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January 10, 2023

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Environmental Compliance and Cleanup Division
Office of Environmental Policy and Compliance (OEPC)
US Department of Interior

Mr. Aaron Yue
California Department of Toxic Substances Control
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Subject: December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California
(Document ID: TPK_Monthly_Progress_Rpt_December_2022_20230110)

Dear Ms. Dickerson and Mr. Yue:

In compliance with the *1996 Corrective Action Consent Agreement (CACA)* (Attachment 6, Part E, Section 9a and Attachment 7) and the *2013 Remedial Design/Remedial Action Consent Decree (CD)* (Paragraph 32 and Appendix C, Section 5), and pursuant to the *Construction/Remedial Action Work Plan (C/RAWP)* (Section 2.6.3.1), this monthly report describes activities taken at Pacific Gas and Electric Company's (PG&E's) Topock Compressor Station in December 2022, as well as activities planned for the next six weeks (January 1 to February 11, 2023), and presents available results from sampling and testing performed in the reporting period.

This report also discusses material deviations from the approved design documents and/or the C/RAWP, if any, that PG&E has proposed to DTSC and DOI, or that have been approved by DTSC and DOI. This report highlights key personnel changes, if any, and summarizes activities performed and activities planned in support of DOI's 2012 Community Involvement Plan and DTSC's 2019 Community Outreach Plan, as well as contacts with the local community, representatives of the press, and/or public interest groups, if any. This report also includes data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection, as required by the Condition of Approval # xi in DTSC's approval letter dated August 24, 2018.

Please note that since activities conducted to comply with the project's Applicable or Relevant and Appropriate Requirement (ARARs) and the Subsequent Environmental Impact Report (SEIR) mitigation measures are currently reported in separate compliance reports, this information is not repeated in the monthly reports. Monthly progress reports will be submitted to DTSC and DOI by the 10th day of the following month during construction and startup of the groundwater remedy at the Topock Compressor Station which officially began on October 2, 2018. This is the 51st monthly progress report. Please contact me at (760) 791-5884 if you have any questions or comments regarding this submittal.

Sincerely,

A handwritten signature in cursive script that reads 'Kristina Bonnett'.

Kristina Bonnett
Topock Technical Project Manager

Internal

Topock Project Executive Abstract

<p>Document Title: <i>December 2022 Monthly Progress Report for the Groundwater Remedy Construction and Startup, PG&E Topock Compressor Station, Needles, California</i></p> <p>Submitting Agency: DOI, DTSC</p> <p>Final Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Date of Document: 1/10/2023</p> <p>Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E</p>
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<p>What does this information pertain to?</p> <p><input type="checkbox"/> Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)</p> <p><input type="checkbox"/> RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)</p> <p><input type="checkbox"/> Corrective Measures Study (CMS)/Feasibility Study (FS)</p> <p><input checked="" type="checkbox"/> Corrective Measures Implementation (CMI)/Remedial Action (RA)</p> <p><input type="checkbox"/> California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR)</p> <p><input type="checkbox"/> Interim Measures</p> <p><input type="checkbox"/> Other / Explain:</p>	<p>Is this a Regulatory Requirement?</p> <p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If no, why is the document needed?</p>
<p>What is the consequence of NOT doing this item? What is the consequence of DOING this item?</p> <p>The consequence for not doing this item is PG&E will be out of compliance with the 1996 Corrective Action Consent Agreement (CACA) and the 2013 Remedial Design/Remedial Action Consent Decree (CD), as well as the Construction/Remedial Action Work Plan (C/RAWP).</p>	<p>Other Justification/s:</p> <p><input type="checkbox"/> Permit <input type="checkbox"/> Other / Explain:</p>
<p>Brief Summary of attached document:</p> <p>This monthly report describes activities taken in December 2022 as well as activities planned for the next six weeks (January 1 to February 11, 2023) and presents available results from sampling and testing in the reporting period. In addition, this report discusses material deviations from the approved design documents and/or the <i>Construction/ Remedial Action Work Plan</i> (C/RAWP), if any, that PG&E has proposed to the California Department of Toxic Substances Control (DTSC) and the U.S. Department of the Interior (DOI) or that have been approved by DTSC and DOI. This report also highlights key personnel changes, if any, and summarizes activities performed and activities planned at the Topock Compressor Station in support of DOI's 2012 Community Involvement Plan and DTSC's 2019 Community Outreach Plan, as well as contacts with local community, representatives of the press, and/or public interest groups, if any.</p> <p>Written by: Pacific Gas and Electric Company</p>	
<p>Recommendations:</p> <p>Provide input to PG&E.</p>	
<p>How is this information related to the Final Remedy or Regulatory Requirements:</p> <p>This submittal is required in compliance with the CACA, CD, and pursuant to the C/RAWP.</p>	
<p>Other requirements of this information?</p> <p>None.</p>	



December 2022
Monthly Progress Report for the
Final Groundwater Remedy Construction and Startup

PG&E Topock Compressor Station
Needles, California

Document ID: TPK_Monthly_Progress_Rpt_December_20230110

January 2023

Prepared for
U.S. Department of the Interior and California Department of Toxic Substances Control

On Behalf of
Pacific Gas and Electric Company



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Acronyms and Abbreviations

Acronym	Definition
µg/m ³	microgram(s) per cubic meter
AOC	area of concern
ARAR	applicable or relevant and appropriate requirement
BLM	U.S. Bureau of Land Management
BMP	best management practice
CACA	Corrective Action Consent Agreement
C/RAWP	Construction/Remedial Action Work Plan
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CH2M	CH2M HILL, Inc.
CHQ	Construction Headquarters
CRWQCB	California Regional Water Quality Control Board, Colorado River Basin Region
DOI	United States Department of the Interior
DTSC	California Department of Toxic Substances Control
ERTC	Environmental Release to Construct
FCR	field contact representative
IM-3	Interim Measure No. 3
IRZ	in-situ reactive zone
LOC	level of concern
NTH	National Trails Highway
O&M	operations and maintenance
PG&E	Pacific Gas and Electric Company
RCRA	Resource Conservation and Recovery Act
RPWC	Remedy-Produced Water Conditioning
SEIR	Subsequent Environmental Impact Report
SMP	Soil Management Plan
TCS	Topock Compressor Station
USEPA	U.S. Environmental Protection Agency
WEAT	Worker Environmental Awareness Training
WVR	Work Variance Request

1. Introduction

Pacific Gas and Electric Company (PG&E) is implementing the final groundwater remedy to address chromium in groundwater near the PG&E Topock Compressor Station (TCS), located in eastern San Bernardino County 15 miles southeast of the city of Needles, California. The U.S. Department of the Interior (DOI) is the lead federal agency overseeing remedial actions at the TCS. PG&E and the United States executed a Remedial Design/Remedial Action Consent Decree (CD), on behalf of the DOI, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 2012, which was approved by the U.S. District Court for the Central District of California in November 2013 (DOI, 2013). Paragraph 32 and Appendix C (Section 5) of the CD requires PG&E to submit to DOI monthly electronic progress reports during construction of the remedial action, and to submit progress reports on a quarterly basis after the selected remedy has been implemented and demonstrated to be operating as intended.

The California Department of Toxic Substances Control (DTSC) is the lead state agency overseeing corrective actions at the TCS. Remedial activities are being performed in conformance with the requirements of the Resource Conservation and Recovery Act (RCRA) Corrective Action pursuant to a Corrective Action Consent Agreement (CACA) entered into by PG&E and the DTSC in February 1996 (DTSC, 1996). Attachment 6, Part E, Section 9a and Attachment 7 of the CACA require PG&E to provide certain information in monthly progress reports during construction of the corrective action.

In compliance with the CACA and CD requirements, PG&E proposed a template for the monthly progress reports in Exhibit 2.6-2 of the Construction/Remedial Action Work Plan (C/RAWP) (CH2M, 2015b). The C/RAWP was approved by DOI on April 3, 2018 (DOI, 2018) and DTSC on April 24, 2018 (DTSC, 2018a).

This is the 51st of the monthly progress reports that will be submitted to DOI and DTSC for the duration of the remedy construction and startup. This monthly progress report documents activities during December 2022, and follows the content and format described in Exhibit 2.6-2 of the approved C/RAWP. The report is organized as follows:

- Sections 2.1 through 2.7 describe completed construction activities; data collected, generated or received; nature and volume of waste generated; waste handling/disposal; issues encountered; actions taken to rectify problems/issues; personnel changes; and Work Variance Requests (WVRs; i.e., material deviations from the design documents, the C/RAWP, or other approved work plans), if any, as well as agencies' actions on those requests, and potential schedule impacts.
- Sections 2.8 through 2.9 summarize key project personnel changes, if any, contacts with representatives of the press, local community, or public interest groups during the reporting period, other activities provided to assist DTSC and/or DOI in support of the Community Outreach Plan (DTSC, 2019) and/or Community Involvement Plan (DOI, 2012), respectively, and anticipated near-term (approximately next six weeks) activities in support of the Community Outreach and Community Involvement Plans.
- Section 2.10 provides information relating to the construction schedule progress, sequencing of activities, information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule, and a description of efforts made to mitigate those delays or anticipated delays, if any.
- Section 2.11 presents validated data from samples collected as part of the sitewide groundwater monitoring program within 60 days of sample collection, as required by the Condition of Approval # xi in DTSC's approval letter dated August 24, 2018 (DTSC, 2018a).
- Section 3 lists the references cited in this report.

Please note that since activities conducted to comply with the project's Applicable or Relevant and Appropriate Requirement (ARARs) and the Subsequent Environmental Impact Report (SEIR) (DTSC, 2018b) mitigation measures are currently reported in separate compliance reports, the same information is not repeated in the monthly reports.

2. Monthly Update

2.1 Work Completed

Phase 1 remedy construction, which began on October 2, 2018, includes the National Trail Highway (NTH) In-situ Reactive Zone (IRZ) with 22 remediation wells (for injection and/or extraction) and a robust network of 75 monitoring wells (for measuring water levels and quality), as well as a network of over 74,000 linear feet of water conveyance piping and 41,000 feet of electrical conduits that connect the remediation wells to the power supply system, the carbon amendment building, and the Remedy-Produced Water Conditioning (RPWC) system.

Phase 1 systems and components were integrated and tested to make sure they function properly. On December 22, 2021, PG&E initiated injection of ethanol into the groundwater at select NTH IRZ wells using temporary power (i.e., portable generator). On March 24, 2022, the permanent power system (from TCS) was put in service. The RPWC system inside TCS was fully operational on June 24, 2022. Between March and August 2022, the groundwater remedy experienced intermittent power outages of various durations (the contributing factors, include but are not limited to, TCS operations load shedding [i.e., power to remedy was shut off by TCS due to gas operational reasons] and/or functionality of electrical components). Portable generators were used to supply power from end of August to end of October 2022. The permanent power supply issue was resolved at the end of October 2022. The portable generators are kept onsite temporarily as contingencies.

Concurrently, after receipt of DTSC's and DOI's approvals, PG&E turned off the IM-3 extraction wells (TW-2D and TW-3D) on December 21, 2021, and started to prepare IM-3 for lay-up. The preparation for lay-up was completed on March 21, 2022. PG&E notified the agencies that IM-3 is in lay-up mode on March 22, 2022. When the IM-3 system is in a lay-up condition, the system will be left in a safe, secure, and preserved state and will not operate again until agency approval is received for decommissioning and removal of the system.

Phase 2 remedy construction commenced on March 2, 2022, and includes additional wells (located in Bat Cave Wash [BCW]/East Ravine/TCS, on the Transwestern Bench [TWB], and along historic route 66), and pipelines connecting some of the additional wells as well as a pipeline connecting the previously installed Riverbank (RB) wells.

Additional highlights of key activities related to the continued construction of the groundwater remedy completed during this reporting period include the following (in chronological order):

- On July 13, 2018, PG&E sent via email the first weekly six-week look-ahead schedule for the remedy construction field work. The weekly emails provide highlights of field activities in the previous week, field activities scheduled for the next week, and planned activities for the next six weeks. Recipients of the weekly emails are DOI, DTSC, the U.S. Fish and Wildlife Service, the California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB), the Metropolitan Water District of Southern California, Tribes, and the Technical Review Committee. PG&E continues to send these weekly emails to date. As of December 31, 2022, a total of 227 six-week look-ahead schedule emails have been sent. Of those, four six-week look-ahead schedule emails were sent in December 2022 (on December 5, 12, 19, and 27).
- On August 10, 2018, PG&E issued the first Environmental Release to Construct (ERTC) to contractors. As of December 31, 2022, a total of 101 ERTCs (including addenda) were issued for mobilization, construction, site restoration, and revegetation/mitigation planting activities. The ERTCs are listed in Tables 2-1a and 2-1b. Addendum No. 1 to ERTC 18 and Addendum No. 2 to ERTC 20 were issued in December 2022 for remedy electrical work inside TCS and between Electrical Node 2 to well RB-5, respectively. In addition, ERTC #4 was issued in December 2022 for chemical rehabilitation of IRZ wells.
- Starting on October 4, 2018, PG&E has published a daily construction activities list and discussed the list at the morning tailboards with Tribes and agency representatives. This daily list is intended to

inform and facilitate observation by Tribes and agency representatives on site on that day. PG&E continues to publish these daily lists and discuss the list at the daily morning tailboards to date. In December 2022, a total of 19 daily construction activities lists were published and discussed at the morning tailboards.

- In December 2022, PG&E performed the following construction activities (note that Figures 2-1 and 2-2 show the locations of key areas and wells, and Table 2-2 presents the changes in well nomenclature):
 - **Attachment A** includes select photos of activities during this reporting period.
 - **Attachment B** presents all water analytical results from Phase 2A well drilling. Groundwater sampling to establish baseline concentrations at those wells is ongoing and their results are reported **Attachment G** of this report.
 - November 27 to December 3 activities:
 - Continued construction of pipelines outside the TCS at E.
 - Continued IRZ O&M activities.
 - Completed well development at FW-02B.
 - Conducted groundwater sampling at various locations.
 - December 4 to 10 activities:
 - Continued construction of pipelines outside the TCS at E.
 - Continued IRZ O&M activities.
 - Conducted well site demobilization activities at FW-02B, TCS-1, and TCS-2.
 - Conducted revegetation area maintenance, including weeding and soil moisture testing.
 - Conducted groundwater sampling at various locations.
 - December 11 to 17 activities:
 - Continued construction of pipelines outside the TCS at E.
 - Commenced pipeline electrical scope.
 - Continued IRZ O&M activities.
 - Conducted groundwater sampling at various locations.
 - December 18 to 24 activities:
 - Continued construction of pipelines outside the TCS at E.
 - Conducted demobilization activities of pipelines outside the TCS at G.
 - Continued pipeline electrical scope.
 - Continued IRZ O&M activities.
 - Conducted CHQ stormwater repairs.
 - Remedy Baseline/Opportunistic Soil Sampling in December 2022:
 - Pursuant to the Baseline Soil Sampling and Analysis Plan (Appendix A of the Soil Management Plan [SMP] [which is Appendix L of the C/RAWP]), baseline soil samples have been collected during remedy construction to document the soil conditions prior to the start of remedy operation. One baseline soil sample was collected along Pipeline E3 (northeast of Transwestern Bench) in December 2022.
 - No opportunistic soil sample was collected in December 2022.

- **Attachment C** includes a figure showing all baseline soil and opportunistic sampling locations (since the start of remedy construction) and an excel spreadsheet with validated analytical results available to date.
- Fugitive Dust Monitoring/Perimeter Air Sampling in December 2022 (below are highlights, details are in **Attachment D**):
 - In December 2022, 23 real-time dust observation/monitoring events were conducted at the perimeter of the work areas (outside of the exclusion zone). No exceedance of the action level for fugitive dust monitoring (100 µg/m³) was observed in December 2022.
 - One air sampling event for hexavalent chromium occurred at the SPY on December 14, 2022.
 - For brevity, starting with the March 2022 Monthly Progress Report, Tables D-1a and D-1b of **Attachment D** present all analytical results from air sampling events conducted during Phase 2 remedy construction available at this time. Analytical results from air sampling events conducted during Phase 1 remedy construction are available in the February 2022 Monthly Progress Report.

Noise Monitoring in December 2022 (below are highlights, details are in **Attachment E**):

In December 2022, the following monitoring events were conducted:

- Three events at a location west of the mobile home park at Moabi Regional Park. Construction activities closest to this monitoring location include activities at the SPY and Construction Headquarters (CHQ), as well as construction traffic on NTH. The sound level typically varied between 39 and 48 dBA, with an average and median of 41-42 dBA.
- Three events at a location in the Upland just off the IM-3 access road, and near the top of the hill closest to the NTH and MW-20 Bench. Construction activities closest to this monitoring location include activities at the MW-20 Bench and traffic on the IM-3 access road. The sound level varied between 49 and 53 dBA, with an average and median of 50-51 dBA.
- Three events at the old restaurant location west of NTH. Construction activities closest to this monitoring location include work at the UHR-1 mitigation planting area, construction traffic on NTH, and at the northern entrance to the floodplain. The sound level varied between 48 and 52 dBA, with an average and median of 51-52 dBA.

2.2 Freshwater Usage, Waste Generation, and Management

As of December 30, 2022, the volumes of freshwater used for remedy construction and waste streams generated from remedy construction (starting on October 2, 2018), IRZ startup and initial operation (starting on December 22, 2021), and revegetation/mitigation planting (starting with site preparation on December 20, 2021) are as follows:

2.2.1 Freshwater and Wastewater

- As of December 30, 2022, an approximate total of 11,212,782 gallons (34.41 acre-feet) of freshwater have been used, of which approximately 28.67 percent was for pilot boring/well installation/well testing and general construction including hydrostatic testing of pipeline and piping/mechanical components inside well vaults, 60.5 percent was for fugitive dust suppression, and 10.83 percent for revegetation. Of this amount, approximately 27,162 gallons was used in December 2022 (16,162 gallons was for revegetation and 11,000 gallons was for fugitive dust control (including hydrostatic testing water that was containerized for dust control)).
- As of December 30, 2022, an approximate total of 222,556 gallons of hydrostatic testing water has been discharged to land (used for dust control). Of this amount, in December 2022, approximately 270 gallons were generated from hydrostatic testing of pipelines outside TCS. After testing, the water was containerized and used for dust control. All water discharged to land was in compliance with the substantive requirements of State Water Resources Control Board Water Quality Order 2003-0003-DWQ.

- As of December 2022, approximately 207,708 gallons of injectivity testing water has been discharged to land. No injectivity test was conducted in December 2022.

Please note that the injectivity test at well FW-02B was conducted on November 21, 2022. This was unintentionally omitted in the November 2022 Monthly Progress Report. However, the amount of freshwater used for the FW-02B injectivity test (19,433 gallons) was included in the total volume of freshwater used for well drilling and testing reported for the month of November.

- IM-3 treated an approximate total of 22,241,409 gallons of remedy wastewater (generated from Phase 1 drilling operations, well testing, aquifer testing) up to December 28, 2021. The treatment at IM-3 was terminated on December 28, 2021. IM-3 has been in lay-up mode since March 21, 2022.
- As of December 31, 2022, an approximate total of 1,451,183 gallons of wastewater generated from drilling operations were discharged to Compressor Station evaporation pond #4. Remedy-produced wastewater was not discharged to Pond #4 in December 2022.
- As of December 22, 2022, an approximate 379,618 gallons of remedy-produced water (e.g., IRZ backwash water, well sampling purge water, water pumped from vaults/secondary containment, and drilling wastewater) was generated. Of which, an approximate 38,957 gallons of remedy-produced water (32,155 gallons backwash water, 3,302 gallons well sampling purge water, and 3,500 gallons of drilling wastewater) was generated in December 2022.

To date, about 283,408 gallons (or 74.7%) of the remedy-produced water (after conditioning) was reinjected into the aquifer. Prior to reinjection, the conditioned water is sampled in accordance with the approved sampling plan in the O&M Plan. Analytical data for remedy-produced water is included in Attachment G.

2.2.2 Displaced Materials/Soils/Clay

- As of December 30, 2022, approximately 16,320 cubic yards of displaced materials/excess soils were generated from remedy construction activities. Of those, 125 cubic yards of excess soil were generated from trenching for pipeline E installation in December 2022.
- On September 28-29, 2022, 131.39 tons of nonhazardous soil was shipped offsite for disposal at Republic Services LaPaz landfill in Parker, Arizona. There was no shipment of Phase 2 construction soil offsite since September 2022.

2.2.3 General Construction Waste, Sanitary Waste, and Recyclables

- As of December 31, 2022, approximately 2,194.54 cubic yards or 1,975 tons of general construction waste (assume density of 1800 pounds (0.9 ton) per cubic yard for dump debris, wetted for dust suppression), 571.41 tons of construction debris (including concrete, empty pipes, etc.), 180.55 cubic yards of asphalt, 2,062.6 tons of green waste, and 276 cubic yards of recyclables were generated from remedy construction activities. Of which, 5 cubic yards of construction waste was generated in December 2022.
- Two 55 gallons drums of asphalt slurry from saw cutting were generated in April 2022.
- In May 2022, 1 cubic yard of coke breeze was generated from trenching for pipeline installation inside TCS.
- In March 2022, approximately 125.17 tons of broken concrete with encased non-friable pipe and milled asphalt were hauled offsite to US Ecology in Beatty, Nevada.
- In April 2021, approximately 40 cubic yards of asphalt was sent offsite for recycling at Kern Asphalt facility in Bakersfield, California. In September 2021, an approximate 27 cubic yards of old asphalt was removed from paving work along NTH. In addition, an approximate 1 cubic yard of old asphalt was removed from recent stormwater BMPs work at the TWB. These old asphalts were sent offsite for recycling on November 2, 2021. All asphalt generated during Phase 2 construction has been sent to Mohave County landfill.

- A total of nine tires were recovered during construction along Pipeline B/J and disposed of at Mohave Valley landfill in Fort Mohave, Arizona for disposal. No additional tires were encountered since February 2020.
- Sanitary waste from construction trailers/portable toilets is hauled offsite as needed.
- Starting in September 2019, recycling at the site was ceased due to the high costs of local recycling.

2.3 Worker Training and Education

- Starting in March 2022, Covid-19 training is combined with the mandatory Site Health and Safety Training. As of December 22, 2022, a total of 397 health and safety training sessions were held and 1,044 employees and contractors received the training. Of those, in December 2022, four sessions were conducted and 8 employees/contractors/visitors were trained. After the training, the attendees signed the training roster.
- PG&E continues to provide the mandatory Worker Environmental Awareness Training (WEAT) to its employees and contractors that will be involved in the remedy construction project. The self-administered WEAT (which was formally rolled out on March 1, 2022) is a self-study course and is available 24/7 and can be taken anywhere at any time. After the training, the WEAT attendees took a quiz and signed the WEAT Completion Form. As of December 22, 2022, 1,178 employees and contractors received the training. Of those, in December 2022, 13 employees/contractors were trained or retrained. Educational brochures are made available to attendees of the training; they are designed to reinforce the key topics and highlight the take-aways discussed during the training.
- PG&E's onsite biologist also trains Field Contact Representatives (FCRs), who will be responsible for compliance with biological avoidance and mitigation measures. As of December 31, 2022, a total of 21 FCR training sessions were conducted. No FCR session was conducted in December 2022.
- Training records are kept electronically and at the temporary construction trailer at the SPY. The records are available upon request.

2.4 Status of Work Variance Requests

There was no proposed Work Variance Requests in November 2022. For reference, Table 2-3 includes information regarding activities related to approved and proposed WVRs (i.e., material deviations from the design documents, the C/RAWP, or other approved work plans), and agencies' actions on those requests.

2.5 Use of Future Activity Allowance

To date, the following use of FAA is documented:

1. On September 23, 2022, DTSC informed the Consultative Work Group of a determination that the pipeline (and conduits) associated with well TWB-3 is considered an FAA. The following infrastructures are associated with installation of the pipeline:
 - A trench of approximate dimension of 2 feet wide by 3 to 4 feet deep by 470 feet long will be installed from well TWB-3 to well TWB-1. The actual dimension of the trench may vary depending on field conditions.
 - Within the trench, there will be two High-Density Polyethylene (HDPE) pipes (2 or 3 inches in diameter by 470 feet long) and three conduits (2 inches in diameter by 470 feet long). Where the trench crosses over PG&E gas pipeline, one pipe sleeve (approximately 4 inches in diameter by 20 feet long, actual dimension may vary depending on field conditions) will be used to contain the HDPE pipes. Therefore, the total pipe length is 2 by 470 and 1 by 20, equaling 960 feet; and total conduit length is 3 by 470, equaling 1,410 feet.
 - The estimated volume of soil to be displaced from pipeline trenching and excavation to install pull boxes and a well vault is approximately 124 cubic yards.

2. In May 2021, DTSC prepared and adopted an addendum to the Groundwater SEIR for the TW-01 aquifer test activities. As part of the approval of the TW-01 aquifer test work plan, DTSC has also determined that the proposed additional water conveyance pipeline and power pole are considered (FAA) considered in the SEIR. DTSC and DOI approved the TW-01 aquifer test work plan on April 8, 2021. DTSC directed PG&E to track and record the additional infrastructures associated with TW-01 aquifer test as required by the SEIR mitigation measure CUL-1a-14. The following additional infrastructures were associated with implementation of the TW-01 aquifer test:
 - An approximate 2,090 linear feet of aboveground and 56 linear feet of belowground conveyance pipeline were installed. In addition, a trench (50 feet long by 3 feet deep by 3 feet wide) was excavated for piping installation under the access road on the MW-24 bench. A trench (6 feet long by 4.5 feet deep by 4 feet wide) was excavated to connect with the IM-3 spare pipe on the MW-20 bench. One temporary electrical pole was installed by Needles Electrical to provide electrical power needed for the TW-01 aquifer test.

2.6 Issues Encountered and Actions Taken to Rectify Issues/Problems

- A recent inspection of the CHQ stormwater erosion control measures showed two areas needing repair: a) stormwater has channeled underneath some of the ecology blocks southeast of the fenced yard and b) stormwater has created a small channel just east of the concrete sampling basin. The repair was completed within 72 hours of notification.
- Two large storm events occurred on August 24 and 26, 2022. An initial assessment showed storm damages to various Phase 2a pipeline segments in TCS and at I2, as well as impacts to access roads. For Pipeline I2, stormwater runoff caused damages to the sand bedding underneath the pipe and electrical zones, the import fill on top of the pipe zone, and the slurry cap on top of the electrical zone. There was also localized flooding at the SPY, East Ravine, and BCW, and water intrusion into the IRZ well and valve vaults along NTH. Below is a summary of completed and planned repairs from storm damage:
 - Steel plates were placed as a temporary measure to re-open the access road to BCW.
 - Localized erosions on the IM3 access road were temporarily filled with site gravel/soil. After this repair, the IM3 access road was re-opened to traffic.
 - PG&E continues to install sump pumps in the IRZ wells and valve vaults to automatically remove excess water in the vaults to prevent water damages.
- On March 29, 2022, a large storm event occurred at the site and caused damages to the erosion control measures (under construction at the time of the storm event) along Pipeline B access road as well as flooded some well vaults along NTH. The following is a summary of completed and planned repairs from storm damage:
 - **Pipeline B Access Road Erosion Control Measures:** Secured the aboveground stormwater conveyance piping at key locations with slurry, removed and backfilled the gabion locations, rebuilt the damaged check dams, and added a pre-cast trench drain. On July 6, the contractor recommenced the repair after receipt of long lead-time materials. The repair was anticipated to be completed in August 2022. With the exception of the gabions, the two large August storm events caused minor impacts to this area and the remaining erosion control measures installed to date were effective. Future maintenance will be needed to maintain the stormwater measures efficacy following storm events.
 - **Vaults:** After water was evacuated from the flooded vaults, several components inside the IRZ well vaults were found to be damaged by storm water and need to be repaired/replaced. In the short-term, to minimize downtime for the NTH IRZ operations, PG&E replaced the damaged components in all but one well vault (IRZ-39).

In addition, on May 19 and June 2, 2022, PG&E presented a near term proposal to DTSC and DOI to knock-out sumps in all 12-kV electrical vaults. The purpose is to allow any water that may get into the vaults (e.g., stormwater run-on, groundwater intrusion as recently observed in the 12-

kV electrical vault near C9 north) to percolate and allow for operation and maintenance activities to be conducted inside the vaults without de-energizing the entire system. This work was conducted during the week of June 27, 2022.

Concurrently, PG&E evaluated long-term solutions to prevent future stormwater intrusion into IRZ wells and valve vaults. On June 30, 2022, PG&E presented a proposal to DTSC and DOI to install sump pumps in the IRZ well/valve vaults. The purpose is to automatically remove excess water in the vaults to prevent water damages. Currently, this process is performed manually. Excess water in the vaults will be conveyed in the existing remedy-produced water pipeline to the storage frac tanks located at the MW-20 Bench. PG&E procured the sump pumps and continued the installation of the sump pumps in December.

2.7 Key Personnel Changes

There was no key PG&E personnel changes.

2.8 Communication with the Public

There was no communication with the public in December 2022.

2.9 Planned Activities for Next Six Weeks

The planned activities for next six weeks (January 1 to February 11, 2023) include the following:

- Continue pipeline construction outside TCS.
- Continue wire and conduits pull inside and outside TCS.
- Remove the green stained material on the Transwestern Bench as directed by DTSC.
- Investigate and pothole the circular underground feature at the Transwestern bench (work is conducted under the Work Plan for Historical Water Supply Well Reconnaissance – Well #1; Area 1A, TCS).
- Conduct baseline soil sampling in accordance with the approved Groundwater Remedy Baseline Soil Sampling and Analysis Plan.
- Continue to conduct noise and dust monitoring and inspection of Stormwater Pollution Prevention Plan BMPs, as needed.
- Continue to manage displaced soil per the approved SMP.

Attachment G contains the six-week look-ahead schedule available at this time. Any adjustments to the schedule will occur as needed via the weekly emails (sent at the end of each week) and/or the daily list of construction activities (published daily and discussed with agency and Tribal representatives on site on that day).

2.10 Construction Schedule Review

Tables 2-4a and 2-4b present a summary of the percent completeness for key Phase 1 and Phase 2 construction and site restoration activities, respectively, as of December 30, 2022. In addition, the latest project schedule including remedy construction can be downloaded from the [project website](#).

2.11 Available Sitewide Groundwater Monitoring Data (DTSC Condition of Approval xi)

Pursuant to Condition of Approval # xi in DTSC's approval letter dated August 24, 2018 (DTSC, 2018a), PG&E is required to report data from samples collected as part of the sitewide groundwater monitoring

program within 60 days of sample collection. In compliance with this requirement, PG&E submitted validated data to DTSC via monthly emails. For ease of recordkeeping and to minimize the number of ad-hoc compliance reports/emails, PG&E has included data in each monthly progress report starting with the November 2018 monthly report. The data are included in Attachment G of this report.

2.12 IM-3 Shutdown and Lay-up

On December 20, 2021, pursuant to the 2012 Settlement Agreement between the DTSC and the Fort Mojave Indian Tribe (FMIT), Article 5b of Exhibit A, Additional Settlement Terms – Criteria for Decommissioning of IM-3, PG&E notified the FMIT that the IM-3 system is ready to be turned off since Phase 1 groundwater remedy equipment and facilities are in place, and ready to begin startup.

Subsequent to the notification to the FMIT, pursuant to Section 7.3.3 (Implementation of Transition Plan) of the approved *Basis of Design Report for the Final Groundwater Remedy*, on December 20, 2021, PG&E requested DTSC's and DOI's approvals for turning off the IM system (also called IM No. 3) as Phase 1 groundwater remedy equipment and systems are in place and ready to begin startup. PG&E received written approvals from DTSC and DOI on December 20 and 21, respectively.

After receipt of the agencies' approvals, PG&E turned off the IM No. 3 extraction wells (TW-2D and TW-3D) at 2:20 pm pacific standard time on December 21 and started to prepare IM-3 for lay-up. The treatment at IM3 was terminated on December 28, 2021.

The preparation for lay-up of IM-3 was completed on March 21, 2022 and IM-3 was put on lay-up mode starting March 22, 2022. A report that summarizes activities to prepare IM-3 for lay-up was submitted to DTSC and DOI on June 1, 2022.

2.13 Summary of Releases Occurred During Remedy Construction

At the request of DTSC, a summary of releases (or spills) that occurred outside of containment and onto ground is provided in Table 2-5. The summary provides information about each release include date, location of release, type of material released, amount of material released (if known), and associated cleanup activities.

3. References

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CH2M HILL, Inc. (CH2M). 2014. *Final Programmatic Biological Assessment for Pacific Gas and Electric Topock Compressor Station Final Groundwater Remedy*. April 28.

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United States Department of the Interior (DOI). 2013. *Remedial Action/Remedial Design Consent Decree (CD) between the United States of America and Pacific Gas & Electric Company*. Case 5:13-cv-00074-BRO-OP, Document 23. Entered November 21.

United States Department of the Interior (DOI). 2018. *Approval of PG&E Topock Compressor Station Remediation Site – Basis of Design Report/Final (100%) Design Submittal and Construction/Remedial Action Work Plan for the Final Groundwater Remedy and the Supplemental and Errata Information for the Final (100%) Design for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California*. Letter from Pamela Innis/DOI to Curt Russell/PG&E. April 3.

Tables

Table 2-1a. Summary of Non-Well Environmental Release-To-Constructions

*December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California*

ERTC Number ^[a]	Brief Description of Covered Areas and Scope of Authorized Activities	Original Issue Date
Amendment 1 to ERTC 17 ^[b,c]	Scope included fence installation and planting in the revegetation areas in the floodplain.	March 18, 2022
Amendment 2 to ERTC 17 ^[b,c]	Scope included fence installation and planting in the UHR-1 revegetation area, located right off National Trails Highway.	April 4, 2022
ERTC 18	Scope included remedy pipeline installation within TCS.	April 15, 2022
Addendum 1 to ERTC 18	Scope included remedy electrical work inside TCS.	December 7, 2022
ERTC 19	Scope included remedy pipeline I2 installation in Bat Cave Wash.	July 15, 2022
Addendum 8 to ERTC 1 ^[d]	Scope included the expansion of the Soil Processing Yard during the Soil Non-Time Critical Removal Action.	July 18, 2022
ERTC 20	Scope included site preparation for remedy pipeline G installation in the floodplain.	August 8, 2022
Addendum 1 to ERTC 20	Scope included remedy pipeline G, riverbank well vaults, and aggregate-based access road on top of pipeline G.	August 18, 2022
Addendum 2 to ERTC 20	Scope included remedy electrical work between Electrical Node 2 and well RB-5.	December 16, 2022
ERTC 21	Scope included remedy pipeline E installation at and in the vicinity of the Transwestern Bench.	October 17, 2022

^[a] For brevity and readability, the Non-Well ERTCs issued for Phase 1 construction, revegetation effort, and miscellaneous stormwater erosion control projects (October 2018 thru February 2022) are not listed in this report. For a complete list of those ERTCs, please Table 2-1a of the February 2022 Monthly Progress Report. The monthly progress reports can be accessed via the [Project website](#).

^[b] ERTC 17 was issued on December 15, 2021, for site preparation for mitigation planting, which involves the removal of tamarisk debris and root balls, offsite disposal of debris, installation of irrigation system, and leaching of soluble salts from the soil.

^[c] Addendum 1 and 2 to ERTC 17 were renewed to allow for mitigation planting in Fall 2022.

^[d] ERTC 1 was issued on August 10, 2018, for the setup at the Soil Processing Yard, Construction Headquarters, and various staging areas.

ERTC = Environmental Release-To-Construction

TCS = Topock Compressor Station

Table 2-1b. Summary of Well Environmental Release-To-Constructions

*December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California*

ERTC Number ^[a]	Brief Description of Covered Areas and Scope of Authorized Activities	Original Issue Date
5aq	Scope included the site preparation for and drilling of freshwater injection well FW-2 along the access road to Bat Cave Wash.	February 22, 2022
5ar	Scope included the site preparation at the TW Bench for drilling of wells TWB-1 and TWB-2.	February 23, 2022
Amendment Number 1 to ERTC 5ar	Scope included the drilling of extraction wells TWB-1 and TWB-2 on the Transwestern Bench.	March 13, 2022
5at	Scope included the site preparation for and drilling of extraction wells TCS-1 and TCS-2 inside the Compressor Station.	March 18, 2022
5as	Scope included the site preparation for and drilling of extraction wells ER-1 and ER-2 along historic route 66.	March 14, 2022
Addendum 1 to ERTC 5as	Scope included the 48-hour aquifer tests at extraction wells ER-1 and ER-2.	October 26, 2022
5au	Scope included the site preparation for and drilling of extraction well TWB-3.	April 21, 2022
Addendum 1 to ERTC 5aq	Scope included the site preparation for and drilling of FW-02B (also known as FW-2A' or FW-2Alt').	August 16, 2022
Addendum 2 to ERTC 5ah	Scope included the re-establishment of a walking path for safe access to well MW-V (also called MW-95) for groundwater sampling	November 21, 2022

^[a] For brevity and readability, the Well ERTCs issued for Phase 1 construction are not listed in this report. For a complete list of those ERTCs, please Table 2-1a of the February 2022 Monthly Progress Report. The monthly progress reports can be accessed via the [Project website](#).

ERTC = Environmental Release-To-Construction
TCS = Topock Compressor Station

Table 2-1c. Summary of Well Environmental Release-To-Operate

*December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California*

ERTO Number	Brief Description of Covered Areas and Scope of Authorized Activities	Original Issue Date
1	Scope included the removal of sediments accumulated behind the AOC4 gabion	September 2, 2021
2	Scope included the operation and maintenance of the revegetation areas at UHR-1 and in the floodplain	June 7, 2022
3	Scope included localized repair of road washouts upstream of the culverts along IM-3 access road	June 22, 2022
4	Scope included chemical rehabilitation of IRZ wells	December 13, 2022

AOC = area of concern

ERTO = Environmental Release-To-Operate

IM-3 = Interim Measure No. 3

Table 2-2. Monitoring Wells Nomenclature Changes

December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California

Previous Well Name	New Well Name	Previous Well Name	New Well Name
MW-10D	MW-10D	MW-M-132	MW-84-132
MW-11D	MW-11D	MW-M-193	MW-84-193
MW-70BR-D	MW-70BR-289	MW-N-129	MW-85-129
MW-B-033	MW-75-033	MW-N-217	MW-85-217
MW-B-117	MW-75-117	MW-N-237	MW-85-237
MW-B-202	MW-75-202	MW-O-030	MW-86-030
MW-B-267R	MW-75-267	MW-O-066	MW-86-066
MW-B-337	MW-75-337	MW-O-120	MW-86-120
MW-C-039	MW-76-039	MW-O-140	MW-86-140
MW-C-156	MW-76-156	MW-R-109	MW-87-109
MW-C-181	MW-76-181	MW-R-139	MW-87-139
MW-C-218	MW-76-218	MW-R-192	MW-87-192
MW-D-046R	MW-77-046	MW-R-275	MW-87-275
MW-D-102	MW-77-102	MW-S-109	MW-88-109
MW-D-158	MW-77-158	MW-U-183	MW-89-183
MW-D-187	MW-77-187	MW-U-273	MW-89-273
MW-E-072	MW-78-072	MW-W-031	MW-90-031
MW-E-142	MW-78-142	MW-X-045	MW-91-045
MW-F-060	MW-79-060	MW-X-120	MW-91-120
MW-F-104	MW-79-104	MW-X-170	MW-91-170
MW-G-057	MW-80-057	MW-X-320	MW-91-320
MW-G-082	MW-80-082	MW-Y-037	MW-92-037
Former IRZ-19	MW-81-43	MW-Y-072	MW-92-072
Former IRZ-19	MW-81-98	MW-Y-102	MW-92-102
MW-H-046	MW-82-046	MW-Y-122	MW-92-122
MW-H-112	MW-82-112	MW-Z	MW-93
MW-H-168	MW-82-168	HYDRO-6 (deep)	MW-94-30
MW-H-198	MW-82-198	HYDRO-6 (mid)	MW-94-100
MW-L-090	MW-83-090	HYDRO-6 (shallow)	MW-94-175
MW-L-180	MW-83-180	MW-V	MW-95-113; MW-95-157
MW-L-225	MW-83-225	MW-A	MW-96-045; MW-96-217
MW-L-245	MW-83-245	Former IRZ-11	MW-97-042; MW-97-202
MW-M-057	MW-84-057	Relocated MW-K	MW-98-055; MW-98-077
MW-M-095	MW-84-095	Second HYDRO-6	MW-99-40; MW-99-140
FW-02A'/FW-02Alt'	FW-02B	-	-

Table 2-3. Summary of Work Variance Requests

*December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California*

WVR Number	Brief Description of Work Variance Request	Approval Dates
1	<p>This WVR addressed PG&E's proposed modification to the brine tanks containment for use by the remedy, specifically:</p> <ul style="list-style-type: none"> • Upgrade the existing lined containment to concrete - The original synthetic liner material has degraded from exposure to ultraviolet light, heat, and abrasion and must be replaced. PG&E proposed to replace the synthetic-lined containment (including K-rails) with a concrete containment to support the groundwater remedy. The concrete color will be desert tan, and information on this proposed concrete color will be submitted to the agencies for review. The proposed concrete material will be similar to the material of the truck lane in the final remedy design (refer to Appendix E of the Final Basis of Design Report [CH2M, 2015a], Section 033 00, Cast-In-Place Concrete). • Shorten the length of the containment - This containment will have the same height as the existing containment, but with a slightly smaller footprint (the length is 5 feet shorter). This smaller footprint still meets the required volume for a secondary containment and allows for more space for remedy construction at the tight MW-20 bench. 	<p>DOI approved WVR #1 on June 22, 2018</p> <p>DTSC approved WVR #1 on July 5, 2018</p>
2	<p>PG&E proposed to relocate the tie-in point for remedy construction water to an aboveground location inside TCS and below the TCS Water Storage Tanks. This is to eliminate the risk of damaging the existing pressurized 6-inch water line and to avoid any interference with PG&E Gas Operations control of the TCS's water supply. The WVR addressed this relocation, specifically:</p> <ul style="list-style-type: none"> • Relocate the construction water tie-in point to an aboveground location below the TCS Water Storage Tanks, inside TCS – The final design calls for the temporary construction water line to hot-tap into the existing 6-inch steel water line just as the line turns southwest to continue to TCS. PG&E proposed to move the tie-in point to an aboveground valve manifold, located below the TCS Water Storage Tanks in the boneyard area. • Extend the temporary construction water line to the new tie-in point, along Pipeline 300A access road – The planned 4-inch HDPE temporary construction water line will be extended, following the route of the Pipeline 300A access road, to the new tie-in point inside TCS. This pipeline extension is approximately 1,950 feet and is also made of 4-inch HDPE. The pipe will be laid on ground surface and to the south of the 6-inch water line where possible. At the crossing with the Southern California Gas pipeline access road, the pipeline will be at grade with fill to allow for vehicle crossing. 	<p>DOI/DTSC approved WVR #2 on August 29, 2018</p>
3	<p>PG&E proposed changes within the CHQ fence line to avoid/minimize the overall amount of soil disturbance during construction, reduce the number of truck trips to haul wastewater, and allow for additional working space within the yard. There are no proposed changes to the CHQ footprint nor its fence line. The specifics are described as follows:</p> <ul style="list-style-type: none"> • Relocate the decontamination pad from the western fence to the northern fence (near the western corner). Based on recent survey data collected during construction, the difference in ground elevation between northern and southern end of the pad is about 4 feet. Moving the pad to the northern fence would eliminate the difference in ground elevation and reduce the amount of soil disturbance by at least 80 cubic yards. • Bring the remedy-produced wastewater tank from belowground to aboveground, increase the tank volume from 1,000 to 2,500 gallons, and place the aboveground, double-walled tank adjacent to the decontamination pad. The change from belowground to aboveground reduces the amount of soil disturbance by at least 50 cubic yards. The change to a bigger tank will reduce the amount of truck trips needed to haul wastewater. The placement of the tank adjacent to the decontamination pad allows for the pad to function as a secondary containment for the haul truck during off-loading of the wastewater. • Defer construction of the underground sewage tanks. Deferral of the underground tanks reduces the overall amount of soil disturbance by at least 800 cubic yards. All sanitary wastes will be managed in aboveground sewage tanks (similar to the ones currently used for the SPY trailers) or portable toilets. • Swap the location of the construction trailers and the sunshade and change the configuration of the sunshade from a rectangle to a square. This change will allow for more working space within the CHQ. All functions that would occur in the Workshop/Sampling Processing building will be conducted in the construction trailers. 	<p>DOI/DTSC approved WVR #3 on January 4, 2019</p>

WVR Number	Brief Description of Work Variance Request	Approval Dates
4	PG&E proposed to revise a segment of Pipeline C near the I-40 bridge, to meet the permit requirement in Caltrans Encroachment Permit No. 08-18-6-MW-0533. The revision involves relocating a small segment of Pipeline C to within National Trails Highway to meet a minimum distance of 10 feet from current and future I-40 bridge footings. The treatment measure specified for Segment X of National Trails Highway in the Cultural and Historic Property Management Plan will be implemented during installation of this pipeline segment.	DOI/DTSC approved WVR #4 on May 14, 2019
5	PG&E proposed to phase the remedy-produced water conditioning system within the approved footprint inside TCS.	DOI and DTSC approved WVR #5 on July 19 and July 22, 2019, respectively.
6	<p>In early October 2018, PG&E conducted a geotechnical investigation along the Pipeline F alignment on the entrance road to the TCS and the adjacent hill side. Based on the geotechnical results, the construction contractor (PIVOX) indicated that soldier piles and lagging would be required for temporary shoring. Over 40 soldier piles would be installed by drilling using a 330-sized excavator or larger. A 330-sized excavator has a general width of 11 feet, and counter weight clearance of approximately 4 feet. During operation, this rig would occupy a minimum 15 to 16 feet width of the TCS entrance road for about 12 days. The paved width of the road is between 22 to 24 feet in the area of shoring (per review of the location via Google Earth).</p> <p>Assuming a minimum clearance of 1 foot (which is still less than the recommended clearance) from any operating equipment, there will be approximately 5 to 8 feet of available lane width for access by TCS traffic. Large vehicles (tractor-trailers, delivery trucks, construction equipment) will likely not be able to pass by the active operation, and passenger vehicles may also not be able to pass the active operation in locations where the road narrows. Also, the excavator cannot be repositioned while soldier piles are being drilled. In sum, access to TCS will be severely restricted for about 12 days. This is not acceptable for Compressor Station operations.</p> <p>Therefore, PG&E proposed to realign Pipeline F (starting from segment F3) along the approved alignment of Pipelines B and J. Construction of Pipelines F, B, and J would occur in the same alignment and at the same time.</p>	DOI and DTSC approved WVR #6 on May 21 and May 22, 2019, respectively.
7	<p>This WVR proposed the following changes to remedy infrastructure at the CHQ and SPY.</p> <ul style="list-style-type: none"> a) Locate all temporary office and break trailers at the SPY. PG&E proposed to keep the three existing office trailers at their current locations in the SPY and add two additional office trailers and one break trailer for workers. The additional trailers will be equipped with aboveground sewage tanks, similar to the existing trailers. They will also be powered by Needles Electric. This will require the original SPY fence line to be extended south/southwest to encompass these trailers and the original truck entrance from National Trails Highway to the access road east of SPY. Neither changes reduce the overall area available for soil storage. b) Eliminate the workshop/sample processing building at the CHQ. The function planned for this building will be moved to the Carbon Amendment building at the MW-20 Bench. Removal of this building reduces the amount of soil disturbance by approximately 334 cubic yards. c) Eliminate the sunshade at the CHQ. The function for the sunshade will be replaced by the break trailer for the workers. Removal of the sunshade reduces the amount of soil distance (i.e., installation of the footings) by approximately 14 cubic yards. d) Convert the utility pad at the CHQ to a smaller transformer/electrical panel pad. With the relocation of the six trailers to SPY and elimination of the workshop/sample processing building, PG&E proposed to convert the utility pad to smaller pad for a smaller transformer/electrical panel to serve the remaining trailers at the CHQ. This reduces the amount of soil disturbance by approximately 61 cubic yards. 	DOI and DTSC approved WVR #7 on June 14, 2019.
8	On September 12, 2019, PG&E proposed a WVR to change the alignment of pipeline segment C6 on the eastern slope of the MW-20 Bench. The purpose of the WVR is to reduce the amount of soil disturbance, reduce the number of plants to be removed, reduce the safety risks associated with construction atop the MW-20 bench, and reduce the hazards associated with operation at the MW-20 bench during construction.	DTSC and DOI approved WVR #8 on October 4 and 8, 2019, respectively.
9	On March 20, 2020, and at DTSC's direction, PG&E submitted a WVR to relocate MW-A and convert IRZ-11 to a monitoring well.	DTSC and DOI approved WVR #9 on April 24, 2020.

WVR Number	Brief Description of Work Variance Request	Approval Dates
10	On December 1, 2021, PG&E proposed a WVR to revise the following pipeline alignments for constructability and safety during Phase 2A construction, as well as future operations and maintenance: <ol style="list-style-type: none"> 1. Outside the Compressor Station <ol style="list-style-type: none"> i. Realign Pipeline C18 in East Ravine. ii. Realign Pipeline I1 in Bat Cave Wash. 2. Inside the Compressor Station <ol style="list-style-type: none"> i. Consolidate piping/conduits (L1/L2/D1/D2) in the southern area of TCS into a common utility corridor ii. Realign Pipeline L3 to connect to Pipeline K. 	DTSC and DOI approved WVR #10 on January 6 and 7, 2022, respectively.
11	On January 11, 2022, PG&E proposed a WVR for new mitigation planting areas in the floodplain. The purpose of the WVR is to propose new mitigation planting areas that are better suited for the mitigation plantings than some earlier identified areas.	DOI and DTSC approved WVR #11 on January 14 and 19, 2022, respectively.
12	The extraction well TWB-3 was a provisional well in the remedy design, therefore a pipeline associated with this well was not specified in the design. On September 23, 2022, PG&E submitted a WVR to add a pipeline (and conduits) to connect TWB-3 to the groundwater remedy. In addition, the WVR proposes the deferral of construction of the Operations Building on the TWB.	DTSC and DOI approved WVR #12 on October 19 and 20, 2022, respectively.

Source: CH2M HILL, Inc. (CH2M). 2015a. Basis of Design Report/Final (100%) Design Submittal for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California. November 18.

CHQ = Construction Headquarters

DOI = Department of the Interior

DTSC = California Department of Toxic Substances Control

HDPE = high-density polyethylene

PG&E = Pacific Gas and Electric

SPY = Soil Processing Yard

TCS = Topock Compressor Station

WVRs = Work Variance Request

Table 2-4. Summary of Cumulative Percent Completeness of Key Phase 2 Construction Activities
December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California

Activity	% Complete	Cumulative Status of Phase 2 Construction Activities (as of December 30, 2022*)
Extraction and Injection Well Installation	80%	<ul style="list-style-type: none"> Pilot holes for TWB-1, -2, -3, TCS-1, -2, FW-02A, and FW-02B have been drilled. TWB-2 was not a viable location for extraction and was abandoned. A temporary well was installed at TWB-1 followed by well development and step testing. Results showed that TWB-1 is a viable location for an extraction well. A larger diameter extraction well was installed in August and developed and tested in September/October. No aquifer was present at FW-02 alternate location. Drill casing was left in place at FW-02 alternate. Evaluation of the data was performed and potential alternate locations have been identified and presented to agencies and stakeholders on May 6 and May 18, 2022. A site walk was held on June 23 to view the identified potential alternate locations. An additional site walk was held on July 14 to view the location FW-02A' and to discuss implementation details. In mid-August, a pilot hole was drilled at the FW-02A' location which was subsequently renamed FW-02B. The location is viable for the freshwater injection well. In October, the pilot hole was over-drilled. In November, an injection well was installed and developed. ER-1 and ER-2 were drilled, installed, developed, and tested. Sediment was observed at the bottom of ER-2 during development in early June. A bung was installed in ER-2 to prevent further sediment infiltration and allow for completion of development. Based on performance of these wells during well development, additional 48-hour step testing will be conducted at both extraction well locations in early November. A pilot hole for TWB-3 was drilled. The observed lithology and aquifer thickness showed that TWB-3 is expected to be a viable extraction well. The extraction well was installed in August and developed and tested in September/October. Final well designs are complete for injection/extraction wells TWB-1 & -3, TCS-1 & -2, and FW-02B. Pump for groundwater sampling at PGE-07BR was stuck in the well. The stuck pump retrieved, cleaned, and reset to the appropriate depth needed for sampling. In addition, a drop tube was installed to collect water level measurements without needing to remove the pump. The pump was tested prior to reinstallation but was not operating during groundwater sampling and will be retested in July. The pump and tubing were replaced in August. Monitoring well MW-70BR-225 was renamed as ER-6 to function as an extraction well. ER-6 was developed and a step test was conducted to appropriately size the future pump. The step test was unable to be completed in May due to equipment malfunctions. The step test was completed in July. TCS-1 has been drilled and testing (including injectivity testing) are complete. TCS-2 has been drilled underwent development and testing in October/November. Downhole camera survey completed on wells TCS-1, TCS-2, TWB-1, TWB-3 and FW-02B in December.
Extraction and Injection Well Downhole Installation	20%	<ul style="list-style-type: none"> Engineer Drawings of each downhole set up have been completed. Pumps have been procured for all wells.

Activity	% Complete	Cumulative Status of Phase 2 Construction Activities (as of December 30, 2022*)
Pipeline Installation Inside TCS	95%	<ul style="list-style-type: none"> Pipeline excavation activities have been completed on pipelines M1/2/2', I1, L3, N1, K1, and M5/6 (formerly M3/M4/M5). Duct bank reinforcing steel placement completed on pipelines M1/2/2', I1, M5/6, L3, N1, and K1. Duct bank concrete encasement has been completed on pipelines M1/2/2', I1, L3, N1, K1, and M5/6. Duct bank conduit installation completed on pipelines M1/2/2', I1, M5/6, N1, K1, and L3. TCS-1 pre-cast concrete vault excavation and placement completed. TCS-1 pre-cast concrete vault backfill has been completed. TCS-2 pre-cast concrete vault excavation and placement has been completed. TCS-2 pre-cast concrete vault backfill has been completed. TCS-1 and TCS-2 pre-cast concrete HDPE and conduit penetration coring has been completed. TCS-1 and TCS-2 pre-cast concrete vault interior mechanical has been completed. TCS-1 and TCS-2 concrete vault sloped floor installation has been completed. Pipeline HDPE force main installation completed on pipelines M1/2/2', I1, N1, K1, M5/6, and L3. Trench backfill has been completed on pipelines M1/2/2', I1, L3, N1, K1, and M5/6. Pipeline contractor completed demobilization.
Pipeline Installation Outside TCS	55%	<ul style="list-style-type: none"> Pipeline G mobilization has been completed. Pipeline G temporary road construction has been completed. Pipeline G vegetation removal and site grading has been completed. Pipeline G HDPE forcemain installation has been completed. Pipeline G conduit and pull box installation has been completed. Pipeline G final road construction has been completed. Pipeline E1 mobilization has been completed. Pipeline E1 site setup and utility location has been completed. Pipeline E1 TWB-1 extraction vault excavation and placement has been completed. Pipeline E1 HDPE and conduit trench excavation has been completed. Pipeline E1 HDPE force main installation has been completed. Pipeline E1 conduit and pull box installation has been completed. Pipeline E1 trench backfill has been initiated. Pipeline E3 mobilization has been completed. Pipeline E3 site setup and utility location completed. Pipeline E3 HDPE and conduit trench excavation completed. Pipeline E3 HDPE force main installation has been completed. Pipeline E3 conduit and pull box installation has been initiated. Pipeline E3 TWB-3 extraction vault excavation and placement has been completed. Pipeline E3 trench backfill has been initiated. Pipeline I2 assessment and reinstallation planning activities due to storm events on 8/24 and 8/26 continues.
Remedy Electrical Work	2%	<ul style="list-style-type: none"> Conductor and fiber pull inside TCS has been initiated. Conductor and Fiber pull outside TCS (from Electrical Node 2 to well RB-5) has been initiated.

Note:

Duct bank is a group of pipes through which electrical conduits/wires are pulled through.

* Remedy construction activities did not occur from December 23, 2022 to January 2, 2023 due to the holiday break.

Table 2-5. Summary of Releases Occurred During Groundwater Remedy Construction

December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup

PG&E Topock Compressor Station, Needles, California

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
10/8/2018	MW-L	Weight of drill mud tub and drilling activity caused the ground to cave in, which formed a void. Shifting ground made the seal weak causing the seal to leak, causing a release onto ground.	Mixture of freshwater and aquifer water	2 gallons	Three 5-gallon buckets of impacted soil was removed and placed into drilling spoil bin.	More thorough inspections of seal on mud tub
10/10/2018	MW-L	Pressure from the drilling activity caused aquifer/ freshwater water to push up, around the casing and the seal causing a release.	Mixture of freshwater and aquifer water	1 to 2 gallons	About .05 gallon of impacted soil was removed and placed into drilling spoil bin.	Moving forward bentonite will be used in the hole created by hand clearing for utilities and a 7-inch conductor casing will be drilled through the bentonite to create a tight seal.
1/10/2019	Access dirt road east of SPY	Hydraulic hose ruptured at the rear of a roll off truck (during a lift), resulting in hydraulic fluid contacting surface soil.	Hydraulic fluid	1/2 pint	About 1.5 gallon of impacted soil was removed and taken to IM3 for pickup by next milk run.	
2/27/2019	Floodplain	Hydraulic hose on a skid steer ruptured, resulting in oil on floodplain sand.	Hydraulic fluid	6 to 7 ounces	An approximate 2 square shovels with 3/4 full of impacted sand was removed and placed into a 5 gallon bucket. The 5-gallon bucket was taken to IM3 for pick up by next milk run.	Continue to do inspection of equipment prior to use.
2/27/2019	MW-N	Shifting ground weakened seal around mud tub, causing the seal to leak and release water onto the ground.	Mixture of freshwater and aquifer water	Not available	Approximately 10 gallons of impacted soil removed and placed into drilling spoil bin.	Site prep to include soil compaction before drilling. Seal will be inspected during each day and upon setup.
4/9/2019	IRZ-20	A "blowout" occurred where water in the borehole discharged out the annular space, and onto ground.	Mixture of freshwater and aquifer water	20 gallons	Cr6 tested at IM3, result was ND. Impacted soil left in place.	Drill methodology changed to avoid another "blowout".
4/11/2019	MW-20 Bench	Wastewater storage frac tank overtopped during water transfer operation.	Drilling wastewater	5 to 10 gallons	Cr6 tested at IM3, result was ND. Soil left in place.	Better coordination with well construction support team and water level will be measured using water level tube.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
5/29/2019	MW-20 Bench	Wastewater from a storage frac tank leaked into the tank containment, and then onto the ground because part of the containment had collapsed.	Drilling wastewater	200 gallons	Cr6 test at IM3, result was 8.1 ppb. Impacted soil left in place.	Notified subcontractors that no one is to adjust or remove piping and hose manifolds. Regular inspections to be conducted. A pipe rack will be used for better housekeeping of hoses.
5/31/2019	Floodplain	Hydraulic hose on a backhoe ruptured resulting in oil on the ground.	Hydraulic fluid	12 ounces	Area cleaned with absorbent pads and approximately 0.4 gallon of impacted sand was removed/placed in bucket. The bucket was taken to IM3 for pick up by next milk run.	Equipment taken out of service and repaired
8/7/2019	RB-4	The metal band that secured the fitting inside a discharge hose leaked onto ground. The hose was part of the wastewater service line for the river bank wells.	A mixture of freshwater and aquifer water	0.5 gallons	Impacted sand left in place.	Installed catch/spill containment to encompass all hose connections and fittings at the connection points. Tee installed to discharge hose to connect at 90 degree angle instead of 180.
8/27/2019	RB-3	Wastewater leaked into containment during water transfer operation. Water released onto ground from a separation between two fiber rolls in the containment wall.	A mixture of freshwater and aquifer water	5 gallons	Impacted sand left in place.	Fiber rolls reinstalled without gap. Stand down with crew to emphasize BMPs and SWPPP refresher.
9/6/2019	Pipeline B	Hydraulic oil leaked from excavator.	Hydraulic oil	2 to 4 ounces	Impacted soil removed and taken to IM3 for pick up by next milk run.	
9/11/2019	Northern fence line of CHQ	A loose seal on the hydraulic cylinder that raises/lowers the dump bed caused a hydraulic oil leak onto ground.	Hydraulic oil	3 to 5 ounces	One 5-gallon of impacted rocks were collected and took to IM3 for pickup by next milk run.	Reviewed BMP with crew in tailboard.
9/20/2019	Floodplain access road from RB-5 to RB-2	Leak from construction truck	Hydraulic oil	3 to 4 ounces	Approximately 4 cubic feet of impacted sand and absorbent pads were placed in a bucket and taken to IM-3 for pickup in next milk run.	Inspect work area before leaving area.

December 2022 Monthly Progress Report for the
Final Groundwater Remedy Construction and Startup



Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
9/27/2019	Pipeline B	Hydraulic oil leaked from pickup truck.	Hydraulic oil	2 ounces	Impacted soil was removed and taken to IM-3 for pickup in next milk run.	
11/2/2019	MW-Y	Hydraulic line ruptured during placement of stabilizing mats.	Hydraulic oil	Not available	Impacted sand was removed and taken to IM-3.	
12/12/2019	Pipeline C7	Fuel leaked from a fuel cap of a front end loader that was not tightened correctly.	Fuel	Not available	Impacted soil removed and placed in three 55 gallon drums. Drums taken to IM-3 for disposal with milk run.	Retraining of personnel on post fueling equipment inspections.
1/9/2020	Pipeline B	Hydraulic oil leaked from hydraulic hammer onto ground.	Hydraulic fluid	3 drops	Cleanup of impacted rocks (6 rocks) performed under TCS direction and given to TCS for disposal.	Reminder of situation awareness that allowed team to catch leak early.
1/9/2020	MW-20 Bench	Wastewater leaked from a valve during transfer operation, and onto ground.	Drilling wastewater	1/4 gallon	Impacted soil removed and placed into drilling spoil bin.	Containment and absorbent pads placed under leaky valve, main valve to tank closed, and the line was pumped off. Valve relocated to within containment and tightened.
2/6/2020	MW-20 Bench	Freshwater released onto ground during a water transfer operation	Freshwater	5 gallons	Impacted soil left in place.	Discussion with team about opening overflow valve and monitor the spill bucket from the overflow valve on the water truck tank as a visual indicator that the tank is full.
2/18/2020	Pipeline B access road	Hydraulic oil leak occurred from the engine bay of a pickup truck.	Hydraulic fluid	Not available	Impacted soil removed and taken to IM-3 for pickup in next milk run.	Discussion with team about proper inspection of site pickup trucks.
2/20/2020	SPY	Antifreeze/water released from a passenger vehicle parked at the SPY.	Antifreeze/water	Not available	Impacted rocks (5-gallon) removed and disposed offsite.	Vehicle removed from project site. PG&E ordered all vehicles to stop for physical inspections.
2/21/2020	Bat Cave Wash access road	Hydraulic oil leaked from vehicle on access road to Bat Cave Wash.	Hydraulic fluid	Several drops	Impacted soil removed and taken to IM-3 for pickup in next milk run.	Truck removed from site. PG&E brought on board 3rd party inspector following week to perform thorough inspections of each heavy duty vehicle on site.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
5/15/2020	MW-20 Bench	Antifreeze released from a forklift onto ground.	Antifreeze	2 ounces	Impacted rocks were removed.	Heavy equipment inspection checklist emphasized and reviewed with team.
6/8/2020	MW-20 Bench	Cutting oil inside the electrician's conex box flowed out and dripped to the ground. No containment was present beneath the cutting machine.	Cutting oil	3 to 4 ounces	About 2 pounds of impacted soil was removed and taken to IM-3 for pickup in next milk run.	Cutting machine placed on containment.
6/16/2020	MW-20 Bench	Fuel leaked from a fuel cap of a construction vehicle, that was not tightened correctly.	Fuel	Not available	Impacted soil was removed/placed in a 5-gallon bucket and taken to IM-3 for pickup in next milk run.	Proper fueling procedures discussed with subcontractor.
7/1/2020	Pipeline J	Concrete washout water leaked from containment and released onto ground.	Concrete wash out water	Not available	About 1/2 cubic yard of impacted soil removed and transported to SPY for classification per SMP.	Use new plastic.
7/11/2020 to 7/12/2020	C19 staging area	Grease melted from an arm knuckle of a backhoe and onto the ground	Grease	Not available	Less than 10 ounces of impacted soil was removed and taken to IM-3 for pickup in next milk run.	
6/29/2021	NTH	Diesel fuel leaked from a fuel cap on a water truck while on NTH	Diesel	Not available	Approximately two 5-gallon buckets of impacted soil was removed and brought to SPY.	Reviewed fueling procedures with crew.
6/22/2021	MW-20 Bench	Antifreeze leak from skid steer	Antifreeze	Not available	Affected soil was removed and placed in buckets and brought to SPY.	
6/14/2021	IRZ-39 well vault	Extracted groundwater from TW-01 released onto ground during startup of the aquifer test.	TW-01	A few hundred gallons	TW-1 data showed 1400ppb of Cr6. Impacted soil was excavated and placed on plastic. Sample submitted for lab.	Test suspended and quality control review conducted.
3/23/2022	TWB-2	A hydraulic line broke during the process of retrieving stuck drill casing from the borehole and hydraulic fluid leaked onto the soil hopper, mud tub, and well casing, as well as surrounding ground.	Hydraulic fluid	1/4 cup	Stained gravel removed and fluid in mud tub soaked up with absorbent pads and all placed into 5 gallon bucket. The bucket was taken to IM3 for pickup in next milk run.	

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
4/26/2022	Transwestern Bench	Drilling wastewater stored in frac tank leaked onto the tank's containment. Water in contained released onto ground through pin holes in the containment.	Drilling wastewater	Three gallons	Impacted soil will be removed when the leaked tank and containment are removed.	Inspection of tanks and liners prior to putting them into service.
5/4/2022	ER-2	A hydraulic line ruptured during drilling at the ER-2 location (on the Refuge) and due to high winds at the time, hydraulic fluid sprayed droplets on field crew, equipment, nearby creosote plants, wooden rails, temporary water line, and the ground	Hydraulic fluid	Unknown	Impacted area (nearby bluff, ground) and creosote plants were decontaminated/ sprayed with Simple Green. Oil spots on the temporary water line was wiped down.	The crew will add a better protective spiral or rubber wrap that fits tighter to the hose. This type of wrap is thicker than the current cloth wrap, will give better protection, and allow for easier visual inspection of normal wear and tear.
5/11/2022	Floodplain at C9 north, near 12-kV electrical vault	A dump truck hauling soil for the revegetation project made a U-turn near the C9 North area and bumped into the 12-kV electrical vault. The truck diesel tank leaked and spilled diesel fuel on the ground and into the electrical vault.	Diesel fuel	15 gallons	<p>About 8 cubic yards of impacted soil was excavated and contained in 39 55-gallon drums. The drums were picked up for offsite disposal. A confirmation soil sample was collected close to the southeast corner of the 12-kv electrical vault where most of the impacted soil was removed for TPH analysis. TPH results are below soil management screening levels. Based on lab results, the excavated area was backfilled with soil from the SPY.</p> <p>Once the impacted soil was removed, the inside of the electrical vault was inspected. A diesel sheen was observed on top of existing water inside the vault. An approximate 200 gallons of water/diesel was removed from the electrical vault and contained in four 55-gallon drums. The drums were picked up for offsite disposal.</p>	Traffic delineators and red rope were placed across the road to prevent traffic from trying to turn around at the end of the road. The project team's daily tailboard meetings will continue to include reminders and discussion on designated work areas and egress and regress areas and a description of delineation (wattles, tape, cones, ropes, etc.) for areas not to enter.

Date Release Identified	Release Location	Description of Release	Material Released Outside of Containment	Approximate Volume of Material Released	Cleanup Action	Corrective Action To Prevent Re-Occurrence
7/22/2022	TCS-2	While lifting a soil bin onto a transport truck, some water inside the bin spilled onto the plastic containment below and splashed onto nearby equipment.	Drilling wastewater	Minimal	The contractor removed all wet areas visible on the ground and cleaned up the affected equipment. The affected soil was put into the soil bin.	Soil bins will be inspected prior to lifting onto truck. If water is present and has a potential to spill outside of the bin, the water will be removed prior to lifting the bin.
9/2/2022	FW-02B	While backfilling at FW-02B, the seal on the mud tub broke releasing drilling and purge water onto secondary containment (plastic) and the ground (mostly on the drilling pad and a minor amount onto the ground about 2 feet south of the drilling pad).	Drilling wastewater	About 2 gallons	About 2 gallons of wet soil outside of the drill pad was removed and put into the FW-02 drilling soil bin. The wet soil on the pad was not removed since this pad will be built up for the dual rotary rig	During morning rig inspections of the mud tub, the mud tub seal around the conductor casing will similarly be inspected. In the event that the seal is seen as compromised (cracks, material is beginning to look dry), a stop work will be utilized, the lead driller will be alerted and additional bentonite chips will be used to reinforce the mud tub seal.
11/23/2022	IRZ-23 Well Vault	A pipe flange broke in the IRZ-23 well vault causing extracted groundwater from IRZ-9 and IRZ-13 to accumulate in the vault. The system alarm programing shut down the IRZ system, as water reached a high level mark in the vault. The Operator bypassed the alarms, which re-started the system, causing the extracted groundwater to overflow from the IRZ-23 well vault and onto ground.	Untreated groundwater from IRZ-9 and IRZ-13	1,400 gallons	Proposed surface soil sample locations were submitted to the agencies on 11/29/22 to assist in decision making regarding cleanup. After receipt of the Bureau of Reclamation (BOR)'s concurrence on 11/30/22, soil samples were collected on 12/2/22. BOR is the landowner where the release occurred. Results will be compared with baseline soil data and discussed with regulatory agencies to determine next steps.	The existing SOP was updated to include additional details on communication protocols and operational procedures for post-alarm startup and operation of the IRZ system. Operators were trained on the updated SOP on 12/13/22.

BMP = best management practice
CHQ = construction headquarters
Cr6 = hexavalent chromium
IM-3 = Interim Measure No. 3
kV = kilovolt
ND = not detected

NHT = National Trail Highway
PG&E = Pacific Gas and Electric
ppb = part(s) per billion
SPY = Soil Processing Yard
SWPPP = stormwater pollution prevention plan
TPH = total petroleum hydrocarbons

Figures



LEGEND

- Existing Access Route (will continue to be used for remedial activities)
- Existing Route (to be used as is for access to remedial activities)
- Roads to be improved or constructed for groundwater remedy
- Soil Processing (Area #5) and Construction Headquarters (Area #4) for Remediation Project
- Staging Areas for Remediation Project
- 5 Area # referenced in the Notes

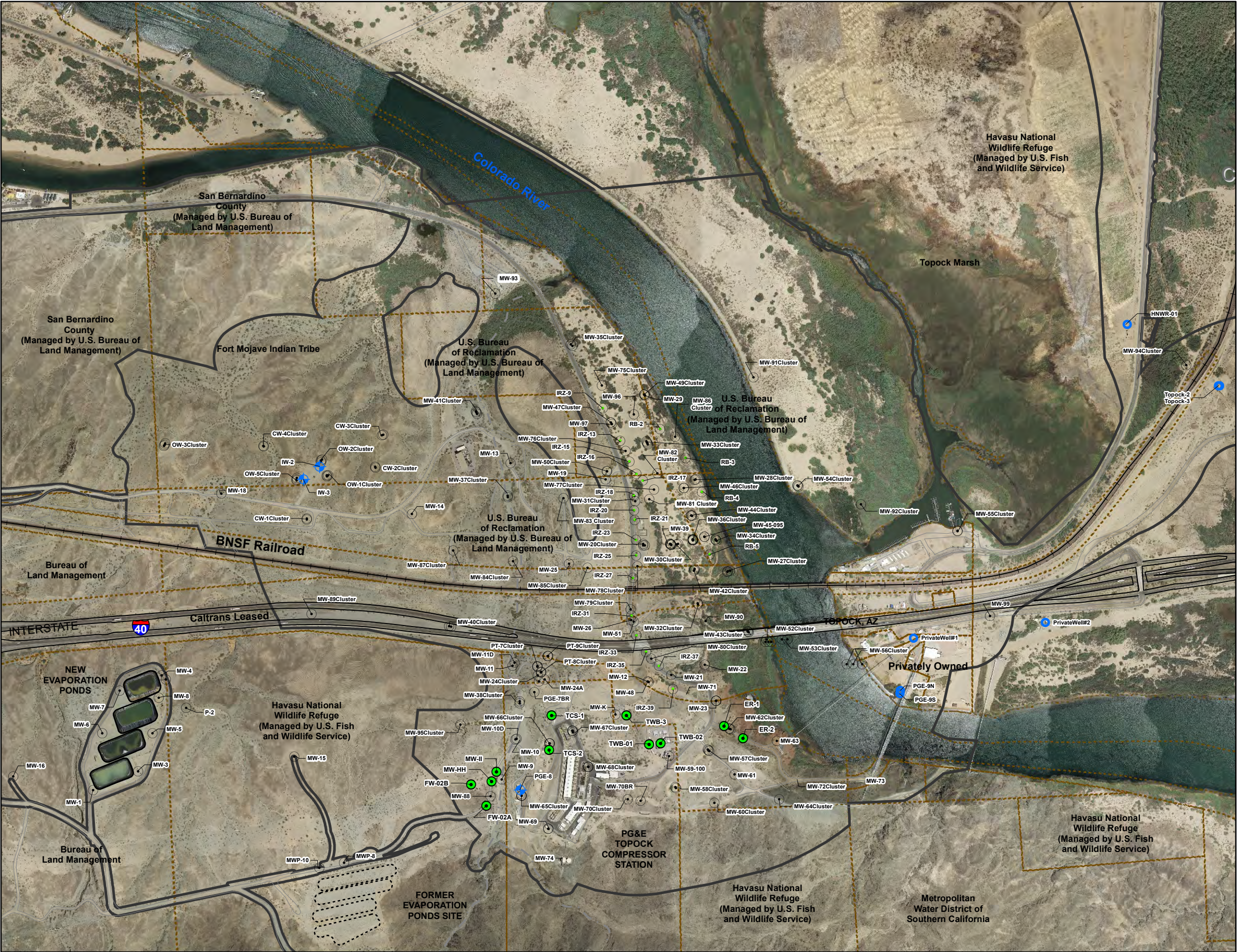
Notes:

1. Decontamination pads will be located in Area #21 (Topock Compressor Station), and Area #23 (Transwestern Bench).
2. Areas #15, 16, 17, 19, and 20 will not be used as staging areas. Areas #16, 17, and 19 may be part of the primary work zones for remedy infrastructure along the access road.
3. Area #20 may be part of the primary work zone for installation of future provisional well IRL-6 (if determined to be needed in the future) and associated piping/concrete/vault.

4. Public roadways outside of the EIR project area and the APE can also be used for remedy implementation.



**FIGURE 2-1
CONSTRUCTION SITE PLAN
AND ACCESS ROUTES**
GROUNDWATER REMEDY PHASE 1 CONSTRUCTION
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



- LEGEND
- Project Area
 - Phase 2A Well (Approximate Location, Drilling program in progress)
 - Injection Well
 - Groundwater Monitoring Well
 - Water Supply Well
 - Remediation Well

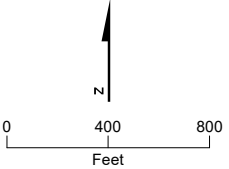


Figure 2-2
Well Locations
Groundwater Remedy Phase 1 Construction
PG&E Topock Compressor Station
Needles, California

Attachment A

Photographs



Photos showing Pipeline E Installation, northeast of the Transwestern Bench



Photos showing the excavation for Installation of TWB-3 well vault

Attachment B
Available Boring and Well Construction
Logs, Groundwater Sample Results from
Well Drilling, and Well Testing Activities

(Logs and Well Testing Plans/Results are Presented in
Separate PDFs)

Table B-1. Groundwater Sampling Results

*December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California*

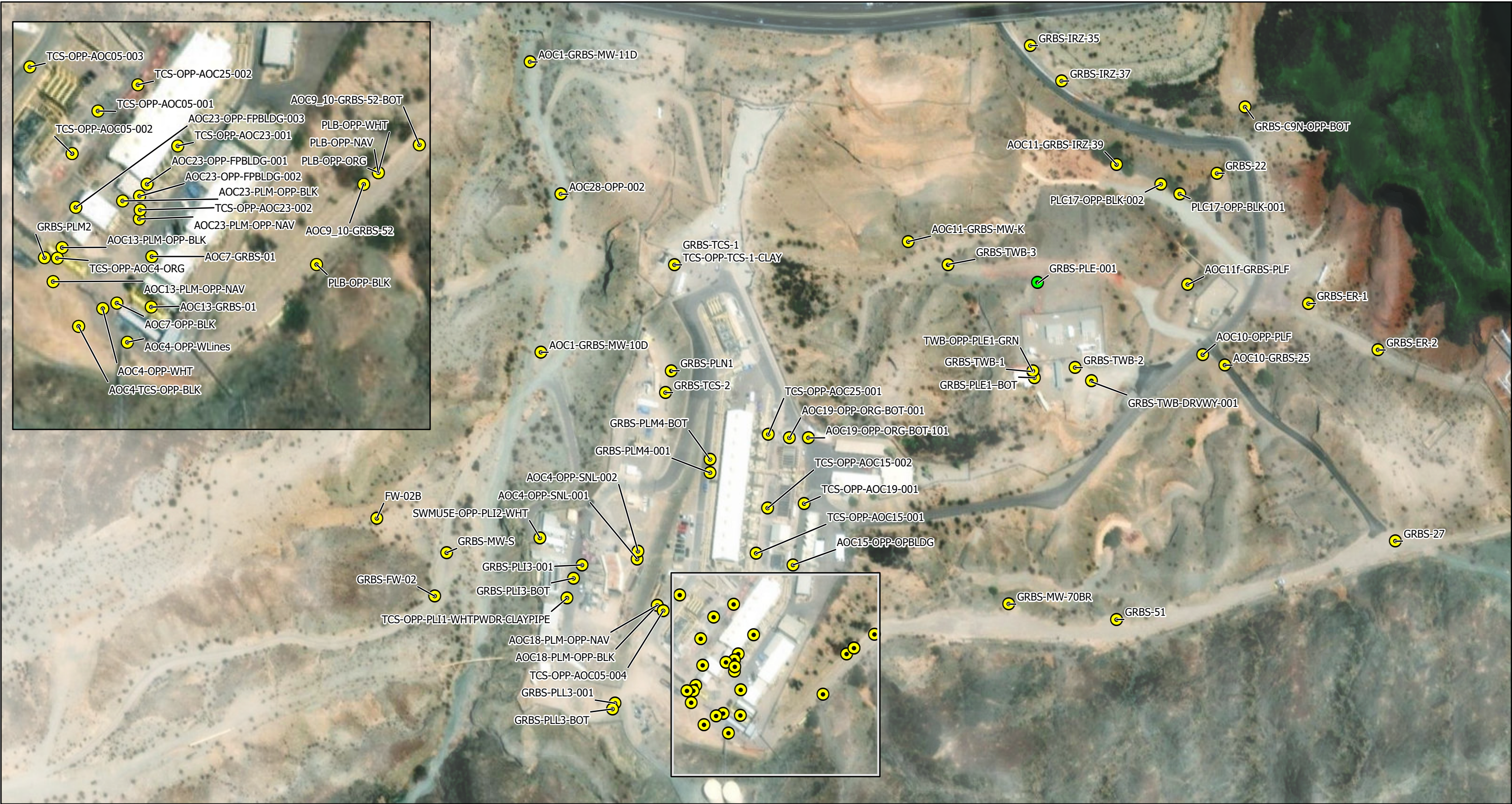
Location ^[a]	Sample ID	Sample Date	Sample Depth Interval in feet below ground surface	Total Dissolved Chromium Concentration in microgram per liter	Hexavalent Chromium Concentration in microgram per liter
FW-02B	FW-02B-VAS-127-132	8/31/22	127-132	39	36
FW-02B	FW-02B-VAS-117-122	8/30/2022	117 to 122	9	7.8
FW-02B	FW-02B-VAS-107-112	8/24/2022	107 to 112	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
FW-02B	FW-02B-VAS-97-102	8/24/2022	97 to 102	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
FW-02A	FW-02A-VAS-177-182	4/26/2022	177 to 182	34	34
FW-02A	FW-02A-VAS-157-162	4/25/2022	157 to 162	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
FW-02A	FW-02A-VAS-167-172	4/25/2022	167 to 172	Not detected below reporting limit of 1	Not detected below reporting limit of 1
FW-02A	FW-02A-VAS-147-152	4/24/2022	147 to 152	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
FW-02A	FW-02A-VAS-127-132	4/23/2022	127 to 132	2	Not detected below reporting limit of 0.2
FW-02A	FW-02A-VAS-137-142	4/23/2022	137 to 142	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
FW-02A	FW-02A-VAS-117-122	4/22/2022	117 to 122	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TCS-2	TCS-2-VAS-211.5-216.5	4/23/2022	211.5 to 216.5	52	120
TCS-2	TCS-2-VAS-220-225	4/23/2022	220 to 225	Not detected below reporting limit of 1	Not detected below reporting limit of 1
TCS-2	TCS-2-VAS-202-207	4/22/2022	202 to 207	2100	2300
TCS-2	TCS-2-VAS-161.5-166.5	4/21/2022	161.5 to 166.5	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TCS-2	TCS-2-VAS-181-186	4/21/2022	181 to 186	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TCS-2	TCS-2-VAS-147-152	4/20/2022	147 to 152	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TCS-2	TCS-2-VAS-131-136	4/19/2022	131 to 136	4100	4300
TCS-1	TCS-1-VAS-266-271	4/13/2022	266 to 271	Not detected below reporting limit of 1	Not detected below reporting limit of 1
TCS-1	TCS-1-VAS-254-259	4/7/2022	254 to 259	Not detected below reporting limit of 1	Not detected below reporting limit of 1
TCS-1	TCS-1-VAS-221-226	4/5/2022	221 to 226	1.8	Not detected below reporting limit of 0.2
TCS-1	TCS-1-VAS-192-197	4/4/2022	192 to 197	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TCS-1	TCS-1-VAS-164-169	4/3/2022	164 to 169	1100	1100

Location ^[a]	Sample ID	Sample Date	Sample Depth Interval in feet below ground surface	Total Dissolved Chromium Concentration in microgram per liter	Hexavalent Chromium Concentration in microgram per liter
TWB-01	TWB-1-VAS-82-87	3/18/2022	82 to 87	1600	870
TWB-01	TWB-1-VAS-87-92	3/20/2022	87 to 92	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TWB-01	DUP-1-VAS-032022	3/20/2022	87 to 92	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TWB-01	TWB-1-VAS-97-102	3/20/2022	97 to 102	1100	1200
TWB-01	TWB-1-VAS-110-115	3/21/2022	110 to 115	4300	4300
TWB-01	TWB-1-VAS-122-127	3/21/2022	122 to 127	1600	1700
TWB-02	TWB-2-VAS-97-102	3/29/2022	97 to 102	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TWB-03	TWB-3-VAS-47-52	5/6/2022	47 to 52	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TWB-03	TWB-3-VAS-57-62	5/6/2022	57 to 62	2.6	6.6
TWB-03	TWB-3-VAS-67-72	5/6/2022	67 to 72	Not detected below reporting limit of 1	Not detected below reporting limit of 0.2
TWB-03	TWB-3-VAS-76-81	5/6/2022	76 to 81	Not detected below reporting limit of 1	Not detected below reporting limit of 1

^[a] For brevity and readability, VAS data collected during Phase 1 well drilling and installation are not included in this report. For a complete listing of those data, see Table B-1 of the February 2022 Monthly Progress Report. The monthly progress reports can be accessed via the [Project website](#).

Attachment C
Soil Sampling Locations and Available Soil
Analytical Results

(Soil Data Presented in Excel File)



- Legend
- Soil Sample Collected December 2022
 - Soil Sample Location

Baseline Opportunistic Soil Sampling Locations
Monthly Progress Report
Groundwater Remedy Construction
PG&E Topock Compressor Station,
Needles, California

Table C-1. Summary of Opportunistic Samples Collected During Phase 2^[a] Groundwater Remedy Construction

*December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
PG&E Topock Compressor Station, Needles, California*

Sample ID	Sample Date	Sample Location (as shown in Attachment C figure)	Sample Description
TCS-1-CLAY-001	4/4/2022	Injection Well TCS-1 inside TCS	Clay encountered TCS-1 and managed in accordance with the Clay Handling Protocol.
TCS-OPP-AOC25-001	4/4/2022	East of the Compressor Building, north end	Opportunistic soil sample collected at repaving areas, just below the asphalt layer.
TCS-OPP-AOC25-002	4/4/2022	East of Cooling Tower A West of the Auxiliary Building, middle	Opportunistic soil sample collected at repaving areas, just below the asphalt layer.
TCS-OPP-AOC15-001	4/4/2022	East of the Compressor Building, south end West of the Auxiliary Jacket Water Cooling Pumps	Opportunistic soil sample collected at repaving areas, just below the asphalt layer.
TCS-OPP-AOC15-002	4/4/2022	East of the Compressor Building, middle West of the Auxiliary Jacket Water Cooling Pumps	Opportunistic soil sample collected at repaving areas, just below the asphalt layer.
TCS-OPP-AOC5-001 through 004	4/4/2022	East, west, and south of Cooling Tower A	Opportunistic soil sample collected at repaving areas, just below the asphalt layer.
TCS-OPP-AOC23-001 and 002	4/4/2022	South and east of the Former Water Conditioning Building	Opportunistic soil sample collected at repaving areas, just below the asphalt layer.
TCS-OPP-AOC19-001	4/13/2022	East of the Former Cooling Liquid Mixing Area.	Opportunistic soil sample collected at repaving areas, just below the asphalt layer.
TCS-OPP-AOC4-ORG-001 ^[b]	5/3/2022	TCS Bone Yard (south of TCS)	Stained soil (orange) encountered during excavation into the bone yard, for installation of remedy pipeline south of TCS.
TCS-OPP-CLAYPIPE1	5/18/2022	Inside a clay pipe encountered during trenching of Pipeline I1 (formerly I3), near the hazardous materials/waste shed, inside TCS.	White powder sample was collected inside a clay pipe.
SWMU5E-OPP-WHT	5/20/2022	In Pipeline I2 trench, just outside the TCS fence.	Stained material (white) encountered during trenching of Pipeline I2.
TCS-OPP-AOC13-PLI1-WHT ^[c]	5/31/2022	In Pipeline I1 trench, across from Haz Storage shed	Stained material (white) encountered during trenching of Pipeline I1.
TWB-OPP-PLE1-GRN	10/25/2022	On the northeast wall of the excavation, approximately 4 feet from well TWB-1 (the stickup).	Stained material (green/aqua green) encountered during excavation to install well vault at TWB-1

^[a] Phase 2 started on March 2, 2022.

^[b] On July 13, 2022, a sample of this material was sent to EMAX laboratory in Arizona for BTEX and PAHs for purpose of developing a waste profile for disposal at Republic Services LaPaz landfill in Parker, Arizona. That sample has a sample ID of TCS-OPP-AOC4-ORG-001-AZ.

^[c] On July 13, 2022, a sample of this material was sent to EMAX laboratory in Arizona for BTEX and PAHs for purpose of developing a waste profile for disposal at Republic Services LaPaz landfill in Parker, Arizona. That sample has a sample ID of TCS-OPP-AOC13-PLI1-WHT-AZ.

BTEX = benzene, toluene, ethylbenzene and xylene

ID = identification

PAH = polycyclic aromatic hydrocarbon

TCS = Topock Compressor Station

Attachment D
Perimeter Air Sampling Analytical Results

Attachment D. Perimeter Air Sampling Analytical Results

In conformance with the approved *Construction/Remedial Action Work Plan for the Final Groundwater Remedy, PG&E Topock Compressor Station, Needles, California* (CH2M, 2015), air monitoring has been conducted during construction to evaluate the ongoing effectiveness of the dust control program, to guide modifications to field activities and engineering control measures, if necessary, and to document that construction activities do not result in the migration of soil contaminants beyond the work area boundaries.

Perimeter air monitoring has been performed if construction activities have the potential to generate visible dust. The air monitoring program consists of both real-time fugitive dust monitoring and perimeter air sampling for select soil contaminants. Locations to be monitored and sampled are as follows:

- Real-time fugitive dust monitoring is performed at the perimeter of the work areas (outside of the exclusion zone) that have the potential to generate visible dust, including the Construction Headquarters (CHQ) and the Soil Processing Yard (SPY).
- Perimeter air sampling for hexavalent chromium is performed at the perimeter of the work areas (outside of the exclusion zone) that are inside Areas of Concern (AOCs) within the construction footprint where hexavalent chromium concentrations in soil have been historically reported. Air sampling for hexavalent chromium in the SPY will be performed when soil from AOCs with reported concentrations of hexavalent chromium is actively being processed. Air sampling may also be performed at other work areas at the site based on hexavalent chromium concentrations reported from new soil data or based on field observations during construction activities.
- Air sampling for asbestos will be limited to work areas where asbestos-containing material (ACM) has been observed in prior field investigations, including two areas in AOC 12 and one area in AOC 4. Perimeter air monitoring may also be performed at other work areas at the site if ACM is discovered during construction activities.

Project-specific levels of concern (LOCs) and action levels were developed as an indicator to determine whether additional dust control measures, as presented in the project's Dust Control Plan required by the Mojave Desert Air Quality Management District (MDAQMD), are necessary.

- The LOCs, which represent conservative concentrations of compounds that receptors outside the work area could be safely exposed to during construction, have been evaluated for all compounds that have been detected in soil samples collected at the site in the prior investigations. The LOCs were developed using standard U.S. Environmental Protection Agency (USEPA) and California Environmental Protection Agency risk assessment methodology, toxicology data, and exposure assumptions (USEPA, 2009, 2017; DTSC, 2018). Both cancer and noncancer health effects were considered. For each type of health effect, the LOC was back-calculated from an established target or from acceptable cancer risk or noncancer hazard where USEPA or DTSC toxicity values are available. The LOCs for cancer effects are based on a target excess cancer risk of one in a million (1×10^{-6}). The LOCs for noncancer effects are based on a target hazard quotient of 1. The LOCs were developed using these assumptions:
 - Receptors are present outside the perimeter of the work areas
 - Exposure via inhalation is 10 hours per day for a 10 days on/4 days off schedule
 - Duration of Phase 1 of the final groundwater remedy construction is 20 months
- The action level for fugitive dust monitoring is 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for a net (downwind minus upwind) dust concentration. This action level is based on MDAQMD Rule 403, Part C. A 10-hour time-weighted average of readings collected throughout the work day will be used to document compliance with MDAQMD Rule 403.
- For analytes detected in soil, the following equation was used to calculate maximum allowable airborne particulate concentrations for receptor exposure outside the work area (based on the approach presented by Marlowe [1999]):

$$AL = \frac{LOC \times 1,000,000 \text{ mg/kg}}{CS}$$

Where:

AL = action level for airborne particulates ($\mu\text{g}/\text{m}^3$)

LOC = Project-specific risk-based level of concern ($\mu\text{g}/\text{m}^3$)

CS = maximum detected concentration of compound in site soil (milligrams per kilogram [mg/kg])

Action levels were determined as follows:

- Soil data from prior investigations were gathered for the entire site.
- Sample locations within the maximum construction footprint were evaluated. Some sample locations were removed from evaluation as they were within the compressor station in locations where no construction activities will actually occur.
- The maximum reported soil concentration for each compound was determined and then used to calculate an airborne particulate action level.
- All compounds had allowable airborne particulate action levels greater than $100 \mu\text{g}/\text{m}^3$ except for hexavalent chromium at a few locations.
- Lead does not have USEPA or DTSC toxicity values; however, an action level was calculated using the DTSC (2011) LeadSpread 8 model. This is based on the maximum reported soil concentration for lead of 1,400 mg/kg from samples collected within the construction footprint and a blood LOC through inhalation of 1 microgram per deciliter. The resulting action level for lead is $548 \mu\text{g}/\text{m}^3$.
- Therefore, keeping fugitive dust below the action level $100 \mu\text{g}/\text{m}^3$ will result in airborne particulate concentrations of contaminants (other than hexavalent chromium) remaining below their respective LOCs.
- Fugitive dust monitoring will be used to evaluate airborne contaminants in dust for all compounds except for hexavalent chromium.

In December 2022, 23 real-time dust observation/monitoring events were conducted at the perimeter of the work areas (outside of the exclusion zone). No exceedance of the action level for fugitive dust monitoring ($100 \mu\text{g}/\text{m}^3$) was observed in December 2022.

One air sampling event for hexavalent chromium occurred at the SPY on December 14, 2022.

Tables D-1a and D-1b of **Attachment D** present all analytical results from air sampling events conducted during Phase 2 remedy construction available at this time. All results are below the project LOC for hexavalent chromium, which is $0.00094 \mu\text{g}/\text{m}^3$.

References Cited

California Department of Toxic Substances Control (DTSC). 2011. [LeadSpread8](#).

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Table D-1. Perimeter Air Sampling Results – Hexavalent Chromium

*December 2022 Monthly Progress Report for the Final Groundwater Remedy Construction and Startup
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Location ID ^[a]	Location	Sampling Date	Hexavalent Chromium Concentration in micrograms per cubic meter
GRAM-SPY-U1-Cr6-20220318	SPY Upwind	3/18/2022	Not detected at a reporting limit of 0.000137
GRAM-SPY-D1-Cr6-20220318	SPY Downwind 1- West	3/18/2022	Not detected at a reporting limit of 0.000135
GRAM-SPY-D2-Cr6-20220318	SPY Downwind 2- East	3/18/2022	Not detected at a reporting limit of 0.000135
GRAM-SPY-U1-Cr6-20220322	SPY Upwind	3/22/2022	Not detected at a reporting limit of 0.000129
GRAM-SPY-D1-Cr6-20220322	SPY Downwind 1- West	3/22/2022	Not detected at a reporting limit of 0.000131
GRAM-SPY-D2-Cr6-20220322	SPY Downwind 2- East	3/22/2022	Not detected at a reporting limit of 0.000130
GRAM-SPY-U1-Cr6-20220401	SPY Upwind	4/1/2022	Not detected at a reporting limit of 0.000121
GRAM-SPY-D1-Cr6-20220401	SPY Downwind 1- West	4/1/2022	Not detected at a reporting limit of 0.000120
GRAM-SPY-D2-Cr6-20220401	SPY Downwind 2- East	4/1/2022	Not detected at a reporting limit of 0.000118
GRAM-SPY-D1-Cr6-20220401-Dup	SPY Downwind 1- West	4/1/2022	Not detected at a reporting limit of 0.000120
GRAM-AOC10-U1-Cr6-20220504	East Ravine- Upwind	5/4/2022	Not detected at a reporting limit of 0.000112
GRAM-AOC10-D1-Cr6-20220504	East Ravine- Downwind 1	5/4/2022	Not detected at a reporting limit of 0.000115
GRAM-AOC10-D2-Cr6-20220504	East Ravine- Downwind 2	5/4/2022	Not detected at a reporting limit of 0.000115
GRAM-AOC10-D1-Cr6-20220504-Dup	East Ravine- Downwind 1	5/4/2022	Not detected at a reporting limit of 0.000115
GRAM-SPY-U1-Cr6-20220505	SPY- Upwind	5/5/2022	Detect of 0.0000241. Detection limit is 0.0000229.
GRAM-SPY-D1-Cr6-20220505	SPY- Downwind 1- West	5/5/2022	Not detected at a reporting limit of 0.000124
GRAM-SPY-D2-Cr6-20220505	SPY- Downwind 2- East	5/5/2022	Not detected at a reporting limit of 0.000112
GRAM-AOC13-U1-Cr6-20220506	TCS/PLI3- Upwind	5/6/2022	Not detected at a reporting limit of 0.000120
GRAM-AOC13-D1-Cr6-20220506	TCS/PLI3- Downwind 1	5/6/2022	Not detected at a reporting limit of 0.000121
GRAM-AOC13-D2-Cr6-20220506	TCS/PLI3- Downwind 2	5/6/2022	Not detected at a reporting limit of 0.000121
GRAM-AOC04-U1-Cr6-20220510	TCS/PLM2- Upwind	5/10/2022	Detect of 0.0000261; value is above the detection limit but below the quantitation limit

Location ID ^[a]	Location	Sampling Date	Hexavalent Chromium Concentration in micrograms per cubic meter
GRAM-AOC04-D1-Cr6-20220510	TCS/PLM2- Downwind 1	5/10/2022	Not detected at a reporting limit of 0.000121
GRAM-AOC04-D2-Cr6-20220510	TCS/PLM2- Downwind 2	5/10/2022	Detect of 0.0000334; value is above the detection limit but below the quantitation limit
GRAM-AOC13-U1-Cr6-20220511	TCS/PLI3- Upwind	5/11/2022	Not detected at a reporting limit of 0.000111
GRAM-AOC13-D1-Cr6-20220511	TCS/PLI3- Downwind 1	5/11/2022	Not detected at a reporting limit of 0.000112
GRAM-AOC13-D1-Cr6-20220511-Dup	TCS/PLI3- Downwind 1	5/11/2022	Not detected at a reporting limit of 0.000112
GRAM-AOC13-D2-Cr6-20220511	TCS/PLI3- Downwind 2	5/11/2022	Not detected at a reporting limit of 0.000112
GRAM-AOC13-U1-Cr6-20220516	TCS/PLM4- Upwind	5/16/2022	Not detected at a reporting limit of 0.000127
GRAM-AOC13-D1-Cr6-20220516	TCS/PLM4- Downwind 1	5/16/2022	Not detected at a reporting limit of 0.000126
GRAM-AOC13-D1-Cr6-20220516-Dup	TCS/PLM4- Downwind 1	5/16/2022	Not detected at a reporting limit of 0.000127
GRAM-AOC13-D2-Cr6-20220516	TCS/PLM4- Downwind 2	5/16/2022	Detect of 0.0000305; value is above the detection limit but below the quantitation limit
GRAM-AOC04-U1-Cr6-20220517	TCS/PLM2- Upwind	5/17/2022	Not detected at a reporting limit of 0.000127
GRAM-AOC04-D1-Cr6-20220517	TCS/PLM2- Downwind 1	5/17/2022	Not detected at a reporting limit of 0.000133
GRAM-AOC04-D2-Cr6-20220517	TCS/PLM2- Downwind 2	5/17/2022	Detect of 0.0000294; value is above the detection limit but below the quantitation limit
GRAM-AOC13-U1-Cr6-20220517	TCS/PLM4- Upwind	5/17/2022	Not detected at a reporting limit of 0.000134
GRAM-AOC13-D1-Cr6-20220517	TCS/PLM4- Downwind 1	5/17/2022	Detect of 0.0000311; value is above the detection limit but below the quantitation limit.
GRAM-AOC13-D2-Cr6-20220517	TCS/PLM4- Downwind 2	5/17/2022	Not detected at a reporting limit of 0.000135
GRAM-AOC13-U1-Cr6-20220519	TCS/PLM4- Upwind	5/19/2022	Not detected at a reporting limit of 0.000111
GRAM-AOC13-D1-Cr6-20220519	TCS/PLM4- Downwind 1	5/19/2022	Not detected at a reporting limit of 0.000111
GRAM-AOC13-D2-Cr6-20220519	TCS/PLM4- Downwind 2	5/19/2022	Detect of 0.0000232; value is above the detection limit but below the quantitation limit
GRAM-SPY-U1-Cr6-20220524	SPY Upwind	5/24/2022	Not detected at a reporting limit of 0.000136
GRAM-SPY-D1-Cr6-20220524	SPY Downwind 1- West	5/24/2022	Not detected at a reporting limit of 0.000129
GRAM-SPY-D2-Cr6-20220524	SPY Downwind 2- East	5/24/2022	Not detected at a reporting limit of 0.000129
GRAM-AOC04-U1-Cr6-20220603	TCS/PLL3- Upwind	6/3/2022	Not detected at a reporting limit of 0.000139

Location ID ^[a]	Location	Sampling Date	Hexavalent Chromium Concentration in micrograms per cubic meter
GRAM-AOC04-D1-Cr6-20220603	TCS/PLL3- Downwind 1	6/3/2022	Not detected at a reporting limit of 0.000139
GRAM-AOC04-D2-Cr6-20220603	TCS/PLL3- Downwind 2	6/3/2022	Not detected at a reporting limit of 0.000139
GRAM-AOC13-U1-Cr6-20220608	TCS/PLM4- Upwind	6/8/2022	Not detected at a reporting limit of 0.000109
GRAM-AOC13-D1-Cr6-20220608	TCS/PLM4- Downwind 1	6/8/2022	Not detected at a reporting limit of 0.000111
GRAM-AOC13-D2-Cr6-20220608	TCS/PLM4- Downwind 2	6/8/2022	Not detected at a reporting limit of 0.000114
GRAM-AOC13-U1-Cr6-20220614	TCS/PLM4- Upwind	6/14/2022	Not detected at a reporting limit of 0.000117
GRAM-AOC13-D1-Cr6-20220614	TCS/PLM4- Downwind 1	6/14/2022	Detect of 0.0000233; value is above the detection limit but below the quantitation limit
GRAM-AOC13-D2-Cr6-20220614	TCS/PLM4- Downwind 2	6/14/2022	Detect of 0.0000239; value is above the detection limit but below the quantitation limit
GRAM-AOC13-U1-Cr6-20220616	TCS/PLM5- Upwind	6/16/2022	Not detected at a reporting limit of 0.000119
GRAM-AOC13-D1-Cr6-20220616	TCS/PLM5- Downwind 1	6/16/2022	Not detected at a reporting limit of 0.000119
GRAM-AOC13-D2-Cr6-20220616	TCS/PLM5- Downwind 2	6/16/2022	Detect of 0.0000239; value is above the detection limit but below the quantitation limit
GRAM-AOC13-U1-Cr6-20220621	TCS/PLM5/M6- Upwind	6/21/2022	Not detected at a reporting limit of 0.000138
GRAM-AOC13-D1-Cr6-20220621	TCS/PLM5/M6- Downwind 1	6/21/2022	Not detected at a reporting limit of 0.000138
GRAM-AOC13-D2-Cr6-20220621	TCS/PLM5/M6- Downwind 2	6/21/2022	Detect of 0.0000227; value is above the detection limit but below the quantitation limit
GRAM-AOC13-D1-Cr6-20220621-Dup	TCS/PLM5/M6- Downwind 1	6/21/2022	Detect of 0.0000227; value is above the detection limit but below the quantitation limit
GRAM-AOC13-U1-Cr6-20220713	PLM5- Upwind	7/13/2022	Not detected at a reporting limit of 0.000123
GRAM-AOC13-D1-Cr6-20220713	PLM5- Downwind 1	7/13/2022	Detect of 0.0000257; value is above the detection limit but below the quantitation limit
GRAM-AOC13-D2-Cr6-20220713	PLM5- Downwind 2	7/13/2022	Detect of 0.0000721; value is above the detection limit but below the quantitation limit
GRAM-SPY-U1-Cr6-20220721	SPY- Upwind	7/21/2022	Not detected at a reporting limit of 0.000123
GRAM-SPY-D1-Cr6-20220721	SPY- Downwind 1	7/21/2022	Not detected at a reporting limit of 0.000123
GRAM-SPY-D2-Cr6-20220721	SPY- Downwind 2	7/21/2022	Not detected at a reporting limit of 0.000123
GRAM-SPY-U1-Cr6-20220724	SPY- Upwind	7/24/2022	Not detected at a reporting limit of 0.000123
GRAM-SPY-D1-Cr6-20220724	SPY- Downwind 1	7/24/2022	Not detected at a reporting limit of 0.000123

Location ID ^[a]	Location	Sampling Date	Hexavalent Chromium Concentration in micrograms per cubic meter
GRAM-SPY-D2-Cr6-20220724	SPY- Downwind 2	7/24/2022	Detect of 0.0000262; value is above the detection limit but below the quantitation limit
GRAM-SPY-U1-Cr6-20220725	SPY- Upwind	7/25/2022	Not detected at a reporting limit of 0.000123
GRAM-SPY-D1-Cr6-20220725	SPY- Downwind 1	7/25/2022	Not detected at a reporting limit of 0.000124
GRAM-SPY-D2-Cr6-20220725	SPY- Downwind 2	7/25/2022	Not detected at a reporting limit of 0.000132
GRAM-SPY-D2-Cr6-20220725-Dup	SPY- Downwind 2	7/25/2022	Not detected at a reporting limit of 0.000125
GRAM-SPY-U1-Cr6-20221008	SPY- Upwind	10/8/2022	Not detected at a reporting limit of 0.000129
GRAM-SPY-D1-Cr6-20221008	SPY- Downwind 1	10/8/2022	Not detected at a reporting limit of 0.000131
GRAM-SPY-D2-Cr6-20221008	SPY- Downwind 2	10/8/2022	Not detected at a reporting limit of 0.000132
GRAM-SPY-U1-Cr6-20221214	SPY- Upwind	12/14/2022	Awaiting lab results
GRAM-SPY-D1-Cr6-20221214	SPY- Downwind 1	12/14/2022	Awaiting lab results
GRAM-SPY-D2-Cr6-20221214	SPY- Downwind 2	12/14/2022	Awaiting lab results

^[a] For brevity and readability, perimeter air sampling results for hexavalent chromium collected during Phase 1 construction are not included in this report. For those results, please see Table D-1a of the February 2022 Monthly Progress Report. The monthly progress reports can be accessed via the [Project website](#).

Attachment E
Noise Monitoring Results
(SEIR NOISE-2 Requirement)

Attachment E. Noise Monitoring Results

In conformance with the Supplemental Environmental Impact Report (SEIR) Mitigation Measure NOISE-2, noise monitoring has been conducted with ANSI S1.4 Type 1, precision sound level meters when construction activities are within the specified distance (e.g., 1,850 feet from sensitive receptors in California) at approved monitoring locations previously determined in coordination with the Tribes and land owners/managers. The goal of the noise monitoring is to identify if noise levels from project construction activities exceed applicable standards of the San Bernardino and Mohave County codes. Exceedance of standards would require coordination with the Tribes and land owners/managers to evaluate the potential constraints and locations for temporary engineered acoustical barriers. Consistent with the request of the Tribes, monitoring equipment is not left at the approved monitoring locations; rather, it is mounted on a tripod for attended representative measurements and removed when the monitoring event is complete.

When a new construction activity is conducted or a previously monitored construction activity is conducted closer to a noise-sensitive area, monitoring is conducted at more frequent intervals to evaluate the potential need for an acoustical barrier. As the activities continue in the same location and multiple attended measurements indicate that the applicable standard has not been exceeded by the construction activity, periodic attending monitoring events are conducted to confirm continued compliance.

The attended monitoring events document the A-weighted equivalent continuous sound level (L_{eq}) at periodic intervals (e.g., 5, 10, 15, 20, 30, 40, 50 and 60 minutes). The trend of the data at these intervals is evaluated in the field to assess the stability in the sound level to determine the duration of the monitoring event. When the interval data are relatively stable or clearly below the standard, the attended monitoring event will typically be 15 to 30 minutes in duration. As the applicable standards are expressed in terms of the 24-hour average day-night sound level (L_{dn}) which is based on the L_{eq} metric, the measured L_{eq} is compared to the applicable L_{dn} standard for mobile noise sources (i.e., 60 A-weighted decibels [dBA] for Park Moabi, 65 dBA at all other locations). This results in a reasonable and conservative assessment given construction activities are not emitting noise continuously over a 24-hour period, nor are they occurring frequently during the nighttime hours (10 p.m. to 7 a.m.).

In December 2022, the following monitoring events were conducted:

- Three events at a location west of the mobile home park at Moabi Regional Park. Construction activities closest to this monitoring location include activities at the SPY and Construction Headquarters (CHQ), as well as construction traffic on NTH. The sound level typically varied between 39 and 48 dBA, with an average and median of 41-42 dBA.
- Three events at a location in the Upland just off the IM-3 access road, and near the top of the hill closest to the NTH and MW-20 Bench. Construction activities closest to this monitoring location include activities at the MW-20 Bench and traffic on the IM-3 access road. The sound level varied between 49 and 53 dBA, with an average and median of 50-51 dBA.
- Three events at the old restaurant location west of NTH. Construction activities closest to this monitoring location include work at the UHR-1 mitigation planting area, construction traffic on NTH, and at the northern entrance to the floodplain. The sound level varied between 48 and 52 dBA, with an average and median of 51-52 dBA.

Sound monitoring will continue as work progresses and moves into new areas to identify when an acoustical barrier needs to be considered.

Attachment F
Six-Week Look-Ahead Schedule

Six-Week Look-Ahead Schedule
PG&E Topock Compressor Station Remedial Activities

Activity	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Primary Planned Activities	1/1/2023	1/2/2023	1/3/2023	1/4/2023	1/5/2023	1/6/2023	1/7/2023
Start Time (PST)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Non-TCS Pipelines G5*	No Work	No Work	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines
TCS and Non-TCS Electrical E5*, F5*, G5*	No Work	No Work	TCS and Non-TCS Electrical Wire Pull	TCS and Non-TCS Electrical Wire Pull	TCS and Non-TCS Electrical Wire Pull	TCS and Non-TCS Electrical Wire Pull	TCS and Non-TCS Electrical Wire Pull
Site Wide Groundwater Sampling G3*, F3*, E4*, F4*, G4*, D5*, E5*, F5*, G5*, D6*, E6*, F6*, & G6*	No Work	No Work	No Work	No Work	No Work	No Work	No Work
Site Wide Revegetation F5*	No Work	No Work	No Work	No Work	No Work	Irrigation O&M/Watering	No Work
Soil NTCRA G5*	No Work	No Work	^Soil Removal Activities Step Outs AOC 10-2	^Soil Removal Activities Step Outs AOC 10-2	^Soil Removal Activities Step Outs AOC 10-2	^Soil Removal Activities Step Outs AOC 10-2	Demobilize AOC 10-2
Primary Planned Activities	1/8/2023	1/9/2023	1/10/2023	1/11/2023	1/12/2023	1/13/2023	1/14/2023
Start Time (PST)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Non-TCS Pipelines G5*	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines Last Look - Tentative	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	No Work	No Work
TCS and Non-TCS Electrical E5*, F5*, G5*	No Work	No Work	No Work	No Work	No Work	No Work	No Work
Site Wide Groundwater Sampling G3*, F3*, E4*, F4*, G4*, D5*, E5*, F5*, G5*, D6*, E6*, F6*, & G6*	No Work	Groundwater Sampling	Groundwater Sampling	Groundwater Sampling	Groundwater Sampling	Groundwater Sampling	No Work
Site Wide Revegetation F5*	No Work	No Work	No Work	No Work	No Work	Irrigation O&M/Watering	No Work
Soil NTCRA G5*	No Work	Mobilization and Site Setup SWMU 1-1	Mobilization and Site Setup SWMU 1-1	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Soil Removal Activities SWMU 1-1 and AOC 1-3	No Work
Primary Planned Activities	1/15/2023	1/16/2023	1/17/2023	1/18/2023	1/19/2023	1/20/2023	1/21/2023
Start Time (PST)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Non-TCS Pipelines G5*	No Work	No Work	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines
Non-TCS Electrical G5*	No Work	No Work	Non-TCS Electrical Wire Pull Last Look - Tentative	Non-TCS Electrical Wire Pull	Non-TCS Electrical Wire Pull	Non-TCS Electrical Wire Pull	Non-TCS Electrical Wire Pull
Site Wide Groundwater Sampling G3*, F3*, E4*, F4*, G4*, D5*, E5*, F5*, G5*, D6*, E6*, F6*, & G6*	No Work	No Work	No Work	No Work	No Work	No Work	No Work
Site Wide Revegetation F5*	No Work	No Work	No Work	^Monthly Monitoring/Weeding and Moisture Testing	^Monthly Monitoring/Weeding Irrigation O&M/Watering	Monthly Monitoring	No Work
Soil NTCRA G5*	No Work	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Soil Removal Activities SWMU 1-1 and AOC 1-3	No Work
Primary Planned Activities	1/22/2023	1/23/2023	1/24/2023	1/25/2023	1/26/2023	1/27/2023	1/28/2023
Start Time (PST)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Non-TCS Pipelines G5*	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	No Work	No Work
Site Wide Groundwater Sampling G3*, F3*, E4*, F4*, G4*, D5*, E5*, F5*, G5*, D6*, E6*, F6*, & G6*	No Work	No Work	No Work	No Work	No Work	No Work	No Work
Site Wide Revegetation F5*	No Work	No Work	No Work	No Work	No Work	Irrigation O&M/Watering	No Work
Soil NTCRA G5*	No Work	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Soil Removal Activities SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	No Work
Primary Planned Activities	1/29/2023	1/30/2023	1/31/2023	2/1/2023	2/2/2023	2/3/2023	2/4/2023
Start Time (PST)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Non-TCS Pipelines G5*	No Work	No Work	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines
Site Wide Groundwater Sampling G3*, F3*, E4*, F4*, G4*, D5*, E5*, F5*, G5*, D6*, E6*, F6*, & G6*	No Work	No Work	No Work	No Work	No Work	No Work	No Work
Site Wide Revegetation F5*	No Work	No Work	No Work	No Work	No Work	Irrigation O&M/Watering	No Work
Soil NTCRA G5*	No Work	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	No Work
Primary Planned Activities	2/5/2023	2/6/2023	2/7/2023	2/8/2023	2/9/2023	2/10/2023	2/11/2023
Start Time (PST)	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM
Non-TCS Pipelines G5*	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	^Non-TCS Phase 2A Pipelines	No Work	No Work
Site Wide Groundwater Sampling G3*, F3*, E4*, F4*, G4*, D5*, E5*, F5*, G5*, D6*, E6*, F6*, & G6*	No Work	No Work	No Work	No Work	No Work	No Work	No Work

Six-Week Look-Ahead Schedule
PG&E Topock Compressor Station Remedial Activities

Activity	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Site Wide Revegetation F5*	No Work	No Work	No Work	No Work	No Work	Irrigation O&M/Watering	No Work
Soil NTCRA G5*	No Work	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	^Backfill and Compaction SWMU 1-1 and AOC 1-3	No Work

Notes:
The timing of field activities is estimated and may change day-to-day based on site conditions, field progress, or other factors.
When planning to visit the site to observe a specific activity or area, please contact Kristina Bonnett (628.219.8380) for the latest schedule information.
* **Bold font** = Work location as described on the Project Grid Map. See Project Grid Map tab for location of grid positions provided on the Look-Ahead.
^ = Intrusive/Ground-Disturbing work activity



Figure showing a grid superimposed on the Topock site map. Each grid position is denoted by an letter followed by a number.

Attachment G
Groundwater Monitoring Data (DTSC
Condition of Approval xi)

(Groundwater Data Presented in Separate PDF)