



**United States Department of the Interior  
California Department of Toxic Substances Control**



**ELECTRONIC SUBMISSION**

April 4, 2014

Ms. Yvonne Meeks  
Portfolio Manager – Site Remediation  
Pacific Gas and Electric Company  
4325 South Higuera Street  
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**Subject:** Directives on Outstanding Issues of the Response to Basis of Design Report/ Intermediate (60%) Design Comments for PG&E Topock Compressor Station Remediation Site.

Dear Ms. Meeks:

The Department of the Interior (DOI) and the Department of Toxic Substances Control (DTSC) jointly as lead agencies (the Agencies) have deliberated on input from Tribes<sup>1</sup> and stakeholders, specific comments, response to comments, and information provided in your April 2013 Basis of Design Report concerning several key issues that are vital to the progress of the Pre-Final (90%) Groundwater Remedy Design submittal. These issues include varying perspectives on the alignment of the remediation pipeline infrastructure, locations of soil storage and construction staging areas, the freshwater well source in Arizona, remedy monitoring, short-term remediation goals for the groundwater cleanup project, and sampling/data reporting. This letter provides Pacific Gas and Electric Company (PG&E) with the Agencies' directives for proceeding with the 90% groundwater remedy design. These directives are in addition to the resolutions made during the 60% Design comment resolution meetings and memorialized in the 60% Design Response to Comments Table.

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<sup>1</sup> The Topock project area is culturally and spiritually significant to nine federally-recognized tribes. Of the nine tribes in the area, the Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribes ("CRIT"), Fort Mojave Indian Tribe ("FMIT") and Hualapai Tribal Nation (hereafter collectively referred to as "the Tribes") have taken the most interest in the project and regularly participate in meetings and provide detailed comments on issues pertaining to site cleanup.

### Aboveground/Below Ground Pipeline Infrastructure

During the preliminary (30%) design, the Agencies provided direction to PG&E to modify the remedy design to implement a double-back loop along National Trails Highway and eliminate the Bat Cave Wash pipeline and trenching (See Figure 1-Pipeline modifications from 30% - 60% design). Based on input received during Tribal consultation meetings, the Agencies determined that these design modifications would reduce adverse effects of the groundwater remedy on the cultural, religious and spiritual values held by the Tribes for the Traditional Cultural Property (TCP) within the Area of Potential Effect (APE), while recognizing the Agencies' responsibility to protect public safety and reduce ecological and visual impacts in the area.

The Tribes indicated in their 30% and 60% Groundwater Remedy Design review comments and in discussions during the response to comments that their preference is for all piping associated with the remedy to be situated aboveground and that further intrusion into the land is objectionable to the Tribes. During the 30% design comment resolution, DOI committed to evaluate other options for aboveground piping in the areas adjacent to Old Route 66 and the Topock Compressor Station.

DOI developed a pipeline matrix detailing the varying alternatives for above/below ground pipelines and evaluation criteria to be considered during the selection process, which was submitted with DOI comments in April 2013 on the 60% design. The matrix only addressed portions of the remedy infrastructure referred to as Pipeline A and Pipeline B. The purpose of the matrix was to memorialize the multiple criteria considered in evaluating pipeline options and to facilitate the submission of stakeholder input. DOI worked with interested Tribes and the Technical Review Committee (TRC) members in the development of the matrix evaluation criteria and the various pipeline placement alternatives. DOI directed PG&E to fill out the technical portions of the matrix as part of the response to DOI's comment. After several revisions and significant input from the Agencies, Tribes and stakeholders, PG&E has completed the matrix and it is included in the final Response to Comment package for the 60% design.

On March 7, 2014, DOI received a letter from the FMIT providing a revised position on the preference for portions of Pipeline A. The most significant change was the revised preference for below ground piping for the area adjacent to Maze Loci B. FMIT stated a preference for aboveground placement of the remaining portions of the Pipeline A. A similar letter was received from the Hualapai Tribe on March 10, 2014 with the same position regarding the first segment of the pipeline. However, the Hualapai Tribe identified either above or below ground for the remaining Pipeline A segments. Finally, a letter from the Cocopah Tribe was received on March 13, 2014, noting the acceptance of above or belowground infrastructure for all segments of Pipeline A.

In our evaluation of aboveground versus below ground pipeline alternatives, the Agencies considered all input received from PG&E, the Tribes and stakeholders as well as other significant criteria, such as ecological impacts, construction impacts and long-term maintenance and safety concerns. After significant deliberation, evaluation and

consideration of all influential factors, the Agencies direct PG&E to continue to design the pipeline system for below ground pipeline placement, following the alignment in PG&E's 60% Design proposal. Additionally, based on additional input from the Tribes, PG&E shall remove all underground utilities and infrastructures to the extent practicable at the time of remedy decommissioning. This directive shall be incorporated into the decommissioning plan as part of the 90% Basis of Design.

#### ER-6 Pipeline Route

The Agencies have considered the various options on the installation of the pipeline route associated with East Ravine extraction well 6 (ER-6). PG&E's preferred option is to place the pipeline through Area of Concern 10, which is an area that has detected contamination at significantly elevated concentrations. PG&E has proposed to delay the installation of ER-6 until after completion of soil investigation and risk assessment.

The Agencies are not in favor of postponing the construction of the extraction well in the East Ravine area due to the potential for direct communication of contaminated groundwater with the river and the potential delay to implementation of the groundwater remedy. Although the Agencies consider the northern access with aboveground piping to be the shortest and most direct, PG&E has raised issues associated with health and safety concerns due to the steep slope through which the pipeline must be constructed.

If PG&E proposes their preferred eastern route in the 90% design, the Agencies will require PG&E to conduct enhanced sampling where the pipeline intersects the wash and develop a plan to segregate contaminated (e.g., shallow) soils. Enhanced soil sampling and management must include provisions for investigating and potentially remediating soils at a greater depth within the footprint of the pipeline trench. In addition, the pipeline segment must be located at the edge of the wash to minimize the volume of contaminated materials that might be encountered during installation. The 90% Design must incorporate the specific items identified in this paragraph.

#### Storage and Staging Areas

With respect to soil storage and staging areas, the Agencies acknowledge the need for PG&E to have sufficient staging and material storage within close proximity to areas of construction. After considering all available areas near the areas of construction, a soil staging and storage area matrix was prepared based on input from PG&E and the Tribes (see attached draft Soil Storage and Staging Matrix). It is our current understanding that the Tribes will be providing a final revised matrix in the near future. Furthermore, recent communications from the Tribes as well as PG&E have detailed preferences regarding each location. Based on information gathered to date, it is DOI's direction to eliminate Sites 15, 16 and 19 from further consideration. Additionally, Site 20 is within Area of Concern (AOC) #24 which requires additional investigation. The Agencies recommend limited use of the area and PG&E should not consider this location for long-term storage.

According to PG&E, a distinction must be made between construction locations and storage and staging areas. PG&E has requested that construction infrastructure still be allowed within the areas that are no longer identified for storage and staging, stating that

the duration of use will only be limited to the construction activities in that area. The Agencies direct PG&E to consider all the information provided in the revised matrix, communications from the Tribes in meetings, and design comments to identify the minimum number of preferred storage and staging locations necessary in the 90% design for the Agencies consideration. The Agencies will review PG&E's proposed locations for storage and staging, along with the proposed infrastructure, during the review period for the 90% Basis of Design Report.

Storage and staging areas that are adjacent to sensitive or undisturbed areas shall include physical protection measures, such as k-rail barriers, and site workers should receive additional sensitivity training with respect to minimizing impacts to ecological and cultural settings. Additionally, PG&E shall coordinate closely with the Bureau of Land Management and Bureau of Reclamation regarding potential use of properties associated with or adjacent to Park Moabi.

#### Freshwater Well Location

The Agencies have considered the data provided from the testing of the existing HNWR-1 well and the newly installed Site B well. Based on the laboratory and field data presented by PG&E during the telephone and internet conference communications for the Freshwater Implementation Plan updates and information included in the April 2, 2014 technical memorandum, the Agencies acknowledge that Site B has a larger saturated thickness and will provide a higher yield of freshwater than HNWR-1. However, the chemical results obtained as part of the well development and pump tests raise several concerns with respect to the chemistry of Site B. At Site B, the average arsenic concentration is slightly higher than HNWR-1 and more importantly, the hexavalent chromium concentration is consistently at or slightly above the groundwater cleanup goal of 32 parts per billion (RAO 3). Because the Arizona freshwater will be injected into an area outside of the current plume location, the Agencies have significant reservations about injecting water with elevated levels of hexavalent chromium into the existing water basin. Injection of water at or slightly above the target remediation objective may not allow the Agencies to ascertain if PG&E can comply with Remedial Action Objective 4, which specifies that PG&E must ensure hexavalent chromium plume boundary does not permanently expand following completion of the groundwater remedy. Therefore, the Agencies direct PG&E to first consider the use of the HNWR-1 location. The Agencies agree with the recommendations made by PG&E in the April 2, 2014 technical memorandum to install the new well at HNWR-1 location and to proceed with depth specific testing at the Site B well. PG&E may seek approval from the Agencies to consider the use of other sources, including Site B, if they can demonstrate that technical feasibility prevents the use of the HNWR-1 location. Similarly, PG&E may request approval from the Agencies for blending of water from other sources, prior to injection, or other alternatives (e.g., well modification/reconstruction).

#### Remedy Monitoring Outside the Hexavalent Chromium Plume Boundaries

In accordance with maintaining the quality of groundwater outside the chromium plume boundary, the Agencies are requiring that the 90% Design include a monitoring element that will track injected water quality at IRL and Freshwater Injection Wells as well as at

locations down-gradient of the In-situ Reduction Zone (“IRZ”) line. Flow charts similar to those used for the IM-3 contingency planning for groundwater injection should be prepared and incorporate Action Levels and Agency notification requirements. Action Levels can be based on MCLs, injection water quality, and receiving water quality. Action Levels are a mechanism to inform the Agencies of changes in water quality. A large suite of analytes (e.g., Exhibit 5.2-2 of Volume 2, Appendix L of the 60% Design) should be conducted quarterly as part of the monitoring program as the remedy begins. Receptor wells (e.g., Park Moabi, Topock Marina, Sanders, and Smith) should be identified and monitored periodically, including private wells if access is granted.

#### Groundwater Capture Zone Monitoring

The capture zone monitoring in the 60% Design is inadequate and unacceptable in its current form. While a multiple lines of evidence approach is proposed and is necessary, the current approach is incomplete and undefined. It is imperative that appropriate and acceptable plume control for both contaminants and byproducts be evaluated and established for the remedy. Furthermore, capture zone monitoring must provide definitive criteria and sufficient data that would allow DTSC to meet the plume control determination as specified in Exhibit A5a of the DTSC 2012 settlement with FMIT and to enable DTSC to reach findings required under Exhibit A1 and A2 for decommissioning of IM-3. As stated in Exhibit A5a of the settlement agreement, PG&E must demonstrate consistency of model projections of the groundwater flow with transport model and field data.

First, the capture zone must be clearly defined and illustrated in three dimensions. Well gradient pairs must be established and identified that will provide appropriate information to determine that groundwater extraction is providing sufficient hydraulic influence and capture. Additional groundwater wells, including slant wells under the river, need to be proposed to provide hydraulic assessment and/or to evaluate concentration trends over time. The Agencies recognize that contaminant and byproduct concentration trends at certain wells will likely fluctuate and may show increases before approaching cleanup goals. (For example, a monitoring well in the floodplain downgradient of both the IRZ network and areas of elevated Cr (VI) concentrations might exhibit increases during early stages of the remedy as contamination moves towards a river extraction well). Finally, tracer studies should be considered as part of the multiple lines of evidence approach to support capture.

#### Injection and Management of TDS Outside the Hexavalent Chromium Plume

One of the objectives of the remedy implementation is to maintain the quality of the groundwater aquifer outside the limits of the chromium plume and to comply with beneficial groundwater uses and objectives identified in the Regional Water Quality Control Board’s Basin Plan. PG&E shall consider and evaluate the potential impacts of Total Dissolved Solids (TDS) as part of the 90% design and propose a monitoring and management plan throughout the remedy. PG&E’s goal should be to limit discharges of TDS that would adversely impact the shallow aquifer at IRL and Freshwater Injection Wells. The Agencies request that PG&E consider injection of higher TDS concentrations (i.e., waters from Riverbank Extraction Wells) into the deep portion of the aquifer where

elevated TDS naturally occurs. The Agencies agree with PG&E that TDS along the IRZ will likely be mixed in the aquifer and that TDS management would be difficult in this area.

#### Short-Term Remediation Goals

Because the adopted remedy will be constructed and operated for decades prior to meeting the anticipated remedial objectives, the Agencies are required to conduct periodic reviews (5-year reviews) of the remedy. The Five-Year Review requirement applies to all remedial actions selected under CERCLA §121. This requirement is also specified in the Consent Decree between PG&E and DOI. The Agencies have directed PG&E as early as the CMI Work Plan to consider and develop measurable and quantifiable short-term goals to facilitate the remedy performance assessment. In addition, as part of the March 2013 settlement agreement between the Fort Mojave Indian Tribes, DTSC, and PG&E, DTSC is obligated to consider the decommissioning of the Interim Measure 3 Treatment Plant once the adopted remedy is considered to be “operating successfully and properly.” The criteria for meeting this objective must be defined by DTSC and PG&E, with DOI’s approval.

On December 31, 2013, PG&E submitted a draft matrix of suggested short-term remedial objectives for consideration in response to the Agencies’ comments on this subject within the intermediate design review. Subsequently, the Agencies met and collaborated in the creation of an enhanced short-term remediation goal matrix and presented it to PG&E for evaluation on March 3, 2013. Currently, the Agencies understand that PG&E will provide input on the enhanced matrix during the week of March 31, 2014. Therefore, the Agencies anticipate that the development of short-term remediation objectives will be ongoing and target a resolution of the parameters of these goals prior to the draft final (90%) basis of design document. Furthermore, the Agencies expect that the resolution will develop measurable goals for one year after construction and for subsequent five year reviews thereafter.

#### Sampling Methodology and Data Reporting

DTSC convened a meeting with PG&E chemists on March 26, 2014 regarding sampling methodology and data reporting. As a result of the meeting, DTSC chemists understand that the hexavalent chromium reporting limit for this project can push the technological, financial, and resource capabilities of contract laboratories. Despite careful procedures in place, occasional and random laboratory contaminants of hexavalent chromium can and do appear in sampling results. Therefore, DTSC agrees that the current Sampling and Analysis Plan (SAP) for sample collection would not need to be revised. Additionally, DTSC agrees with PG&E’s chemists that the laboratory Standard Operating Procedures, additional quality control procedures and corrective action protocols should be appended to the Quality Assurance Project Plan (QAPP) to ensure that the commercial laboratories are following procedures that would yield the best precision and accuracy achievable for the project. Furthermore, the Agencies direct PG&E to amend the quality control section of the groundwater monitoring reports to improve on the specificity of laboratory narratives and corrective action taken in reporting “suspect” detections of hexavalent chromium in surface water samples. These narratives should include, at a minimum,

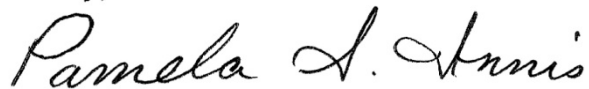
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identifying each “suspect” detection, the basis for what likely caused the detection, and any future corrective action that will be implemented to resolve identified problems. The Agencies further direct PG&E to provide immediate notification to the Agencies of all samples that are considered “suspect” requiring reanalysis at the laboratory. Subsequent to the analysis and validation process, PG&E shall submit electronically all supporting laboratory notes, QA/QC data, raw chromatograms and validation reporting to the Agencies, to ensure transparency, in support of PG&E’s conclusion of a false positive result identified at the laboratory.

If you have any questions, please contact Pamela Innis at (303) 445-2502 or Aaron Yue at (714) 484-5439.

Sincerely,



Pamela S. Innis  
DOI Topock Remedial Project Manager



Aaron Yue  
Project Manager  
Department of Toxic Substances Control

cc: PG&E Topock Consultative Workgroup Members  
PG&E Topock Geo/Hydro Technical Workgroup Members  
Tribal Representatives in PG&E Project Contact List  
Technical Review Committee