monitoring wells target short sections (ten or twenty feet) of the most productive zones of an aquifer that would contain the highest concentrations of chromium. Long screened wells pull water from high and low chromium concentration areas thereby producing a lower net chromium concentration, particularly when compared to the short screened monitoring wells used to map the chromium plume in Hinkley.

The issue of background chromium levels is the subject of much confusion by some members of the public. Our understanding is that certain non-residents, including some speakers at the March 9 Board meeting, have been providing their opinion to members of the Hinkley community that there is no such thing as naturally occurring hexavalent chromium, and that the existence of wells that show no detection of hexavalent chromium is proof of that assertion.



These claims fly in the face of a long-established record of scientific investigations and publicly available data that plainly demonstrate the existence of naturally occurring hexavalent chromium in groundwater. Those who are advancing the “no background” illusion have created unfounded concern among the public by their insistence that any concentration of hexavalent chromium is indicative of contamination (and thus a potential health concern), further adding to the difficulty residents have in putting their well test results in an accurate context. Denying the existence of background levels may be a valuable step in manufacturing fodder for litigation, but it is a perversion of established science and good, solid data.

The natural occurrence of hexavalent chromium in groundwater in arid regions of the southwestern United States has been documented in studies published as early as 1975. The source of this naturally occurring hexavalent chromium is thought to be a combination of oxidation and subsequent dissolution of chromium minerals, such as chromite, resulting in the generation of the hexavalent species, which is highly mobile in groundwater<sup>2</sup>. Trivalent chromium, in its various mineral states, is estimated to constitute around 1 percent of the earth’s crust, and the highest concentrations of those minerals in the United States occur primarily along the western and eastern coastlines.<sup>3</sup>

Numerous studies completed by the United States Geological Survey (USGS), California’s State Water Resources Control Board (SWRCB), the United States Air Force Center for Engineering and the Environment (US AFCEE), and the California Department of Public Health (CDPH), as well as studies by academia, have confirmed that hexavalent chromium occurs naturally in groundwater as a background constituent throughout California, including the Antelope Valley near Hinkley, California.

A detailed study of groundwater conditions in the Mojave Desert near Hinkley conducted by the USGS confirmed the presence of naturally-occurring hexavalent chromium in groundwater at concentrations that ranged from non-detect up to 60 parts per billion (ppb).<sup>4</sup> This local study was supplemented with a more comprehensive regional study of groundwater sampled from drinking water wells in the Antelope Valley (located adjacent to the Mojave Desert) conducted

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<sup>2</sup> Ball, J.W., Izbicki, J.A., 2005. “Occurrence Occurrence of hexavalent chromium in ground water in the western Mojave Desert, California” *Applied Geochemistry* 19, pg 1123-1125.

<sup>3</sup> Oze, C., Bird, D.K., Fendorf, S., 2007, “Genesis of hexavalent chromium from natural sources in soil and groundwater” *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, April 17, 2007, Vol., 104, no. 16 pg 6544-6549.

<sup>4</sup> United States Geological Survey. 2008. “Naturally High Levels of Chromium Found in Groundwater”. June 9, 2008.



by the USGS and the California SWRCB. In this study, hexavalent chromium was detected in 17 of the 56 wells included in the study, at concentrations ranging from 2 to 14 ppb.<sup>5</sup>

These local studies are consistent with more regional studies of background groundwater quality in California, which also have confirmed the presence of naturally-occurring Cr6 in groundwater. A comprehensive study of background groundwater quality conditions conducted by AFCEE also found that hexavalent chromium is present as a background constituent in groundwater in California. In this study, AFCEE identified 1,307 groundwater monitoring wells at 13 locations in California that were installed in non-contaminated (background) areas and compiled water quality data from those wells to understand background groundwater quality conditions. AFCEE found that hexavalent chromium was present as a constituent in more than one-third of the background monitoring wells, at concentrations up to 60 ppb.<sup>6</sup>

These studies, which rely on data from distinct areas showing both detectable concentrations of hexavalent chromium, as well as no detectable concentration, clearly demonstrate the variability of naturally occurring background concentrations within a given area, and repudiate the unfounded argument that non-detect concentrations somehow “prove” the absence of a background concentration.

Finally, abundant proof of the widespread and common occurrence of hexavalent chromium in groundwater throughout California is provided by the public water supply well database compiled since 1998 by the California Department of Public Health (CDPH). The CDPH database contains data from approximately 7,000 regulated drinking water sources in California. More than 2,200 of those water sources (or 32 percent) have reported some level of hexavalent chromium in the water. More than 20 percent of water sources have levels of hexavalent chromium up to 5 parts per billion (ppb), and approximately 11 percent reported hexavalent chromium levels from above 5 ppb to over 50 ppb.<sup>7</sup>

The City of Davis Public Works Department reported a range of groundwater hexavalent concentrations from non-detect to 38 ppb, with a weighted average concentration of 12.6 ppb in

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<sup>5</sup> United States Geologic Survey. 2008. Groundwater Quality Data in the Antelope Valley Study Unit, 2008: Results from the California GAMA Program.

<sup>6</sup> Hunter, P.M., et. al. 2005. “Inorganic Chemicals in Ground Water and Soil: Background Concentrations at California Air Force Bases”. Air Force Center for Environmental Excellence (currently Air Force Center for Engineering and the Environment) Brooks City-Base, Texas, Department of Toxic Substances Control, California EPA, Sacramento California. Presented at the 44<sup>th</sup> Annual Meeting of the Society of Toxicology, New Orleans Louisiana. March 10.

<sup>7</sup> California Department of Public Health, Chromium-6 in Drinking Water Sources: Sampling Results, at <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Chromium6sampling.aspx>



2006.<sup>8</sup> That study also reported that 17 of 21 water supply wells had Cr6 concentrations greater than 5.4 ppb. Water delivered from the Soquel Creek Water District naturally contained hexavalent chromium concentrations ranging from non-detect to 38 ppb (average of 15 ppb) from its Aromas aquifer and hexavalent chromium concentrations from non-detect to 15 ppb (average of 5 ppb) from its Central Water District wells.<sup>9</sup>

**Issue #6: Comments regarding the EIR currently under preparation, the scope of alternatives in the EIR, and peer review of the alternatives.**

A number of comments were made at the March 9, 2011 meeting regarding the scope of alternatives in the EIR, and Board members provided direction to staff regarding the scope of alternatives, specific technologies, and peer review of the scope of alternatives. However, PG&E is concerned that Board members may not have been informed that many of those issues, particularly those relating to alternative technologies, were already evaluated in the Feasibility Study, and that Feasibility Study, together with staff direction to the Board's consultant regarding further alternatives to be considered, was the basis for the scope of alternatives currently in the EIR as briefly described to the Board on March 9. We have provided information below that responds to the comments made at the March 9 meeting.

**Evaluation of Alternatives in the Feasibility Study, Selection of Further Alternatives for Evaluation in the EIR**

The process of selecting alternatives to be considered in the EIR began with the Feasibility Study. That study began with an evaluation of 36 remedial technologies and process options, all of which were screened for further evaluation, considering such factors as the specific attributes of Cr6, characteristics of the Hinkley site and the substantial existing data specific to the Hinkley site that has been gathered over the years. The purpose of this initial screening of 36 remedial technologies was to eliminate technologies based on feasibility considerations, and to focus attention and further evaluation on those technologies potentially applicable to Cr6 in groundwater, either individually as a stand-alone remedial technology or as a component of a combined approach. The 36 remedial technologies which were evaluated are listed in Table 6-1 in the Feasibility Study, a copy of the Feasibility Study is contained on the enclosed DVD.

The process of evaluating the 36 technologies included two steps. The first step was to screen technologies to determine which are generally applicable to reduce Cr6 in groundwater. The second step was further to screen those technologies based on considerations specific to the Hinkley site, including the relative effectiveness of the technology at achieving background conditions, restoring beneficial use, containing the Cr6 plume, and achieving productive use of

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<sup>8</sup> City of Davis 2009 Annual Water Quality Report. City of Davis. Davis, California.

<sup>9</sup> Soquel Creek Water District Consumer Confidence/Water Quality Report 2009. Soquel Creek Water District. Capitola, California. May/June 2010.



the groundwater resource at the site (the four specified remedial objectives). Technologies that could not meet these criteria were eliminated from further consideration.

The Feasibility Study concluded that the most effective, reasonable and sustainable plan to achieve regulatory water quality objectives includes containment pumping, agricultural application of the extracted water, and in situ treatment of the plume core in the area where Cr6 concentrations are higher. As noted in the Feasibility Study, this combined-technologies plan was recommended by PG&E because it has significant benefits, including providing for productive re-use of groundwater already affected by non-chromium constituents (dissolved solids, nitrate) for livestock crop production, removing nitrate from groundwater, minimizing secondary environmental impacts such as well drawdown or increased dissolved solids discharge, increasing local agricultural production, and potentially reducing the import of potable water for agricultural use.

Following submission of the Feasibility Study, Board staff directed PG&E to formulate and model, for evaluation in the EIR, two additional alternatives using the combined technologies recommended in alternative 4 of the Feasibility Study. These two alternatives, 4a and 4b, provide for cleanup of Cr6 over a substantially shorter time frame than that presented under the original alternative 4. Although these two new alternatives were described briefly during the EIR presentation at the March 9 meeting, there was no discussion of the overall process of remedy selection embodied in the Feasibility Study, leaving the audience uninformed as to the extensive analysis of alternative remedial technologies that was included in that study. Based upon the Feasibility Study, and the further delineation of alternatives directed by the Board, PG&E and its technical consultant team believe that the range of alternatives currently being evaluated in the EIR fully meets CEQA's requirements for analysis of a reasonable range of feasible alternatives. The current range of alternatives properly focuses on those alternatives most capable of achieving water quality objectives in a reasonable time.

### **Suggested Alternative Technologies**

Speakers at the March 9 meeting promoted a number of specific alternative technologies, or instances where other technologies have been applied at a particular location. The technologies described by these speakers either have already been evaluated and eliminated from further consideration in the Feasibility Study, or are substantially equivalent to those technologies already reviewed.

One such technology raised at the March 9 meeting was an above-ground treatment plant as a means of treating groundwater. The treatment plant operating at PG&E's Topock remediation project was cited as an example of such an application. PG&E evaluated the use of above-ground treatment plants in the Hinkley Feasibility Study, and created both a plume-wide pump-and-treat option (Alternative 5) in the original Feasibility Study and, at the Water Board staff's request, a "combined" alternative featuring above-ground pump-and-treat technology in Addendum No. 1 to the Feasibility Study. Neither of these options was recommended, due



principally to the extended times necessary to achieve cleanup goals as compared to the recommended alternative (cleanup to 3.1 ppb in 140 years or 90 years for Alternative 5 and the combined alternative, respectively, as compared to 40 years for Alternative 4B). Other drawbacks to above-ground treatment systems include the significantly more complex operation and maintenance programs required by treatment plants as compared to other technologies, the increased environmental impacts resulting from treatment plant operation (such as increased truck traffic), and the significant additional costs associated with treatment plants (for example, an estimated nominal cost of \$882 Million to achieve the 3.1 ppb goal using Alternative 5, as compared to \$109 Million using Alternative 4B).

The relatively small (135 gallons per minute) above-ground treatment plant at the Topock facility was not designed to treat the Topock groundwater plume. Its purpose is to provide a means of disposing of water generated from interim plume-control pumping on the Colorado River floodplain. In fact, the final groundwater treatment remedy for Topock, approved in early 2010 by both federal and state regulators, does not include the operation of the existing pump-and-treat plant or any other above-ground treatment plant. Upon implementation of the approved final remedy at Topock (in-situ technologies), the existing above-ground treatment plant is to be shut down and dismantled.

A second type of above ground treatment raised in public comments on March 9 was resin treatment. The Board asked staff to evaluate a resin treatment technology that is being used for treatment of groundwater at the City of Glendale and at the Lawrence Livermore National Laboratory. The Feasibility Study investigated resin technology (see Table 6-1, p.2, and Appendix C of the Feasibility Study). Based on the specific experience at Glendale and Lawrence Livermore, strong base anion (SBA) resin technology was determined not to be suitable for the Hinkley site. Weak base anion (WBA) resin technology might be feasible, but the performance of WBA resin technology is strongly influenced by factors such as the acidity of the water and the amount of sulfates or other chemicals in the water. These factors are concerns in Hinkley.

As detailed in a memorandum from CH2M Hill included in Appendix C to the Feasibility Study, the Glendale and Lawrence Livermore evaluations set forth several factors that indicate that resins are not likely to be effective at Cr6 removal at Hinkley :

- Treatment using resin requires pH adjustment of the water to 6.0 – 6.5. Because groundwater at Hinkley contains relatively high levels of total dissolved solids (TDS) significant acid addition would be required to achieve the necessary pH. In contrast to the groundwater at Hinkley, groundwater at both the Glendale and Lawrence Livermore sites has relatively low TDS concentrations.
- Hinkley groundwater contains relatively high sulfate concentrations which substantially reduce the effectiveness of resin treatment because the resin also removes sulfate in



addition to chromium. The high levels of sulfate in Hinkley groundwater would “compete” with the chromium for removal, significantly reducing the efficiency of this technology. Groundwater at both the Glendale and Lawrence Livermore sites has relatively low sulfate concentration.

- The Glendale resin treatment is designed to achieve a target cleanup down to 5 parts per billion hexavalent chromium. That level of cleanup is not low enough for use in Hinkley which has a maximum background Cr6 concentration of 3.1 ppb.

PG&E also examined resin treatment technologies first mentioned at the March 9 meeting that are in use in Midland, Texas and Flat Iron Mesa, California. At both locations, the resin treatment is not designed to achieve target cleanup levels as low as the Hinkley maximum background Cr6 concentration of 3.1 ppb.

The Board also raised the possibility that dewatering of the aquifer should be considered. Notably, the purpose of evaluating alternatives in an EIR is to evaluate feasible alternatives that reduce environmental impacts. There is an enormous flux of water in the Hinkley valley, and dewatering the aquifer is not technically feasible. Dewatering would also result in substantial adverse environmental impacts, including the loss of local groundwater supplies, accompanying losses of agricultural uses of land, and substantial subsidence impacts, including the risk of sinkholes and similar problems.

### **Peer Review of Alternatives**

Board staff were directed at the meeting to consider peer review of the scope of alternatives in the EIR. PG&E understands that DTSC has agreed to the Board’s request to review the Feasibility Study alternatives. PG&E welcomes this effort and hopes the work can be completed in a way so as not to delay the CEQA process, and thus delay the remedy.

As background, it is important to note that the legal requirement for an EIR is that the EIR must reflect the lead agency’s independent judgment. Public Resources Code § 21082.1(c). There is no legal requirement for peer review. The Regional Board is ensuring that the EIR reflects its independent judgment by selecting its own consultant to prepare the EIR, and by independently reviewing that work.

If additional peer review regarding the selection of alternatives in the EIR is desired, PG&E respectfully suggests that peer review should be completed by the close of the regular comment period on the Draft EIR, so that any comments can be included in the final EIR, in the normal course of the CEQA process. Given the focus of the suggested peer review on the range of alternatives, PG&E further suggests that the evaluation of alternative technologies in the Feasibility Study, and the subsequent alternatives directed by Board staff, form the basis for any



such peer review. If the number of alternatives exceeds these, it is probable that the Feasibility Study will have to be reopened and the time to reach a final remedy will be significantly expanded, a result that likely would not meet with significant public support.

**Issue #7: Data from properly constructed monitoring wells, rather than from domestic or agricultural wells, should be used to create plume maps. Chemical data from domestic or agricultural wells are often unreliable due to construction materials and screen lengths.**

Monitoring wells must be designed and constructed in a manner that allows representative groundwater samples to be obtained from targeted depth zones without changing the chemistry of the water. This includes the selection of materials for well construction that will not change groundwater quality after it enters the well, and installation of relatively short well screens that allow groundwater only from the target depth zones into the well.

Domestic wells often use casing (*i.e.*, the well “wall”) and well screen made from mild steel. Metallic well materials are not recommended for use in wells that monitor groundwater for metal constituents, as even minor leaching of metals from well materials could result in significant interference with laboratory testing or alteration of test results. In addition, well screens in domestic wells typically extend across relatively long intervals of the most permeable materials in the aquifer and often avoid poor quality groundwater associated with agriculture (such as that containing high concentrations of dissolved solids and nitrate), as opposed to the relatively short screens used in monitoring wells to target specific zones for sampling. Because of these factors, groundwater samples from domestic wells are not directly comparable to groundwater samples from monitoring wells, and may not be representative of groundwater in the aquifer.

The Cal-EPA guidance manual entitled “Monitoring Well Design and Construction for Hydrogeologic Characterization” (Cal-EPA, 1995) provides guidelines for construction of monitoring wells to ensure the collection of representative water quality samples. This guidance addresses specific factors to be considered in constructing a monitoring well, such as: 1) drilling methods that minimize the use of water or drilling fluids; 2) installation methods (proper packaging, staging and handling of well materials) to avoid the introduction of contaminants; 3) well materials (well casings/screen, coupling, centralizers, etc.) that do not alter the chemical qualities of water or the constituents being evaluated; 4) well design (structural integrity, screen depth, screen length, filter pack, annular seal, and protective casing); and 5) well development.

Cal-EPA (1995) has also provided guidelines for evaluating whether existing monitoring wells meet the performance standards required under the California Code of Regulations. When existing wells are physically damaged or when little or no documentation of how wells were designed or installed is available, the guidance recommends that a replacement should be considered.



PG&E's approach is to expand the monitoring well network to assess the lateral and vertical distribution of Cr6 and Cr(T) in groundwater as necessary, rather than to rely on results from private wells for this purpose. In addition, at Water Board staff's request, PG&E already places domestic/agricultural well data on plume maps, but draws plume contours only using monitoring well data. PG&E suggests that the current approach of installing new monitoring wells in locations where domestic/agricultural wells are above background levels, mapping the plume using monitoring well data, and listing the domestic/agricultural well test results on the plume maps, provides an accurate and scientifically defensible accounting of plume conditions.

**Issue #8: The Hinkley School wells have not been affected by the PG&E plume.**

The Hinkley School wells have always tested within natural background levels for chromium. The wells show natural variability in hexavalent and total chromium concentrations in each sampling, but all test results have been solidly within the range of natural background levels. These data provide clear evidence that the school wells have not been affected by chromium from the plume.

A reported concentration of 2.9 ppb in Hinkley School well 27-28 in the October 28, 2010 sampling event was also cited as evidence that the plume may have affected the school wells. However, it is important to note that the sample results in question, along with other samples taken on the same day, were "flagged" with a notation during the quality control/quality assurance review, indicating that the results may not be reliable (in this case, due to the high degree of variability between hexavalent and total chromium results for the same well). As is the established procedure in such cases, additional samples were taken from that well to provide confirmation of chromium levels. Those additional tests, as well as all subsequent tests, show chromium concentrations within the background range of non-detect to 2.2 ppb that has characterized all previous results for the school wells.

Groundwater data from monitoring and domestic wells on the western side of the Hinkley plume in the general area between the plume and the Hinkley School supply wells show generally stable chromium conditions and do not suggest any plume impact on the Hinkley School wells. PG&E provided bottled water to the school due to increased public concern caused mainly by unsupported and misleading claims made by a number of outside interests.

**Issue #9: The highest chromium concentrations in monitoring wells near the compressor station are found only in deep wells while lower concentrations are found in shallow wells, indicating that there is no ongoing source in the shallow soil near the compressor station.**

Concerns were raised at the March 9 meeting that there may be a continuing source of Cr6 to groundwater in shallow soils near the compressor station. The concerns were based upon high levels and an increasing concentration trend at monitoring well SA-MW-05D. PG&E recognizes that the hexavalent chromium concentrations at SA-MW-05D have varied over time. The baseline Cr6 concentration was 5,070 ppb in 2007, the maximum concentration was 9,030 ppb in



November 2010 and the most recent concentration was 7,280 ppb in February 2011. However, the SA-MW-05D Cr6 concentration trends, together with the data trends from the other monitoring wells in the vicinity, indicate that the high Cr6 concentrations in the deep unit detected at SA-MW-05D exist only in the deep unit. Shallow monitoring wells in the same location show much lower chromium levels of 20 to 30 ppb, indicating that there is no on-going shallow source at the compressor station.

Upon installation of monitoring well SA-MW-05D in 2007, the Cr6 concentration at the well was 5,070 ppb, higher than the maximum Cr6 concentration at nearby PMW-03, 3,890 ppb, indicating that small pockets of high concentration groundwater that had not previously been detected existed in this area in the deep unit. The variation in concentration from 5,070 to 9,030 ppb at SA-MW-05D is likely due to natural variability in plume concentrations and may be due to the hydraulic influence of pumping at nearby remediation extraction well SA-RW-04, rather than from an ongoing source at the compressor station.

It should be noted that PG&E is currently in the process of expanding the Source Area in-situ remediation zone under the existing permit. The expansion specifically targets the Cr6 mass in the vicinity of SA-MW-05D in the deep unit. SA-MW-05D is on PG&E owned land and is more than one half mile from the nearest domestic well. PG&E's expanded in-situ effort in the source area will aggressively treat the chromium in this area of SA-MW-05D.

**Issue #10: There is no basis for Mr. Bowcock's assertion that contaminated water was injected into domestic wells in Hinkley.**

Litigation consultant Bob Bowcock asserted at the March 9 meeting that water tanker trucks reportedly put contaminated water into certain domestic wells when they were dry. PG&E has thoroughly explored similar claims as they were raised in litigation and there is no basis for these assertions. No witness has claimed, nor have any documents been produced that support the claim that contaminated water was injected into domestic wells in Hinkley. In addition, such an activity seems extremely unlikely, given the effort required to remove the pumps and piping from the wellhead to inject water down a domestic well, and the subsequent effort required (likely to no avail) to attempt to pump such water back out of a well after the water had spread into the geologic formation.

It is true that PG&E allowed the Hinkley Fire Department to fill its tanker trucks at the PG&E Compressor Station fire hydrant for firefighting in the Hinkley area. The water obtained did not contain chromium. The supply wells were upgradient from the plume and various tests confirmed they weren't impacted by the plume. Moreover, no testimony or documents exist stating that water from the fire hydrant at the PG&E Hinkley Compressor Station was put into local wells. Nevertheless, even if that did happen, the water from the PG&E fire hydrant has always been clean.



During the lawsuits, some firefighters reported that they made infrequent deliveries to local storage tanks when residents were out of water in summer months, or filled local pools at the beginning of the summer. But, no firefighter or document has suggested that anyone injected water into domestic wells.

If the Water Board believes that there is any merit to Mr. Bowcock's assertion, the Water Board should ask Mr. Bowcock to back up his claim with documents or credible witnesses. PG&E has asked Mr. Bowcock to support this claim and has asked him for his sampling data from Hinkley. However, Mr. Bowcock has not responded to PG&E's requests.

**Issue #11: No cross-screened wells remain in the area of lower aquifer impacts. The closest remaining cross-screened well will be destroyed by Summer 2011.**

PG&E's lower aquifer delineation report confirms that chromium impacts to the lower aquifer are limited to the general area of monitoring well MW-23C. PG&E began a comprehensive evaluation of historic agricultural and domestic wells in this area in 2009. PG&E prioritized the destruction of any wells that could be cross-screened between the upper and lower aquifer. The only remaining well that could be cross-screened in the area of lower aquifer impacts is well 26-04. Based on the location of this well, and the lateral distribution of chromium in the lower aquifer, it does not appear well 26-04 has provided a conduit for chromium to affect the lower aquifer (chromium affected wells MW-23C and MW-92C are located up-gradient of well 26-04). Well 26-04 will be destroyed in accordance with local agency requirements no later than Summer 2011.

#### Conclusion

PG&E requests the opportunity to make a full formal presentation to the Water Board at the June meeting in Barstow so that it can more thoroughly discuss these concerns and answer any questions that the Board or staff may have. PG&E believes It is important that this opportunity not be delayed beyond the June meeting because the Board's staff will be proceeding with the March 9 directives without the benefit of a great deal of very important information and delay will also result in a continuation of the potential for public misunderstanding of the current state of PG&E's remediation efforts. We ask that PG&E be provided with sufficient time to address these issues with the Water Board at the next southern-area meeting in June, 2011. Thank you for your consideration of this request.

Very truly yours,

A handwritten signature in cursive script that reads "David A. Gilbert".

David A. Gilbert



cc: Don Jardine, Vice Chair  
Mike Dispenza  
Keith Dyas  
Amy Horne, Ph.D  
Peter C. Pumphrey  
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Harold Singer  
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