

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

AMENDED CLEANUP AND ABATEMENT ORDER NO. R6V-2008-0002A1

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 owns and operates the Hinkley Compressor Station (hereafter the "Facility") located southeast of the community of Hinkley in San Bernardino County. For the purposes of this Order, the Pacific Gas and Electric Company is referred to as the "Discharger."
2. On August 6, 2008, the Water Board issued Cleanup and Abatement Order (CAO) No. R6V-2008-0002 (attached) to the Discharger to cleanup and abate the effects of waste discharges and threatened discharges containing hexavalent chromium and total chromium to waters of the State. The CAO required the Discharger to take additional corrective actions to contain chromium migrating with groundwater, to continue to implement groundwater remediation in the source area and central plume area, and to develop and implement a final cleanup strategy. The Order also modified the monitoring and reporting program for permitted projects.
3. Amended CAO No. 6-87-160A2, issued in 1998, established the cleanup level for hexavalent chromium in groundwater at the laboratory method reporting limit that was in effect at the time of 10 micrograms per liter ($\mu\text{g/L}$). The method reporting limits for hexavalent chromium and total chromium are now 0.2 $\mu\text{g/L}$ and 1 $\mu\text{g/L}$, respectively.
4. Sampling in the Hinkley Valley indicates that hexavalent and total chromium occur naturally in groundwater at variable concentrations, according to the February 27, 2007, document, *Groundwater Background Chromium Study Report, Hinkley Compressor Station* (Study). The Study, submitted by the Discharger, presents the results of one year of water sampling from wells located outside the boundaries of the chromium plume. The mean concentrations detected in background are 1.19 $\mu\text{g/L}$ for hexavalent chromium and 1.52 $\mu\text{g/L}$ for total chromium. The work plan for the Study recommended that maximum likely background concentrations should be expressed as the 95% upper tolerance limits. The 95% upper tolerance limit is the value that is estimated to include 95 percent of the

population with a 95 percent confidence level. The 95% upper tolerance limits are 3.09 µg/L for hexavalent chromium and 3.23 µg/L for total chromium.

The Study added the laboratory analysis methods' accuracy limits to the 95% upper tolerance limits to recommend background threshold values of 3.55 µg/L for hexavalent chromium and 4.04 µg/L for total chromium in groundwater. In an August 2008 staff report, Water Board staff recommended the 95% upper threshold limits, rather than the Study's recommended background threshold values, as the maximum background concentrations that should be considered when evaluating the chromium plume. Staff's recommendation is based on the independent, expert peer reviewers' comments on the draft Study work plan, which were incorporated into the final Study work plan. The peer reviewers recommended using the 95% upper tolerance limit of the background study sample results as the maximum likely background chromium concentrations. Staff's review of literature on setting background concentrations has not identified a single case where laboratory method accuracy limits were added to the maximum likely concentrations derived through statistical analysis, such as the 95% upper tolerance limit method.

5. On September 11, 2008, Water Board staff hosted a meeting in Hinkley to inform the public of the status of chromium cleanup in groundwater and of the contents of the 2007 *Background Chromium Study*. Public comments and concerns about the Study were considered by Water Board staff.
6. At the November 12-13, 2008 meeting, the Water Board considered the 2007 *Background Chromium Study* and comments and recommendations by interested persons and staff.
7. The 1995 *Water Quality Control Plan for the Lahontan Region* (Basin Plan) establishes Water Quality Objectives (WQOs) for the protection of beneficial uses. WQOs include the following Maximum Contaminant Level (MCL) established by the California Department of Health Services as a safe level to protect public drinking water supplies.

Total chromium 50 µg/L

8. On August 15, 2008, the Discharger submitted to the Water Board a document titled, *Second Quarter 2008 Monitoring Report, Source Area In-situ Remediation Project* (Report). Groundwater monitoring data in the Report shows that concentrations of total chromium were reported up to 7,400 µg/L and hexavalent chromium were reported up 7,050 µg/L in the source area at well SA-MW-05D.
9. The concentrations of total chromium and hexavalent chromium detected in groundwater at and downgradient of the Facility exceed WQOs for groundwater specified in the Basin Plan. The concentrations adversely affect the groundwater in the Mojave Hydrologic Unit for its municipal and domestic supply beneficial uses. The levels of waste chromium in groundwater, therefore, constitute a pollution of hazardous waste as defined in Water Code section 13050, subdivision (I).

10. The discharge of chromium to the groundwaters of the Mojave Hydrologic Unit, as described in Finding No. 8 above, violates a prohibition contained in the Basin Plan. Specifically, the discharge violates the following discharge prohibition:

“The discharge of waste...as defined in Section 13050(d) of the California Water Code which would violate the water quality objectives of this plan, or otherwise adversely affect the beneficial uses of water designated by this plan, is prohibited.”

11. Chromium in groundwater in and downgradient of the source area at the compressor station continues to adversely affect groundwater quality. This Amended Cleanup and Abatement Order establishes background chromium concentrations to be considered when evaluating final cleanup actions. Technical reports are necessary to verify corrective action implementation, cleanup of water quality, and progress towards restoring the beneficial uses of the aquifer.
12. This enforcement action is being taken by this regulatory agency to enforce the provisions of the California Water Code, and as such is exempt from the provisions of the California Environmental Quality Act (Public Resources Code section 21000 et seq.) in accordance with California Code of Regulations, title 14, section 15321. In addition, there is no possibility that the proposed activity will have a significant effect on the environment. In pertinent part, California Code of Regulations, title 14, section 15061, subdivision (b)(3), known as the "common sense exemption", 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. In this case, the proposed activity maintains the interim background concentration for hexavalent chromium of 4 ug/L for the purpose of plume containment and establishes background concentrations for hexavalent chromium and total chromium against which remediation strategies are to be assessed. Consequently, because there is no possibility that the proposed activity will have a significant effect on the environment, the proposed activity is also exempt from CEQA pursuant to California Code of Regulations, title 14, section 15061, subdivision (b)(3).

IT IS HEREBY ORDERED that, pursuant to the Water Code sections 13267 and 13304, the Discharger must clean up and abate the effects of the discharge and threatened discharge of chromium to waters of the State, and must comply with the provisions of this Order:

1. For the purposes of evaluating plume containment and complying with Requirement No. 3 of Cleanup and Abatement Order No. R6V-2008-0002, the interim background concentration for hexavalent chromium of 4 µg/L remains in effect.
2. For the purposes of complying with Requirement No. 5, Final Cleanup Actions, of Cleanup and Abatement Order No. R6V-2008-0002, background concentrations against which remediation strategies are to be assessed are established as follow:

Maximum background hexavalent chromium = 3.1 µg/L
Maximum background total chromium = 3.2 µg/L
Average background hexavalent chromium = 1.2 µg/L
Average background total chromium = 1.5 µg/L

Remediation strategy assessment 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.

Failure to comply with the terms or conditions of this Order will result in additional enforcement action that may include the imposition of administrative civil liability pursuant to Water Code sections 13268 and 13350 or referral to the Attorney General of the State of California for such legal action as he may deem appropriate.

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.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on November 12, 2008.


HAROLD J. SINGER
EXECUTIVE OFFICER

Attachment: Cleanup and Abatement Order No. R6V-2008-0002

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

AMENDED CLEANUP AND ABATEMENT ORDER NO. R6V-2008-0002A2

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 owns and operates the Hinkley Compressor Station (hereafter the "Facility"), located at 35863 Fairview Road, Hinkley in San Bernardino County. For the purposes of this Order, the Pacific Gas and Electric Company is referred to as the "Discharger."
2. The purpose of this Amendment is to allow the lateral migration of the 4 micrograms per liter ($\mu\text{g/L}$) hexavalent chromium [Cr(VI)] eastern plume boundary during implementation of cleanup actions to contain chromium expansion on the downgradient boundary in the northwest direction. The requirement for plume containment is listed in Cleanup and Abatement Order (CAO) No. R6V-2008-0002 (attached).
3. The Third Quarter 2008 Groundwater Monitoring Report for the Source Area In-situ Remediation Project contains monitoring data showing up to 6,420 $\mu\text{g/L}$ Cr(VI) and 5,920 $\mu\text{g/L}$ total chromium [Cr(T)] in groundwater at the Facility.
4. On August 6, 2008, the Water Board issued CAO No. R6V-2008-0002 to the Discharger to cleanup and abate the effects of waste discharges and threatened discharges containing hexavalent chromium and total chromium to waters of the State. Among the requirements listed in the Order, is the requirement for the Discharger to take additional corrective actions to contain chromium migrating with groundwater. The Order allows the Discharger to propose that the Water Board allow a quantified migration of the 4 $\mu\text{g/L}$ Cr(VI) plume boundary or the 50 $\mu\text{g/L}$ Cr(T) plume as part of a proposed remedial action project.
5. On September 24, 2008, the Discharger submitted a Notice of Intent (NOI) under General Waste Discharge Requirements (Board Order No. R6V-2008-0014). The Discharger also submitted an NOI Addendum on November 6, 2008 and a revised Figure 3 on November 24, 2008. The project proposes additional remediation activities for hexavalent chromium in groundwater at the site. One of the components of the proposed project includes groundwater extraction from within the northwestern portion of the chromium plume and injection of extracted water

dosed with reductant within the plume to the area south of the Central Area In-situ Remediation Project. The location of the dosed water discharge is referred to as the South Central Area. Up to 110 gallons per minute of groundwater may be injected into wells in the South Central Area. Modeling shows that such injections may result in groundwater mounding causing up to 1,000 feet of lateral migration of the 4 µg/L Cr(VI) eastern plume boundary. Some of the lateral spreading of the plume boundary may extend beyond PG&E-owned property onto private property to the east. PG&E has an agreement in place with the private party to not operate water wells that could cause further plume spreading. Modeling also predicts that any potential migration of the 4 µg/L Cr(VI) plume boundary as a result of project implementation will return to pre-project conditions approximately ten years or less after injections cease.

6. On November 12, 2008, the Water Board issued CAO No. R6V-2008-0002A1 (attached) to the Discharger establishing background chromium concentrations to be considered when defining plume boundaries and final cleanup actions.
7. Chromium in groundwater in and downgradient of the source area at the Facility continues to adversely affect groundwater quality. This Amended Cleanup and Abatement Order allows the lateral migration of the 4 µg/L Cr(VI) eastern plume boundary during implementation of the project described in Finding No. 4 above. Technical reports required pursuant to Board Order No. R6V-2008-0014 are necessary to verify corrective action implementation, cleanup of water quality, and progress towards restoring the beneficial uses of the aquifer.
8. Corrective actions proposed by the Discharger are necessary to maintain compliance with the CAO R6V-2008-0002 for containing plume migration. The proposed corrective action is the only feasible method readily available to the Discharger as it can be implemented almost immediately and still prevent adverse impacts to active users of groundwater in the area.
9. This enforcement action is being taken by this regulatory agency to enforce the provisions of the California Water Code, and as such is exempt from the provisions of the California Environmental Quality Act (Public Resources Code section 21000 et seq.) in accordance with California Code of Regulations, title 14, section 15321.

IT IS HEREBY ORDERED that, pursuant to the Water Code sections 13267 and 13304, the Discharger must clean up and abate the effects of the discharge and threatened discharge of chromium to waters of the State, and must comply with the provisions of this Order:

1. Cleanup and Abatement Order No. R6V-2008-0002A1 is amended to allow lateral spreading of the 4 µg/L Cr(VI) eastern plume boundary to no more than 1,000 feet, as shown on the attached map, and shall not extend to areas of existing groundwater use. Lateral spreading of the plume must be monitored and described in monitoring reports required pursuant to Board Order No. R6V-2008-0014.

Failure to comply with the terms or conditions of this Order will result in additional enforcement action that may include the imposition of administrative civil liability pursuant to Water Code sections 13268 and 13350 or referral to the Attorney General of the State of California for such legal action as he may deem appropriate.

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, section 2050 and following. The State Water Board must receive the petition by 5:00pm., 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, or 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: *Harold J. Singer*
HAROLD J. SINGER
EXECUTIVE OFFICER

Dated: April 7, 2009

Attachments: Cleanup and Abatement Order No. R6V-2008-0002
Cleanup and Abatement Order No. R6V-2008-0002A1
Area of Allowed Plume Expansion

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**AMENDED CLEANUP AND ABATEMENT ORDER
NO. R6V-2008-0002A3**

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 owns and operates the Hinkley Compressor Station (hereafter the "Facility"), located at 35863 Fairview Road, Hinkley in San Bernardino County. For the purposes of this Order, the Pacific Gas and Electric Company is referred to as the "Discharger."
2. The purpose of this Amendment is to address the hydraulic containment of chromium-affected groundwater south of Thompson Road in Hinkley, California, and actions to reduce plume migration in the area generally north of Thompson Road.
3. On August 6, 2008, the Water Board issued Cleanup and Abatement Order No. R6V-2008-0002 (combined with its amendments, hereafter referred to as the "CAO" or "CAO R6V-2008-0002") to the Discharger to clean up and abate the effects of waste discharges and threatened discharges containing hexavalent chromium and total chromium to waters of the State. The CAO required the Discharger to develop and implement a comprehensive cleanup strategy to clean up and abate the chromium plume to background levels and set an interim maximum background level of 4 parts per billion (ppb).
4. The CAO also required the Discharger to take immediate additional corrective actions to contain chromium migrating with groundwater and to continue to implement groundwater remediation in the source area and central plume area. The CAO also modified the monitoring and reporting program for permitted projects.
5. Order Paragraph 3 of the CAO required the Discharger to contain the hexavalent and total chromium plumes to locations where hexavalent chromium was below the interim background level of 4 ppb and the total chromium was below 50 ppb.

- a. The Discharger was required to achieve containment of the hexavalent chromium plume in the ground water by December 31, 2008, using the Discharger's *Boundary Control Monitoring Program and Updated Site-Wide Groundwater Monitoring Program* (submitted July 2, 2008 and prepared by Secor International) as described in Finding 16 in the Order.
 - b. The Discharger was required to achieve containment of the total chromium plume in the ground water by December 31, 2008, also based on the *Boundary Control Monitoring Program and Updated Site-Wide Groundwater Monitoring Program* as described in Finding 16 in the Order.
6. Amendment Order No. R6V-2008-0002A1, effective November 12, 2008, adopted average and maximum background levels for hexavalent chromium of 1.2 ppb and 3.1 ppb, respectively. The adopted average and maximum background levels in the Amendment Order for total chromium are 1.5 ppb and 3.2 ppb, respectively. These background levels were adopted for the purposes of establishing background water quality conditions, considering cleanup strategies and supporting future decisions regarding cleanup levels. For plume containment, the level remained at 4 ppb for both hexavalent chromium and total chromium.
7. Amendment Order No. R6V-2008-0002A2, effective April 7, 2009, allowed lateral migration of the 4 ppb hexavalent chromium plume boundary east of the South Central Remediation In-situ Area from discharges to groundwater extracted and piped from cleanup actions in the northwest plume area. Lateral plume expansion of 1,000 feet was allowed as long as it could be shown that the chromium would be captured by the existing groundwater extraction system in the downgradient flow direction.
8. In its First Quarterly 2009 Evaluation Monitoring Report, the Discharger reported that hexavalent chromium control limits were exceeded in Monitoring Well 62-A beginning in November 2008. The results were verified in February and March, 2009. The report was submitted April 29, 2009. Subsequent quarterly reports indicated that Monitoring Well 62-A continued to exceed hexavalent chromium control limits (with the exception of one quarter) through the Fourth Quarterly 2011 Groundwater Monitoring Report, submitted January 30, 2012. Data reported by the Discharger indicates that Monitoring Wells 72S and 79S have also exceeded hexavalent chromium concentrations, greater than 4 ppb. Since 2009, the migrating chromium plume in groundwater has affected domestic and agricultural wells at concentrations exceeding the maximum background concentration for hexavalent chromium of 3.1 ppb or total chromium of 3.2 ppb. Affected wells are located east of Summerset Road, and north of Thompson Road to Mount General Road.
9. On March 14, 2012, the Water Board adopted Settlement Agreement and Stipulation for Entry of Order; Order No. R6V-2012-0013 at its public meeting after receiving comments from the public. The Settlement Agreement addresses the period of

violation of CAO R6V-2008-0002 for plume migration from January 1, 2009 to December 31, 2011. As part of Order No. R6V-2012-0013, the Water Board agreed to amend CAO R6V-2008-0002 to replace CAO Paragraph 3 with the requirements presented in this Amendment to CAO R6V-2008-0002 addressing chromium plume migration.

10. In the interim period prior to Water Board certification of an environmental impact report and adoption of waste discharge requirements to achieve comprehensive cleanup, modified corrective actions by the Discharger from those listed in CAO R6V-2008-0002 are necessary to achieve containment north of Highway 58, at the Desert View Dairy and north to Thompson Road, and north of Thompson Road to Salinas Road. The Discharger will take actions reasonably available and permissible to reduce chromium levels in the impacted areas during this interim period. Chromium impacts to groundwater may be subject to cleanup additional investigative and cleanup requirements set by the Water Board.
11. This enforcement action is being taken by this regulatory agency to enforce the provisions of the California Water Code, and as such is exempt from the provisions of the California Environmental Quality Act (Public Resources Code section 21000 et seq.) in accordance with California Code of Regulations, title 14, section 15321. The implementation of this CAO Amendment is an action to assure the restoration of the environment and is exempt from the provisions of the California Environmental Quality Act, and in accordance with the California Code of Regulations, title 14, sections 15301 and 15303. The existing monitor well pairs and triplets and infrastructure are subject to section 15301 because there is negligible or no expansion of their existing uses. The extraction well to be installed north of Thompson Road is a new, small structure subject to section 15303.

IT IS HEREBY ORDERED that, pursuant to the Water Code section 13304, the Discharger shall clean up and abate the effects of the discharge and threatened discharge of chromium to waters of the State, and shall comply with the provisions of this Order:

- A. Cleanup and Abatement Order No. R6V-2008-0002 is amended for the purposes of evaluating plume containment and complying with Requirement No. 3 of Cleanup and Abatement Order No. R6V-2008-0002 by replacing Requirement No. 3 with the following.

3. Plume Containment

Hydraulic Containment of Chromium-Affected Groundwater South of Thompson Road: As part of its effort to prevent further migration of chromium-affected groundwater, the Discharger shall achieve and maintain hydraulic capture within the targeted areas shown on Figures 1 and 2 in Attachment A (incorporated herein by reference) by completing the following.

- 3.1 Discharger shall operate and maintain the groundwater extraction system that exists as of January 15, 2012, or its functional equivalent, such that hydraulic containment is maintained within the areas indicated on Figures 1 and 2 in Attachment A on a year-round basis. Separate Areas of Hydraulic Containment are established for the shallow zone of the Upper Aquifer and the deep zone of the Upper Aquifer. The Water Board will determine hydraulic containment compliance by comparing hydraulic gradients or groundwater flow direction vectors calculated from groundwater elevation data from select well pairs and triplets and piezometers with control limits, as outlined in Attachment B of this Order (incorporated herein).
- 3.2 Water levels shall be monitored on a monthly basis, year-round. For this evaluation, the Discharger shall collect continual pressure transducer data by the end of the month (e.g., January 31) and a data evaluation shall be submitted by the Discharger by the 15th of the subsequent month (e.g., February 15). If the evaluation demonstrates that the average monthly water level data from any of the well pair or triplet metrics provided in Attachment B is not met, the Discharger shall:
 - a. Verify the water levels manually within five days of the evaluation, and in any case no later than the 20th of the month when the data evaluation is submitted.
 - b. If the manual measurements confirm that there is no longer an inward gradient, the Discharger will adjust operations within five days in the field using existing infrastructure (i.e., adjust individual well pumping rates).
 - c. With the Water Board staff's written approval, the Discharger may demonstrate plume capture using alternative metrics (e.g., well pairs or triplets) to verify inward plume capture.
- 3.3 The Water Board may find the Discharger out of compliance with this Order if either of the following occurs:
 - a. The third consecutive month of data (e.g., January, February and March) for the same well pair or triplet indicates that the capture metrics are still not met, or
 - b. If for any 3 out of 12 months during the course of one year (e.g., July 2012 through July 2013), a specific well pair or triplet does not meet capture metrics.
- 3.4 Should either condition 3.3.a. or 3.3.b. occur, then by the 15th of the following month, the Discharger shall submit a contingency plan to re-establish capture

in addition to the existing infrastructure. The Water Board staff will review the contingency plan and either accept it or request modifications in writing.

Actions to Reduce Plume Migration in Area Generally North of Thompson Road:

The Discharger shall take reasonable and practicable corrective actions to reduce hexavalent chromium concentrations in groundwater and to reduce plume migration in areas north of Thompson Road (as illustrated by Attachment C incorporated herein by reference) by taking the following interim actions prior to the approval of the final remedy proposed by Discharger:

- 3.6 Starting the summer of 2012, the Discharger shall conduct groundwater extraction during the summer months of June 1 through September 30 in at least one location to maximize extraction and chromium removal. Failure to implement this action will constitute a violation of this Order.
- 3.7 By July 1, 2012, the Discharger shall review existing extraction and well sampling data and evaluate the need for additional extraction within the area depicted by Attachment C. If additional extraction is deemed necessary, the Discharger shall evaluate extraction methods and propose additional actions and a schedule to implement further chromium removal north of Thompson Road in the area depicted on Attachment B. The Discharger shall include the most effective actions reasonably feasible. The Discharger shall then implement these additional actions according to the schedule, subject to obtaining all required permits from regulatory agencies including approvals required by the California Environmental Quality Act and state and federal Endangered Species Acts, which approvals the Discharger shall diligently seek. In the event of any delay, the Discharger shall notify the Water Board staff in writing and seek a modification of the schedule. Failure to implement this action will constitute a violation of this Order.
- 3.8 The Discharger shall dispose of extracted groundwater containing chromium concentrations in a manner approved by Water Board staff.
- 3.9 In the event the Discharger determines that the new remedial components required by paragraphs 3.1-3.5 are interfering with the Discharger's ability to maintain inward gradients as required by paragraphs 3.1-3.5, the Discharger shall notify Water Board staff within five days of that determination and provide written evidence supporting the Discharger's determination. After notifying the Water Board, the Discharger may suspend the remedial requirements required by paragraphs 3.1-3.5 for no longer than is necessary to develop alternative pumping regimes above and/or below Thompson Road that will maintain internal hydraulic capture south of Thompson Road while maximizing chromium removal north of Thompson Road. The Discharger shall consult Water Board staff as necessary and seek written approval before taking any actions inconsistent with paragraphs 3.1-3.9 of this Order.

Any modifications to this order amending CAO No. R6V-2008-0002 are only effective upon the written approval of the Executive Officer or Assistant Executive Officer. Failure to comply with the terms or conditions of this Order will result in additional enforcement action that may include the imposition of administrative civil liability pursuant to California Water Code section 13350 or referral to the Attorney General of the State of California for such legal action as she may deem appropriate.

Any person aggrieved by this action of the Lahontan Water Board may petition the State Water Resources Control Board (State Water Board) to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 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, or 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.

I, Harold J. Singer, Executive Officer and Board Advisor, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on March 14, 2012.

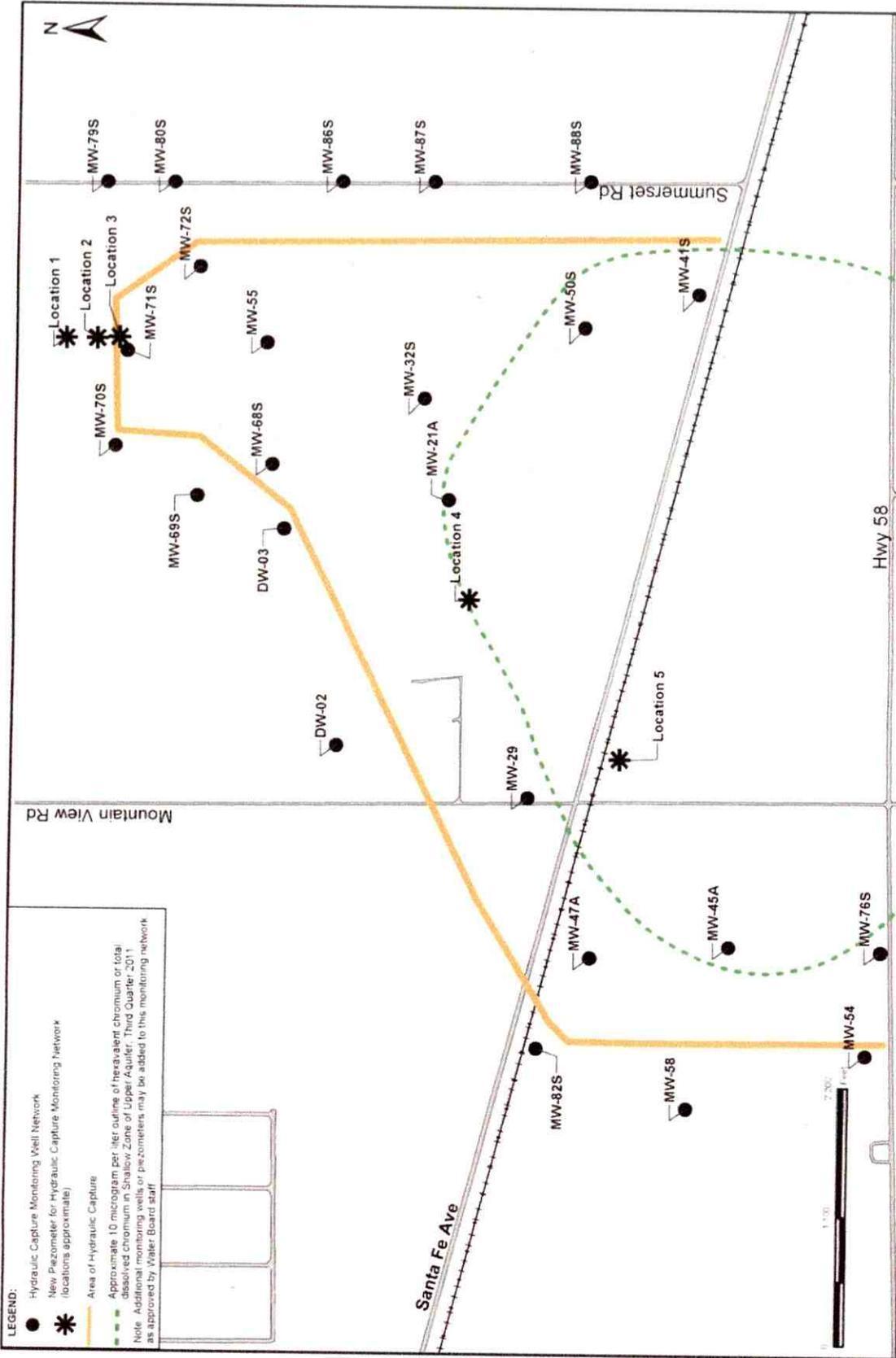


HAROLD J. SINGER
EXECUTIVE OFFICER

Attachments:

- A. Hydraulic Capture Zones, Figures 1 and 2
- B. Hydraulic Zone Capture Metrics
- C. Area for Extraction and Treatment of Hexavalent Chromium in Ground Water
North of Thompson Road

ATTACHMENT A
HYDRAULIC CAPTURE ZONES
FIGURES 1 AND 2



LEGEND:

- Hydraulic Capture Monitoring Well Network
- ★ New Piezometer for Hydraulic Capture Monitoring Network (locations approximate)
- Area of Hydraulic Capture
- Approximate 10 microgram per liter outline of hexavalent chromium or total dissolved chromium in Shallow Zone of Upper Aquifer, Third Quarter 2011
- Note: Additional monitoring wells or piezometers may be added to this monitoring network as approved by Water Board Staff

	<h2 style="margin: 0;">Hydraulic Capture Monitoring Plan, Shallow Zone of Upper Aquifer</h2> <p style="margin: 0; font-size: small;">Pacific Gas and Electric Company Hinkley, California</p>	<p>FIGURE 1</p>
<p>Project Manager: Lisa Coppe</p> <p>Project Manager: Jennifer Beatty</p> <p>Project Manager: Margaret Conable</p> <p>Technical Review: Scott Sayfred</p>	<p>100 Montgomery Street, Suite 1000 San Francisco, California 94104 Tel: 415.774.2744 www.arcadisusa.com</p>	

LEGEND:

- Hydraulic Capture Monitoring Well Network
- ★ New Piezometer for Hydraulic Capture Monitoring Network (locations approximate)
- Area of Hydraulic Capture
- Approximate 10 microgram per liter outline of hexavalent chromium or total dissolved chromium in Deep Zone of Upper Aquifer, Third Quarter, 2011

Note: Additional monitoring wells or piezometers may be added to this monitoring network as approved by Water Board staff

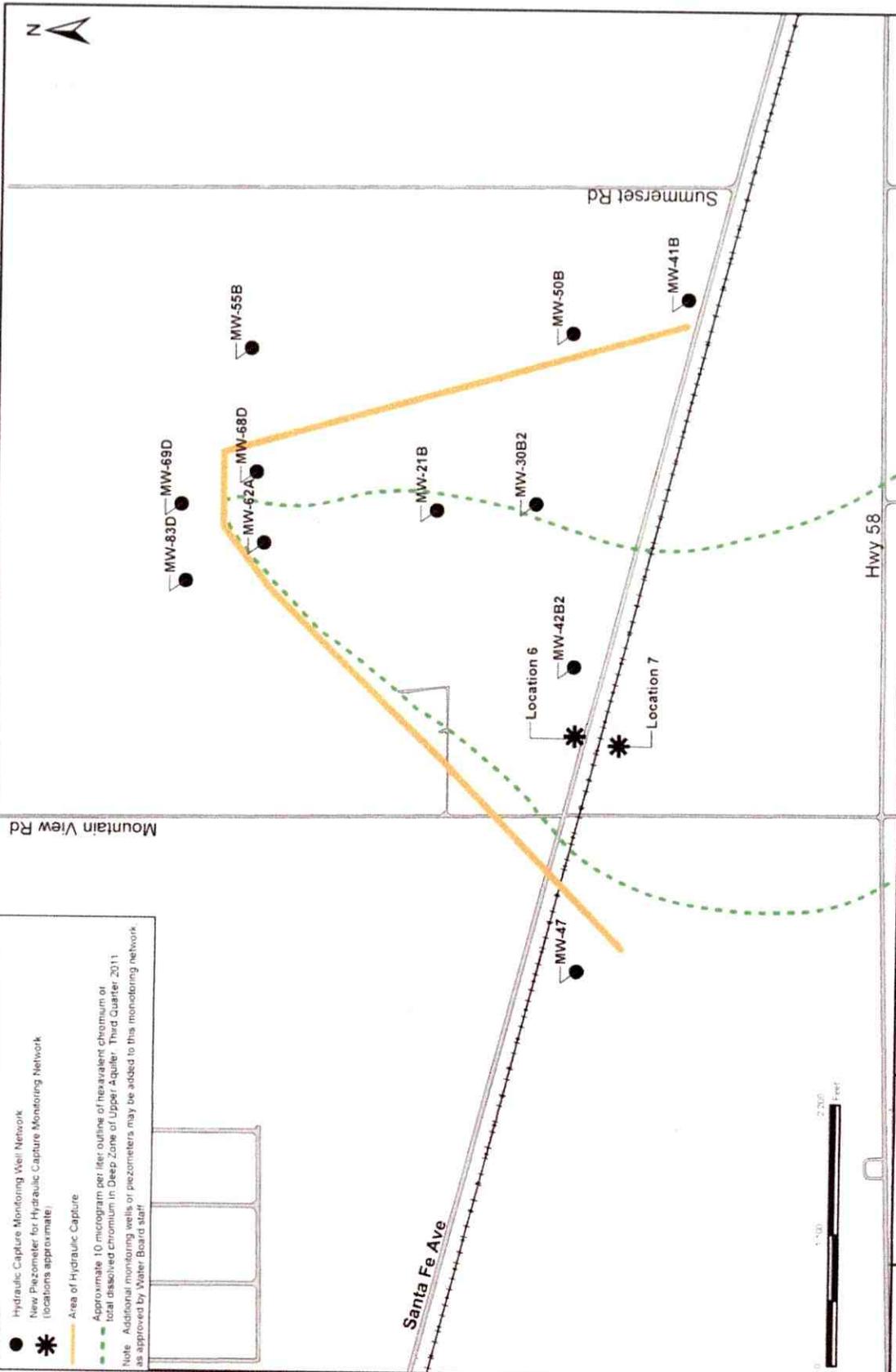


FIGURE 2

Hydraulic Capture Monitoring Plan, Deep Zone of Upper Aquifer

Pacific Gas and Electric Company
Hinkley, California

ARCADIS

500 Montgomery Street, Suite 300
San Francisco, CA 94111
Tel: 415.774.2342
Fax: 415.774.2340
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Project Manager:
Luis Coppe

Project Manager:
Jennifer Beatty

Site Manager:
Margaret Gentile

Project Engineer:
Scott Glynn



ATTACHMENT B
HYDRAULIC ZONE CAPTURE METRICS

APPENDIX A

Hydraulic capture shall be demonstrated through analysis of potentiometric surfaces in the A1 and A2 layers of the upper aquifer measured at least monthly. Hydraulic capture shall be demonstrated using those monitoring wells or piezometers identified in Table A-1 or other wells as accepted by Water Board staff. For well pairs, the inner well must have a potentiometric surface lower than the outer well. For well triplets, the vector described by the potentiometric surfaces at the three wells must show a gradient directed inward of the capture boundary line shown on Figures A-1 or A-2, for the A1 and A2 depth layers, respectively.

Table A-1 Hydraulic Capture Monitoring Plan

Depth Interval	Well Pairs		Well Triplets
A1 Layer	Outer Well	Inner Well	
	MW-86S	MW-55S	
	MW-80S	MW-72S	
	DW-03	MW-68S	
	MW-79S	MW-71S	
	New wells ^{1,2}	MW-71S	
			MW-88S, -87S, -32S
			MW-70S, -69S, -71S ²
			DW-02, MW-29, -21A or new piezometer ³ near MW-31
			MW-58, -45A and -47A
	MW-82S	new piezometer ³ near EX-29/-30	
			MW-54, -76S and -45A
			MW-50S, -88S and -41S
A2 Layer	Outer Well	Inner Well	
	MW-41B	MW-30B2	
	MW-83D	MW-62A	
	MW-69D	MW-62A ²	
	MW-50B	MW-21B	
	MW-47	MW-42B2 or new piezometer ³ near EX-29/-30 or EX-26	
			MW-69D, MW55B, MW-68D ²

¹“New Wells” indicates one or more piezometers in a row north of 71S. There is technical uncertainty as to the exact location of the down gradient capture line. Therefore only one of the piezometers will need to indicate an inward gradient. This piezometer must be outboard of the containment line.”

² It is understood that seasonal groundwater extraction to the north of this well pair/triplet may temporarily expand capture to the north. As a result, it is acceptable that an inward gradient or vector at these points may not be demonstrated during extraction from the A1 interval north of G2R, and/or from the A2 interval north of Alcudia Road. Expanding capture to the north will continue to meet the minimal plume capture requirement.

³ If the new piezometer cannot be installed due to access limitations pursuant to Endangered Species Act, then PG&E will develop an alternative location.

ATTACHMENT C

AREA FOR EXTRACTION AND TREATMENT OF HEXAVALENT
CHROMIUM IN GROUND WATER NORTH OF THOMPSON ROAD

