

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

ORDER R7-2018-0022

WASTE DISCHARGE REQUIREMENTS
FOR
PACIFIC GAS AND ELECTRIC COMPANY, OWNER/OPERATOR
TOPOCK COMPRESSOR STATION CLASS II SURFACE IMPOUNDMENTS
AND GROUNDWATER REMEDIATION FACILITY
Southeast of Needles – San Bernardino County

The California Regional Water Quality Control Board, Colorado River Basin Region (Colorado River Basin Water Board) finds that:

1. Pacific Gas and Electric Company (PG&E or Discharger), 77 Beale Street, San Francisco, CA 94105, is the owner and operator of the Topock Compressor Station (TCS). The TCS is a natural gas compressor station used for transmission of natural gas by pipeline, and PG&E uses four Class II surface impoundments regulated under title 27 of the California Code of Regulations (surface impoundments) to dispose of nonhazardous wastewater generated by the TCS. The TCS is assigned GeoTracker Global Identification No. L10004096479.
2. Soil and groundwater contamination has been identified at and around the TCS. The contamination is being addressed under the oversight of the California Department of Toxic Substances Control (DTSC) and the United States Department of the Interior (DOI) as part of a Corrective Action/Remedial Action under both RCRA¹ and CERCLA.² The primary contaminant of concern is hexavalent chromium (Cr-VI). An interim mitigation measure installed in 2004 (IM-3) is currently being used to control the movement of contaminated groundwater toward the Colorado River. IM-3 is assigned GeoTracker Global Identification No. SL0607161506.
3. DTSC and DOI have approved a comprehensive remedial action to clean up the contaminated groundwater associated with the TCS (Remedy). The Remedy includes the construction, operation, and maintenance of a groundwater remediation facility, which will use an in-situ method to stimulate microbial activity in the groundwater to reduce chromium from the more toxic and mobile hexavalent form to a less toxic, immobile trivalent form. The Remedy will consist of several dozen remediation wells connected via pipelines, with supporting equipment housed in small buildings and structures located at the compressor station, Transwestern Bench, MW-20 Bench, and Moabi Regional Park.
4. On April 12, 2016, the Discharger submitted an application and a revised Report of Waste Discharge (ROWD) for the discharge of nonhazardous wastewater produced by the TCS, the Remedy, and the decommissioning of IM-3 to the surface impoundments located at the Facility.³

¹ Resource Conservation and Recovery Act (RCRA), 42 U.S.C. section 6901 et seq.

² Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. section 9601 et seq.

³ Facility includes: (1) PG&E's natural gas compressor station, (2) parking area, (3) four surface impoundments, (4) office area, (5) any related piping and appurtenances, and (6) the portion of the groundwater remediation facility that is located on the TCS property.

5. The discharge of wastewater generated by the TCS to the surface impoundments is currently regulated by Waste Discharge Requirements (WDRs) Order R7-2004-0080, adopted on October 13, 2004. WDRs Order R7-2004-0080 must be updated to incorporate design modifications at the Facility and to allow the discharge of nonhazardous construction, maintenance, and operation wastewater from the Remedy and from the decommissioning of IM-3 to the surface impoundments. Accordingly, this Order supersedes Order R7-2004-0080 upon the effective date of this Order, except for enforcement purposes.

Facility Location and Site Description

6. The TCS is located on land owned by PG&E (Assessor's Parcel Number [APN] 650-161-08), approximately 15 miles southeast of Needles, California. The TCS surface impoundments are located approximately 0.6 miles directly west of the main TCS buildings. The surface impoundments and a portion of the conveyance piping are located on land managed by the United States Bureau of Land Management (BLM), in APN 650-161-03, E ½ of NE ¼ of Section 7, Township 7 North, Range 24 East, San Bernardino Base and Meridian (SBB&M). The latitude and longitude of the surface impoundments are 34.715° North and 114.504° West, respectively. The general location of the TCS and surface impoundments as shown in **Attachment A**, Vicinity Map, and an aerial view of the surface impoundments is shown in **Attachment B**, both of which are incorporated herein and made part of this Order.
7. A portion of the Remedy is located on the TCS facility site. The remaining portion is located on land owned by the federal government, private landowners, and the Fort Mojave Indian Tribe (FMIT). The general Remedy system layout is shown in **Attachment C**, incorporated herein and made part of this Order.
8. Current land use within one mile of the Facility includes transportation (Interstate-40, BNSF Railway [BNSF]), natural gas transmission pipelines, telecommunications, recreational (the Havasu National Wildlife Refuge [HNWR] and Moabi Regional Park), residential (mobile home park and private residents at or near Topock Marina), and commercial (Topock 66 Resort).
9. Land surrounding the Facility is owned and/or managed by a number of government and private entities, including the United States Bureau of Reclamation (BOR) (managed by the BLM), the United States Fish and Wildlife Service (USFWS) (managing the HNWR), San Bernardino County, BNSF, FMIT, and the Metropolitan Water District of Southern California. In addition, several other entities have easements and/or rights-of-way (ROWs), including the California Department of Transportation (Caltrans), Southern California Gas Company, Transwestern Pipeline Company, Mojave Pipeline Company, PG&E, the City of Needles, Southwest Gas Corporation, and Frontier Communications. The nearest airport is Needles Airport, located more than 2.5 miles northwest of the surface impoundments.

Site-Specific Regulatory Background⁴

10. In 1951, PG&E began compressing natural gas at the TCS for transportation through pipelines to PG&E's service area in central and northern California. As natural gas is compressed, its temperature increases and the compressed gas must be cooled. From 1951 to 1964, PG&E used hexavalent chromium as a corrosion inhibitor for its cooling towers and discharged untreated wastewater containing hexavalent chromium to percolation beds in Bat Cave Wash, an ephemeral streambed draining into the Colorado River.
11. In 1964, PG&E began treatment of blowdown water by reduction of hexavalent chromium to trivalent chromium prior to discharge to percolation beds.
12. On August 14, 1969, the Colorado River Basin Water Board adopted Resolution No. 69-25 prohibiting PG&E from discharging wastewater containing hexavalent chromium. PG&E began disposing of treated blowdown water by subsurface injection at well PGE8 at the Facility.
13. On December 10, 1970, the Colorado River Basin Water Board adopted Resolution No. 70-72, which served as WDRs regulating PG&E's proposed discharge of cooling tower and other wastewater into onsite, single-lined evaporation basins. Concurrently, the Colorado River Basin Water Board also adopted Resolution No. 70-73, which served as WDRs regulating the disposal of chromic hydroxide sludge residue.
14. On September 11, 1975, the Colorado River Basin Water Board rescinded Resolution No. 70-72 and adopted WDRs Order 75-52. The new order permitted a maximum of 0.030 million gallons per day (mgd) of wastewater containing chromate to be discharged to the four lined evaporation basins. The order also prohibited the discharge of wastewater to the Colorado River or to any channel draining to the Colorado River. In addition, the order specified that chemical residues obtained by chemical flocculation or evaporation of process wastewater be discharged only at a solid waste disposal site approved to receive those wastes.
15. On October 2, 1985, the Colorado River Basin Water Board rescinded WDRs Order 75-52 and adopted WDRs Order 85-99. The new order allowed the Discharger to replace chromate-based cooling tower water treatment additives with phosphate-based inhibitors.
16. On May 21, 1986, the Colorado River Basin Water Board rescinded Resolution No. 70-73 (which served as WDRs regulating the disposal of chromic hydroxide sludge residue).
17. On January 27, 1988, the Colorado River Basin Water Board rescinded WDRs Order 85-99 and adopted WDRs Order 88-30, which was revised on March 23, 1988. The new order authorized discharge to four new, double-lined Class II surface impoundments constructed in compliance with former subchapter 15, chapter 3, title 23 of the California Code of Regulations.⁵ PG&E closed the four previously-existing, lined evaporation basins and associated waste management facilities.

⁴ This section is only intended to be a summary of background relevant to these WDRs and not an exhaustive history of the site.

⁵ In 1997, the regulations governing Class II surface impoundments in title 23 of the California Code of Regulations were moved to title 27 of the California Code of Regulations.

18. On May 10, 1995, PG&E notified the Colorado River Basin Water Board of the results of analyses of groundwater samples collected from two dormant production wells located approximately 2,000 feet northeast of the former percolation beds and 1,700 feet southwest of the Colorado River. The concentrations in the two wells were 2,300 parts per billion (ppb) and 2,850 ppb total chromium, respectively, and 1,480 ppb and 2,340 ppb hexavalent chromium, respectively.⁶ The samples were obtained from a depth of approximately 120 feet below ground surface (bgs). The source of the chromium was determined to be historical discharges by PG&E to Bat Cave Wash and other areas, and not associated with the active Class II surface impoundments.
19. On February 26, 1996, DTSC and PG&E entered into a Corrective Action Consent Agreement (CACA) due to hazardous levels of chromium found in groundwater near the TCS, which was amended on January 29, 2018. DTSC was designated as the lead agency in the RCRA investigation at the TCS. Under the terms of the CACA, PG&E agreed to conduct a RCRA Facility Investigation/Corrective Measures Study and to implement appropriate corrective action measures.
20. On May 14, 1998, the Colorado River Basin Water Board adopted WDRs Order 98-050 and rescinded Board Order 88-30. Like the order that it rescinded, WDRs Order No. 98-050 continued allowing the discharge of cooling tower blowdown to the Class II surface impoundments.
21. In 2004, DTSC required PG&E to perform a series of interim measures to extract and treat impacted groundwater to control the movement of the hexavalent chromium plume. Interim Measures Nos. 1 and 2 were the initial extraction and treatment of groundwater on a small strip of land owned and managed by the BLM. On June 30, 2004, DTSC directed PG&E to prepare and immediately implement Interim Measures No. 3 (IM-3) to expand existing groundwater extraction and management facilities to address hydraulic control of the hexavalent chromium plume.
22. On October 13, 2004, the Colorado River Basin Water Board adopted WDRs Order R7-2004-0080 and rescinded WDRs Order 98-050. The new order authorized disposal of IM-3 reverse osmosis (RO) concentrate and liquids to either the onsite surface impoundments or to an off-site permitted disposal facility. Solids generated by IM-3 were to be disposed of offsite at a permitted facility. The order also continued to permit the discharge of industrial wastewater into the surface impoundments. The Colorado River Basin Water Board also issued separate WDRs authorizing the subsurface injection of treated water from IM-3 to injection wells (WDRs Order R7-2004-0103) and the discharge of treated water from IM-3 to the Colorado River (WDRs Order R7-2004-0100).
23. IM-3 began operating in 2005. IM-3 consists of extraction wells, a treatment plant, and injection wells for the treated groundwater. Waste streams produced by IM-3 consist of: (1) treated groundwater that is discharged into injection wells located northwest of the TCS, (2) chromium-containing sludge produced by the treatment process that is transported offsite

⁶ As of the date of this Order, the State of California's Maximum Contaminant Level (MCL) for hexavalent chromium in drinking water is 50 ppb, following the superior court's ruling in *Cal. Mfrs. & Tech. Ass'n, et al. v. Cal. Dep't of Public Health, et al.* (Super. Ct. Sacramento County, 2017. No. 34-2014-80001850).

for disposal at a permitted disposal facility, and (3) reverse-osmosis concentrate that is transported offsite for disposal at a permitted facility. IM-3 wastes have never been disposed of in the surface impoundments.

24. In July 2005, PG&E entered into an Administrative Consent Agreement (Consent Agreement) with DOI and other federal agencies, wherein PG&E agreed to perform a Remedial Investigation and Feasibility Study, among other tasks, as part of a CERCLA Remedial Action. The Consent Agreement specified that DOI would oversee all remedial actions pursuant to CERCLA. However, the federal agencies agreed to coordinate the activities regulated by the Consent Agreement with those required by the CACA under the RCRA Corrective Action. It was further agreed that PG&E would prepare all investigations and reports to comply with the requirements of both RCRA and CERCLA.
25. On September 20, 2006, the Colorado River Basin Water Board rescinded WDRs Order R7-2004-0103 and adopted WDRs Order R7-2006-0060, which allowed for the continued injection of treated water from IM-3 into injection wells. Since treated waste from IM-3 was never actually placed in the Colorado River pursuant to WDRs Order R7-2004-0100, the Colorado River Basin Water Board allowed WDRs Order R7-2004-0100 to expire by its own terms. WDRs Order R7-2006-0060 expired on September 20, 2011, and its requirements were incorporated into the Applicable and Relevant or Appropriate Requirements (ARARs) by agreement of DOI on August 18, 2011 and PG&E on September 7, 2011.
26. In 2006 and 2007, the Colorado River Basin Water Board issued WDRs for various pilot tests for in-situ groundwater remediation. (See WDRs Order R7-2006-0008, revised by Special Order R7-2007-0014 and rescinded by Order R7-2008-007; WDRs Order R7-2007-0015, rescinded by Order R7-2009-0052.)
27. After several drafts of the RCRA Facility Investigation/Remedial Investigation (RFI/RI) dating back to 2000, PG&E prepared a multi-part Final RFI/RI Report for the groundwater contamination, the first volume of which was approved by DTSC and DOI on August 10, 2007. DTSC and DOI approved Volume 2 on February 11, 2009. Several addendums to Volumes 1 and 2 were also completed in subsequent years.
28. On December 16, 2009, PG&E submitted a Final Corrective Action Measures Study/Feasibility Study (CMS/FS), which analyzed a range of nine cleanup alternatives for groundwater contamination and evaluated their advantages and disadvantages, to DTSC and DOI.
29. On January 20, 2011, DOI selected the Remedial Action (i.e., Remedy), identified as "Alternative E – In Situ Treatment with Fresh Water Flushing" in the CMS/FS, in a Record of Decision (ROD). The Remedy proposed an in-situ remediation method to stimulate microbial activity in the groundwater to reduce chromium from the more toxic and mobile hexavalent form to a less toxic, immobile trivalent form. DTSC also selected the same remedy, which is embodied in a Statement of Decision and Resolution of Approval executed by DTSC on January 31, 2011.
30. In November 2015, PG&E submitted the final design for the Remedy to clean up the chromium groundwater plume. DTSC and DOI approved the final design of the Remedy on April 24, 2018 and April 3, 2018, respectively.

31. The Remedy will be constructed in phases. Construction of Phase 1 of the Remedy is anticipated to start in late 2018. Phase 1 of the Remedy is anticipated to commence startup and operation in late 2020. Phase 2 construction is anticipated to commence after Phase 1 begins operation.
32. Once the Remedy is determined by DTSC and DOI to be functional and operating properly and successfully, and after receipt of approval of DTSC, and with concurrence from DOI, the Discharger will decommission and remove IM-3 in accordance with an approved work plan. The decommissioning process will generate liquid wastes that will need to be managed.

Existing Waste Streams and Unit Classification

33. The TCS is a natural gas compressor station used for transmission of natural gas by pipeline. The compressor station uses cooling towers to cool the natural gas after it is compressed for transmission through the pipeline.
34. Water is supplied to the cooling towers from groundwater wells (Topock-2 and -3) located in Arizona near the Havasu National Wildlife Refuge. In addition, water is supplied from a groundwater well (HNWR-1A) located in Arizona on the Havasu National Wildlife Refuge. Supply water is conveyed to the compressor station via pipelines across the Colorado River to storage tanks. From the storage tanks, water is supplied to the cooling towers as needed.
35. Chemical additives are added to the cooling tower water to inhibit corrosion, prevent scaling, and stop algae growth. Cooling tower water is recirculated in the cooling towers until the total dissolved solids (TDS) concentration becomes too high, at which point it is necessary to discharge some of the wastewater, called blowdown, and replace it with fresh water. Discharged wastewater flows from the cooling towers to an accumulation tank at the TCS. When the water level reaches the discharge set point, it is pumped to the surface impoundments through a dedicated water pipeline.
36. A small amount of wastewater associated with equipment wash-downs and intermittent operational activities, such as degreasing of equipment and compressor engine parts and draining of cooling systems, is processed in an oil/water separator and also discharged to the accumulation tank, where it is comingled with cooling tower blowdown water and subsequently pumped to the surface impoundments.
37. The Discharger proposes to continue to discharge designated waste to the lined, Class II surface impoundments at the Facility. A list of the chemicals with hazardous constituents that may enter the wastewater stream from the TCS, from chemicals currently used or currently under consideration for use, are:

Chemical Name (and Hazardous Constituents)

Purpose

Nalco 3DTRASAR® 3DT184 (Phosphoric Acid, 30-60%)	Steel corrosion inhibitor
Nalco 3DTRASAR® 3DT192 (Sulfuric Acid 60-100%)	Anti-scale/copper corrosion inhibitor
Nalco® 2597 (Sulfuric Acid 1-5%)	pH regulation

Nalco® 22313 (phased out in 2010) (Tetrasodium EDTA 10-30%)	Cleaner
Nalco® 90005 (Glycerol 5-10%, Dimethyl-Dioctyl-Ammonium Chloride (30-60%))	Algaecide
Nalco® STA.BR.EX ST70 (Sodium Hydroxide 1-5%)	Microorganism control
Nalco Trasar® TRAC101 (Sodium Nitrite 10-30%, Sodium Molybdate 1-5%, Substituted Triazole 0.1-1%)	Corrosion inhibitor
Nalco® TRAC107 Plus (phased out in 2011) (Sodium Hydroxide 1-5%, Sodium Tetraborate 1-5%)	Corrosion inhibitor
Selig WC #68 Swype (Ethylene Glycol 1-5%, Sodium Metasilicate 4-8%)	Equipment descaling
Zep Split Auto Scrub (Tetrasodium Ethylenediamine Tetraacetate 1-10%)	Equipment degreasing and floor cleaning
Nalco 3D TRASAR® 3DT230 (No hazardous ingredients)	Cooling water treatment
Nalco 3D TRASAR® 3DT157 (No hazardous ingredients)	Cooling water treatment

38. On July 31, 2018, a sample of the effluent was analyzed and found to contain the following constituents:

Alkalinity, total as CaCO ₃	mg/L	53
Barium	mg/L	0.12
Copper	mg/L	0.0072
Fluoride	mg/L	10
Chromium, Hexavalent	mg/L	0.019
Chromium, Total	mg/L	0.029
Lead	mg/L	0.0016
Molybdenum	mg/L	0.088
Nickel	mg/L	0.0024
Nitrate (as N)	mg/L	5.7
pH	pH units	7.8
Sulfate	mg/L	380
TDS	mg/L	1900

39. The discharge from the cooling towers has a pH value ranging from approximately 6.0 to 9.0 and a TDS concentration of approximately 15,000 mg/L, up to a maximum of 75,000 mg/L.
40. Designated waste is defined in Water Code section 13173 and section 20210 of title 27 of the California Code of Regulations as a nonhazardous waste consisting of or containing pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or could reasonably be expected to affect beneficial uses of the waters of the state.
41. Because discharge from the TCS exceeds water quality objectives for several constituents of concern for underlying groundwater and areal surface waters, the discharge is properly classified as a “designated waste” that must be discharged to a Class II surface impoundment, as required by title 27 of the California Code of Regulations.

Newly-Proposed Waste Streams

42. New waste streams proposed to be discharged to the surface impoundments consist of nonhazardous waste liquids generated during: (A) installation and operation of the Remedy, and (B) decommissioning of IM-3. The majority of the water generated from Remedy operations and maintenance (O&M) will be re-injected. Some of the water will be conditioned to remove solids and adjust pH, as necessary, prior to reinjection. A flow diagram of the proposed waste stream is depicted in **Attachment D**, incorporated herein and made a part of this Order.
43. New waste streams proposed to be discharged to the surface impoundments are anticipated to be comprised of the following:
 - a. Remedy-produced water that cannot be re-injected into the aquifer,
 - b. Construction wastewater from well installation, development, and decommissioning,
 - c. Wastewater from well sampling activities,
 - d. Wastewater from pipeline maintenance;
 - e. Equipment decontamination water, and
 - f. Fluids from the decommissioning of IM-3.
44. Constituents of potential concern in these waste streams, which may differ from the existing waste streams, include the following:
 - a. Drilling additives typically used during well drilling operations for potable water supplies, such as foaming agents (Baroid Quik Foam or equivalent), bentonite based products, and fluid property control additives (soda ash, Baroid Quik Gel, Quick Trol, EZ Mud, and N-Seal or equivalent).
 - b. Well rehabilitation additives, specifically designed to remove fouling from potable water wells, such as acids to dissolve mineral deposits (phosphoric acid), oxidizing agents to disinfect and degrade biofilms (hydrogen peroxide), biocides to inhibit biological growth, and carbon dioxide to maintain well performance.

- c. Mineral precipitates, such as iron sulfides and iron oxides,
 - d. Dissolved metals, such as iron, arsenic, and manganese,
 - e. Equipment decontamination water, which may contain soil, chromium and/or petroleum hydrocarbons, and
 - f. Additives for conditioning the Remedy-produced water, such as hydrochloric acid, a coagulant to aid in settling solids (Nalco Ultrion 8187 or equivalent [aluminum chloride hydroxide]), and a flocculent to aid in dewatering solids (Nalco 7878 Flocculant [anionic type] or equivalent).
45. Only nonhazardous wastes are proposed to be disposed into the surface impoundments.

Existing Surface Impoundment Features

46. Each surface impoundment was originally constructed with a composite liner system. The primary liner was a 60-mil synthetic liner underlain by a leachate collection and removal system (LCRS). Beneath the LCRS is a second 40-mil synthetic liner and a two-foot clay layer. The two-foot clay layer is designed for a maximum hydraulic conductivity of 1×10^{-6} cm/sec. Since 2010, an additional 60-mil synthetic liner has been installed on top of the original liners at each surface impoundment.
47. Three of the four surface impoundments have a vadose zone monitoring system consisting of four (4) vacuum lysimeters each (two for each pond half). The fourth surface impoundment has six (6) vacuum lysimeters. In addition, there are seven (7) groundwater monitoring wells adjacent to the surface impoundments (MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8).
48. The LCRS functions effectively as an early warning system, enabling the Discharger to determine if the top liner system has been compromised at the earliest opportunity. The vadose zone monitoring system allows detection of leaks past the LCRS but before liquids reach groundwater (groundwater is between approximately 160 and 190 feet below the bottom of the ponds). The groundwater monitoring system detects leaks after they have affected groundwater.

Proposed Modifications to the Surface Impoundments

49. To accommodate the additional volume of wastewater anticipated from the Remedy and decommissioning of IM-3, equipment will be added to enhance the surface impoundment evaporation rates. Remote controlled valves will be installed to allow diversion of wastewater to specific surface impoundments to maximize available surface area. In surface impoundments Nos. 3 and 4, the existing once-through cascade distribution system will be modified by installing a pontoon pump in each surface impoundment near the sumps. The pumps will continuously cycle water through the cascade system, both increasing evaporation area and breaking surface tension of the surface impoundments to increase evaporation. Planned improvements at the surface impoundments will include the following:
- a. Installation of pumped re-circulation and inter-pond cascade systems to maximize water evaporation rates;
 - b. Instruments to measure pond levels and remote-controlled cameras to inspect the ponds;

- c. Automated and remotely-controlled valves to divert wastewater to specific surface impoundments;
 - d. Dedicated onsite power source;
 - e. Portable pond-to-pond transfer pumps; and
 - f. Dedicated secondary containment and piping for truck delivery of water to the ponds and also to facilitate effective transfer of water out of ponds into trucks for offsite disposal of wastewater, if needed.
50. Fluids from the new waste streams will be delivered to the surface impoundment directly by truck and/or routed to the surface impoundments by adding the fluids to the accumulation tank system located at the TCS. Changes to the piping system leading to the surface impoundments are not proposed.

Climatic and Hydrogeologic Conditions

51. The climate at the Facility is typical of low desert areas along the Colorado River, with hot summer and mild winter seasons. The nearest weather station is 6.3 miles upriver in the Havasu National Wildlife Refuge (HNWR) and is operated by the BLM. The closest National Weather Service station is at the Needles Airport, approximately 7.5 miles northwest of the TCS. The average daily maximum temperature ranges from 63.8 degrees Fahrenheit (°F) in January to 108.6°F in July. The average daily maximum temperature exceeds 100°F during June, July, August, and September, and the temperature rarely drops below freezing.
52. Based on the 30-year period of 1961 through 1990, average precipitation was 4.67 inches per year in Needles. Between 1950 and 1990, the maximum annual rainfall was 9.6 inches. In a typical year, rain primarily occurs during summer thunderstorms from July through early September, or during the winter from January to March. May and June are typically the driest months.
53. The predominant wind direction is south-southwest, with an average speed of 8.8 miles per hour, based on data from the Needles Airport. The second most predominant wind direction is north-northwest, with an average speed of 10.7 miles per hour. Wind direction and speed are more variable at the TCS site and adjoining areas and are largely controlled by the site topography. Winds at the TCS are predominantly from the southeast.
54. The Colorado River is located approximately 0.8 miles east of the surface impoundments. A drainage course referenced as the Bat Cave Wash that discharges into the Colorado River is located immediately adjacent to the TCS and approximately 1 mile from the surface impoundments.
55. The hydrogeologic setting consists of unconsolidated alluvial and fluvial deposits (the Alluvial Aquifer) underlain by the Miocene Conglomerate and pre-Tertiary metamorphic and igneous bedrock. The oldest rocks in the area are exposed in the Chemehuevi Mountains and include Precambrian and Mesozoic-age metamorphic and igneous rocks. Miocene-age sedimentary and volcanic rocks, associated with the tectonic uplift and faulting in the region, were deposited on the metamorphic and plutonic bedrock complex.
56. The bedrock basement formations are, in turn, overlain by younger Tertiary and Quaternary to Recent-age sedimentary deposits. The surface impoundments lie on an alluvial fan emanating from the nearby Chemehuevi Mountains. The alluvial sediments beneath the surface impoundments are composed primarily of silty sands and gravels, with occasional

zones of clean sands and gravels. The thickness of the alluvium the vicinity of the surface impoundments ranges from about 250 to 300 feet.

57. Groundwater occurs in the Tertiary and younger alluvial basin deposits, which include the productive Pleistocene to recent fluvial deposits associated with the Colorado River. The depth to first groundwater ranges from about 210 feet at MW-01 in the southwest portion of the surface impoundment area to about 170 feet at MW-08 in the northeast portion. The saturated thickness of the alluvial aquifer beneath the surface impoundments ranges from about 50 to 150 feet. Groundwater in the alluvial aquifer beneath the surface impoundments flows to the east at a shallow gradient of approximately 0.00015 ft/ft.
58. Saturated bedrock formations capable of yielding significant quantities of groundwater have not been identified in the Mohave groundwater basin. Bedrock wells at the Facility typically yield no more than a few gallons per minute of brackish water. Upward vertical gradients are observed between the bedrock and the overlying alluvium, which limits downward movement water from the alluvial aquifer into the underlying bedrock.
59. The Discharger's SMRs (Semi-Annual Monitoring Reports) provide groundwater monitoring data for seven wells in the vicinity of the discharge. Attachment B shows the location of the monitoring wells. Groundwater monitoring samples are collected from the seven wells on a semi-annual basis, and analyzed for total dissolved solids (TDS), specific conductance, pH, total chromium, hexavalent chromium, trivalent chromium (calculated), boron, and molybdenum. As shown in Table D-1 of the semi-annual monitoring reports, groundwater contains the following range of water quality characteristics in the vicinity of the surface impoundments:

Molybdenum	0.005 (min) – 0.078 (max) mg/L
Total Chromium	0.0055 – 0.4 mg/L
Hexavalent Chromium	0.002 – 0.051 mg/L
Trivalent Chromium	0.0005 – 0.17 mg/L
pH	6.5 – 9 pH units
Specific Conductance	554 – 1,700 μ mhos/cm
Total Dissolved Solids	280 – 1,070 mg/L

60. The site is located in a seismically-active desert region.

Basin Plan, Beneficial Uses, and Regulatory Considerations

61. The Water Quality Control Plan for the Colorado River Basin (Basin Plan), which was adopted on November 17, 1993 and amended on March 7, 2017, designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Pursuant to section 13263, subdivision (a) of the Water Code, waste discharge requirements must implement the Basin Plan and take into consideration the beneficial uses to be protected of the receiving waters, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Water Code Section 13241.

62. The Facility is located within the Piute Hydrologic Unit. The beneficial uses for groundwater in the Piute Hydrologic Unit are:
 - a. Municipal supply (MUN),
 - b. Groundwater Recharge (GWR), and
 - c. Agricultural supply (AGR).
63. The nearest surface water to the Facility consists of the Colorado River. The beneficial uses of the Colorado River are:
 - a. Municipal supply (MUN),
 - b. Agricultural supply (AGR),
 - c. Aquaculture (AQUA),
 - d. Industrial supply (IND),
 - e. Groundwater recharge (GWR),
 - f. Water contact recreation (REC I),
 - g. Noncontact water recreation (REC II),
 - h. Warm freshwater habitat (WARM),
 - i. Cold freshwater habitat (COLD),
 - j. Wildlife habitat (WILD),
 - k. Hydropower generation (POW),
 - l. Preservation of rare, threatened, or endangered species (RARE), and
 - m. Freshwater Replenishment (FRSH).
64. This Order establishes waste discharge requirements (WDRs) pursuant to division 7, chapter 4, article 4 of the Water Code (for discharges that are not subject to regulation under section 402 of the Clean Water Act (33 U.S.C. § 1342)).
65. These WDRs implement numeric and narrative water quality objectives for ground and surface waters established by the Basin Plan. The numeric objectives for surface waters and groundwater designated for municipal and domestic supply are the Maximum Contaminant Levels (MCLs) specified in title 22 of the California Code of Regulations, though the limit for Total Dissolved Solids (TDS) in the Colorado River is not based on title 22 because TDS exceeds the secondary MCL values prior to reaching California. The Basin Plan states that groundwater for use as domestic or municipal water supply (MUN) must not contain taste or odor-producing substances in concentrations that adversely affect beneficial uses as a result of human activity.
66. It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

67. Section 13267 of the Water Code authorizes the Colorado River Basin Water Board to require technical and monitoring reports. The monitoring and reporting requirements in Monitoring and Reporting Program (MRP) R7-2018-0022 are necessary to determine compliance with this Order. The State Water Resources Control Board's (State Water Board) electronic database, GeoTracker Information Systems, facilitates the submittal and review of Facility documents. The burden, including costs, of this MRP bears a reasonable relationship to the need for that information and the benefits to be obtained from that information.
68. Pursuant to Water Code Section 13263, subdivision (g), the discharge of waste is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

State Antidegradation Policy

69. State Water Board Resolution 68-16, entitled *Statement of Policy with Respect to Maintaining High Quality Waters in California* (Antidegradation Policy), generally prohibits the Colorado River Basin Water Board from authorizing discharges that will result in the degradation of high-quality waters, unless it is demonstrated that any change in water quality will (a) be consistent with maximum benefit to the people of the state, (b) not unreasonably affect beneficial uses, and (c) not result in water quality less than that prescribed in state and regional policies (e.g., the violation of one or more water quality objectives). The discharger must also employ best practicable treatment or control (BPTC) to minimize the degradation of high quality waters.
70. The Antidegradation Policy does not apply to the discharge of waste to the surface impoundments. The WDRs in this Order are designed to ensure that any such wastes remain contained in the surface impoundments and will not reach waters of the state. The requirements reflect the Discharger's best efforts to control such wastes, and also constitute BPTC for the prevention of surface water and groundwater degradation.

Stormwater

71. Federal regulations for stormwater discharges were promulgated by USEPA on November 16, 1990 (40 C.F.R. parts 122, 123, and 124) to implement the Clean Water Act's stormwater program set forth in Clean Water Act section 402(p) (33 U.S.C. § 1342(p)). In relevant part, the regulations require specific categories of facilities that discharge stormwater associated with industrial activity to "waters of the United States" to obtain NPDES permits and to require control of such pollutant discharges using Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to prevent and reduce pollutants and any more stringent controls necessary to meet water quality standards.
72. IM-3 is subject to the federal requirements for regulation of stormwater discharges associated with industrial activities as listed in 40 C.F.R. section 122.26, subdivision (b)(14). IM-3 has coverage under the State Water Board's General Permit for Storm Water Discharges Associated with Industrial Activities, Order WQ 2014-0057-DWQ (NPDES No. CAS000001) and is assigned SMARTS (Stormwater Multiple Application and Reporting Tracking Systems) Identification No. 736I019443. No changes are proposed to the existing stormwater management facilities.

Clean Closure and Closure Financial Assurances

73. The Discharger previously submitted a Preliminary Closure Plan (PCP) for the surface impoundments. As required by title 27, section 21400, subdivision (b)(1) of the California Code of Regulations, the PCP proposes clean closure of the surface impoundments, meaning that the liner system, LCRS, and any sludges will be removed and taken to an off-site appropriately-permitted landfill. The soil underlying the impoundments will be sampled for the presence of contaminants, limited over-excavation of the top two feet of soil will be conducted, and the site will then be graded for future use. The PCP proposes to prepare and this Order requires the submission of a final closure plan and approval of the plan by the Colorado River Basin Water Board's Executive Officer prior to commencing closure activities.
74. The PCP included an itemized cost estimate for third-party costs to clean close the surface impoundments. The Colorado River Basin Water Board approved the cost estimate. The Discharger provided financial assurances (in the form of a bond) in accordance with the approved cost estimate and naming the Colorado River Basin Water Board as a beneficiary. The Discharger has also made annual adjustments to the bond amount.

Corrective Action Financial Assurances

75. Section 22222 of Title 27 of the California Code of Regulations requires the Discharger to establish financial assurances for corrective action of a known or reasonably foreseeable release (KRFR). The Discharger submitted a corrective action estimate to address a KRFR, including an estimate of the total likely maximum cost of remediation for a KRFR for the four existing surface impoundments, pursuant to California Code of Regulations, title 27, section 20380, subdivision (b).
76. The Colorado River Basin Water Board approved the KRFR cost estimate. The Discharger provided financial assurances (in the form of a bond) in accordance with the approved cost estimate and naming the Colorado River Basin Water Board as a beneficiary. The Discharger has also made annual adjustments to the bond amount.

CEQA and Public Participation

77. On January 31, 2011, DTSC, as lead agency for the Remedy under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), certified a Final Environmental Impact Report (FEIR) (State Clearing House [SCH] No. 2008051003) and adopted a Mitigation Monitoring and Reporting Program (MMRP). The FEIR provided project-level analysis for the conceptual technical methods proposed for the Remedy to clean up the contaminated groundwater. The FEIR also gave a program-level analysis of the construction of physical facilities necessary to implement the Remedy. In August 2013, DTSC prepared an Addendum to the FEIR, and DTSC filed a Notice of Determination (NOD) with the SCH on September 4, 2013.
78. In 2015, DTSC began preparing a Subsequent EIR (SEIR) to evaluate potential environmental impacts resulting from design details of the Remedy. The SEIR included an evaluation of potential environmental impacts associated with the discharge of Remedy-produced wastewater to the surface impoundments. A draft SEIR was made available for public review and comment on January 12, 2017. DTSC responded to all comments and certified the Final SEIR on April 24, 2018. A NOD was also filed with the SCH on April 24, 2018.

79. The Colorado River Basin Water Board is a responsible agency under CEQA and in making its determinations and findings, must presume that DTSC's certified environmental documents comport with the requirements of CEQA and are valid. (Pub. Resources Code, § 21167.3.) The Colorado River Basin Water Board has reviewed and considered the environmental documents and finds that the environmental documents prepared by DTSC address the Remedy's water resource impacts to the Facility. (Cal. Code Regs., tit. 14, § 15096, subd. (f).)
80. The Colorado River Basin Water Board has notified the Discharger and all known interested agencies and persons of its intent to draft WDRs for this discharge, and has provided them with an opportunity for a public meeting and an opportunity to submit comments.
81. The Colorado River Basin Water Board also previously held a public workshop on March 9, 2017 in Needles, California concerning its intent to draft these WDRs.
82. The Colorado River Basin Water Board, in a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, that Order R7-2004-0080 is rescinded upon the effective date of this Order, except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code and regulations adopted thereunder, the Discharger shall comply with the following:

A. Discharge Prohibitions

1. Discharge to the surface impoundments of "hazardous waste," as defined in the California Code of Regulations, title 27, section 20164, is prohibited.
2. The discharge of wastewater to any surface waters, surface drainage courses, or groundwater is prohibited.
3. The use of chemicals with hazardous constituents (except as listed in this Order), including chromates, is prohibited in the cooling tower water treatment process without prior approval from the Colorado River Basin Water Board's Executive Officer.
4. The discharge of wastewater at a location, or in a manner, different from that described in this Order is prohibited.
5. The discharge of wastes into the surface impoundments to a point where evapoconcentration causes the wastes therein to exceed the criteria for "hazardous waste" is prohibited.
6. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management units, could produce violent reaction (e.g., heat, pressure, fire, or explosion), toxic by-products, or reaction products, which, in turn:
 - a. require a higher level of containment than provided by the unit; or
 - b. are 'restricted wastes'; or
 - c. impair the integrity of containment structures;

is prohibited pursuant to Section 20200, Subdivision (b), Title 27 of the California Code of Regulations.

7. The treatment or disposal of wastes from the Facility or the Remedy shall not cause pollution or nuisance as defined in Section 13050, Subdivisions (l) and (m) of Division 7 of the Water Code.

B. Discharge Specifications

1. A minimum depth of two feet of freeboard shall be maintained at all times in the surface impoundments.
2. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
3. Thirty (30) days prior to the introduction of a new waste stream into the surface impoundments, the Discharger must receive approval from the Colorado River Basin Water Board's Executive Officer.
4. The surface impoundments shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.
5. Adequate protective works shall be provided to ensure that flood or surface drainage water does not erode or render portions of the surface impoundments inoperable.
6. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
7. The surface impoundment(s) shall be designed, constructed, and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the water line.
8. Residual solids obtained by evaporation of wastewater shall be discharged only at a waste management facility permitted to receive such wastes and as approved by the Colorado River Basin Water Board's Executive Officer.
9. The Facility described in this Order shall be protected from any washout or erosion of wastes or covering material, and from any inundation which could occur as a result of floods having a predicted frequency of once in 100 years. This includes the surface impoundments, wells, and the conveyance system between the TCS and the surface impoundments.
10. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.
11. Leachate collected from a waste management unit(s) shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with section 20340, subdivision (g) of title 27 of the California Code of Regulations.

12. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste (Cal. Code Regs., tit. 27, § 20200(c)) or designated waste (Cal. Code Regs., tit. 27, § 20210).
13. Solids that accumulate in the surface impoundments shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for surface impoundment leachate and for the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to article 2, subchapter 2, chapter 3, division 2 of title 27 of the California Code of Regulations. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Colorado River Basin Water Board staff for review.

C. Standard Provisions

1. **Noncompliance.** The Discharger shall comply with all of the conditions of this Order. Noncompliance is a violation of the Porter-Cologne Water Quality Control Act (Water Code, § 13000 et seq.) and grounds for: (1) an enforcement action; (2) termination, revocation and reissuance, or modification of these waste discharge requirements; or (3) denial of an Order renewal application.
2. **Monitoring and Reporting Program.** The Discharger shall comply with Monitoring and Reporting Program R7-2018-0022 and future revisions thereto, as specified by the Colorado River Basin Water Board's Executive Officer.
3. **Proper Operation and Maintenance.** The Discharger shall at all times properly operate and maintain all systems and components of collection, treatment, and control, installed or used by the Discharger to achieve compliance with this Order. Proper operation and maintenance includes, but is not limited to, effective performance, adequate process controls, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities/systems when necessary to achieve compliance with this Order. All systems in service or reserved shall be inspected and maintained on a regular basis. Records of inspections and maintenance shall be retained, and made available to the Colorado River Basin Water Board on request.
4. **Material Changes.** Prior to any modification that results in any material change in the designated waste containment area, quantity or quality of wastewater treated or discharged, or the location of discharge, the Discharger shall report all pertinent information in writing to the Colorado River Basin Water Board and obtain revised requirements, as necessary.
5. **Mosquito Prevention.** The surface impoundments shall be managed to prevent breeding of mosquitoes; in particular, dead algae, vegetation, and debris shall not accumulate on the water surface.
6. **Solid Waste Disposal.** The Discharger shall maintain a permanent log of all solids hauled away from the surface impoundments for disposal and shall provide a summary of the volume, type, and disposal destination. Before disposing of treated or untreated solid waste, the Discharger shall provide a plan as to the method, treatment, handling, and disposal of solid waste that is consistent with all state and federal laws and regulations,

including title 27 of the California Code of Regulations. The plan shall include any and all prior approvals required by the BLM, DOI and/or DTSC, and obtain prior written approval from the Regional Water Board specifying location and method of disposal.

7. **Familiarity with Order.** The Discharger shall ensure that all site-operating personnel are familiar with the content of this Order, and shall maintain a copy of this Order at the site.
8. **Access to Facility and Records.** The Discharger shall allow the Colorado River Basin Water Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter the premises regulated by this Order, or the place where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, records kept under the conditions of this Order;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
 - d. Sample or monitor at reasonable times, for the purpose of assuring compliance with this Order or as otherwise authorized by the Water Code, any substances or parameters at this location.
9. **Change in ownership.** The Discharger shall notify the Regional Water Board in writing of any proposed change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the surface impoundments. This notification shall be given prior to the effective date of the change and shall include a statement by the new discharger that construction, operation, closure, and post-closure maintenance will be in compliance with any existing WDRs and any revisions thereof. The Regional Water Board may amend the existing WDRs to name the new discharger.
10. **Response to Failure.** The Discharger shall promptly notify the Regional Water Board of any slope failure occurring at the waste management unit. The Discharger shall promptly correct any failure which threatens the integrity of containment features or the surface impoundments in accordance with method approved by the Colorado River Basin Water Board's Executive Officer.
11. **Leachate Production Change Notification.** The Discharger shall notify the Regional Water Board within seven (7) days if fluid is detected in a previously-dry LCRS or unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in the LCRS which exceeds the previously-observed range of volumes for that location.
12. **Change in Site Conditions Notification.** The Discharger shall immediately notify Colorado River Basin Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
13. **Reporting of Noncompliance.** The Discharger shall report any noncompliance that may endanger human health or the environment. Information shall be provided orally to the Colorado River Basin Water Board office and the Office of Emergency Services within twenty-four (24) hours of when the Discharger becomes aware of the incident. If

noncompliance occurs outside of business hours, the Discharger shall leave a message on the Colorado River Basin Water Board's office voicemail. A written report shall also be provided within five (5) business days of the time the Discharger becomes aware of the incident. The written report shall contain a description of the noncompliance and its cause, the period of noncompliance, the anticipated time to achieve full compliance, and the steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance.

14. **Closure Requirements.** One (1) year prior to the anticipated closure of one or more of the surface impoundments at the Facility, the Discharger shall submit a final closure and post-closure maintenance plan in accordance with California Code of Regulations, title 27 to the Colorado River Basin Water Board for review and approval by the Executive Officer. Closure of the surface impoundments shall require the removal of all residual wastes, including liquids, sludge, precipitates, settled solids, liner materials, and adjacent natural geologic materials polluted by wastes. The removed waste shall be discharged to a waste management unit approved by the Colorado River Basin Water Board's Executive Officer. If after reasonable attempts, the Discharger demonstrates the removal of all remaining contamination attributable to the surface impoundments is infeasible, the surface impoundments shall be closed as a landfill.
15. **Annual Financial Assurances Update.** By April 30th of each year, the Discharger shall submit a report to the Colorado River Basin Water Board that reports the balance of both the closure and corrective action funds or the amounts of the guarantees and the adjustments to account for inflation in accordance with section 22236 of title 27 of the California Code of Regulations.
16. **Format of Technical Reports.** The Discharger shall furnish, under penalty of perjury, technical monitoring program reports, and such reports shall be submitted in accordance with chapter 30, division 3, title 23 of the California Code of Regulations, as groundwater raw data uploads electronically over the internet into the State Water Board's GeoTracker database, found at: <https://geotracker.waterboards.ca.gov/>. Documents that are normally mailed by the Discharger, such as regulatory documents, narrative technical monitoring program reports, and such reports submissions, materials, data, and correspondence, to the Colorado River Basin Water Board shall also be uploaded into GeoTracker in the appropriate Microsoft software application, such as word, excel, or an Adobe Portable Document Format (PDF) file. Large documents are to be split into manageable file sizes appropriately labelled and uploaded into GeoTracker. The Facility is assigned GeoTracker Global Identification No. L10004096479.
17. **Qualified Professionals.** In accordance with Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of California registered professionals (i.e., civil engineer, engineering geologist, geologist, etc.) competent and proficient in the fields pertinent to the required activities. All technical reports required under this Order that contain work plans, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal. Additionally, all field activities are to be conducted under the direct supervision of one or more of these professionals.

18. **Penalty of Perjury.** All technical reports required in conjunction with this Order shall include a statement by the Discharger, or an authorized representative of the Discharger, certifying under penalty of perjury under the laws of the state of California, that the reports were prepared under his or her supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluated the information submitted, and that based on his or her inquiry of the person or persons who manage the system, the information submitted is, to the best of his or her knowledge and belief, true, complete, and accurate.
19. **Violation of Law.** This Order does not authorize violation of any federal, state, or local laws or regulations.
20. **Property Rights.** This Order does not convey property rights of any sort, or exclusive privileges, nor does it authorize injury to private property or invasion of personal rights, or infringement of federal, state, or local laws or regulations.
21. **Modification, Revocation, Termination.** This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for an Order modification, rescission, or reissuance, or the Discharger's notification of planned changes or anticipated noncompliance, does not stay any Order condition. Causes for modification include, but are not limited to, a change in land application plans or sludge use/disposal practices and adoption of new regulations by the State Water Board, Colorado River Basin Water Board (including revisions to the Basin Plan), or federal government.

I, Paula Rasmussen, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on September 20, 2018.

Original signed by
Paula Rasmussen
Acting Executive Officer

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

MONITORING AND REPORTING PROGRAM R7-2018-0022

FOR
PACIFIC GAS AND ELECTRIC, OWNER/OPERATOR
TOPOCK COMPRESSOR STATION CLASS II SURFACE IMPOUNDMENTS
AND GROUNDWATER REMEDIATION FACILITY
Southeast of Needles – San Bernardino County

Location of Discharge:
E ½ of NE ¼ of Section 7, T&N, R24E, SBB&M

A. Monitoring

1. This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code section 13267 and describes requirements for monitoring the relevant wastewater system and groundwater quality. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Colorado River Basin Water Board or its Executive Officer.
2. Water Code Section 13267, Subdivision (b)(1), states:

“In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”
3. Water Code Section 13268 states, in part:

“(a)(1) Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267, failing or refusing to furnish information as required by subdivision (a) or (b) of Section 13267.5, or failing or refusing to furnish a statement of compliance as required by subdivision (b) of Section 13399.2, or falsifying any information provided therein, is guilty of a misdemeanor, and may be liable civilly in accordance with subdivision (b)....

(b)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars (\$1,000) for each day in which the violation occurs.”

4. The Discharger owns and operates the wastewater system that is subject to WDRs Order R7-2018-0022. The reports are necessary to ensure that the Discharger complies with the Order. Pursuant to Water Code Section 13267, the Discharger shall implement the MRP and shall submit the monitoring reports described herein.
5. All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. If composite samples are collected, the basis for sampling (time or flow weighted) shall be approved by Colorado River Basin Water Board staff.
6. Field test instruments (such as those used to test pH, dissolved oxygen, and electrical conductivity) may be used provided that:
 - a. The user is trained in proper use and maintenance of the instruments;
 - b. The instruments are field calibrated prior to monitoring events at the frequency recommended by the manufacturer;
 - c. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
 - d. Field calibration reports are submitted as described in the "Reporting" section of this MRP.
7. The collection, preservation, and holding times of all samples shall be in accordance with United States Environmental Protection Agency (USEPA) approved procedures. Unless otherwise approved by the Colorado River Basin Water Board's Executive Officer, all analyses shall be conducted by a laboratory certified by the Environmental Laboratory Accreditation Program (ELAP), Division of Drinking Water, State Water Resources Control Board. All analyses shall be conducted in accordance with the latest edition of the "Guidelines Establishing Test Procedures for Analysis of Pollutants" (40 C.F.R. part 136), promulgated by the USEPA.
8. Pursuant to the Water Code Section 13267, samples collected for Total Chromium shall be analyzed with a method having a method detection limit (MDL) of 1.0 ppb and samples collected for hexavalent chromium shall be analyzed with a method having a MDL of 0.2 ppb. The analytical results shall be reported in terms of the practical quantitation limit (PQL), if the MDL cannot be achieved. The requirements are necessary to ensure compliance with the waste discharge requirements set forth in Order R7-2018-0022, determine the impact on the surface impoundments, and confirm that the disposal of wastewater associated with the maintenance operations of groundwater remediation system or nonhazardous liquid from the decommissioning of IM-3 does not violate Waste Discharge Requirements.
9. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. In the event that continuous monitoring equipment is out of service for period greater than 24-hours, the Discharger shall obtain representative grab samples each day the equipment is out of service. The Discharger shall correct the cause(s) of failure of the continuous monitoring equipment as soon as practicable. The Discharger shall report the period(s) during which the equipment was out of service and if the problem has not been corrected, shall identify the steps which the Discharger is taking or proposes to take to bring the equipment back into service and the schedule for these actions.

10. Samples shall be collected at locations approved by the Regional Water Board's Executive Officer. If no location is specified, sampling shall be conducted at the most representative sampling point available.
11. The Discharger shall comply with the following:
 - a. Samples and measurements collected for the purpose of monitoring shall be representative of the monitored activity.
 - b. The Discharger shall retain records of all monitoring information, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least 5 years from the date of the sample, measurement, report or application.
 - c. Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurements.
 - ii. The individual(s) who performed the sampling or measurements.
 - iii. The date(s) analyses were performed.
 - iv. The individual(s) who performed the analyses.
 - v. The analytical techniques or methods used; and
 - vi. The results of such analyses.
12. If the Facility is not in operation, or there is no discharge during a required reporting period, the Discharger shall forward a letter to the Colorado River Basin Water Board indicating that there has been no activity during the required reporting period.
13. The discharger shall monitor the surface impoundments, groundwater, leachate collection and recovery systems and vadose zone in accordance with the following:

Surface Impoundments Monitoring

14. Representative grab wastewater samples shall be collected from each surface impoundment near the point of discharge and analyzed as follows:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow	gpd ¹	Metered	Continuously	Semiannually
pH	pH units	Grab	Semiannually	Semiannually
Specific Conductance	µmhos/cm ²	Grab	Semiannually	Semiannually
TDS	mg/L ³	Grab	Semiannually	Semiannually
Fluoride	mg/L	Grab	Annually	Annually

¹ Gallons per Day
² micro mhos per centimeter
³ milligram per liter

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Antimony	µg/L ⁴	Grab	Annually	Annually
Arsenic	µg/L	Grab	Annually	Annually
Barium	µg/L	Grab	Annually	Annually
Beryllium	µg/L	Grab	Annually	Annually
Cadmium	µg/L	Grab	Annually	Annually
Total Chromium	µg/L	Grab	Annually	Annually
Hexavalent Chromium	µg/L	Grab	Annually	Annually
Cobalt	µg/L	Grab	Annually	Annually
Copper	µg/L	Grab	Annually	Annually
Lead	µg/L	Grab	Annually	Annually
Mercury	µg/L	Grab	Annually	Annually
Molybdenum	µg/L	Grab	Annually	Annually
Nickel	µg/L	Grab	Annually	Annually
Selenium	µg/L	Grab	Annually	Annually
Silver	µg/L	Grab	Annually	Annually
Thallium	µg/L	Grab	Annually	Annually
Vanadium	µg/L	Grab	Annually	Annually
Zinc	µg/L	Grab	Annually	Annually
Bioassay	N/A	Grab	Annually	Annually

Surface Impoundment Sludge Monitoring

15. Representative composite sludge samples shall be collected on an annual basis from each surface impoundment that has sludge present and tested for the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Fluoride	mg/kg	Composite	Annually	Annually
Antimony	mg/kg	Composite	Annually	Annually

⁴ microgram per liter

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Arsenic	mg/kg	Composite	Annually	Annually
Barium	mg/kg	Composite	Annually	Annually
Beryllium	mg/kg	Composite	Annually	Annually
Cadmium	mg/kg	Composite	Annually	Annually
Total Chromium	mg/kg	Composite	Annually	Annually
Hexavalent Chromium	mg/kg	Composite	Annually	Annually
Cobalt	mg/kg	Composite	Annually	Annually
Copper	mg/kg	Composite	Annually	Annually
Lead	mg/kg	Composite	Annually	Annually
Mercury	mg/kg	Composite	Annually	Annually
Molybdenum	mg/kg	Composite	Annually	Annually
Nickel	mg/kg	Composite	Annually	Annually
Selenium	mg/kg	Composite	Annually	Annually
Silver	mg/kg	Composite	Annually	Annually
Thallium	mg/kg	Composite	Annually	Annually
Vanadium	mg/kg	Composite	Annually	Annually
Zinc	mg/kg	Composite	Annually	Annually
Bioassay	N/A	Composite	Annually	Annually

16. The Discharger shall report on the quantity, location, and method of disposal of all sludge and similar solid materials being produced in the surface impoundments.
17. The Discharger shall annually collect one representative composite sample of sludge for each surface impoundment and have an aquatic bioassay test performed on the samples. Select a procedure from the Static Acute Bioassay Procedure for Hazardous Waste Sample by the California Department of Fish and Wildlife, Water Pollution Control Laboratory, revised November 1988 or by other test methods approved by the California Department of Fish and Wildlife. The Discharger shall provide a report supporting any deviation from a standard procedure, and the deviation must be approved by the Colorado River Basin Water Board's Executive Officer.

Groundwater Monitoring

18. Groundwater samples shall be collected semiannually from groundwater monitoring wells MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8 and analyzed for the following constituents:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Depth to Groundwater (bgs) ⁵	ft	Measurement	Semiannually	Semiannually
Groundwater elevation (msl) ⁶	ft	Calculated	Semiannually	Semiannually
Groundwater Gradient and Direction	feet/foot	Calculated	Semiannually	Semiannually
pH	pH units	Grab	Semiannually	Semiannually
Specific Conductance	µmhos/cm ⁷	Grab	Semiannually	Semiannually
TDS	mg/L ⁸	Grab	Semiannually	Semiannually
Total Chromium	µg/L	Grab	Semiannually	Semiannually
Hexavalent Chromium	µg/L	Grab	Semiannually	Semiannually
Trivalent Chromium	µg/L	Calculated	Semiannually	Semiannually
Molybdenum	µg/L	Grab	Annually	Annually

19. In accordance with the requirements of sections 20415 and 20420 of title 27 of the California Code of Regulations, a groundwater detection monitoring program has been established and implemented for the Facility. The following report describes the component of the program: Pacific Gas and Electric Company Topock Compressor Station Class II Surface impoundments Updated Monitoring and Response Plan for Board Order No. 98-050, Report No. 402.331-00.85, dated April 2000. This plan shall be revised to conform with Board Order R7-2018-0022.

Leachate Collection and Recovery System

20. Leachate collection and recovery system (LCRS) sumps for the surface impoundments shall be monitored weekly to check for potential leakage from the liner system. A log recording the inspection date and the person(s) inspecting the LCRS shall be maintained. Liquid present in a LCRS shall be pumped out and the quantity removed shall be recorded. If the total leachate flow rate detected in any LCRS collection sump at any of the four surface impoundments is greater than or equal to 10 gallons per day (“action leak rate”), a sample from both the LCRS sump and the corresponding surface impoundment shall be

⁵ Below ground surface

⁶ Above Mean Sea Level. Groundwater elevation shall be based on depth-to-water using a surveyed measuring point elevation on the well and a surveyed reference elevation.

⁷ micro mhos per centimeter

⁸ milligrams per liter

collected and field tested for pH and specific conductance. These values shall be compared as an initial indicator of a leak through the top liner(s). If the field testing results indicates the LCRS and surface impoundment results are similar, both samples shall be submitted to a laboratory and analyzed for the indicator chemicals TDS, boron and molybdenum. If these testing results are within 50 percent of each other, the indicator chemical testing shall be deemed to indicate a probable leak.

If the action leak rate of 10 gallons per day is reached or exceeded, or testing for the indicator chemicals indicates a possible leak, the continued discharge to the affected surface impoundments is prohibited until the waste management unit is evaluated and repaired. In case of a leak being detected (action leak rate exceeded), the discharger shall report the leak immediately to the Colorado River Basin Water Board. If no leak occurs or is detected above the action leak rate, a "No Leak Detected" statement shall be made in the monitoring report.

Vadose Zone Monitoring

21. The Vadose Zone Detection system for the surface impoundments shall be monitored quarterly for the detection of moisture in the soil pores of the unsaturated zone. The detection of soil-pore liquid is determined by the use of lysimeters. A field notebook recording the inspection date and the person(s) inspecting the Vadose Zone Detection System shall provide documentation of the inspections. During each monitoring event, a vacuum shall be applied to each lysimeter for at least 12 hours to draw soil moisture into the lysimeter, then that accumulated moisture shall be retrieved from the lysimeter and retained for analysis. The quantity of water obtained from each lysimeter shall be recorded, and the lysimeter samples shall be analyzed for the indicator parameters molybdenum, boron, specific conductivity and TDS. If any of these indicator parameters are greater than 50% of the most recent values obtained for the associated surface impoundment, these results shall be deemed to indicate a probable release has occurred.
22. In accordance with the requirements of sections 20415 and 20420 of the California Code of Regulations, a vadose zone detection monitoring program has been established and implemented for the Facility. The following report describes the component of the program: Pacific Gas and Electric Company Topock Compressor Station Class II Surface Impoundments Updated Monitoring and Response Plan for Board Order No. 98-050, Report No. 402.331-00.85. dated April 2000. This plan shall be revised to conform with Board Order R7-2018-0022. If no moisture is detected then a "No Moisture Detected" statement shall be made in the semiannual report.

Remedy-Related Waste

23. Prior to discharge of IM-3 or Remedy-related wastes to the surface impoundments, the Discharger shall conduct sampling and analyses to demonstrate that the discharge is not hazardous. Information on the source and quantity of the discharge to the surface impoundments and a summary of analytical results shall be included in the monitoring reports. Copies of all laboratory reports will be uploaded to GeoTracker.
24. For wastewater that is routed through the WCP, the discharger shall inform the Colorado River Basin Water Board, in writing, of all sampling locations (identified in the O&M Plan) and the expected startup date of the plant at least 7 days prior to the beginning of operational start-up and sample collection activities. The Regional Water Board shall be notified in writing five (5) days prior to any change in sampling location.

25. For wastewater that is routed through the WCP prior to discharge to the surface impoundments, the Discharger shall provide the Colorado River Basin Water Board the same O&M report(s) for the groundwater Remedy that is submitted to DTSC and DOI.

B. Reporting

1. The Discharger shall document any O&M problems for the WCP, wastewater conveyance system, surface impoundments and monitoring devices. The wastewater conveyance system consists of the piping, equipment, oil/water separator, and ponds downstream of the wastewater holding tank. Calibration of flow meters (if this can be performed accurately on-site with an ultrasonic flow meter) and equipment shall be performed in accordance with manufacturer's requirements and documented. O&M reports for the surface impoundments shall be submitted to the Colorado River Basin Water Board office semiannually on January 30 and July 30 of each year. O&M reports for the groundwater Remedy, including the WCP, shall be submitted to the Colorado River Basin Water Board office concurrently with submittal to DTSC and DOI.
2. Annually by **April 30** of each year, the Discharger must report that the amount of financial assurance is adequate, or increase the amount of financial assurance as required under title 27, sections 22207 and 22222 of the California Code of Regulations.
3. The Discharger shall arrange the data in tabular form so that the specified information is readily discernible. The data shall be summarized in such a manner as to clearly illustrate whether the Facility is operating in compliance with the WDRs. Where appropriate, the Discharger shall include supporting calculations (e.g., for monthly averages).
4. The results of any analysis performed more frequently than required at the locations specified in this MRP shall be reported to the Colorado River Basin Water Board.
5. SMRs shall be certified under penalty of perjury to be true and correct, and shall contain the required information at the frequency designated in this MRP.
6. Each Report shall contain an affirmation in writing that states:

"All analyses were conducted at a laboratory certified for such analyses by and in accordance with current USEPA procedures or as specified in this Monitoring and Reporting Program."
7. Each Report shall contain the following completed declaration:

"I certify under the penalty of law that this document, including all attachments and supplemental information, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

Executed on the _____ day of _____ at _____

_____(Signature)

_____(Title)"

8. The SMRs, and other information requested by the Colorado River Basin Water Board, shall be signed by a principal executive officer or ranking elected official.
9. A duly authorized representative of the Discharger may sign the documents if:
 - a. The authorization is made in writing by the person described above;
 - b. The authorization specified an individual or person having responsibility for the overall operation of the regulated disposal system; and
 - c. The written authorization is submitted to the Colorado River Basin Water Board's Executive Officer.
10. Reporting of any failure in the Facility (Remedy-produced Water Conditioning Plant, surface impoundment wastewater conveyance system, and surface impoundments) shall be as described in this Order. Results of any analysis performed as a result of a failure of the Facility shall be provided within fourteen (14) days after collection of the samples.
11. The Discharger shall attach a cover letter to the SMRs. The information contained in the cover letter shall clearly identify violations of the WDR; discuss corrective actions taken or planned and the proposed time schedule of corrective actions. Identified violations should include a description of the requirement that was violated and a description of the violation.
12. Daily, semi-weekly, weekly, monthly, and quarterly monitoring shall be submitted to the Colorado River Basin Water Board with the semiannual monitoring reports. Semiannual monitoring reports shall be submitted to the Regional Water Board by **January 30** and **July 30** of each year. Annual monitoring reports shall be submitted to the Regional Water Board by **April 30** of each year.
13. The Discharger shall comply with the Electronic Submittal of Information (ESI) requirements by submitting all correspondence and reports required under MRP R7-2018-0022, and future revisions thereto, including groundwater monitoring data and discharge location data (latitude and longitude), correspondence, and pdf monitoring reports to the State Water Resources Control Board GeoTracker database. Documents that are 400 MB or larger should be broken down into smaller electronic files, labelled properly and uploaded into GeoTracker.

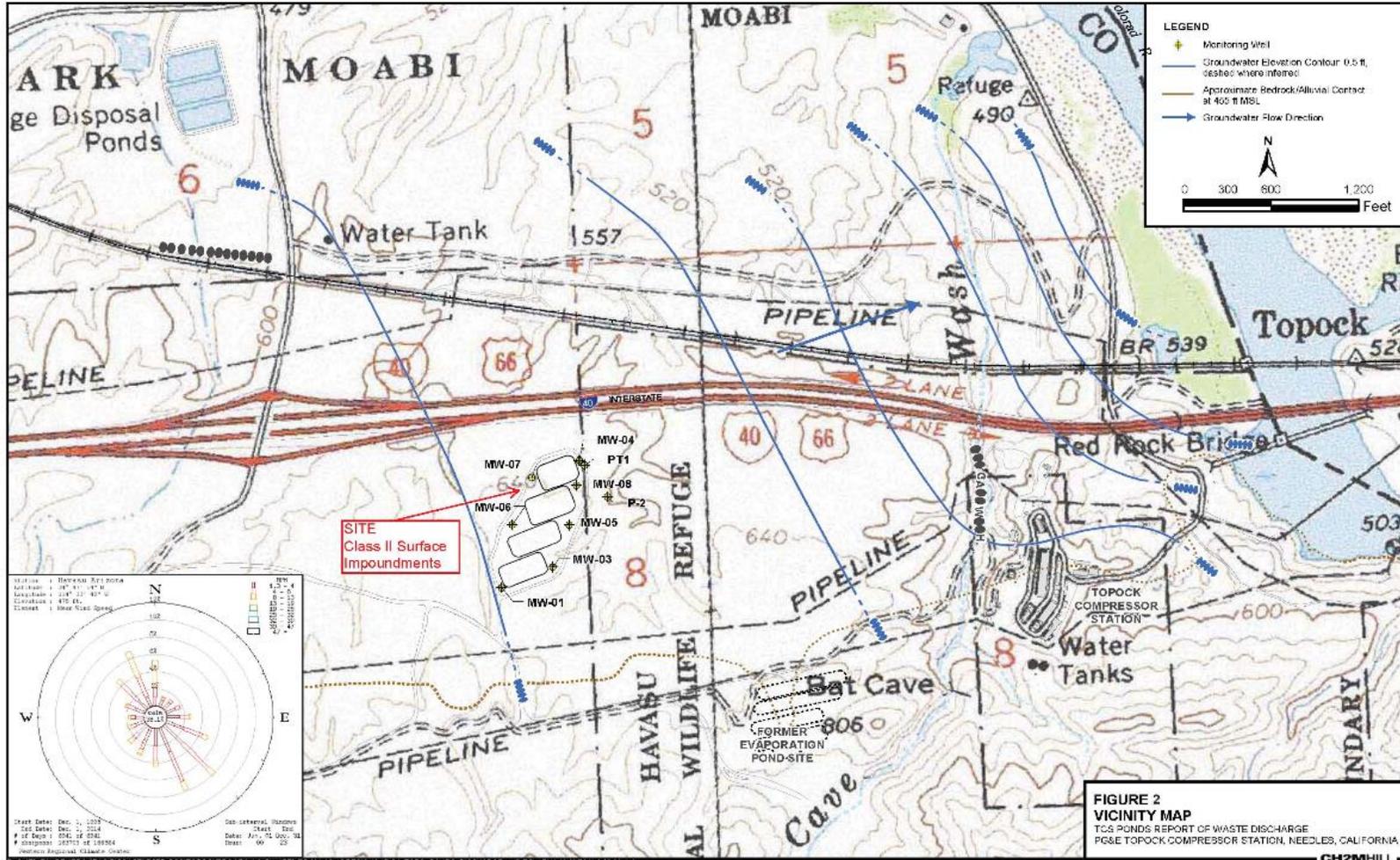
Ordered by Original signed by
Paula Rasmussen
Acting Executive Officer

9-20-20-18
Date

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

PACIFIC GAS AND ELECTRIC
TOPOCK COMPRESSOR STATION
Southeast of Needles – San Bernardino County
Discharge Location: SE ¼ of Section 19, T4S, R5E, SBB&M

Attachment A

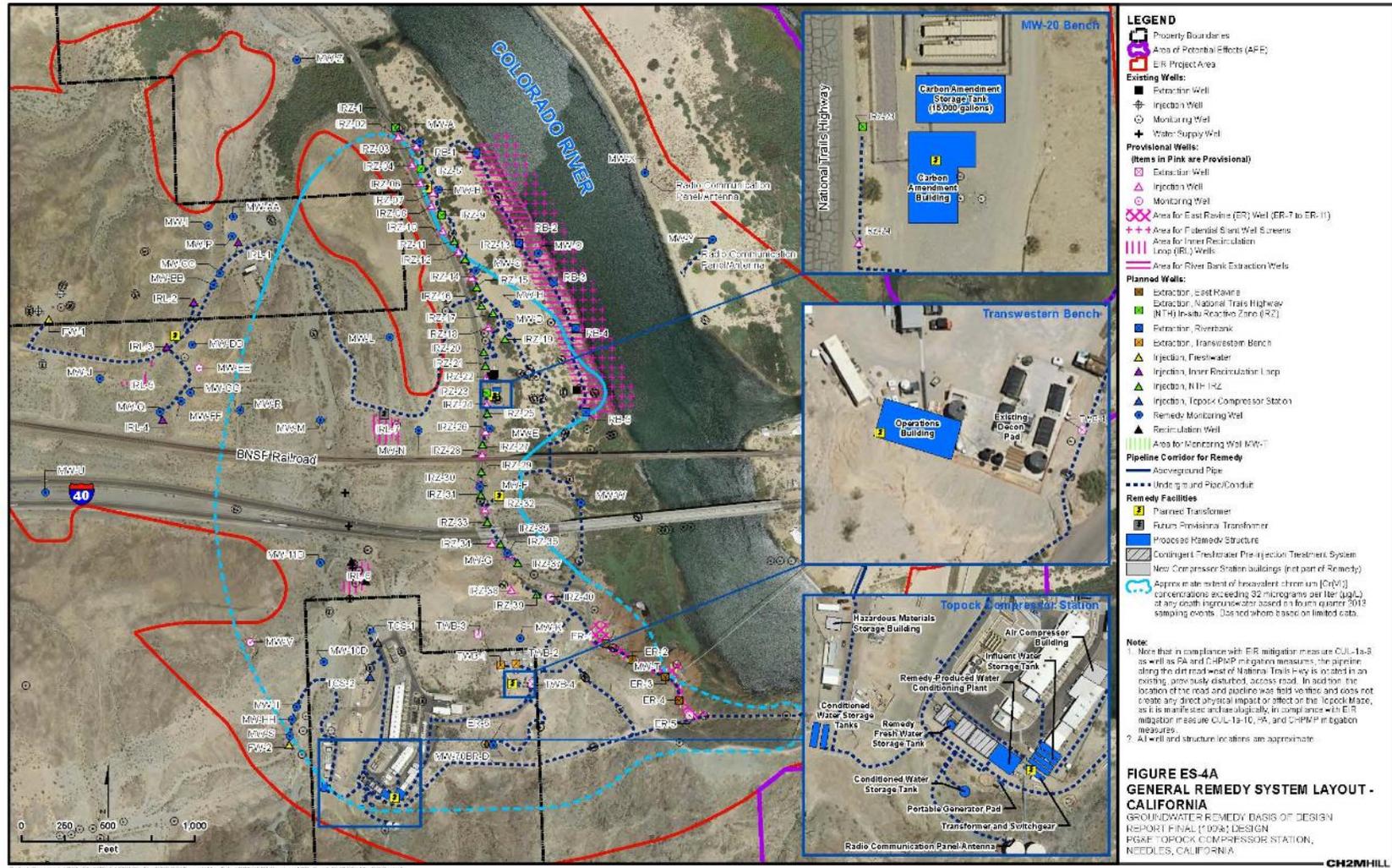


**CALIFORNIA REGIONAL WATER QUALITY CONTROLBOARD
COLORADO RIVER BASIN REGION**

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

**PACIFIC GAS AND ELECTRIC
TOPOCK COMPRESSOR STATION**
Southeast of Needles – San Bernardino County
Discharge Location: SE ¼ of Section 19, T4S, R5E, SBB&M

Attachment C



PACIFIC GAS AND ELECTRIC
TOPOCK COMPRESSOR STATION
Southeast of Needles – San Bernardino County
Discharge Location: SE ¼ of Section 19, T4S, R5E, SBB&M

Attachment D

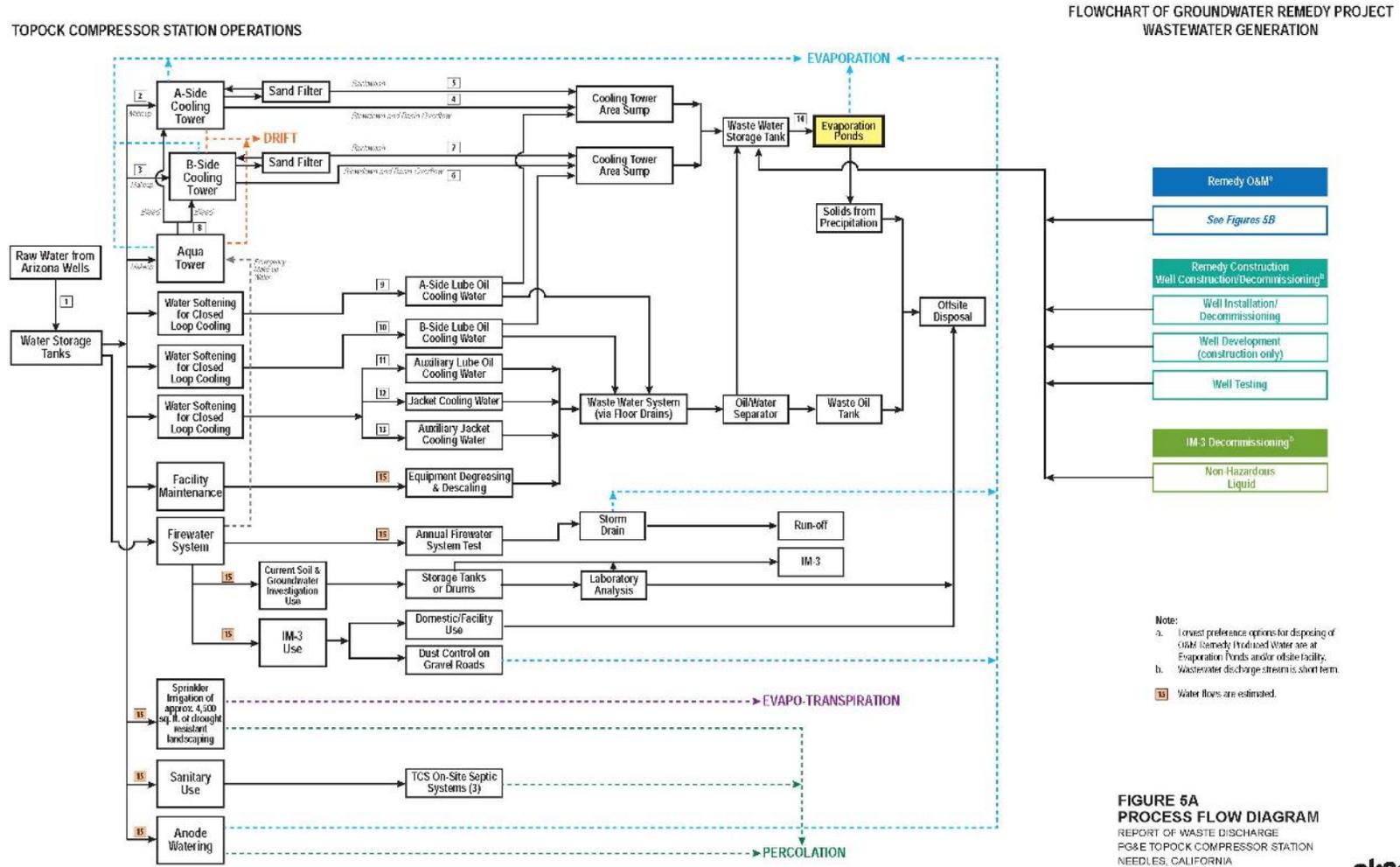


FIGURE 5A
PROCESS FLOW DIAGRAM
REPORT OF WASTE DISCHARGE
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

