

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD COLORADO RIVER BASIN REGION

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ORDER R7-2021-0033



Order Information

Discharger: U.S. Marine Corps, Public Works Division
Facility: Twentynine Palms Air Ground Combat Center
P-192 Potable Water Treatment/Blending
Facility
Address: Twentynine Palms, California 92278
County: San Bernardino County
WDID: 7A360702041
GeoTracker ID: WDR100053540
Prior Order(s): None

I, PAULA RASMUSSEN, Executive Officer, hereby certify that the following is a full, true, and correct copy of the order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on July 20, 2021.

Original signed by

PAULA RASMUSSEN
Executive Officer

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER R7-2021-0033

WASTE DISCHARGE REQUIREMENTS
FOR
U.S. MARINE CORPS, PUBLIC WORKS DIVISION, OWNER/OPERATOR
TWENTYNINE PALMS MARINE CORPS AIR GROUND COMBAT CENTER
P-192 POTABLE WATER TREATMENT/BLENDING FACILITY
CLASS II SURFACE IMPOUNDMENTS
TWENTYNINE PALMS, SAN BERNARDINO COUNTY

The California Regional Water Quality Control Board, Colorado River Basin Region (Regional Water Board) hereby makes the following **FINDINGS**:

1. The United States Marine Corps, Public Works Division (Discharger), P.O. Box 788104, Twentynine Palms, California 92278, proposes to build and operate a potable water treatment and blending facility (Facility) on undeveloped land within the boundaries of the Marine Corps Air Ground Combat Center (MCAGCC) north of the city of Twentynine Palms, California. The Facility location is depicted in **Attachment A**, Location Map, made part of this Order by reference.
2. The Facility will produce potable water for on-base consumption using reverse osmosis (RO), brine minimization through closed-circuit desalination (CCD) and chlorination. The treatment process will produce a large quantity of brine that the Discharger is proposing to discharge into two Class II surface impoundments (Surface Impoundments) to be constructed at the Facility. The proposed Facility layout is depicted in **Attachment B**, Site Layout Map. The Surface Impoundments are waste management units regulated under California Code of Regulations, title 27, section 20005 et seq.¹
3. The Discharger submitted an initial Report of Waste Discharge (ROWD) on April 13, 2019. The Regional Water Board provided written comments on December 24, 2019, requesting clarifications concerning and/or changes to portions of the design. The Discharger submitted a response-to-comments table (RCT) on January 15, 2020 that proposed changes to the original design where appropriate, and clarifications and justifications regarding the design where the Discharger did not make changes. The Regional Water Board issued a letter concurring with the proposed changes and clarifications on February 14, 2020.

¹ "Waste management unit" is as defined in California Code of Regulations, title 27, section 20164. Unless otherwise specified, all terms have the meaning specified in California Code of Regulations, title 27, division 2, subdivision 1, chapter 2, article 1.

The Discharger submitted a revised ROWD on April 13, 2020 incorporating the agreed upon changes.

4. This Order provides Waste Discharge Requirements (WDRs) to comply with current laws and regulations as set forth in the Water Code and the California Code of Regulations.
5. The Facility and these WDRs are assigned California Integrated Water Quality System (CIWQS) No. CW-872367, Waste Discharge Identification (WDID) No. 7A360702041, and GeoTracker ID No. WDR100053540.

Facility Overview and Waste Classification

6. The Facility is located in San Bernardino County, within the boundaries of the MCAGCC, approximately 8 miles northwest of the main base buildings at a latitude of approximately 34.3 degrees north and a longitude of approximately 116.2 degrees west, as shown in **Attachment A**. The vicinity is generally undeveloped desert terrain. One unpaved road crosses the site vicinity. Four existing water storage tanks are currently located a short distance north of the proposed Facility location.
7. The Facility is being constructed to treat water from new potable water supply wells installed into the Deadman Aquifer and will consist of a water treatment plant (WTP) and two new Surface Impoundments. The purpose of the Facility is to treat groundwater from new and existing production wells to remove naturally occurring salts and metals to meet current and anticipated drinking water standards. The treated water will be distributed throughout the MCAGCC using the existing water distribution system.
8. The proposed treatment processes use RO, brine minimization through CCD and chlorination. The discharge from the CCD system will discharge to the Surface Impoundments. The Facility is designed to treat 3.19 million gallons per day (mgd) of incoming groundwater and produce 3 mgd of treated water. The resulting 190,000 gallons of brine will be discharged to the Surface Impoundments at an average flow rate of 128 gallons per minute (gpm).
9. The Surface Impoundments and monitoring systems are summarized as follows:
 - a. Two Surface Impoundments are proposed, with a total top surface area of 9.0 acres.
 - b. The maximum storage depth is 5 feet with a freeboard of two (2) feet.
 - c. Both Surface Impoundments will have double-liner systems in conformance with title 27 requirements, including two layers (primary and secondary) of 60-mil high-density polyethylene (HDPE) separated by a

200-mil geotextile net (geonet) drain liner. The primary HDPE layer will be textured for safety.

- d. A Leak Collection and Removal System (LCRS) will be located between the primary and secondary liners. The purpose of the LCRS is to monitor the primary liner for leaks and contain any leakage. The LCRS drains to a V-shaped depression (collection sump) along the centerline of the lower liner that contains a 6-inch diameter pipe and gravel. The pipe drains laterally to a 36-inch diameter vertical pipe located southwest of the footprint of the ponds. The vertical pipe extends to a depth of 18 feet, 7 of which extends below the connection to the lateral drainpipe and serves as a leachate storage sump. Any leachate that drains to the LCRS collects in the vertical pipe pending removal. The storage volume of the LCRS storage sump, below the connection with the lateral drainpipe, is approximately 370 gallons.
- e. A Vadose Zone Monitoring System (VZMS) will be located under the LCRS collection sump area. The purpose of the VZMS is to monitor the LCRS collection sump for leaks. The VZMS is similar in design to the LCRS but not as laterally extensive; the VZMS is only under the V-shaped sump of the LCRS. Leachate that escapes the LCRS collection sump would collect in the VZMS, then drain to another vertical pipe located southwest of the footprint of the pond. The vertical pipe associated with the VZMS extends 5 feet below the connection to the lateral drainpipe and has a storage capacity of approximately 260 gallons.
- f. Instrumentation will include visual level/depth gages, instrumentation for remote level detection, and actuated feed valves for remote fill/no fill control. A ramp will provide access to the interior of each Surface Impoundment.
- g. Each Surface Impoundment will have four mechanical spray evaporators (MSEs), each designed to evaporate 17,000 gallons per day (gpd) based on an operating average of 16 hours a day.
- h. Pond sizes are based on an annual average waste discharge flow rate of 85 gpm, natural evaporation rates based on historical weather conditions, and 4 MSEs operating 16 hours a day in each pond.
- i. Groundwater monitoring consists of one upgradient and two downgradient monitoring wells.
- j. An 8-foot chain link fence (7-ft fabric with 1-ft outrigger) will surround the ponds to prevent wildlife incursion.

10. Stormwater runoff from the Facility will not be discharged into the Surface Impoundments.
11. Regional Water Board staff issued a comment letter on December 24, 2019. The comments focused primarily on the size and design the LCRS, questions regarding whether the ponds were large enough to accommodate the volume of water proposed to be discharged, and whether there was enough excess capacity in the event one of the ponds or any of the MSEs were taken offline.
12. On January 15, 2020, the Discharger submitted a Response to Comments table that described how each of the comments would be addressed. In summary:
 - a. The storage capacity of the LCRS was increased by increasing the diameter of the vertical storage pipe.
 - b. The new wells and treatment facility were being installed to reduce the rate at which the existing groundwater supply was being depleted, and that the Facility could be operated at reduced capacity, including completely by-passing treatment, and still meet the needs of the MCAGCC for a period of time. Therefore, any operational upset or lack of evaporative capacity would be addressed by reducing the quantity of waste produced by the Facility.
13. On February 5, 2020, the Regional Water Board issued a letter concurring with the changes proposed by the Discharger on January 15, 2020, in large part because the Discharger could reduce waste discharge rates in the event the evaporation rates were not as high as anticipated.
14. The ROWD includes wind speed and direction information. The average wind speed is 6.8 miles per hour, the maximum wind speed was 27 miles per hour and the dominant wind direction was to the southwest. Winds to the southeast and northwest were also common, but winds to the northeast were less common.
15. The eight MSEs are proposed to be installed in a single row down the middle of the northwest to southeast axis of the Surface Impoundments, a minimum of 147 feet from the edge of the Surface Impoundments at full water level. The MSEs will be held in place with ropes extending from the northeast and southwest berms. Modeling of the distance that spray might extend from the MSEs found operation of the MSEs at a wind speed higher than 10 mph was not recommended. Calculations of the adequacy of the storage volume of the Surface Impoundments assumed that the MSEs would be shut off if the wind exceeded 7 mph.
16. Due to: (1) the high salt content of the mists to be generated by the MSEs, (2) that fine mists travel farther before falling back to the ground, (3) mists become finer as they evaporate, and (4) the need for the mists to be retained within the

boundaries of the Surface Impoundments, the sprayer system should not be operated when the average wind speed exceeds 7 miles per hour for 15 minutes, wind gusts exceed 10 miles per hour, or visible mists are observed to be reaching the edge of the Surface Impoundments. Requirements to this effect have been added to this Order.

17. Wastewater at the Facility is considered designated waste. Designated waste is defined in Water Code section 13173 and California Code of Regulations, title 27, section 20210 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 reasonably expected to affect beneficial uses of the waters of the state. The wastewater generated by this Facility will contain elevated concentrations of salts that would pose a significant threat to surface water and groundwater quality if allowed to leave the site. Therefore, the discharge is a designated waste and, as such, must be discharged to waste management units regulated under title 27 of the California Code of Regulations.

Control Systems/Monitoring Programs

18. Each pond will have an LCRS. As described above, the LCRS is comprised of a geonet drainage layer between the upper and lower HDPE liners. The upper liner is designed to contain the wastewater within the ponds. The lower liner stops leaks that get through the upper liner. The geonet collect leachate that gets through the upper liner and conveys it to the V-shaped collection sump at the low spot in the lower liner. A horizontal drainpipe provides for drainage from the V-shaped collection area to the vertical storage sump. Storage capacity in the vertical storage sump is about 360 gallons.
19. Each pond will have a VZMS located under the V-shaped collection area of the LCRS. As described above, the VZMS is similar in design to the LCRS except that it is not as laterally extensive, and the storage volume of the vertical storage sump is only about 260 gallons.
20. Monitoring and Reporting Program – Monitoring systems are outlined in the attached Monitoring and Reporting Program (MRP) R7-2021-0033 and include visual inspections, groundwater monitoring, and leak detection monitoring.
21. Groundwater Monitoring – The groundwater monitoring system includes upgradient and downgradient monitoring wells to evaluate the quality of the groundwater under the Facility. The monitoring program is designed to meet the applicable requirements of California Code of Regulations, title 27, sections 20415 and 20420. Three groundwater monitoring wells have been installed around the ponds, referred to as MW8A to the southwest, MW8B to the north, and MW8C to the northeast, as shown in **Attachment B**. The regional

groundwater flow direction is to the east, and therefore MW8A is upgradient of the Facility and MW8B and MW8C are downgradient of the Facility.

22. Surface Water Monitoring – No surface water monitoring is required. All waste must be contained within the Surface Impoundments.
23. Wind Monitoring – These WDRs require that the Discharger install a wind monitoring system as part of the control system for the sprayer system.

Hydrogeologic Conditions

24. The Facility is located within the Mojave Desert geomorphic province of Southern California. This area is characterized by rugged mountain ranges that rise abruptly from broad alluvium-filled desert basins. The Facility is located within an alluvium-filled basin derived from the surrounding mountains and consist of loosely to well consolidated sand, gravel, silt, and clay.
25. The Facility is located in the Morongo Groundwater Basin. Due to extensive faulting and folding, this basin is comprised of 17 defined groundwater subbasins.
26. The Facility is located in the Deadman Subbasin. The Deadman Subbasin is bound on the west by the Surprise Springs Fault and on the east by the Bullion Mountains and the Bullion Mountain Fault. The southern boundary is formed by the “Transverse Arch,” which separates the Deadman Subbasin from the Mesquite Subbasin to the south. The Deadman Subbasin is bound on the north by a combination of the Calico Fault and the consolidated rocks of the Hidalgo and Argos Mountains.
27. The water bearing deposits in the Deadman Subbasin are divided into the upper, middle, and lower aquifers. The upper aquifer consists of Quaternary/Tertiary alluvial fan deposits containing highly permeable sand and gravel. The upper aquifer is thin or unsaturated in the Deadman Subbasin and, accordingly, the existing test/monitoring wells were not perforated in this aquifer. The middle aquifer consists of older alluvial fan deposits of Quaternary/Tertiary age. The middle aquifer is less permeable than the upper aquifer and contains sand, silt, and clay. The middle aquifer is approximately 500 feet thick in the Deadman Subbasin and confined. The lower aquifer consists of Tertiary older sedimentary deposits containing poorly sorted sands, gravel, silt and clay that become more consolidated with depth. Overall permeability of the lower aquifer is low.
28. The direction of groundwater flow is to the northeast based on 2016 USGS water level data. Groundwater flow follows the general gradient of the land surface except in areas of heavy extraction and where subsurface flow may be affected by faults.

29. Recent sampling of the Deadman Aquifer production wells verified elevated concentrations above the maximum contaminant levels (MCL) for arsenic and fluoride. In addition, the total dissolved solids (TDS) is above the Secondary MCL and the California notification level for boron.
30. Groundwater sampling results from monitoring wells MW8A, MW8B and MW8C from March 2021 indicates groundwater quality under the Facility is generally good, with only one well (MW8A) exceeding a drinking water standard, and only for arsenic (see **Attachment C**).

Basin Plan and Other Regulatory Considerations

31. The Water Quality Control Plan for the Colorado River Basin Region (Basin Plan), adopted on November 17, 1993 and most recently amended on January 8, 2019, 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 Water Code section 13263, subdivision (a), WDRs must implement the Basin Plan and take into consideration the beneficial uses to be protected, 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.
32. The Facility is located in the Deadman Hydrologic Unit, as designated in the Basin Plan. The beneficial uses of ground waters in the Deadman Hydrologic Unit are:
 - a. Municipal and domestic supply (MUN).
33. This Order establishes WDRs pursuant to division 7, chapter 4, article 4 of the Water Code for discharges that are not subject to regulation under Clean Water Act section 402 (33 U.S.C. § 1342).
34. These WDRs implement numeric and narrative water quality objectives for groundwater and surface waters established by the Basin Plan and other applicable state and federal laws and policies. The numeric objectives for groundwater designated for municipal and domestic supply (MUN) include the Maximum Contaminant Levels (MCLs) and bacteriological limits specified in California Code of Regulations, title 22, section 64421 et seq. 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.
35. 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 the

Discharger to maintain waste containment systems that prevent discharges of waste to waters of the state.

36. These WDRs also implement state regulations applicable to the discharge of solid/designated waste to land found in California Code of Regulations, title 27, division 2, subdivision 1, commencing with section 20005 (“Consolidated Regulations for Treatment, Storage, Processing or Disposal of Solid Waste”). These regulations contain classification criteria for wastes and for disposal sites, and prescribe minimum standards for the siting, design, construction, monitoring, and closure of waste management units.
37. Consistent with Water Code section 13241, the Regional Water Board, in establishing the requirements contained herein, considered factors including, but not limited to, the following:
 - a. Past, present, and probable future beneficial uses of water;
 - b. Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto;
 - c. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
 - d. Economic considerations;
 - e. The need for developing housing within the region; and
 - f. The need to develop and use recycled water.
38. Water Code section 13267 authorizes the Regional Water Board to require technical and monitoring reports. MRP R7-2021-0033 establishes monitoring and reporting requirements to implement state requirements and demonstrate compliance with this Order and to identify the Facility’s impact, if any, on receiving waters. The State Water Resources Control Board’s (State Water Board) electronic database, GeoTracker Information Systems, facilitates the submittal and review of facility correspondence, discharger requests, and monitoring and reporting data. The burden, including costs, of the MRP bears a reasonable relationship to the need for the information and the benefits to be obtained from that information.
39. 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.

Antidegradation Analysis

40. State Water Board Resolution 68-16, *Statement of Policy with Respect to Maintaining High Quality Waters in California* (Resolution 68-16), generally prohibits the Regional 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. High quality waters are surface waters or areas of groundwater that have a baseline water quality better than required by water quality control plans and policies.
41. Potential constituents of concern (PCOCs) for this Facility include TDS, arsenic, boron, fluoride, and metals. Wastewater is only stored in the lined surface impoundments for evaporation. The surface impoundments are Class II surface impoundments lined to title 27 requirements. Migration of PCOCs through the liner system and into the soil to the local groundwater is not expected to occur, and therefore no degradation should occur to surface water, groundwater, or soils.
42. The discharge of wastewater to the surface impoundments, as permitted herein, reflects BPTC. These WDRs incorporate specific containment requirements for discharged materials, including:
 - a. Liner system with 1×10^{-6} cm/sec permeability, or synthetic liner with equivalent permeability;
 - b. LCRS to collect leaks through the primary liners;
 - c. VZMS to monitor the LCRS collection sump for leaks;
 - d. Groundwater monitoring well network;
 - e. Operation and maintenance with a minimum of two (2) feet of freeboard; and
 - f. Construction outside the 100-year floodplain.
43. This Order complies with Resolution 68-16 by requiring the Discharger to maintain waste containment systems that prevent discharges of waste to waters of the state. Although no degradation from the discharge to the Surface Impoundments is expected to occur, the Facility is equipped with sufficient controls to detect and minimize any impacts. Any minimal degradation of groundwater by some of the typical waste constituents is consistent with the maximum benefit to the people of

the state. The Discharger performs an important national security function and the provision of a drinking water supply that meets appropriate water quality standards is an essential public service. Accordingly, the discharge as authorized is consistent with the antidegradation provisions of Resolution 68-16.

Stormwater

44. Federal regulations for stormwater discharges were promulgated by the U.S. Environmental Protection Agency 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 National Pollutant Discharge Elimination System (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.
45. The State Water Board adopted Order 2014-0057-DWQ (NPDES No. CAS000001), *General Permit for Storm Water Discharges Associated with Industrial Activities* (Industrial General Permit), which became effective on July 1, 2015. The Industrial General Permit regulates discharges of stormwater associated with certain industrial activities, excluding construction activities, and requires submittal of a Notice of Intent (NOI) to be covered under the permit. The North American Industrial Classification System (NAICS) code number for the Facility is 221310 (water supply system), and the Facility falls outside the facilities covered in Attachment A of the Industrial General Permit.
46. The State Water Board also adopted Order 2012-0006-DWQ (NPDES NO. CAS000002), *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit), which regulates dischargers whose project disturbs one or more acres of soil, or whose project disturbs less than one acre but is part of a larger common plan of development that in total disturbs one or more acres. Construction of the Facility may require the Discharger's enrollment under the Construction General Permit, if applicable.
47. Under normal working conditions, the capacity of the Surface Impoundments will be large enough to accept wastewater generated at the Facility as well as precipitation within the footprint of the Surface Impoundments for a storm event with a 1000-year return.
48. The Discharger must comply with all pertinent stormwater requirements contained in title 27 of the California Code of Regulations and in this Order.

Financial Assurances

49. The State Water Board-promulgated provisions of title 27 of the California Code of Regulations require maintenance of appropriate financial assurance mechanisms to cover all expenses related to the following:
 - a. Closure Activities (Cal. Code Regs., tit. 27, § 22207) – in at least the amount of the current closure cost estimate;
 - b. Post-closure Maintenance (Cal. Code Regs., tit. 27, § 22212) – in at least the amount of the current post-closure cost estimate; and
 - c. Corrective Action (Cal. Code Regs., tit. 27, § 22222) – for initiating and completing corrective action for all known or reasonably foreseeable corrective action.
50. The Discharger has indicated that it plans to “clean close” the Surface Impoundments in accordance with California Code of Regulations, title 27, section 21400. Post-closure financial assurances are therefore not needed.
51. **Within 120 days** following the issuance of this Order, the Discharger must provide appropriate assurances of financial responsibility for clean closure and for corrective action in compliance with title 27 of the California Code of Regulations.

CEQA and Public Participation

52. As lead agency under the National Environmental Policy Act (NEPA; 42 U.S.C. § 4321 et seq.), the Discharger prepared a draft Environmental Assessment (EA) for the construction and operation of the Facility and circulated it for a 30-day public comment period from July 8, 2018 to August 17, 2018. The draft EA was circulated for public review as broadly as required by state law. (See Cal. Code Regs., tit. 14, §§ 15072, subd. (a), 15225, subd. (a).) Based on the draft document and comments received, the Discharger approved a Final EA and Finding of No Significant Impact (FONSI) for the proposed project on September 6, 2018. On September 25, 2019, the Discharger adopted a Final Supplemental EA/FONSI, which examined potential environmental impacts from an expanded project boundary.
53. On June 11, 2021, the Regional Water Board, as lead agency under the California Environmental Quality Act (CEQA; Public Resources Code, § 21000 et seq.), issued notice of its intent to use the approved Final EA/FONSI and Final Supplemental EA/FONSI in place of a mitigated negative declaration and its belief that these environmental documents meet the requirements of CEQA. (See Cal. Code Regs., tit. 14, § 15225, subd. (a).) The Regional Water Board’s notice was circulated in a newspaper of general circulation in the project area; posted

on the Regional Water Board's website; posted at the clerk's office for the County of San Bernardino; and circulated to interested individuals.

54. The Regional Water Board has notified the Discharger and all known interested agencies and persons of its intent to issue WDRs for this discharge and provided them with an opportunity for a public meeting and to submit comments.
55. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to section 13263 and 13267 of the California Water Code, 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. The discharge of waste classified as "hazardous," as defined California Code of Regulations, title 27, section 20164 is prohibited.
2. The disposal of incompatible wastes or wastes that, when mixed or commingled with other wastes, may create heat, pressure, fire, explosion, toxic by-products, or other chemical reactions that: (1) impair the integrity of the containment structures, or (2) generate products requiring a higher level of containment than provided by the waste management unit into which the wastes are placed, is prohibited.
3. The discharge of process wastewater to a location outside of the Surface Impoundments is prohibited.
4. The discharge of waste to land not owned or controlled by the Discharger, or not authorized for such use, is prohibited.
5. The discharge of waste to any surface water or surface drainage courses is prohibited.
6. The Discharger shall not cause or contribute to an increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the waste management unit if such waste constituents could migrate to waters of the state, in either the liquid or the gaseous phase, and cause, or threaten to cause, a condition of contamination or pollution.
7. The storage, treatment, or disposal of wastes from the Facility shall not cause contamination, pollution, or nuisance as defined in Water Code section 13050, subdivisions (k), (l), and (m).

B. Discharge Specifications

1. The Discharger shall comply with all applicable provisions of title 27 (Cal. Code Regs., tit. 27, § 20005 et seq.), even if not specifically referenced in this Order.
2. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
3. The Discharger is responsible for accurate characterization of wastes, including determinations of whether wastes will be compatible with containment features and other wastes at the waste management unit, and whether the wastes are required to be managed as a “hazardous” waste or “designated” waste.
4. The Discharger shall not cause the concentration of any Constituent of Concern (including Monitoring Parameters), as defined in MRP R7-2021-0033 and incorporated herein by reference, to exceed its representative concentration limit in any monitoring medium outside of the surface impoundment structures (i.e., exceed the Water Quality Protection Standard [WQPS]). The concentration limit for each constituent will be set in accordance with the MRP. Data analysis shall be performed in accordance with the MRP.
5. All waste management units shall be operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater, including the capillary fringe.
6. The Discharger shall promptly notify the Regional Water Board of any slope failure occurring at a waste management unit. The Discharger shall promptly correct any failure which threatens the integrity of containment features or the unit in accordance with the method approved by the Regional Water Board’s Executive Officer.
7. Leachate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with California Code of Regulations, title 27, sections 20200(d) and 20340(g), and in a manner consistent with the waste classification of the liquid.
8. The Discharger shall maintain sufficient freeboard in each surface impoundment to accommodate seasonal precipitation and to contain a 1,000 year 24-hour storm event, but in no case no less than two (2) feet of freeboard (measured vertically).
9. Any automated direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overflowing. Discharges shall be stopped in the event of any containment system failure which causes a threat to water quality.

10. If during the active life of a surface impoundment, the wastes are removed and the bottom of the impoundment is cleaned down to the liner, an inspection shall be made of the bottom of the liner prior to refilling of the impoundment and repairs performed as needed.
11. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit.
12. The LCRS shall be operated to function without clogging through the scheduled closure of the applicable waste management unit and during the post-closure maintenance period. The LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions.
13. The liquid collected by the LCRS shall not be allowed to accumulate to the point that fluids extend out of the LCRS collection sump and into the collection portion of the LCRS. The Discharger shall remove fluids from the LCRS storage sump as often as needed to prevent the liquid in the LCRS from backing up into the collection portion of the LCRS.
14. LCRS maintenance and repair plans shall be submitted to the Regional Water Board in advance of any work. Surface impoundment repair plans and liner Construction Quality Assurance (CQA) plans shall be developed and stamped by a licensed professional experienced in this type of work.
15. Residual solids obtained by evaporation of process wastewater shall be discharged only at a waste management facility licensed to receive such wastes. The Discharger shall maintain legible records on the volume and type of each waste removed and disposed from each waste management unit.
16. The Discharger shall maintain legible records on the volume and type of each waste discharged into each waste management unit at the Facility.
17. The Discharger shall maintain visible monuments identifying the boundary limits of the entire Facility. Public contact with material in the waste management units shall be precluded through fences, signs, or other appropriate alternatives.
18. Objectionable odors originating at the Facility shall not be perceivable beyond the limits of the Facility boundary.
19. The fan portion of the MSE shall not be operated when any of the following occur:

- a. The average wind speed during a 15-minute period exceeds 10 miles per hour;
- b. A single wind gust exceeds 15 miles per hour; or
- c. Wind speeds are high enough that mists or crystals crystallized from the mists are visibly blown to the edge of the ponds.

Once stopped, the fan portion of the MSE may be restarted if none of these conditions have existed for at least one hour.

The Discharger may request an adjustment to the wind speed limitation by providing data from onsite studies regarding the distance mists drift under various wind speeds and directions. Prior to performing these studies, the Discharger shall submit a workplan of the proposed studies for review and approval. The wind speed limitation shall not be adjusted until the revised value is approved by the Regional Water Board's Executive Officer.

20. A wind monitoring system shall be installed at the Surface Impoundments. A summary of the wind monitoring data and sprayer operations shall be presented in each monitoring report.

C. Stormwater Specifications

1. The Class II surface impoundments shall be designed, constructed, operated, and maintained to limit, to the greatest extent possible, erosion, slope failure, overtopping, inundation or washout, and damage resulting from natural disasters such as: floods from a 24-hour storm event having a predicted frequency of once in 1000 years, pursuant to California Code of Regulations, title 27, section 20375; the Maximum Credible Earthquake (MCE) pursuant to section 20310, Table 4.1; and severe wind storms.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit.
3. Surface drainage from tributary areas, and internal site drainage from surface or subsurface sources, shall not contact or percolate through the wastes discharged at the Facility.
4. Diversion and drainage facilities shall be designed, constructed, and maintained to:
 - a. Accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit.
 - b. Effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities.

- c. Prevent surface erosion through the use of energy dissipators, where required, to decrease the velocity of runoff, slope protection, and other erosion control measures where needed to prevent erosion.
 - d. Control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste.
 - e. Take into account:
 - i. For closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern.
 - ii. For operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time.
 - iii. The possible effects of the waste management unit's drainage pattern on and by the regional watershed.
 - iv. The design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility.
 - f. Preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.
5. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm, as needed, or otherwise managed to maintain the design capacity of the system.

D. Construction Specifications

1. The Surface Impoundments shall be constructed as described in the ROWD.
2. Construction of the Surface Impoundments shall be performed in accordance with a Construction Quality Assurance Plan that complies with California Code of Regulations, title 27, section 20324 and is prepared by a registered civil engineer or certified engineering geologist.
3. The Construction Quality Assurance (CQA) program, including all relevant aspects of construction quality control, shall provide evidence that materials and procedures utilized in the placement of any containment feature at any waste management unit will be tested and monitored to assure the structure is constructed in accordance with the design specifications approved by the Regional Water Board.

4. **CQA Final Report.** Within **90 days** of the completion of construction, the Discharger shall submit a final Construction Quality Assurance (CQA) report documenting the construction process and containing the quality assurance documentation described in the ROWD and required by section 20324(d) of title 27 of the California Code of Regulations.

E. Monitoring Specifications

1. The Discharger shall implement MRP R7-2021-0033 and any revisions thereto to detect at the earliest opportunity unauthorized discharges of waste constituents from the Facility, or any impairment of beneficial uses that result from discharges of waste to the Facility. The Discharger shall report the results of all onsite monitoring in accordance with MRP R7-2021-0033 and revisions thereto.
2. The Discharger shall conduct a water quality monitoring and response program in accordance with MRP R7-2021-0033 and any future amendments thereto, including:
 - a. Detection Monitoring. The Discharger shall institute a detection monitoring program pursuant to California Code of Regulations, title 27, section 20420.
 - b. Evaluation Monitoring. The Discharger shall institute an evaluation monitoring program under California Code of Regulations, title 27, section 20425:
 - i. Whenever there is “measurably significant” (as defined in section 20164) evidence of a release from the waste management unit under the detection monitoring program; or
 - ii. Whenever there is significant physical evidence of a release from the waste management unit. Significant physical evidence of a release includes unexplained volumetric changes in surface impoundments, unexplained stress in biological communities, unexplained changes in soil characteristics, visible signs of leachate migration, and unexplained water table mounding beneath or adjacent to the unit and any other change to the environment that could reasonably be expected to be the result of a release from the unit.
 - c. Corrective Action Monitoring. The Discharger shall institute a corrective action program under California Code of Regulations, title 27, section 20430 when the Regional Water Board determines that the assessment of the nature and extent of the release and the design of a corrective action program have been satisfactorily completed.

3. **Sample Collection and Analysis Plan.** Within **90 days** of the adoption of these WDRs, the Discharger shall submit, for review and approval by the Regional Water Board's Executive Officer, a comprehensive Sample Collection and Analysis Plan (SCAP) that shall describe in detail the methods used to perform all monitoring activities for all onsite features, including:
 - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment,
 - b. Sample preservation information and shipment procedures,
 - c. Sample analytical methods and procedures,
 - d. Sample quality assurance/quality control (QA/QC) procedures,
 - e. Chain of custody control, and
 - f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

After a SCAP is approved, the Discharger may request changes to the approved SCAP, as needed, but shall use the procedures described in the approved SCAP until such changes are authorized by the Regional Water Board's Executive Officer.

F. Corrective Action Specifications

1. For all waste management units in a corrective action program to address a release from the unit, the Discharger shall implement all corrective measures necessary to remediate the release and to ensure that the Discharger achieves compliance with the WQPS (as defined in the MRP) adopted for that unit. To confirm cleanup of all water-bearing media affected by the release, the Discharger shall complete the demonstration required under California Code of Regulations, title 27, section 20430(g).
2. The cessation of any corrective action measure (e.g. landfill gas, leachate, and groundwater extraction) is prohibited without written approval from the Regional Water Board's Executive Officer. If routine maintenance or a breakdown results in cessation of corrective action for greater than **24 hours**, the Discharger shall notify Regional Water Board staff.
3. Following an earthquake that generates significant ground shaking (Modified Mercalli Intensity Scale V or greater) at or near the Facility, the Discharger shall submit a detailed post-earthquake inspection and corrective action plan. The plan shall address damage to and corrective measures for: containment structures; leachate control and stormwater management systems; wells and equipment to monitor groundwater; and any other system/structure potentially

impacted by static and seismic deformations of the waste management unit. The Discharger shall notify the Regional Water Board Executive Officer immediately, but no later than **24 hours**, of damage to the Facility due to an earthquake, and provide a post-earthquake inspection report within **15 business days**.

G. Financial Assurances Specifications

1. The Discharger shall obtain and maintain adequate assurances of financial responsibility for closure, post-closure maintenance, and corrective action for all known and reasonably foreseeable releases from a waste management unit at the Facility in accordance with California Code of Regulations, title 27, sections 20380(b) and 20950 and subchapter 2 (“Financial Assurance Requirements”) of division 2, subdivision 1, chapter 6 of title 27.
2. The Discharger shall demonstrate to the Regional Water Board that it has established acceptable financial assurance mechanisms described in subchapter 3 (“Allowable Mechanisms”) of California Code of Regulations, title 27, division 2, subdivision 1, chapter 6 in at least the amount of the cost estimates for closure, post-closure maintenance, and corrective action approved by the Regional Water Board’s Executive Officer.²
3. **Corrective Action Financial Assurance.** Within **120 days** of the adoption of this Order, the Discharger shall submit to the Regional Water Board, in accordance with California Code of Regulations, title 27, section 22222, assurance of financial responsibility acceptable to the Regional Water Board’s Executive Officer for initiating and completing corrective action for all known or reasonably foreseeable releases from the surface impoundments.
4. **Closure Financial Assurance.** Within **120 days** of the adoption of this Order, the Discharger shall submit to the Regional Water Board, in accordance with California Code of Regulations, title 27, section 22207, an updated assurance of financial responsibility acceptable to the Regional Water Board’s Executive Officer for initiating and completing clean closure for all surface impoundments.
5. **Yearly Financial Assurances Report.** The Discharger shall submit, by June 1 of each year, a report calculating the increase in the cost estimates for closure, post-closure maintenance, and corrective action due to the inflation factor (specified in Cal. Code Regs., tit. 27, § 22236) for the previous calendar year.
6. Documents supporting the amount and active status of the required financial assurance mechanisms shall be included in the Facility’s ROWD and revisions.

² Pursuant to Cal. Code Regs., tit. 27, § 22250, a federal entity may submit a Federal Certification in lieu of using the other allowable financial mechanisms.

Annual cost estimates and inflation factors shall be submitted to the Regional Water Board as an addendum to the ROWD.

H. Closure and Post-Closure Specifications

1. The Discharger shall notify the Regional Water Board in writing of the final closure or partial final closure of a waste management unit as follows:
 - a. Landfill Units. For landfill waste management units, notice shall be given either: (1) at the same time that CalRecycle is notified under California Code of Regulations, title 27, section 21110, or (2) **180 days** prior to beginning any final closure activities, whichever is sooner.
 - b. Non-Landfill Units. For non-landfill waste management units (including Class II surface impoundments), notice shall be given at least **180 days** prior to beginning any final closure activities.
 - c. Affirmation. The notice shall include a statement that all closure activities will conform to the most recently approved final or partial final closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations.
2. The Discharger shall carry out closure of a waste management unit or a portion of a unit only in accordance with a closure and post-closure maintenance plan approved by the Regional Water Board (Cal. Code Regs., tit. 27, §§ 20950(a)(1), 21769(d)) through the issuance of closure WDRs.

I. Standard Provisions

1. **Noncompliance**. The Discharger shall comply with all of the terms, requirements, and conditions of this Order and MRP R7-2021-0033. 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 WDRs; or (3) denial of an Order renewal application.
2. **Enforcement**. The Regional Water Board reserves the right to take any enforcement action authorized by law. Accordingly, failure to timely comply with any provisions of this Order may subject the Discharger to enforcement action. Such actions include, but are not limited to, the assessment of administrative civil liability pursuant to Water Code sections 13323, 13268, and 13350, a Time Schedule Order (TSO) issued pursuant to Water Code section 13308, or referral to the California Attorney General for recovery of judicial civil liability.
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 Regional Water Board on request.

4. **Reporting of Noncompliance.** The Discharger shall report any noncompliance that may endanger human health or the environment. Information shall be provided orally to the Regional Water Board office and the Office of Emergency Services within 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 Regional 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. All other forms of noncompliance shall be reported with the Discharger's next scheduled Self-Monitoring Reports (SMRs), or earlier if requested by the Regional Water Board's Executive Officer.
5. **Duty to Mitigate.** The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment.
6. **Material Changes.** Before initiating a new discharge or making a material change in the character, location, or increase in volume of an existing discharge, the Discharger shall report all pertinent information in writing to the Regional Water Board, and if required by the Regional Water Board, obtain revised requirements before any modifications are implemented. A material change includes, but is not limited to, the following:
 - a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
 - c. A change in the type of waste being accepted for disposal; or
 - d. A change to previously approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.

7. **Familiarity with Order.** The Discharger shall ensure that all site-operating personnel are familiar with the content of this Order and maintain a copy of this Order at the site.
8. **Inspection and Entry.** The Discharger shall allow the Regional 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.** This Order is not transferable to any person without written approval by the Regional Water Board's Executive Officer. Prior to any change in ownership of this operation, the Discharger shall notify the Regional Water Board's Executive Officer in writing at least 30 days in advance. The notice must include a written transfer agreement between the existing owner and the new owner. At a minimum, the transfer agreement must contain a specific date for transfer of responsibility for compliance with this Order and an acknowledgment that the new owner or operator is liable for compliance with this Order from the date of transfer. The Regional Water Board may require modification or revocation and reissuance of this Order to change the name of the Discharger and incorporate other requirements as may be necessary under the Water Code.
10. **Monitoring Wells.** The Discharger shall comply with all notice and reporting requirements of the California Department of Water Resources and with any well permitting requirements imposed by a local agency regarding the construction, alteration, destruction, maintenance, or abandonment of any monitoring wells used for compliance with this Order and the accompanying MRP, as required under Water Code sections 13750 and 13755 and local agency requirements.
11. **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 California Code of Regulations, title 23, division 3, chapter 30, as groundwater raw data uploads electronically over the Internet

into the State Water Board's [GeoTracker](#) database. Documents that were formerly mailed by the Discharger to the Regional Water Board, such as regulatory documents, narrative monitoring reports or materials, and correspondence, shall be uploaded into GeoTracker in the appropriate Microsoft Office software application format, such as Word or Excel files, or as a Portable Document Format (PDF) file. Large documents must be split into appropriately labelled, manageable file sizes and uploaded into GeoTracker.

12. **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, describe the conduct of investigations and studies, or 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.
13. **Certification Under 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 ensure that qualified personnel properly gathered 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.
14. **Violation of Law.** This Order does not authorize violation of any federal, state, or local laws or regulations.
15. **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.
16. **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, the

violation of any term or condition contained in this Order, a material change in the character, location, or volume of discharge, a change in land application plans or sludge use/disposal practices, or the adoption of new regulations by the State Water Board, Regional Water Board (including revisions to the Basin Plan), or federal government.

17. **Severability.** The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of these requirements shall not be affected.

Any person aggrieved by this Regional Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. The State Water Board must receive the petition by 5:00 p.m. on the 30th day after the date of this Order; if the 30th day falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the statutes and regulations applicable to filing petitions are available on the State Water Board's website and can be provided upon request.

Order Attachments

Attachment A—Site Location Map

Attachment B—Site Layout Map

Attachment C—Summary of Groundwater Chemistry, March 2021

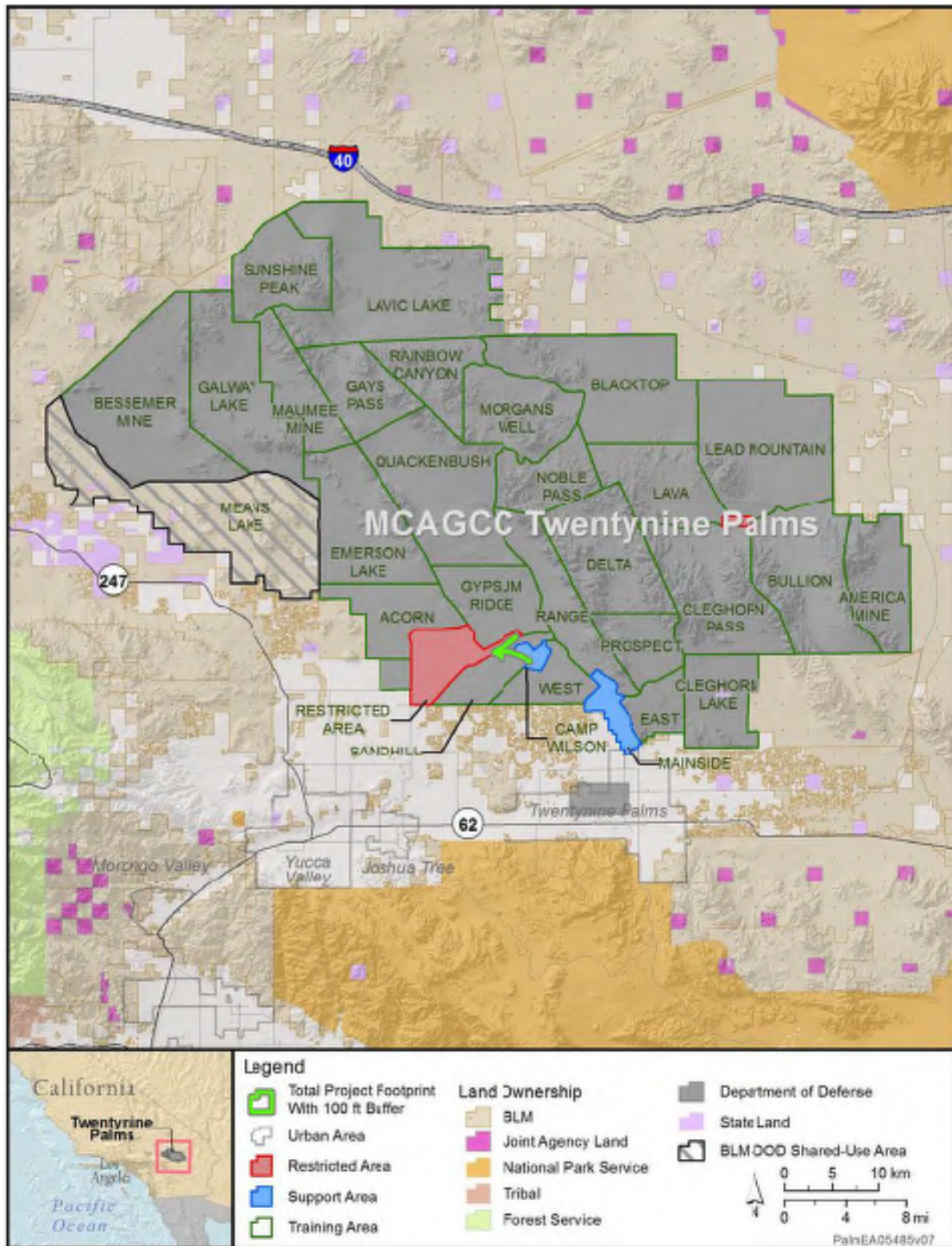
Monitoring and Reporting Program R7-2021-0033

Attachment A—Site Location Map

New Drinking Water Treatment Plan
 at MCAGCC Twentynine Palms

Final Environmental Assessment

August 2018



Attachment B—Site Layout Map

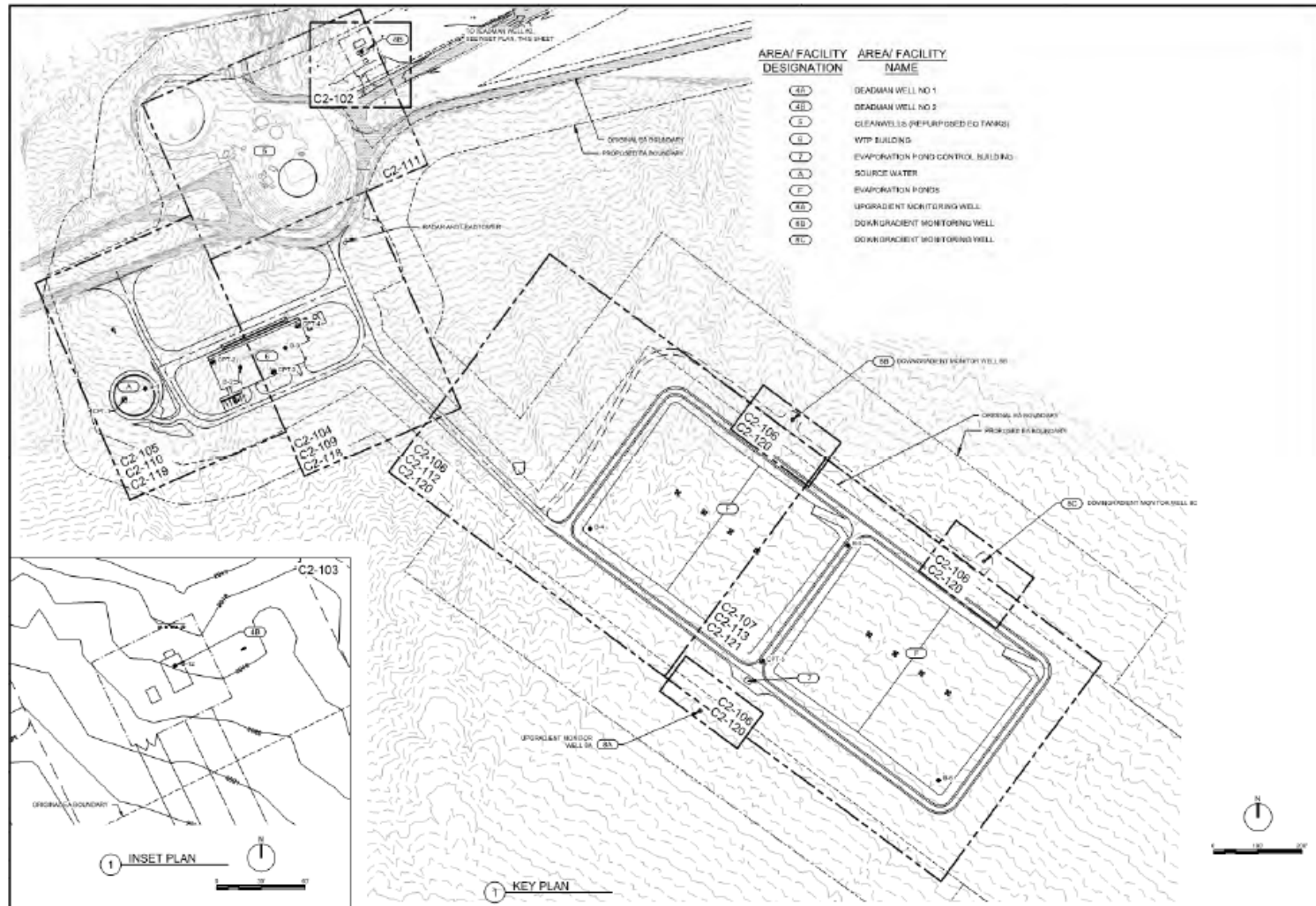


Figure 1-1 P-192 Site Plan

Attachment C—Summary of Groundwater Chemistry

Groundwater Data from March 2021

Analyte	Units	MW8A	MW8B	MW8C	Primary MCL	Secondary MCL
Arsenic	ug/L	12	2.7	8.9	10	na
Boron	ug/L	110	110	110	1,000*	na
Chromium	ug/L	11	1.5	2.8	50	na
Chloride	mg/L	32	74	35	na	250/500
Sulfate	mg/L	62	81	66	na	250/500
Fluoride	mg/L	2.6	2.0	2.5	2	na
TDS	mg/L	280	400	310	na	500/1,000
pH	units	8.1	8.0	8.0	na	na

* = Notification level

na = Not Applicable

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM R7-2021-0033

FOR
U.S. MARINE CORPS, PUBLIC WORKS DIVISION, OWNER/OPERATOR
TWENTYNINE PALMS MARINE CORPS AIR GROUND COMBAT CENTER
P-192 POTABLE WATER TREATMENT/BLENDING FACILITY
CLASS II SURFACE IMPOUNDMENTS
TWENTYNINE PALMS, SAN BERNARDINO COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code section 13267 and incorporates requirements for groundwater and surface water detection monitoring, as well as special monitoring provisions relating to individual waste management units (WMUs). Monitoring requirements in this MRP are necessary to determine if the Twentynine Palms MCAGCC P-192 Potable Water Treatment/Blending Facility (Facility) is in compliance with Waste Discharge Requirements (WDRs) Order R7-2021-0033 (Order) and to ensure early detection of any releases of waste constituents from the Facility. The U.S. Marine Corps, Public Works Division (Discharger) shall not implement any changes to this MRP unless a revised MRP is issued by the California Regional Water Quality Control Board, Colorado River Basin Region (Regional Water Board) or its Executive Officer.

PART I: SAMPLING AND ANALYSIS GENERAL REQUIREMENTS

A. Sampling and Analysis General Requirements

1. As provided in Monitoring Specification E.3 of the Order, the Discharger shall submit a Sample Collection and Analysis Plan (SCAP) that incorporates the standard monitoring provisions below and describes the sampling and analysis protocols to be used for all monitoring activities. The SCAP must be received by the Regional Water Board within 90 days of adoption of the Order and this MRP.
2. Once the SCAP is approved, the Discharger may request changes to the approved SCAP, as needed, but shall use the procedures described in the approved SCAP until such changes are authorized by the Regional Water Board's Executive Officer.

B. Standard Monitoring Provisions

1. **Analytical Methods.** Specific methods of analysis for monitored waste constituents shall be identified in the SCAP. If the Discharger proposes to use methods other than those in the latest edition of the U.S. Environmental Protection Agency's (USEPA) *Test Methods for Evaluating Solid Waste*:

Physical/Chemical Methods Compendium (SW-846) or Guidelines Establishing Test Procedures for Analysis of Pollutants, 40 Code of Federal Regulations part 136, the SCAP must explain the rationale for the change. The change must be approved by the Regional Water Board's Executive Officer prior to use.

2. **Monitoring Test Procedures.** The collection, preservation, and holding times of all samples shall be in accordance with protocols included in USEPA's SW-846 or 40 Code of Federal Regulations part 136, or as otherwise approved by the Regional Water Board. The Regional Water Board may, in its discretion, require methods more sensitive than those specified by USEPA.
3. **30-Day Sample Procurement Limitation.** For any given monitored medium, the samples collected from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be collected within a span not to exceed 30 days, unless a longer time period is approved by the Regional Water Board's Executive Officer, and shall be collected in a manner that ensures sample independence to the greatest extent feasible. The 30-day limit does not apply to media that (1) are resampled to confirm the results of the initial round of samples, or (2) are resampled due to errors in the original sampling and analysis, but the Discharger shall conduct the resampling as expeditiously as practical.
4. **Laboratory Certification.** Unless otherwise approved by the Regional Water Board's Executive Officer, all analyses shall be conducted by a laboratory accredited by the State Water Resources Control Board (State Water Board), Division of Drinking Water's Environmental Laboratory Accreditation Program (ELAP).
5. **Reporting Levels.** All analytical data shall be reported with method detection limits (MDLs) and with either the reporting level or limits of quantitation (LOQs) according to 40 Code of Federal Regulations part 136, Appendix B. The laboratory reporting limit for all reported monitoring data shall be no greater than the practical quantitation limit (PQL).
6. **QA/QC Data.** All quality control / quality assurance (QA/QC) data shall be reported, along with the sample results to which they apply, including the method, equipment, and analytical detection limits, the recovery rates, an explanation of any recovery rate that is less than the QA/QC recovery target, the results of equipment and method blanks, the results of spiked and surrogate samples, and the frequency of quality control analyses. The name and qualifications of the person(s) performing the analyses shall be provided upon request. Sample results shall be reported unadjusted for blank results or spike recovery. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.

7. **Instrumentation and Calibration.** 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. If continuous monitoring equipment is out of service for a 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.
8. **Field Test Instruments.** 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.
9. **Records Retention.** The Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, for a minimum of five years from the date of the sampling or measurement. This period may be extended by request of the Regional Water Board's Executive Officer at any time. Records of monitoring information shall include:
 - a. The date, exact place, and time of sampling or measurement(s);
 - b. The individual(s) who performed the sampling or measurement(s);
 - c. The methods used for groundwater purging/sampling;
 - d. The date(s) analyses were performed;
 - e. The individual(s) who performed the analyses;
 - f. The analytical techniques or method used; and
 - g. All sampling and analytical results, including:
 - i. units of measurement used;
 - ii. minimum reporting limit for the analyses;
 - iii. results less than the reporting limit but above the method detection limit (MDL);

- iv. data qualifiers and a description of the qualifiers;
- v. quality control test results;
- vi. dilution factors, if used; and
- vii. sample matrix type.

PART II: SITE-SPECIFIC MONITORING REQUIREMENTS

This part describes the site-specific monitoring program requirements to be implemented for the Facility and is organized by the type of monitoring to be performed. The methods used shall be as described in the approved SCAP.

The site-specific monitoring program of this MRP includes:

Table 1. Summary of Site-Specific Monitoring

Section	Monitoring Program
A	Groundwater Monitoring
B	Unsaturated Zone Monitoring
C	Surface Water Monitoring
D	Surface Impoundment Monitoring
E	Evaluation Monitoring

A. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of California Code of Regulations, title 27, sections 20415 and 20420. Monitoring shall be performed in accordance with the locations, frequencies, and parameters described below:

1. Monitoring Well Locations

Upgradient wells are considered background monitoring points. Downgradient wells where no releases have been detected are used for detection monitoring. The groundwater monitoring network shall consist of the following monitoring wells and any new monitoring wells added at the Facility (as approved by the Regional Water Board’s Executive Officer):

Table 2. Monitoring Wells Summary

Wells	Expected Gradient Direction	Monitoring Status	Frequency
MW8A	Up	Detection	Semi-Annually

Wells	Expected Gradient Direction	Monitoring Status	Frequency
MW8B MW8C	Down	Detection	Semi-Annually

The groundwater gradient and identification of upgradient and downgradient monitoring wells shall be determined during each monitoring event based on the elevation of groundwater in the wells.

2. **Parameters/Constituents Monitored**

Groundwater samples shall be collected from the detection monitoring wells and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the Monitoring Parameters and Constituents of Concern specified below in accordance with the specified methods and frequencies.

“Monitoring Parameters” and “Constituents of Concern” shall have the meaning specified in California Code of Regulations, title 27, section 20164. “Monitoring Parameters” means the group of constituents specified below and includes physical parameters, waste constituents, reaction products, and hazardous constituents that provide a reliable indication of a release from a waste management unit. “Constituents of Concern” (COCs) include a larger group of waste constituents and mean any waste constituents, reaction products, and hazardous constituents reasonably expected to be in or derived from waste contained in a waste management unit.

Various Constituents of Concern are included as Monitoring Parameters, although the full list of Constituents of Concern are not included as Monitoring Parameters and need only be sampled for once every 5 years, as specified below.

a. **Monitoring Parameters**

“Monitoring Parameters” shall consist of the (1) Field Monitoring Parameters and (2) Laboratory Monitoring Parameters specified below:

- i. Field Monitoring Parameters – During each groundwater monitoring event,³ the following field parameters shall be measured:

³ Pursuant to Cal. Code Regs., tit. 27, § 20415(e)(13).

Table 3. Field Parameters Monitoring

Parameter	Unit
pH	pH units
Groundwater elevation ⁴	Feet above mean sea level (USGS Datum)
Specific conductance	Micromhos/cm
Temperature	Degrees F
Turbidity	Nephelometric Turbidity Units (NTU)
Dissolved oxygen	Milligrams per liter (mg/L) and percent saturation
Oxidation-Reduction Potential (ORP)	Millivolts (mV)

- II. Laboratory Monitoring Parameters – Twice per year (semi-annually), groundwater samples shall be collected and analyzed at a laboratory for the following constituents (at a minimum):

Table 4. Laboratory Monitoring Parameters Monitoring

Constituents	Units	Sample Type	Reporting Freq.
Total Dissolved Solids	mg/L	Grab	Semi-Annually
Arsenic	ug/L	Grab	Semi-Annually
Fluoride	ug/L	Grab	Semi-Annually
Chromium	ug/L	Grab	Semi-Annually
Boron	ug/L	Grab	Semi-Annually
Major Cations (Calcium, Magnesium, Potassium and Sodium)	mg/L	Grab	Annually
Major Anions (Chloride, Sulfate, Bicarbonate)	mg/L	Grab	Annually

⁴ Semi-annual measurement of groundwater elevations is approved pursuant to title 27, section 20380(e), allowing engineered alternatives provided they achieve the goals of the monitoring program.

b. **Additional Constituents of Concern, Required Every Five Years (5-Year COCs)**

In addition to the Monitoring Parameters listed above, the groundwater shall be analyzed at a laboratory every five years, with the next 5-year monitoring event to be performed in 2026, for the following 5-Year COCs (and any additional COCs required by the Regional Water Board's Executive Officer):

Table 5. List of 5-Year COCs

Constituent
1. Antimony
2. Arsenic
3. Barium
4. Beryllium
5. Boron
6. Cadmium
7. Total Chromium
8. Cobalt
9. Copper
10. Lead
11. Mercury
12. Molybdenum
13. Nickel
14. Selenium
15. Silver
16. Thallium
17. Vanadium
18. Zinc

The results of the 5-Year COC sampling shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

Note that the broader term "COCs" includes both the Monitoring Parameters and 5-Year COCs.

B. Unsaturated Zone Monitoring

Unsaturated zone monitoring consists of an LCDS-style Vadose Zone Monitoring System (VCMS) installed under the sump area of the Surface Impoundments' LCDS. The presence of leachate in the VZMS indicates a failure in the integrity of the lower liner in the area of the LCDS sump. The methods used to monitor the VZMS for the accumulation of leachate shall be described in the SCAP. Monitoring

of the VZMS shall be as frequent as the monitoring of the LCDS, described below in section II.D.4.

C. Surface Water Monitoring

Perennial streams are not located at the Facility and the occurrence of surface water should be limited to (1) immediately after significant storm events, and (2) if seeps develop along the perimeter of a waste management unit.

- 1. Observed Surface Water Monitoring.** If surface water not associated with a storm is observed at the Facility, the source of the surface water shall be identified, and observations of the following shall be included in the next Semi-Annual Monitoring Report:
 - a. Flow rate and source of water;
 - b. Floating and suspended materials of waste origin: Presence or absence, source, and size of affected area;
 - c. Discoloration and turbidity: Description of color, source, and size of affected area;
 - d. Evidence of odors: Presence or absence, characterization, source, and distance of travel from source; and
 - e. Weather conditions: Wind direction and estimated velocity, total precipitation during the previous five (5) days and on the day of observation.
- 2. Stormwater Monitoring.** After each significant storm event, the remaining freeboard (in vertical feet) and storage capacity (in gallons and/or acre-feet) of each stormwater retention basin shall be identified.
- 3. Seep Monitoring.** If a seep is identified in proximity to a waste management unit:
 - a. The location, flow rate, and other characteristics (such as color and odor) shall be orally reported to the Regional Water Board within **48 hours**, and a written report concerning the seep shall be submitted to the Regional Water Board **within seven (7) days**.
 - b. Flow from the seep shall be contained to preclude the seep from adversely affecting surface waters.
 - c. A sample of the seepage shall be collected and tested for the Field Monitoring Parameters described in Part II.A.2.a.I.

- d. If the Field Monitoring Parameters indicate the seepage is not groundwater, or if it is unlikely the source of the seep is groundwater, the sample shall be analyzed for the Monitoring Parameters and 5-Year COCs described in Part II.A.2.a and b.
- e. The results of all seep-related testing shall be reported to the Regional Water Board **within seven (7) days** of receipt of the written laboratory report.
- f. Seeps that continue to exist for more than one reporting period shall be sampled during each reporting period and the results shall be included in the next Monitoring Report.

D. Surface Impoundment Monitoring

1. Waste Capacity Monitoring

The following shall be monitored at least weekly and included in each Semi-Annual Monitoring Report:

- a. The freeboard in each surface impoundment cell, in feet.
- b. The average daily volume and maximum daily volume of wastewater discharged into the Surface Impoundments, in gallons.
- c. Observations of erosion, settlement, and/or subsidence along the visible areas of the surface impoundment(s), including the top of the berm, outer slopes, and upper region of the inner slope. Repairs shall be performed as needed and documented in the inspection logs.

2. Impoundment Monitoring

- a. Samples of wastewater shall be collected from each Surface Impoundment and analyzed for the following:

Table 6. Surface Impoundment Monitoring

Constituents	Units	Sample Type	Reporting Freq.
Total Dissolved Solids	mg/L	Grab	Semi-Annually
Chloride	mg/L	Grab	Annually
Bicarbonate	Mg/L	Grab	Annually
Sulfate	mg/L	Grab	Annually
Calcium	mg/L	Grab	Annually
Potassium	mg/L	Grab	Annually

Constituents	Units	Sample Type	Reporting Freq.
Magnesium	mg/L	Grab	Annually
Sodium	mg/L	Grab	Annually
Antimony	mg/L	Composite	Annually
Arsenic	mg/L	Grab	Annually
Barium	mg/L	Composite	Annually
Boron	mg/L	Grab	Annually
Cadmium	mg/L	Composite	Annually
Total Chromium	mg/L	Composite	Annually
Cobalt	mg/L	Composite	Annually
Copper	mg/L	Composite	Annually
Lead	mg/L	Composite	Annually
Mercury	mg/L	Composite	Annually
Nickel	mg/L	Composite	Annually
Selenium	mg/L	Composite	Annually
Zinc	mg/L	Composite	Annually

3. Sludge Monitoring

- a. Sludge samples shall be collected for each Surface Impoundment that has sludge present. Grab samples of sludge shall be collected and analyzed for the following:

Table 7. Sludge Monitoring

Constituents	Units	Sample Type	Reporting Freq.
Antimony	mg/kg	Grab	Annually
Arsenic	mg/kg	Grab	Annually
Barium	mg/kg	Grab	Annually
Boron	mg/kg	Grab	Annually
Beryllium	mg/kg	Grab	Annually
Cadmium	mg/kg	Grab	Annually
Total Chromium	mg/kg	Grab	Annually

Constituents	Units	Sample Type	Reporting Freq.
Cobalt	mg/kg	Grab	Annually
Copper	mg/kg	Grab	Annually
Lead	mg/kg	Grab	Annually
Mercury	mg/kg	Grab	Annually
Molybdenum	mg/kg	Grab	Annually
Nickel	mg/kg	Grab	Annually
Selenium	mg/kg	Grab	Annually
Silver	mg/kg	Grab	Annually
Thallium	mg/kg	Grab	Annually
Vanadium	mg/kg	Grab	Annually
Zinc	mg/kg	Grab	Annually

4. LCRS Monitoring

- a. The Facility shall monitor the height of liquid in each LCRS sump at least **weekly** to an accuracy of one-quarter (1/4) inch. The Discharger shall record the data in the weekly monitoring logs and include the data in the Semi-Annual Monitoring Report. If an automated measuring system is installed, a manual check of the accuracy of the automated system shall be performed semi-annually by hand-measuring the height of the liquid and comparing the hand-measurement to the automated measurement.
- b. The Discharger shall remove fluids from the LCRS storage sumps as often as needed to prevent the liquid in the collection sumps from backing up into the collection portion of the LCRS. The removed liquid may be discharged into either surface impoundment. The volume removed shall be measured and used to identify the leakage rate in each LCRS. The removal dates, volumes, and calculated leakage rates shall be included in each Monitoring Report.
- c. If an automated sump-pump is installed, the upper limit shall be set to be below the junction of the lateral drainage pipe and the storage sump, and an alarm shall be installed to indicate if the sump fills beyond the upper limit of the sump-pump settings. Automated systems shall also include a means of monitoring changes in the height of liquid in the sump and measuring the frequency and volume of pumping. This data shall be converted to a daily leakage rate and summarized in each Monitoring Report. Automated sump pumps shall be tested at least annually to ensure they are functioning properly.

- d. If leakage rates exceed the reporting threshold (RT), the Discharger shall follow the steps in Part II.E.3 – Excessive Leachate Production. Unless a Facility-specific RT is approved by the Regional Water Board, the default RT shall be half the volume of the sump per day.
- e. The Discharger shall test each LCRS annually pursuant to California Code of Regulations, title 27, section 20340(d) to demonstrate proper operation. Except for the first annual test, the results of this testing shall be compared to earlier tests made under comparable conditions.
- f. A workplan describing proposed changes to the LCRS monitoring system shall be submitted to the Regional Water Board for review and approval prior to implementing any proposed changes.

5. Wind Monitoring

- a. The Facility shall install a wind monitoring device in a location that will provide representative data regarding wind speeds at the Facility. The wind monitoring system shall record wind speeds and direction whenever the sprayer system is in operation. The Discharger shall include in each Monitoring Report a summary of sprayer usage, average wind speeds and direction, and wind gust data during sprayer operation. This data can be summarized in either tables, words or graphs. Note that operation of the MSE system is prohibited when winds exceed thresholds listed in Discharge Specification B.20.

E. Evaluation Monitoring

1. Notification of a Release

Should the Discharger discover a release from the Facility, defined as leachate escaping the confines of the lower liner, the Discharger shall:

- a. Initial Notification. Notify the Regional Water Board by phone or e-mail **within 24 hours**, and by mail **within seven days**, when the Discharger determines from monitoring results that there is measurably significant evidence of a release. (Cal. Code Regs., tit. 27, § 20420(j)(1).)
- b. Retest. The Discharger may immediately initiate the verification procedure specified in Part III.B.3 to verify that there is a “measurably significant” evidence of a release of particular constituent.⁵ (Cal. Code Regs., tit. 27, § 20420(j)(2).)

⁵ Under California Code of Regulations, title 27, section 20420(k)(7), the Discharger may also demonstrate that a source other than the waste management unit caused the release.

- c. Notice to Nearby Landowners. The Discharger shall, **within 14 days** of confirming measurably significant evidence of a release, notify all persons who own the land or reside on the land that directly overlies any portion of the plume of contamination, if sampling of detection monitoring wells indicates contaminants have migrated off-site. (40 C.F.R. § 258.55(g)(1)(iii).)

2. **Evaluation of a Release**

If the Discharger determines that a previously unknown release from the Facility has occurred, the following actions shall be taken:

- a. Non-Statistical COC Scan. If the detection was made based upon sampling and analysis for Monitoring Parameters, the Discharger shall immediately sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all Monitoring Parameters and Constituents of Concern for comparison with established concentration limits. Because this scan does not involve statistical testing, the Discharger will only need to collect and analyze a single water sample from each monitoring point in the affected medium. (Cal. Code Regs., tit. 27, § 20420(k)(1).)
- b. Amended ROWD for Evaluation Monitoring Program (EMP). The Discharger shall, **within 90 days** of confirming a measurably significant evidence of a release, submit an amended Report of Waste Discharge (ROWD) proposing an evaluation monitoring program that meets the requirements of California Code of Regulations, title 27, sections 20420(k)(5) and 20425. The evaluation monitoring program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release. (Cal. Code Regs., tit. 27, §§ 20420(k)(5) and 20425(b).) For releases from MSW landfill units, the evaluation monitoring program shall also include any additional proposals necessary to comply with 40 C.F.R. § 258.55, particularly the additional monitoring wells required by 40 C.F.R. § 258.55(g)(1)(ii). Additionally, the Discharger shall add any 5-Year COC for which there is a confirmed measurably significant release to the list of Monitoring Parameters.
- c. Preliminary Engineering Feasibility Study. The Discharger shall, **within 180 days** of confirming a measurably significant evidence of a release, submit to the Regional Water Board a preliminary engineering feasibility study report for a corrective action program that meets the requirements of California Code of Regulations, title 27, sections 20420(k)(6) and 20430. At a minimum, the feasibility study shall contain a detailed description of

the corrective action measures that could be taken to achieve background concentrations for all COCs.

- d. Additional EMP Required Actions. The Discharger shall, **within 90 days** of establishing an evaluation monitoring program (i.e., from the date of Regional Water Board approval of the program), complete and submit the following:
- i. A report with the results and assessment/delineation of the release based on the approved evaluation monitoring program. (Cal. Code Regs, tit. 27 § 20425(b).)
 - ii. An updated engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under title 27, section 20425(e). (Cal. Code Regs., tit. 27, § 20425(c).)
 - iii. An amended ROWD to establish a corrective action program meeting the requirements of title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study. (Cal. Code Regs., tit. 27, § 20425(d).)⁶

3. **Excessive Leachate Production**

- a. If leakage rates in any LCRS exceed the reporting threshold (RT), or if any leachate accumulates in the VZMS, the Discharger shall report this to the Regional Water Board within **48 hours** and propose further actions to evaluate whether repairs are needed. Unless a Facility-specific RT is approved by the Regional Water Board, the default RT for the LCRS shall be one half of the volume of the sump per day.

PART III: EVALUATION OF MONITORING DATA

Part III of this MRP provides the requirements for the analysis of detection, evaluation, and corrective action monitoring data collected from monitoring wells associated with the Facility.

A. Water Quality Protection Standard

For each waste management unit, the Water Quality Protection Standard (WQPS) consists of all COCs (under title 27, section 20395), the concentration limit for each

⁶ The Discharger shall (for releases from MSW landfill units) discuss the results of the updated engineering feasibility study, prior to the final selection of a remedy, in a public meeting with interested and affected parties. (40 C.F.R. § 258.56(d).)

COC (under title 27, section 20400), and the points of compliance for each monitored medium (under title 27, section 20405) for the duration of the compliance period (under title 27, section 20410).

1. **Constituents of Concern (COCs)**

- a. The COCs are as defined above in Part II.A.2 and include both Monitoring Parameters and 5-Year COCs.

2. **Concentration Limits**

- a. **Default Limits.** The following concentration limits shall apply, unless the Regional Water Board approves a Concentration Limit Greater than Background (CLGB), as provided in Part III.A.2.b below:
- i. **Non-natural Constituents.** For COCs that are not naturally occurring, the concentration limit shall be the detection limit of the laboratory testing procedure.
 - ii. **Naturally Occurring Constituents.** For naturally occurring COCs, the concentration limit shall be the background concentration determined through either inter-well or intra-well comparisons.
- b. **CLGB.** Use of a CLGB may be proposed by the Discharger provided it is justified through a statistical analysis of relevant data (including the background dataset) and a demonstration that background concentrations would not be technologically or economically feasible for the COCs for a given monitoring well. (Cal. Code Regs., tit. 27, § 20400, subd. (c).) A concentration limit greater than background will only be considered for COCs present in monitoring wells associated with corrective action monitoring. (Cal. Code Regs., tit. 27, § 20400, subd. (h).)
- c. **Procedure for Approval of Concentration Limits.** The Discharger shall submit a report proposing applicable background concentrations for each COC under Part III.A.2.a in the next Annual Monitoring Report. The Regional Water Board will review proposed concentration limits from the Discharger and approve, modify, or disapprove each proposed limit. (Cal. Code Regs., title 27, § 20400.) Following initial approval of the concentration limits, the Discharger shall reevaluate and propose any updates to the concentration limits **every five years** thereafter.

3. **Compliance Period**

- a. The compliance period for each waste management unit includes the active life of each waste management unit, the closure period, the post-closure

maintenance period, and any compliance period under California Code of Regulations, title 27, section 20410.

4. **Points of Compliance**

- a. All monitoring wells established for the detection monitoring program shall constitute the points of compliance for the WQPS.

B. Statistical and Non-Statistical Analysis of Data

1. **General Requirements**

- a. California Code of Regulations, title 27, section 20415(e) describes a range of statistical and non-statistical data analysis methods that can be used to evaluate data collected during monitoring. In addition, USEPA published *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (EPA 530/R-09-007) in 2009.
- b. The Discharger shall evaluate the data obtained during a monitoring period using either a statistical or non-statistical method described in title 27 or may propose another method for approval by the Regional Water Board's Executive Officer, as long as it achieves the goal of the monitoring program at least as well as the most appropriate method described in title 27, section 20415.
- c. The Discharger shall propose data analysis methods to be used in evaluating water quality monitoring data for each COC. (Cal. Code Regs., tit. 27, § 20415(e)(7).) The specifications for each data analysis method shall include a detailed description of the criteria to be used for determining "measurably significant" (as that term is defined in title 27, section 20164) evidence of any release from the waste management unit and for determining compliance with the WQPS.
- d. Monitoring reports shall describe the statistical or non-statistical method used for each COC at each monitoring point.

2. **Background Values**

- a. Pursuant to California Code of Regulations, title 27, section 20415(e)(10), the Discharger shall in a technical report justify the use of a procedure for determining the background value for each COC.
- b. Inter-well comparisons may be used where upgradient and downgradient wells intercept the same aquifer and are expected to have similar concentrations of naturally occurring constituents. Intra-well comparisons shall be used where uncontaminated background wells are not present, or

the chemical composition of upgradient and downgradient wells are significantly different.

- c. In establishing background values for COCs, the Discharger shall ensure that sampling methods used comply with California Code of Regulations, title 27, section 20415(e)(12), including that the number and kinds of samples collected must be appropriate for the form of data analysis employed and, in the case of statistical data analysis, follow generally accepted statistical principles. The sampling method (including the sampling frequency and the interval of time between successive samples) shall be appropriate for the medium from which samples are taken (e.g., groundwater, surface water, and soil-pore liquid). (See also Cal. Code Regs., tit. 27, § 20415(e)(6).) For groundwater, sampling shall be scheduled to include the times of expected highest and lowest elevations of the potentiometric surface.

3. **Determination of Measurably Significant Evidence of a Release**

- a. Initial Determination of Measurably Significant Evidence of a Release. The Discharger shall use a statistical or nonstatistical data analysis method that complies with California Code of Regulations, title 27, section 20415(e)(7)-(10) to compare the concentration of each COC with its respective background concentration to determine whether there has been measurably significant evidence of a release from the waste management unit. Whenever a COC is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the WQPS, the Discharger shall preliminarily conclude that there is measurably significant evidence of a release and follow the notification procedures in Part II.E.1. (Cal. Code Regs., tit. 27, § 20420(i).)
- b. Confirmation of a Measurably Significant Evidence of a Release. If there is a preliminary indication of a release, within **30 days** of such indication (Cal. Code Regs., tit. 27, § 20415(e)(8)(E)(3)), the Discharger may implement a verification procedure/retest option in accordance with California Code of Regulations, title 27, section 20415(e)(8)(E).⁷
 - i. Retest Method. The verification procedure shall include either: (1) a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release), or (2) at least two “discrete” retests (i.e., statistical analyses, each of which analyzes only newly-acquired data from

⁷ Under California Code of Regulations, title 27, section 20420(k)(7), the Discharger may also demonstrate that a source other than the waste management unit caused the release.

the monitoring point that indicated a release). (Cal. Code Regs., tit. 27, § 20415(e)(8)(E).) The Discharger may use an alternate method with prior approval by the Regional Water Board that complies with the requirements of title 27, section 20415(e)(8)(E) in addition to the performance standards of title 27, section 20415(e)(9).

- ii. **Retest Samples.** The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. (Cal. Code Regs., tit. 27, § 20415(e)(8)(E)(7).)
- iii. **Retest Reporting.** The Discharger shall report to the Regional Water Board the results of both the initial statistical test and the results of the verification procedure, as well as all concentration data collected for use in these tests, within **seven days** of the last laboratory analysis of the samples collected for the verification procedure. (Cal. Code Regs., tit. 27, § 20415(e)(8)(E)(6).)

If the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed. The Discharger shall then follow the procedures identified in Part II.E.2.

PART IV: REPORTS TO BE FILED WITH THE REGIONAL WATER BOARD

Part IV provides a description of the reports required to be submitted to the Regional Water Board for the Facility.

A. Required Reports

1. **Semi-Annual Monitoring Reports** – For each monitored medium, all monitoring results shall be reported semi-annually. Semi-annual Monitoring Reports shall include, at a minimum, the following:
 - a. **Topographic Map.** A topographic map (or copy of an aerial photograph), at an appropriate scale, identifying the maximum lateral extent of wastes in the Facility, the locations of observation stations, monitoring points, background monitoring points, the groundwater elevation contours with interpreted groundwater flow direction and gradient.
 - b. **Groundwater Elevations.** The method and time of groundwater elevation measurements, a description of the method used to purge the well and collect groundwater samples, and quality assurance/quality control (QA/QC) procedures used.

- c. **Field Logs.** Field logs used during well purging and sampling. At a minimum, the field logs should include the following:
 - I. The well number,
 - II. The sampling date and time,
 - III. The method of monitoring Field Monitoring Parameters and calibration of equipment used to monitor Field Monitoring Parameters,
 - IV. The purge method (if a pump is used, include the depth of pump placement in each well and the pumping rate), and
 - V. The purge and sample collection information such as: date each well was purged; well recovery time; method of disposal of the purged water; an estimate of the volume of water purged from each well; the results of all field analyses; depth to groundwater prior to purging, at the conclusion of purging, and when the sample was collected; the method of measuring the water level; and field personnel names and signature.
- d. **Data Tables.** Cumulative tabulated monitoring data for all monitoring points and constituents (including the Monitoring Parameters and 5-Year COCs). Concentrations below the laboratory reporting limit shall not be reported as “ND,” unless the reporting limit is also given in the table. Otherwise, they shall be reported “<” next to the reporting limit (e.g., <0.10). Upon request of Regional Water Board staff, data files shall be provided electronically in a file format approved by the Regional Water Board. Any electronic files submitted to the Regional Water Board in accordance with Order R7-2021-0033 and this MRP, shall not be password protected.
- e. **Graphical Display.** A graphical display for all data collected for each monitoring point and background monitoring point. Each graph shall plot the concentration of one or more constituents over time for a given monitoring point. For any given constituent, the scale for all plots should be the same to facilitate comparison and identification of trends. On the basis of any outliers noted in the plotted data, the Regional Water Board may direct the Discharger to carry out a preliminary investigation, in accordance with Part II.F of this MRP, to determine whether a release is indicated. Trend analyses shall include identification of current trends, a comparison to previously identified trends, and a discussion of any significant changes in the trends. This shall be prepared for groundwater and any unsaturated/vadose zone monitoring points (including subdrains, lysimeters, or landfill gas).

Each graph shall plot the concentration of one or more constituents at an appropriate scale that allows changes in concentrations to be discerned, including the use of a semi-log scale for concentrations that change by more than three orders of magnitude.

- f. **Summary of Groundwater Conditions.** A written summary of the monitoring results and any changes to the groundwater monitoring system since the previous report. The written summary shall include a discussion of the groundwater flow rate and direction,⁸ the appearance of trends or other information that may indicate a potential change in the hydrogeologic conditions beneath and adjacent to the Facility.
 - g. **Evaluation of Groundwater Data.** An evaluation of the groundwater monitoring data analyzed according to the methods described in Part III of this MRP, and whether the analysis indicates a release of waste constituents or waste degradation products from the Facility.
 - h. **Leachate Evaluation.** A summary of leachate data for each applicable waste management unit, including any laboratory results and measurements of the height of liquids in LCRS sumps. The Discharger shall also calculate the leakage rate.
 - i. **Sludge Evaluation.** A summary of sludge data for each applicable waste management unit.
 - j. **Waste Volumes.** A summary of all required information concerning waste volumes for each applicable waste management unit.
2. **Annual Summary Report** – The Discharger shall submit an annual report covering the period from January 1 through December 31 to the Regional Water Board. If desired, the Annual Monitoring Report may be combined with the Semi-Annual Monitoring Report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. The Annual Summary Report shall include, at a minimum, the following:
- a. **Background Concentration Limits Update.** Reevaluate background concentration limits (required every five years per Part III.A.2.c) and propose any appropriate changes.
 - b. **Leachate Data Summary.** A summary of leachate data for each applicable waste management unit, consisting of the monthly total volume of leachate collected during the reporting year from the LCRS and any other leachate collection systems to demonstrate the

⁸ The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report. (Cal. Code Regs., tit 27, § 20415(e)(15).)

effectiveness of the leachate collection and removal system. This summary shall contain a brief discussion of the leachate sampling results and volume produced and how the leachate was disposed of during the reporting period. This summary shall also include a table consisting of the last five years of leachate data collected at the Facility.

- c. **Site Conditions Summary.** Include a comprehensive discussion regarding the condition of the Facility, including, but not limited to, interim cover areas, the current operational area, maintenance roads, the erosion and drainage control measures implemented to control run-on and run-off during the rainy season, the condition of monitoring wells, piezometers, and any other monitoring device located at the Facility. The discussion should also highlight any areas of noncompliance observed and repaired during the previous year and should be documented with photographs and inspection reports.
- d. **Compliance Summary.** Include a comprehensive discussion of the compliance issues during the reporting period (the past year), and of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the Order or this MRP.

B. Report Schedule

Semi-annual monitoring reports shall be submitted to the Regional Water Board in accordance with the following schedule:

Table 9. Semi-Annual Reporting Schedule

Monitoring Period	Report Due
January – June	August 15
July - December	February 15

Annual monitoring reports shall be submitted to the Regional Water Board by February 15 of the following year.

C. Standard Reporting Procedures

1. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.

2. In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are 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).
3. The results of any analysis taken more frequently than required at the locations specified in this MRP shall be reported to the Regional Water Board.
4. As specified in Standard Provisions H.13, all monitoring reports shall be certified under penalty of perjury to be true and correct. 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 ensure 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)”

5. The monitoring reports and any other information requested by the Regional Water Board shall be signed by a principal executive officer or ranking elected official. 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 Regional Water Board’s Executive Officer.
6. As specified in Standard Provisions I.12, technical reports shall be prepared by or under the direction of appropriately qualified professional(s). Each technical report submitted 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.

7. As specified in Standard Provisions I.11, the Discharger shall comply with Electronic Submittal of Information (ESI) requirements by submitting all correspondence and reports required under this MRP and future revisions thereto, including groundwater monitoring data and discharge location data (latitude and longitude), correspondence, and monitoring reports to the State Water Board's Geotracker database. Documents that are too large to be uploaded into Geotracker should be broken down into smaller electronic files and labelled properly prior to uploading into Geotracker.