

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION**

**WASTE DISCHARGE REQUIREMENTS ORDER NO. R3-2012-0225**

Waste Discharger Identification No. 3 400911406

**For**

**CALIFORNIA VALLEY SOLAR RANCH  
CLASS II SURFACE IMPOUNDMENTS  
SAN LUIS OBISPO COUNTY**

The California Regional Water Quality Control Board, Central Coast Region (Water Board), finds that:

**SITE OWNER AND LOCATION**

1. The High Plains Ranch II LLC (Discharger) owns and operates the California Valley Solar Ranch (Facility). The Discharger proposes to construct and operate a reverse osmosis water treatment plant and Class II surface impoundments for brine discharge.
2. The Facility is located approximately 60 miles east of San Luis Obispo along Highway 58, **Figure 1**.
3. The Facility will treat groundwater with reverse osmosis and will discharge brine and raw well water during start up to two brine ponds (surface impoundments). The water treatment and disposal process flow diagram is shown in **Figure 2**. The surface impoundments are shown in **Figure 3**. The overall California Valley Solar Ranch Facility is 4,956 acres. The reverse osmosis water treatment plant and surface impoundments will cover approximately 10 acres, comprised of Assessor's Parcel No. 072-161-015 with a latitude of 35° 20' 10" and a longitude of 119° 55' 09".

**PURPOSE OF ORDER**

4. The Discharger submitted a Report of Waste Discharge (ROWD) on May 19, 2011, to facilitate issuance of Waste Discharge Requirements (WDR) for the surface impoundments. On July 8, 2011, the Discharger submitted a draft Construction Quality Assurance Plan, draft Sampling and Analysis Plan, and a draft Preliminary Closure and Post-Closure Maintenance Plan.
5. These WDRs classify the two brine ponds as Class II surface impoundments in accordance with Title 27, CCR Section 20005, et seq. (Title 27).
6. The maximum brine flow to the surface impoundments will be approximately 8,000 gallons per day (gpd) during Facility construction and 4,000 gpd after construction is complete when the Facility is operating. The Facility is expected to take three years to construct. The maximum capacity of each surface impoundment while maintaining the required two-foot freeboard is approximately 2.4 million gallons. The Discharger submitted a water balance demonstrating adequate surface impoundment capacity to

contain flows of approximately 8,000 gallons per day.

## **FACILITY SITE DESCRIPTION**

7. The Facility's property boundary encompasses 4,956 acres and includes Brine Pond No.1 and Brine Pond No. 2.
8. The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 for the Class II surface impoundments. The engineered alternative consists of the following from top down:
  - A. A primary 60-mil thick high density polyethylene (HDPE) geomembrane.
  - B. A geonet drainage layer, as a leachate collection and removal system (LCRS).
  - C. A secondary 60-mil thick HDPE geomembrane in lieu of the clay liner.
  - D. A geonet drainage layer in lieu of vadose zone monitoring.
  - E. A tertiary 60-mil thick HDPE geomembrane.
9. Side slope liners will be constructed using the same material and in the same sequence and manner as the base liner system. The liner subgrade will be prepared using acceptable engineering and construction practices to provide a smooth surface free from material that could damage the geomembrane. The Discharger will install and certify the liner in accordance with this Order and an Executive Officer-approved construction quality assurance (CQA) plan.
10. The Discharger will construct the ponds with an inboard slope of 3:1 and outside slopes of 2:1. The berm width at the crest will be approximately 14 feet.
11. Each surface impoundment will have a geonet LCRS blanket across the entire lined area.
12. The Discharger will install a pan lysimeter (geonet blanket) under each surface impoundment that will serve as an engineered alternative to the prescriptive unsaturated zone monitoring system requirement of Title 27, CCR Section 20415(d).
13. The depth to groundwater is approximately 150 feet below ground surface. Title 27, CCR Section 20240(c) requires a minimum separation of five feet between waste and the highest anticipated groundwater elevation.
14. Title 27 CCR Section 20080(b) allows the Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative, the Discharger must demonstrate that the prescriptive design is unreasonable and unnecessarily burdensome and will cost substantially more than an alternative, which will meet the criteria contained in Title 27 CCR Section 20800(b) or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27 CCR Section 20800(b)(2). The Executive Officer finds that

the performance of the alternative liner system is equal to, or exceeds, the waste containment capability of the regulatory prescriptive design. For these surface impoundments, the equivalence demonstration was based on the engineered alternative demonstrations made for other facilities. There are no significant differences in the characteristics of already approved engineered alternative liners and the liner system proposed for the California Valley Solar Ranch surface impoundments.

## WASTE TYPE & CLASSIFICATION

15. The wastewater consists of concentrated brine from the reverse osmosis (RO) water treatment plant. The Discharger developed the brine waste characteristics based on feed water quality, RO treatment removal, finished water quality goals, and resulting mass balance. The estimated concentrations in the waste discharged to the surface impoundments are as follows:

<u>Parameter</u>	<u>Concentration (mg/L<sup>1</sup>)</u>
Total Dissolved Solids	29,640
Chloride	2,340
Fluoride	2.4
Sulfate	19,200
Calcium	2,520
Iron	3.6
Potassium	55.8
Magnesium	1,200
Sodium	4,800
Aluminum	3.3
Arsenic	0.042

<sup>1</sup> milligrams per liter

16. Designated waste is identified in Title 27, Section 20210, as a nonhazardous waste, which consists of, or contains pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives, or that could reasonably be expected to affect beneficial uses of waters of the state.
17. The discharge poses a significant threat to water quality. Therefore, the discharge is a designated waste and, as such, must be discharged to a Class II surface impoundment as required by Title 27.
18. The surface impoundments are designed to hold 50-years of solids accumulation while maintaining adequate brine discharge capacity. Once the solids capacity of the surface impoundments are reached, the site will be clean closed with all materials hauled offsite for disposal at a facility permitted to accept the waste.

## GEOLOGY

19. Land use in the area is predominately open, undeveloped land that is vegetated with seasonal grasses.
20. The Facility is located in an area mapped with Holocene and Pleistocene alluvial deposits, which primarily consist of silt, sand, and gravel derived from the nearby Paso Robles and Monterey Formations in the Temblor Range to the northeast.
21. **Faulting/Seismicity** – The Discharger has not completed the geotechnical work necessary to verify compliance with Title 27 stability analysis requirements. The Discharger must complete all seismic and stability analyses and demonstrate compliance with Title 27 Section 20370. The Executive Officer must concur with the Discharger's analyses prior to discharge into the surface impoundments.
22. **Hydrogeology** – Groundwater beneath the surface impoundments occurs in the Carrizo Plain Groundwater Basin (sometimes referred to as the Soda Lake Sub-basin). Depth to groundwater is estimated to be approximately 150 feet below ground surface (bgs). Groundwater flow direction has not been established but the flow is expected to be generally towards the southwest in the vicinity of the surface impoundments.

## GROUNDWATER, STORMWATER, AND SURFACE WATER

23. **Groundwater Quality** – The Discharger collected one groundwater sample from an onsite well and the results indicate elevated concentrations of selenium, total dissolved solids, sulfate, sodium, chloride, and nitrate (as N). Once the facility is constructed the Discharger will collect additional groundwater samples from newly installed monitoring wells located upgradient and downgradient of the surface impoundments.
24. **Supply Wells** – An onsite supply well for the reverse osmosis treatment system is located approximately 800 feet from the surface impoundments. The onsite supply well was drilled to a total depth of 400 feet bgs and will pull water from the area's upper aquifer. No other domestic or irrigation wells are known to exist within one mile of the surface impoundments.
25. **Surface Water** – Unnamed surface drainages flow intermittently, primarily during heavy rain events. The drainages flow to Soda Lake approximately four miles to the southeast of the surface impoundments. Soda Lake is a shallow, ephemeral, alkali lake that retains water and allows no outflow to other bodies of water.
26. **Stormwater** – The Discharger routes surface drainage around the surface impoundments. Although yet to be constructed, perimeter ditches have been designed to handle the runoff from a 100-year, 24-hour storm consistent with CCR Title 27, Section 21750(e).
27. **Precipitation** – According to San Luis Obispo County Public Works Department data, the area receives an average of 9.98 inches of rain per year primarily between the

months of November and April. The highest average monthly rainfall is approximately 1.98 inches in January.

28. **Floodplain** – The Federal Emergency Management Agency Flood Insurance Rate Maps show that the surface impoundments are entirely outside the 100-year flood plain.
29. **Groundwater Separation** – Proposed and existing excavation grades and liner designs provide separation between groundwater and the surface impoundment, thus meeting the CCR Title 27 requirement for maintaining a minimum five-foot separation.

### **CONTROL SYSTEMS/MONITORING PROGRAMS**

30. **Leachate Management System** – The leachate collection and removal system (LCRS) design for each surface impoundment includes a leachate collection sump lined with a 60-mil HDPE geomembrane. The sump will contain a leachate collection pipe covered with gravel and wrapped with geonet fabric. A second sump will be located below the primary sump and will have the same design as the primary sump. The sumps are designed to detect leaks from the liner system and will be connected to leak detection monitoring wells.
31. **Monitoring and Reporting Program (MRP)** – Monitoring systems are outlined in the attached MRP No. R3-2012-0225 and include visual inspections, groundwater monitoring, and leak detection monitoring. Finding 33 below documents the groundwater monitoring well network.
32. **Groundwater Monitoring** - The groundwater monitoring well network for the Facility will consist of three monitoring wells at the locations shown in **Figure 3**.
33. **Surface Water Monitoring** – No surface water monitoring is required. All waste must be contained within the surface impoundments.
34. **Unsaturated Zone Monitoring** – The Discharger will monitor the leak detection system in lieu of unsaturated zone monitoring in accordance with the MRP.

### **BASIN PLAN**

35. The Water Quality Control Plan, Central Coast Basin (Basin Plan), was adopted by the Water Board on September 8, 1994, and approved by the State Water Resources Control Board (State Water Board) on November 17, 1994. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State Waters. This Order implements the water quality objectives stated in that Plan.
36. Unnamed blue line streams drain the Facility and flow to Soda Lake. The Basin Plan identifies the following present and anticipated beneficial uses of Soda Lake:
  - a. Industrial Process Supply;
  - b. Non-contact water recreation;

- c. Wildlife habitat;
- d. Warm fresh-water aquatic habitat;
- e. Preservation of biological habitats of special significance;
- f. Rare, threatened, or endangered species;
- g. Commercial and sport fishing.

37. The Basin Plan does not designate groundwater beneficial uses in the Soda Lake Sub-basin, which is where the project is located. The Discharger will use reverse osmosis to treat groundwater for potable water use and fire protection at the Facility.

### **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

38. The County of San Luis Obispo certified the Final Environmental Impact Report for the California Valley Solar Project on April 20, 2011, and filed a Notice of Determination on April 20, 2011, in compliance with the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.) in accordance with Title 14, Chapter 3, and Section 15301.

### **GENERAL FINDINGS**

39. In accordance with California Water Code (CWC) §13263(g), no discharge into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, must create a vested right to discharge. All discharges of waste into waters of the state are privileges, not rights. Authorization to discharge waste is conditioned upon the Discharger complying with provisions of Division 7 of the CWC and with any more stringent limitations necessary to implement the Basin Plan, to protect beneficial uses, and to prevent nuisance. Compliance with Order No. R3-2012-0225 should assure conditions are met and mitigate any potential changes in water quality attributed to the Facility.

40. The Facility meets the criteria of CCR Title 27 for a Class II surface impoundment suitable to receive brine. Order No. R3-2012-0225 implements, but is not limited to, the prescriptive standards and performance goals of CCR Title 27.

41. **Antidegradation** – State Water Board Resolution No. 68-16 Statement of Policy with Respect to Maintaining High Quality of Waters in California (Resolution No. 68-16) requires Regional Water Boards, in regulating the discharge of waste, to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in a Regional Water Board's policies (e.g., quality that exceeds applicable water quality standards). Resolution No. 68-16 also states, in part:

“Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in best practicable treatment and control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained”.

42. The discharges regulated by this Order are required to comply with the land disposal regulations contained in Title 27, which are intended to prevent discharges of waste to waters of the state, preventing degradation of waters of the state. The discharge is subject to waste discharge requirements, which will result in best practicable treatment or control.
43. On **September 9, 2011**, the Water Board notified the Discharger and interested agencies and persons of its intention to issue the Facility Waste Discharge Requirements and has provided an opportunity to review a copy of the proposed Order and submit views and comments.
44. After considering all comments pertaining to this discharge during a public hearing on **February 2, 2012**, this Order was found consistent with the above findings.

**IT IS HEREBY ORDERED** pursuant to authority in Sections 13263 and 13267 of the California Water Code, the High Plains Ranch II LLC, its agents, successors, and assigns may discharge wastes at the California Valley Solar Ranch Class II Surface Impoundment, providing compliance is achieved and maintained with the following:

**A. COMPLIANCE WITH OTHER REGULATIONS, ORDERS AND STANDARD PROVISIONS**

1. Discharge of waste, operations, and monitoring shall comply with all applicable requirements contained in CCR Title 27. If any applicable regulation requirements overlap or conflict in any manner, the most water quality protective requirement must govern in all cases, unless specifically stated otherwise in this Order, or as directed by the Executive Officer.

**B. PROHIBITIONS**

1. Discharge of waste to areas outside the approved and permitted Class II surface impoundments as illustrated in **Figure 3** is prohibited, unless approved by the Executive Officer.
2. Discharge of waste or leachate to ponded water, drainage way(s), or waters of the State, including groundwater, is prohibited.
3. Discharge of hazardous waste is prohibited. For the purposes of this Order, the term hazardous waste is as defined in Title 23, California Code of Regulations, Section 2510 et seq.
4. Disposal of waste within 50 feet of the property line, 100 feet of surface waters, or 100 feet of domestic water supply wells is prohibited, unless approved by the Executive Officer.
5. Disposal of wastes within five (5) feet of the highest anticipated elevation of underlying groundwater, including the capillary fringe, is prohibited, except as allowed under CCR Title 27, §20080 (b) and (c).

6. Discharge of waste to any Class II surface impoundment is prohibited until the following tasks are completed and approved by Water Board staff:
  - a. Installation of a background groundwater monitoring system.
  - b. Installation of an approved groundwater quality monitoring system.
  - c. Establishment of Financial Assurance funds for corrective action, unit closure, and post-closure maintenance.
  - d. Submittal and approval of a construction quality assurance report for the surface impoundments construction.
  - e. Submittal and approval of complete seismic design and stability analyses as required by Title 27.

### **C. SPECIFICATIONS**

1. Discharge of waste must not cause a condition of pollution or contamination to occur through a statistically significant release of pollutants, contaminants, and/or waste constituents, as indicated by the most appropriate statistical [or non-statistical] data analysis method and retest method described in MRP No. R3-2012-0225.
2. Discharge, collection, and treatment of waste must not create nuisance, as defined by CWC §13050(m).
3. Precipitation and drainage control systems shall be designed, constructed, and maintained to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 100-year, 24-hour precipitation conditions.
4. The Discharger must design, construct, and maintain to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, overtopping, and damage to surface impoundments and drainage facilities resulting from natural disasters (e.g., floods with a predicted frequency of once in 100 years, the maximum probable earthquake, and severe wind storms).
5. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site.
6. The Discharger must maintain a minimum of two feet of freeboard in the surface impoundments. Freeboard is defined as the distance between the water surface within the impoundment and the top of the lined impoundment.
7. Wastes discharged in violation of this Order, must be removed and relocated.
8. The monthly average flow to the Class II surface impoundments shall not exceed 8,000 gallons per day.

9. Both the bottom liner and side slopes liners for the Class II surface impoundments shall be constructed in accordance with the following engineered alternative that is comprised, in ascending order, of the following:
  - a. A primary 60-mil thick high density polyethylene (HDPE) geomembrane.
  - b. A geonet drainage layer, as a leachate collection and removal systems (LCRS).
  - c. A secondary 60-mil thick HDPE geomembrane in lieu of the clay liner.
  - d. A geonet drainage layer in lieu of a vadose zone monitoring system.
  - e. A tertiary 60-mil thick HDPE geomembrane.
10. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering proportions of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and concurrence by the Executive Officer.
11. The Discharger must complete all seismic design and stability analyses as required by Title 27, including obtaining Executive Officer approval, prior to the discharge of waste into the surface impoundments.
12. The unsaturated zone monitoring system shall be capable of measuring any flows that may occur as a result of a release from the surface impoundments.
13. Each surface impoundment and related containment structures shall be constructed and maintained to prevent inundation, erosion, slope failure, washout, and overtopping under 1,000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year annual wet weather season while maintaining the required two feet of freeboard.
14. Each LCRS shall be designed, constructed, and maintained to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of the fluid in any LCRS sump shall be kept at the minimum needed for safe pump operation.
15. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
16. The surface impoundments shall be designed, constructed, and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the water line.
17. If leachate is detected in the LCRS sump or the vadose zone monitoring system of a surface impoundment (indicating a leak in the containment structures) the Discharger shall either implement an Executive Officer approved Response Action Plan or shall:

- a. Immediately cease discharge of waste, excluding leachate to the surface impoundment, until the leaks can be found and repaired.
- b. Immediately collect a grab sample of the leachate and analyze it for constituents listed in the Monitoring and Reporting Program R3-2012-0225.
- c. Verbally notify Water Board staff that the containment structures have failed within 24 hours.
- d. Submit written notification of the release to Water Board staff within seven days, the notification should include plans for corrective measures and a time schedule to repair the containment structures.
- e. The discharge of wastes to the surface impoundment shall not resume until the Executive Officer has determined that repairs to the liners are complete and there is no further threat to water quality.

If the leak is determined to be significant according to the Response Action Plan, or if the Discharger does not have an Executive Officer approved Response Action Plan, the Discharger shall implement a – e above.

18. Leachate removed from a surface impoundment's primary LCRS or vadose zone monitoring system shall be discharged to the impoundment from which it originated. If the surface impoundment liner from which the leachate originated is being repaired, the discharger may discharge leachate to the other surface impoundment until repairs are completed. The Discharger must obtain Executive Officer approval to discharge leachate from one surface impoundment to the other.
19. If the Discharger needs to remove the solids that accumulate in the surface impoundments to maintain minimum freeboard requirements and to maintain adequate capacity, sufficient samples shall be taken for their characterization and classification pursuant to Article 2, Subchapter 2, Chapter 3, Division 2 of Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Water Board staff for review. Before any disposal of solids, the Discharger must obtain concurrence on the disposal method from Water Board staff.
20. If solids in the surface impoundments need to be removed, the Discharger must submit a solids removal plan to Water Board staff for review. The plan must include provisions for removing solids without causing liner damage. Prior to removing any solids from the surface impoundments, the Discharger must receive written approval from the Executive Officer.
21. The Discharger may only proceed with construction after the Executive Officer approves all applicable construction quality assurance plans.
22. The closure of each surface impoundment shall be under the direct supervision of a California registered civil engineer or certified engineering geologist.
23. At closure of each surface impoundment, all residual wastes, including liquids, sludges, precipitates, settled solids, liner materials, and adjacent natural geologic materials polluted by wastes, shall be completely removed and discharged to a waste management unit approved by Water Board staff. If after reasonable

attempts, the Discharger demonstrates the removal of all remaining contamination is infeasible, the surface impoundment shall be closed as a landfill.

#### **D. WATER QUALITY PROTECTION STANDARDS**

1. The discharge of waste must not cause a statistically significant difference in water quality over background concentrations for proposed concentration limits for each monitoring parameter (per MRP No. R3-2012-0225) at the point of compliance. The Discharger must maintain concentration limits for as long as the waste poses a threat to water quality. Discharge of waste must not adversely impact the quality of State waters.
2. Pursuant to CCR Title 27 §20400, the Water Board must specify concentration limits in waste discharge requirements. The Water Board complies with the intent of CCR Title 27 §20400 by requiring the Discharger to establish and review concentration limitations on an annual basis in accordance with MRP No. R3-2012-0225.
3. Pursuant to CCR Title 27 §20405, the point of compliance is a vertical surface located at the hydraulically downgradient limit of a surface impoundment that extends through the uppermost aquifer underlying the surface impoundment.
4. Discharge of waste must not cause concentrations of chemicals and radionuclides in groundwater to exceed the State Department of Public Health's latest recommended Drinking Water Action Levels or Maximum Contaminant Levels of CCR Title 22, Division 4, Chapter 15, Article 5.5.
5. Discharge of waste must not cause a violation of any applicable water quality standard for receiving waters adopted by the Water Board or the State Water Resources Control Board.
6. Discharge of waste must neither cause nor contribute to any surface water impacts.
7. Monitoring parameters for groundwater are listed in MRP No. R3-2012-0225. Monitoring points and background monitoring points must be those specified in MRP No. R3-2012-0225.
8. The compliance period, pursuant to CCR Title 27 §20380(d)(1) and §20410, is estimated to be until the year 2062, based on the surface impoundment estimated closure date of 2061 plus 1 year to clean close the site.

#### **E. PROVISIONS**

1. The Discharger is responsible for waste containment, monitoring, and correcting any problems resulting from the discharge of waste for as long as the waste poses a threat to water quality.
2. The Discharger must comply with MRP No. R3-2012-0225, as specified by the Executive Officer.

3. **By October 1 of each year**, the Discharger must complete all necessary runoff diversion and erosion prevention measures (except for planting vegetation). The Discharger must complete all necessary construction, maintenance, or repairs of precipitation and drainage control facilities to prevent erosion. The Discharger must repair erosion rills greater than six-inches deep immediately after storm events that cause the erosion, if it is safe to do so.
4. Should additional data become available through monitoring or investigation that indicates compliance with this Order is not adequately protective of water quality, the Water Board will review and revise this Order as appropriate.
5. If the Discharger or the Water Board determines, pursuant to CCR Title 27, §20420, that there is evidence of a release from any portion of the surface impoundments, the Discharger must immediately implement the procedures outlined in CCR Title 27 §20380, §20385, §20430, and MRP No. R3-2012-0225.
6. This Order does not authorize commission of any act causing injury to the property of another, does not convey any property rights of any sort, does not remove liability under federal, state, or local laws, and does not guarantee a capacity right.
7. The Water Board must be allowed, at any time and without prior notification:
  - a. Entry upon the surface impoundment area or where records are kept under the conditions of this Order and MRP No. R3-2012-0225.
  - b. Access to a copy of any records that must be kept under the conditions of this Order and MRP No. R3-2012-0225.
  - c. To inspect any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order and MRP No. R3-2012-0225.
  - d. To photograph, sample, and monitor for the purpose of showing compliance with this Order.
8. The Discharger must take all reasonable steps to minimize or correct adverse impacts on the environment resulting from non-compliance with this Order.
9. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
  - a. Violation of any term or condition contained in this Order.
  - b. Obtaining this Order by misrepresentation, or by failure to disclose fully all relevant facts.
  - c. A change in any condition or endangerment to human health or environment that requires a temporary or permanent reduction or elimination of the authorized discharge.
  - d. A material change in character, location, or volume of the waste being discharged to land.

10. **Two-weeks** prior to constructing each phase of a surface impoundment (e.g., preparing foundation, installing liner, installing leak detection system, etc.), the Discharger must notify Water Board staff.
11. Prior to liner construction, a third party (e.g., unrelated to the Discharger, project designer, contractor) must prepare a Construction Quality Assurance (CQA) Plan. The Executive Officer must approve the CQA Plan. The third party must implement the CQA Plan and provide regular construction progress reports to the Executive Officer.
12. Prior to beginning discharge of waste into any newly constructed surface impoundment, the Discharger must receive a final inspection and written approval from the Executive Officer.
13. The Discharger must obtain and maintain Financial Assurance Instruments (Instruments), which comply with CCR Title 27 (§22207 [Closure Fund], §22212 [Post Closure Fund], and §22220 et seq. [Corrective Action Fund]). Pursuant to CCR Title 27 §20380(b), the Discharger must obtain and maintain assurances of financial responsibility, naming the Water Board as beneficiary, for initiating and completing corrective action for all known or reasonably foreseeable releases. As surface impoundment conditions change, and upon the Water Board's request, the Discharger must submit a report proposing the amount of financial assurance necessary for corrective action for the Executive Officer's review and approval. The Discharger must demonstrate compliance with all financial instruments to the Water Board at a minimum of every five years.

## REPORTING

14. All reports must be signed as follows:
  - a. By either a principal executive officer or ranking elected official.
  - b. Their "duly authorized representative."
  - c. A California Registered Civil Engineer or Certified Engineering Geologist must sign engineering reports.
15. Any person signing a report makes the following certification, whether its expressed or implied:

"I certify under penalty of perjury I have personally examined and am familiar with the information submitted in this document and all attachments and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of a fine and imprisonment."
16. Except for data determined to be confidential under §13267 (b)(2) of the CWC, all reports prepared in accordance with this Order must be available for public inspection at the Water Board office. Records will also be available within the State Water Resources Control Board Geotracker database. Facility waste discharge

requirements, monitoring and reporting program, and monitoring data will be posted on the Geotracker database. The public access to the Geotracker database is located at <http://geotracker.waterboards.ca.gov/>.

17. The Discharger must submit written reports in advance of any planned changes in the permitted surface impoundment or in an activity, which could potentially or actually result in noncompliance. Any planned changes must be approved by the Executive Officer prior to implementation.
18. By **October 1** of each year, the Discharger must submit a Wet Weather Preparedness Report (WWPR). The WWPR must describe compliance with **Provisions E.3** above. The report must also detail preparedness actions taken to ensure discharges to surface or groundwater do not occur during the impending rainy season, and ensure compliance with all other relevant CCR Title 27 criteria. The report must include photographs of all wet weather preparedness measures implemented.
19. The Discharger must notify the Water Board with a written request of any proposed change in ownership or responsibility for construction or operation of the surface impoundments in accordance with CCR Title 27, §21710 (c)(1). The written request must be given at least 90-days prior to the effective date of change in ownership or responsibility and must:
  - a. Be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these Waste Discharge Requirements.
  - b. Contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Water Board.
  - c. Contain a statement indicating that the new owner or operator assumes full responsibility for compliance with this Order.
20. Request for change in ownership or responsibility may be approved or disapproved in writing by the Executive Officer. In the event of any change in ownership of this surface impoundment, the Discharger must notify the succeeding owner or operator, in writing, of the existence of this Order. A copy of that notification must be sent to the Executive Officer.
21. The Discharger must furnish, within a reasonable time, any information the Executive Officer may request to determine compliance with this Order or to determine whether cause exists for modifying or terminating this Order.
22. The Discharger or persons employed by the Discharger must comply with all notice and reporting requirements of the State Department of Water Resources, San Luis Obispo County, and other applicable permitting agencies with concurrence of the Executive Officer regarding the permitting, construction, alteration, inactivation, destruction, or abandonment of all monitoring wells used for compliance with this Order or with MRP No. R3-2012-0225, as required by §13750.5 through §13755 and §13267 of the CWC.

23. Should the Discharger discover that it failed to submit any relevant facts or that it submitted incorrect information, it must promptly submit the missing or corrected information.
24. The Discharger must notify the Executive Officer, within 24 hours by telephone and within 14 days in writing, of:
- a. Any noncompliance that potentially or actually endangers health or the environment. Reports of noncompliance must include a description of;
    - i. The reason for non-compliance;
    - ii. A description of the non-compliance, including photo documentation;
    - iii. Schedule of tasks necessary to achieve compliance; and,
    - iv. An estimated date for achieving full compliance.
  - b. Any flooding, equipment failure, slope failure, or other change in Facility conditions which could impair the integrity of waste containment facilities or of precipitation and drainage control structures;
  - c. Leachate leaks(s) occurring on or in proximity to the surface impoundments;
  - d. Violation of a discharge prohibition; and,
  - e. Violation of any treatment system's discharge limitation.
25. Reports of compliance or noncompliance with, or any progress reports on, final requirements contained in any compliance schedule must be submitted within 14-days following each scheduled date. If reporting noncompliance, the report must include a description of:
- a. The reason for non-compliance.
  - b. A description of the non-compliance.
  - c. Schedule of tasks necessary to achieve compliance.
  - d. An estimated date for achieving full compliance.
26. The Discharger must promptly correct any noncompliance issue that threatens the surface impoundments' containment integrity. Correction schedules are subject to the approval of the Executive Officer, except when delays will threaten the environment and/or the surface impoundments' integrity (i.e., emergency corrective measures). For emergency corrective measures, the Discharger must report details of the corrections in writing within seven (7) days of initiating correction.
27. By **June 10, 2016**, the Discharger must submit a Report of Waste Discharge (ROWD) that includes the following information:
- a. Updated information on waste characteristics, geologic, and climatologic characteristics of the waste management facility and the surrounding region, installed features, precipitation and drainage controls, and closure and post closure maintenance plans, in accordance with CCR Title 27 §21740, §21750, §21760, and §21769.
  - b. Discuss whether, in the Discharger's opinion, there is any portion of this Order that is incorrect, obsolete, or otherwise in need of revision.

- c. Include any other technical documents needed to demonstrate continued compliance with this Order and all pertinent State and Federal requirements.
  - d. Include detailed updated information regarding regulatory considerations, operating provisions, environmental monitoring, and closure and post closure.
28. By **June 10, 2016**, or earlier as needed, submit for the Executive Officer's review and approval an updated report on a reasonably foreseeable release, along with adjustments to financial assurances (as necessary).
29. The Discharger must file with the Water Board a ROWD (in accordance with **Provision E. 27** of this Order) or secure a waiver from the Executive Officer at least **120-days** before making any material change or proposed change in the character, location, or volume of the waste being discharged to land.

## **ENFORCEMENT**

30. The Discharger must comply with all conditions of this Order. Non-compliance violates state law and is grounds for enforcement action or modification of the Order.
31. Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of §13267 of the CWC, or falsifying any information provided therein, is guilty of a misdemeanor.
32. The Discharger and any person who violates Waste Discharge Requirements and/or who intentionally or negligently discharges waste or causes or permits waste to be discharged into surface waters or groundwater of the state may be liable for civil and/or criminal remedies, as appropriate, pursuant to §13350, §13385, and §13387 of the CWC.
33. Provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order must not be affected.
34. The Water Board requires all technical and monitoring reports pursuant to this Order in accordance with §13267 of the CWC. Failure to submit reports in accordance with schedules established by this Order, attachments to this Order, or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer may subject the Discharger to enforcement action pursuant to §13268 of the CWC.
35. The Discharger must comply with all conditions of these Waste Discharge Requirements. Violations may result in enforcement actions, including Water Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Water Board. (CWC §13261, §13267, §13263, §13265, §13268, §13300, §13301, §13304, §13340, §13350).
36. No provision or requirement of Order No. R3-2012-0225 or MRP No. R3-2012-0225 is a limit on the Discharger's responsibility to comply with other federal, state and local laws, regulations, or ordinances.

37. The Discharger must comply with the following submittal and implementation schedule for all tasks and/or reports required by this Order.

### REPORT AND IMPLEMENTATION DATE SUMMARY

TASK	IMPLEMENTATION DATE
Runoff diversion and erosion prevention [Provision E.3]	October 1, of each year
Notify Water Board staff [Provision E.10]	Two-weeks prior to constructing each phase
Wet Weather Preparedness Report [Provision E.18]	October 1, of each year
ROWD Amendment [Provision E.27]	June 10, 2016
Update Report on Reasonably Foreseeable Release [Provision E.28]	June 10, 2016, or sooner, as necessary

I, Roger W. Briggs, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on **February 2, 2012**.

\_\_\_\_\_  
Executive Officer

**Attachments:**

- Figure 1 - Location Map
  - Figure 2 - Process Flow Diagram
  - Figure 3 - Site Map
- Monitoring and Reporting Program No. R3-2012-0225



BASE MAP SOURCE: California Solar Ranch Vicinity Map by ENGEO, dated 5/20/2011

**VICINITY MAP**  
Class II Surface Impoundments  
California Valley Solar Ranch  
San Luis Obispo County, California

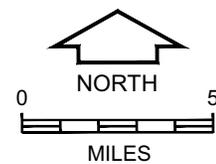
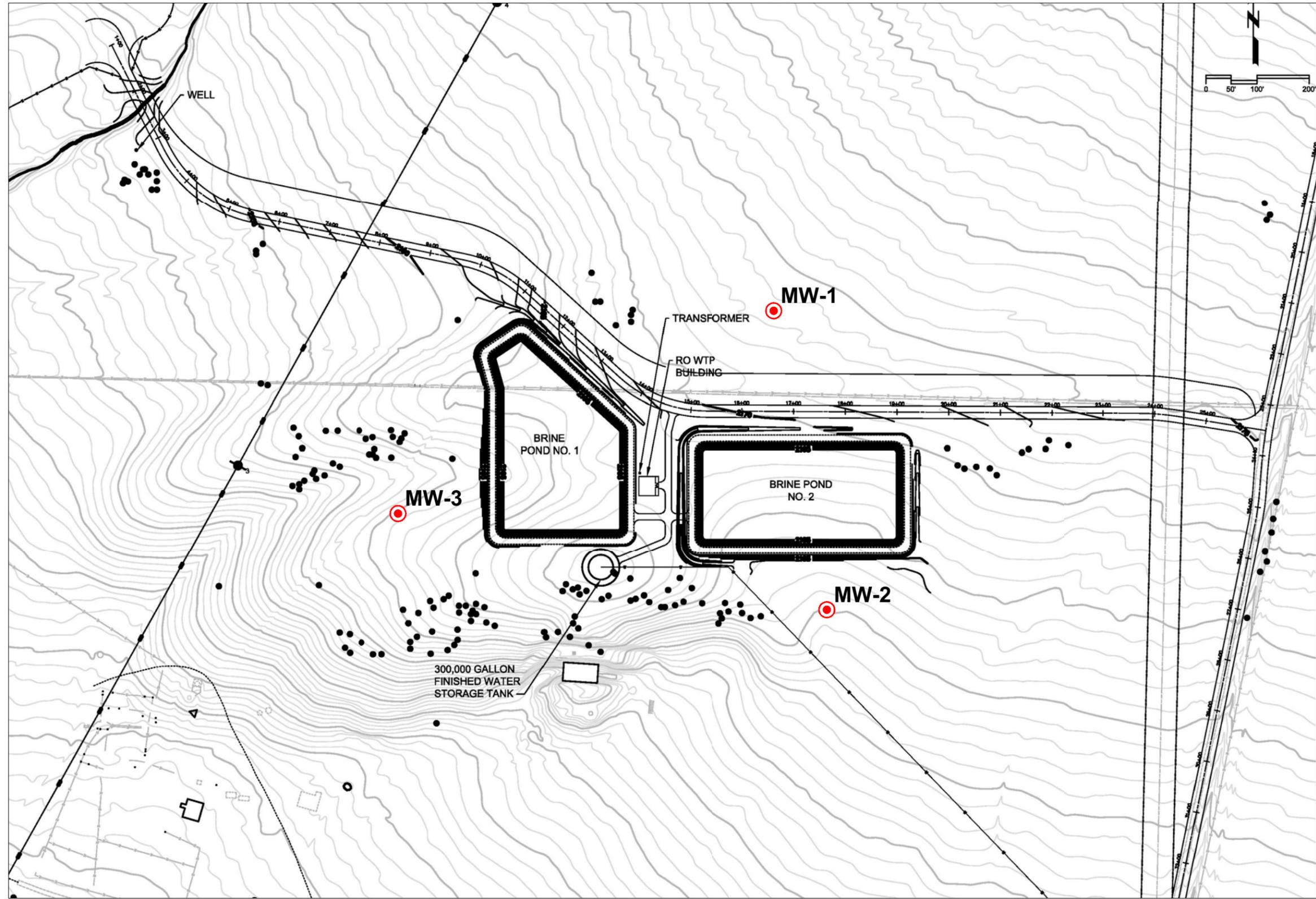


Figure 1



G:\jobdocs\04.71110026 CVSR\Drawings\Phase 6 - GW Sampling and Analysis\20111010\_B04.71110026-01 site plan.dwg 10-11-2011 - 5:04pm



**LEGEND**  
 Proposed location of Monitoring Well

NORTH  
 0 200 400  
 FEET

BASE MAP SOURCE: Site Plan & Facility Index, California Valley Solar Ranch, Phase 1, North Coast Engineering, Inc. (Sheet C-01, 2011).

**WELL SITE PLAN**  
 California Valley Solar Ranch  
 San Luis Obispo, California  
**Figure 3**

**STATE OF CALIFORNIA  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION  
895 Aerovista Place, Suite 101  
San Luis Obispo, California 93401-7906**

**MONITORING AND REPORTING PROGRAM NO. R3-2012-0225  
Waste Discharger Identification No. 3 400911406  
Proposed for Considered at the February 2, 2012 Board Meeting**

**FOR**

**CALIFORNIA VALLEY SOLAR RANCH  
CLASS II SURFACE IMPOUNDMENTS  
SAN LUIS OBISPO COUNTY**

The High Plains Ranch II LLC (Discharger) owns and operates the California Valley Solar Ranch Class II Surface Impoundments (surface impoundments). The Discharger is subject to Monitoring and Reporting Program Order No. R3-2012-0225 (MRP) because it owns and operates the surface impoundments. The MRP is required to assess compliance with the California Water Code (CWC), applicable state and federal regulations, and Waste Discharge Requirements Order No. R3-2012-0225.

Monitoring and Reporting Program Order No. R3-2012-0225 is issued by the Regional Water Quality Control Board, Central Coast Region (Water Board) pursuant to CWC §13267. Pursuant to CWC §13268, a violation of §13267 requirements may subject the Discharger to civil liability of up to \$1,000 per day for each day in which the violation occurs.

**PART I: MONITORING AND OBSERVATION SCHEDULE**

Unless otherwise indicated, the Discharger must report all monitoring and observations as outlined in **Part IV**.

**A. SITE INSPECTIONS**

The Discharger must inspect the surface impoundments, in accordance with the following schedule, and record (including photographs, when appropriate) at a minimum, the Standard Observations listed below:

**1. Site Inspection Schedule:**

- a. During the wet season (**October 1 through April 30**), following each storm event that produces onsite storm water runoff, with inspections performed at least **monthly**. For purposes of this MRP, onsite runoff is defined as surface

water flow resulting from a minimum of one inch of rain within a 24-hour period.

- b. During the dry season (**May 1 through September 30**), a minimum of one inspection each **three month period**.

## 2. Standard Observations:

- a. For the surface impoundments - this includes inspections along the perimeter of the surface impoundments, and any areas associated with the reverse osmosis treatment and brine disposal.
  - i. Whether storm water drainage ditches contain liquids.
  - ii. Inspection of storm water discharge locations for evidence of non-storm water discharges.
  - iii. Integrity of drainage systems during wet season.
- b. For Receiving Waters
  - i. Floating and suspended materials of waste origin; presence or absence, source, and size of affected area.
  - ii. Discoloration and turbidity – description of color, source, and size of affected area.
  - iii. Presence of odors – characterization, source, and distance from source.
  - iv. Evidence of beneficial use – presence of water-associated wildlife.
  - v. Estimated flow rate to the receiving water.
  - vi. Weather conditions – wind direction and estimated velocity, total precipitation during the previous five days and on the day of observation.

## B. ADDITIONAL DRAINAGE SYSTEMS INSPECTIONS

The Discharger must inspect all drainage control systems following each onsite runoff-producing storm event and record the following:

1. General conditions of the storm water facilities;
2. Whether storm water sedimentation/retention basins and drainage ditches contain liquids;
3. Steps taken to correct any problems found during the inspections, as required under **Part IA** of this Monitoring and Reporting Program, and date(s) when corrective action was taken. Include photographic documentation.

## C. RAINFALL DATA

The Discharger must record the following information from the nearest monitoring station:

1. Total precipitation, in inches, during each **three month period** (October through December, January through March, April through June, and July through September).
2. Precipitation, in inches, during the most intense 24-hour rainfall event occurring within each contiguous **three month period**.
3. Number and date of storms (greater than or equal to one inch in 24 hours) received during the **three month period**.

#### **D. POLLUTION CONTROL SYSTEMS**

The Discharger must inspect all pollution and control systems (e.g., liner, leachate collection and removal system (LCRS), and vadose zone monitoring system) and record the following information:

1. Surface impoundments, LCRS and vadose zone monitoring system:
  - i. **Weekly** – Inspect all systems for the presence of liquid and collection system integrity, record volume of leachate collected (gallons), document any liner damage or defects.
  - ii. **Monthly** – Pumping system operational check.
  - iii. Perform routine preventative maintenance focused on keeping the system at design operation. The Discharger must summarize and report all scheduled and unscheduled maintenance.

#### **E. INTAKE MONITORING**

The Discharger must record the following information associated with surface impoundment inflows:

1. Record all flow volumes into the surface impoundments including but not limited to brine, raw supply well water, reverse osmosis bypass water, leachate collected from the LCRS, and any liquid collected from the vadose zone monitoring system.

#### **F. MONITORING LOCATIONS AND ANALYTICAL MONITORING**

The Discharger must monitor the surface impoundments in accordance with the following schedule(s). Groundwater monitoring locations are shown on the Monitoring Network, **Figure 1**. The Discharger must comply with the sampling, analyses, and reporting requirements discussed in **Parts II, III, and IV** of this monitoring and reporting program.

1. Monitoring Periods:

- a. **Semiannually** – The 1<sup>st</sup> and 2<sup>nd</sup> semiannual monitoring periods are January 1 – June 30, and July 1 – December 31.
- b. **Annually** – The annual monitoring period is from January 1 – December 31.

2. Monitoring Programs:

The Discharger must sample the following Monitoring Points and Background Monitoring Point as described below.

a. Surface Impoundments

Surface impoundment samples shall be collected in a location at least 50 feet from the influent structure. Liquids in the surface impoundment shall be monitored/sampled for the parameters as listed in Table 1.

**TABLE 1 – Surface Impoundment Monitoring**

Parameters	Method <sup>1</sup>	Units <sup>2</sup>	Frequency
Flow Rate	Calculated	gallons/month	Monthly
Remaining Capacity	Calculated	gallons	Monthly
Freeboard	Measured	feet	Weekly
Temperature	Field	°F/C	Semiannually
Electrical Conductivity (EC)	Field	µmhos/ cm	Semiannually
pH	Field	pH Units	Semiannually
Chloride	300.0	mg/L	Semiannually
Nitrate (as Nitrogen)	300.0	mg/L	Semiannually
Total Dissolved Solids	160.1	mg/L	Semiannually
Sulfate	300.0	mg/L	Semiannually
Manganese	6010B	mg/L	Semiannually
Sodium	6010B	mg/L	Semiannually
Barium	6010B	mg/L	Semiannually
Lead	6010B	mg/L	Semiannually
Selenium	6010B	mg/L	Semiannually
Arsenic	6010B	mg/L	Semiannually
Potassium	6010B	mg/L	Semiannually
Nickel	6010B	mg/L	Semiannually
Aluminum	6010B	mg/L	Semiannually
Magnesium	6010B	mg/L	Semiannually
Calcium	6010B	mg/L	Semiannually

1. Or most recently approved United States Environmental Protection Agency (US EPA) method that provides the lowest practicable detection limits. All metals must be field filtered before laboratory analysis.  
2. mg/L – milligrams per liter; µmhos/cm – micromillihos per centimeter; °F/C – degrees Fahrenheit/Centigrade; NTU – nephelometric turbidity units

b. Groundwater

Groundwater monitoring samples shall be collected from monitoring wells shown on Figure 1 and analyzed for the following:

**TABLE 2 – Groundwater Monitoring**

<b>Parameters</b>	<b>Method<sup>1,2</sup></b>	<b>Units<sup>3</sup></b>	<b>Frequency</b>
Groundwater Elevations	Sounder	Feet	Semiannually
Temperature	Field	°F/C	Semiannually
Electrical Conductivity (EC)	Field	µmhos/ cm	Semiannually
pH	Field	pH Units	Semiannually
Chloride	300.0	mg/L	Semiannually
Nitrate (as Nitrogen)	300.0	mg/L	Semiannually
Total Dissolved Solids	160.1	mg/L	Semiannually
Sulfate	300.0	mg/L	Semiannually
Manganese	6010B	mg/L	Semiannually
Sodium	6010B	mg/L	Semiannually
Barium	6010B	mg/L	Semiannually
Lead	6010B	mg/L	Semiannually
Selenium	6010B	mg/L	Semiannually
Arsenic	6010B	mg/L	Semiannually
Potassium	6010B	mg/L	Semiannually
Nickel	6010B	mg/L	Semiannually
Aluminum	6010B	mg/L	Semiannually
Magnesium	6010B	mg/L	Semiannually
Calcium	6010B	mg/L	Semiannually

1. Or most recently approved United States Environmental Protection Agency (US EPA) method that provides the lowest practicable detection limits. All metals must be field filtered before laboratory analysis.

2. Statistical and non-statistical assessment methods, as required by **Part III**, must be used to evaluate the sampling results of laboratory-derived parameters.

3. mg/L – milligrams per liter; µmhos/cm – micromillihos per centimeter; °F/C – degrees Fahrenheit/Centigrade; NTU – nephelometric turbidity units

c. Leachate Monitoring

The LCRS sump shall be inspected weekly for liquids. Upon detection of liquid in a previously dry LCRS, the Discharger shall sample and analyze the LCRS liquid for the constituents listed in Table 3. If the liquid is determined to be leachate, the Discharger shall follow the steps outlined in WDR Specification C.17.

**TABLE 3 – LCRS Sampling**

<b>Parameters</b>	<b>Method<sup>1</sup></b>	<b>Units<sup>2</sup></b>	<b>Frequency<sup>3</sup></b>
Flow Rate	Calculated	gallons/month	Monthly
Temperature	Field	°F/C	Monthly
Electrical Conductivity (EC)	Field	µmhos/ cm	Monthly
pH	Field	pH Units	Monthly
Chloride	300.0	mg/L	Monthly
Nitrate (as Nitrogen)	300.0	mg/L	Monthly
Total Dissolved Solids	160.1	mg/L	Monthly
Sulfate	300.0	mg/L	Monthly
Manganese	6010B	mg/L	Monthly
Sodium	6010B	mg/L	Monthly

Parameters	Method <sup>1</sup>	Units <sup>2</sup>	Frequency <sup>3</sup>
Barium	6010B	mg/L	Monthly
Lead	6010B	mg/L	Monthly
Selenium	6010B	mg/L	Monthly
Arsenic	6010B	mg/L	Monthly
Potassium	6010B	mg/L	Monthly
Nickel	6010B	mg/L	Monthly
Aluminum	6010B	mg/L	Monthly
Magnesium	6010B	mg/L	Monthly
Calcium	6010B	mg/L	Monthly
1. Or most recently approved United States Environmental Protection Agency (US EPA) method that provides the lowest practicable detection limits. All metals must be field filtered before laboratory analysis. 2. mg/L – milligrams per liter; $\mu$ mhos/cm – micromillihos per centimeter; °F/C – degrees Fahrenheit/Centigrade; NTU – nephelometric turbidity units 3. Monthly when liquids are present. If no liquid is present, sampling is not required.			

a. Unsaturated Zone

The pan lysimeter shall be checked weekly for liquid. Upon detection of liquid in a previously dry lysimeter, the Discharger shall sample and analyze the liquid for the constituents listed in Table 4. If the liquid is determined to be leachate, the Discharger shall follow the steps outlined in WDR Specification C.17. including ceasing discharge into the surface impoundment.

**TABLE 4 – Lysimeter Sampling**

Parameters	Method <sup>1</sup>	Units <sup>2</sup>	Frequency <sup>3</sup>
Flow Rate	Calculated	gallons/month	Monthly
Temperature	Field	°F/C	Monthly
Electrical Conductivity (EC)	Field	$\mu$ mhos/ cm	Monthly
pH	Field	pH Units	Monthly
Chloride	300.0	mg/L	Monthly
Nitrate (as Nitrogen)	300.0	mg/L	Monthly
Total Dissolved Solids	160.1	mg/L	Monthly
Sulfate	300.0	mg/L	Monthly
Manganese	6010B	mg/L	Monthly
Sodium	6010B	mg/L	Monthly
Barium	6010B	mg/L	Monthly
Lead	6010B	mg/L	Monthly
Selenium	6010B	mg/L	Monthly
Arsenic	6010B	mg/L	Monthly
Potassium	6010B	mg/L	Monthly
Nickel	6010B	mg/L	Monthly
Aluminum	6010B	mg/L	Monthly
Magnesium	6010B	mg/L	Monthly
Calcium	6010B	mg/L	Monthly
1. Or most recently approved United States Environmental Protection Agency (US EPA) method that provides the lowest practicable detection limits. All metals must be field filtered before laboratory analysis. 2. mg/L – milligrams per liter; $\mu$ mhos/cm – micromillihos per centimeter; °F/C – degrees Fahrenheit/Centigrade; NTU – nephelometric turbidity units 3. Monthly when liquids are present. If no liquid is present, sampling is not required.			

3. Groundwater Flow Rate and Direction:

- a. For each monitored groundwater body, the Discharger must measure the water elevation in every well, at least semiannually, including the times of expected highest and lowest elevations of the water level, and determine the presence of vertical gradients, and groundwater flow rate and direction for the respective groundwater body. Groundwater elevations for all wells in a given groundwater body must be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction.
- b. The Discharger must compare observed groundwater characteristics with those from previous determinations, noting the appearance of any trends and of any indications that a change in the hydrogeologic conditions beneath the site has occurred.

4. Sample Procurement Limitation:

For any given monitored medium, the Discharger must collect samples from Monitoring Points with a span not exceeding 30 days within a given Monitoring Period and collect samples in a manner that ensures sample independence to the greatest extent feasible [§2550.7(e)(12)(B) of Article 5].

## **PART II: SAMPLE COLLECTION AND ANALYSIS**

### **A. SAMPLING AND ANALYTICAL METHODS**

The Discharger must collect, store, and analyze samples according to the most recent version of Standard US EPA methods (US EPA publication "SW-846"), and in accordance with a sampling and analysis plan approved by the Water Board's Executive Officer. A laboratory certified for these analyses by the State of California Environmental Laboratory Program must perform all water analyses and they must identify the specific methods of analysis. The director of the laboratory whose name appears in the certification must supervise all analytical work in his/her laboratory and must sign reports of such work submitted to the Water Board. In addition, the Discharger is responsible for seeing that the laboratory analysis of samples from Monitoring Points meets the following restrictions:

1. The methods of analysis and the detection limits used must be appropriate for the expected concentrations. For detection monitoring of any constituent or parameter that is found in concentrations which produce more than 90 percent non-numerical determinations (i.e., trace) in historical data for that medium, the analytical method having the lowest Method Detection Limit (MDL) must be selected.

2. Trace results (results falling between the MDL and the Practical Quantitation Limit [PQL]) must be reported as such.
3. The laboratory must derive MDLs and PQLs for each analytical procedure, according to State of California laboratory accreditation procedures. Both limits are defined in **Part V** and must reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. If the laboratory suspects that, due to a change in matrix or their effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived values, the results must be flagged accordingly, and an estimate of the limit actually achieved must be included.
4. Report Quality Assurance and Quality Control (QA/QC) data along with the sample results to which it applies. Also report sample results that are unadjusted for blank results or spike recovery. The QA/QC data submittal must include:
  - a. Method, equipment, and analytical detection limits;
  - b. Recovery rates, an explanation for any recovery rate that is outside the US EPA-specified recovery rate;
  - c. Results of equipment and method blanks;
  - d. Results of spiked and surrogate samples;
  - e. Frequency of quality control analysis;
  - f. Chain of custody logs; and
  - g. Name and qualifications of the person(s) performing the analyses.
5. Report and flag (for easy reference) QA/QC analytical results involving detection of common laboratory contaminants in associated samples.
6. Identify, quantify, and report, to a reasonable extent, non-targeted chromatographic peaks. Perform second column or second method confirmation procedures when significant unknown peaks are encountered to identify and more accurately quantify the unknown analyte(s).

## **B. CONCENTRATION LIMIT DETERMINATION**

1. For the purpose of establishing Concentration Limits for Monitoring Parameters detected in greater than 10 percent of a medium's samples, the Discharger must:
  - a. Statistically analyze existing monitoring data (**Part III**), and propose, to the Executive Officer, statistically derived Concentration Limits for each Monitoring Parameter at each Monitoring Point for which sufficient data exist.
  - b. In cases where sufficient data for statistically determining Concentration Limits do not exist, the Discharger must collect samples and analyze for Monitoring Parameter(s), which require additional data. Once sufficient data are obtained, the Discharger must submit proposed Concentration Limit(s) to the Executive Officer for approval. This procedure must take no longer than two calendar

- years.
- c. Sample and analyze new Monitoring Points, including any added by this Order, until sufficient data are available to establish a proposed Concentration Limit for all Monitoring Parameters. Once sufficient data are obtained, the Discharger must submit the proposed Concentration Limit(s) to the Executive Officer for approval. This procedure must take no longer than two calendar years.
2. Once established, review concentration limits a minimum of annually. Propose new concentration limits, when appropriate.

### **C. RECORD MAINTENANCE**

The Discharger must maintain records in accordance with CCR Title 27 §21720(f), including maintenance and retention of analytical records for a minimum of five years by the Discharger or laboratory. The Discharger must extend the period of retention during the course of any unresolved litigation or when requested by the Executive Officer. Such records must show the following for each sample:

1. Identity of sample and of the Monitoring Point from which it was taken, along with the identity of the individual who obtained the sample.
2. Date and time of sampling.
3. Date and time that analyses were started and completed, and the name of the personnel performing each analysis.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.
5. Results of analyses, MDL, and PQL for each analysis.
6. A complete chain of custody log.

## **PART III: STATISTICAL AND NON-STATISTICAL ANALYSIS OF DATA**

### **A. STATISTICAL ANALYSIS**

For Detection Monitoring, the Discharger must use statistical methods to analyze Monitoring Parameters that exhibit concentrations that equal or exceed their respective MDL in at least 10 percent of applicable historical samples. The Discharger may propose and use any statistical method that meets the requirements of CCR Title 27, §20414(e)(7). All statistical methods and programs proposed by the Discharger are subject to Executive Officer approval.

## B. NON-STATISTICAL METHOD

For Detection Monitoring, the Discharger must use the following non-statistical method for analyzing constituents, which are detected in less than 10 percent of applicable historical samples. This method involves a two-step process:

1. From constituents to whom the method applies, compile a specific list of those constituents, which exceed their respective MDL. The list must be compiled based on either data from the single sample or in cases of multiple independent samples, from the sample, which contains the largest number of constituents.
2. Evaluate whether the listed constituents meet either of two possible triggering conditions. Either the list from a single well contains two or more constituents, or contains one constituent, which equals or exceeds its Practical Quantitation Limit. If either condition is met, and the compound is not a known laboratory artifact, the Discharger must conclude that a release is tentatively indicated and must immediately implement the appropriate re-test procedure under **Part III.C**.

## C. RE-TEST PROCEDURE

1. In the event that the Discharger concludes that a release has been tentatively indicated, the Discharger must carry out the reporting requirements of **Part IV.C.2** and, within 30 days of receipt of analytical results, collect two new suites of samples for the indicated Monitoring Parameter(s) at each indicating Monitoring Point, collecting at least as many samples per Monitoring Point as were used for the initial test.
2. Analyze each of the two suites of re-test analytical results using the same statistical method (or non-statistical comparison) that provided the tentative indication of a release. If the test results of either (or both) of the re-tested data suites confirm the original indication, the Discharger must conclude that a release has been discovered and must carry out the requirements of **Part IV.C.4**.
3. The Discharger must carry out re-tests only for the Monitoring Point(s) for which a release is tentatively indicated, and only for the Monitoring Parameter(s) which triggered the indication.

## PART IV: REPORTING

### A. MONITORING REPORT

The Discharger must submit a Monitoring Report semiannually by **January 31 and July 31** of each year. Submit the Monitoring Reports in an electronic format, with transmittal letter, text, tables, figures, laboratory analytical data, and appendices in PDF format (one PDF for the entire report). The Discharger is required to upload the full Monitoring Report into Geotracker, as stipulated by California State law. The

Monitoring Report must address all facts of the surface impoundments' monitoring program. The Monitoring Report must include, but should not be limited to the following:

1. Letter of Transmittal:

A letter transmitting the essential points must accompany each report. The letter must include a discussion of violations caused by the surface impoundments since submittal of the last such report. If the Discharger has not observed any new violations since the last submittal, the Discharger must state this in the transmittal letter. Both the Monitoring Report and the transmittal letter must be signed as follows: for private facilities, a principal executive officer at the level of vice president; for public agencies, the director of the agency. Upon Water Board Executive Officer approval, the cited signature can be by a California Registered Civil Engineer, or Certified Engineering Geologist, or Professional Geologist who has been given signing authority by the cited signatories. The transmittal letter must contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

2. Compliance Summary:

The summary must contain at least a discussion of compliance with concentration limits, release indications, and any corrective actions taken.

3. Graphical Presentation of Data:

For each Monitoring Point in each medium, submit, in graphical format, the complete history of laboratory analytical data. Graphs must effectively illustrate trends and/or variations in the laboratory analytical data. Each graph must plot a single constituent concentration over time at one (for intra-well comparison) or more (for inter-well comparisons) Monitoring Points in a single medium. Where applicable, include Maximum Contaminant Levels (MCLs) and/or concentration limits along with graphs of constituent concentrations. When multiple samples are taken, graphs must plot each datum, rather than plotting mean values.

The Discharger must also determine horizontal gradients, groundwater flow rate, and flow direction for each respective groundwater body. Present this data on a figure that depicts groundwater contours and flow directions as well as gradient. Include one figure for each water level measuring period in the semiannual monitoring report.

4. Corrective Action Summary:

Discuss significant aspects of any corrective action measures conducted during the Monitoring Period and the status of any ongoing corrective action efforts, including constituent trend analysis. Calculate pollutant load removed from the impacted media (water, gas, leachate) by mass removal system(s). Base the mass removal calculations on actual analytical data as required by **Part I.F.**

Present discussion and indications, relating mass removal data to the violation the corrective action is addressing.

5. Laboratory Results:

Summarize and report laboratory results and statements demonstrating compliance with **Part II**. Include results of analyses performed at the surface impoundments that are outside of the requirements of this Monitoring and Reporting Program.

6. Sampling Summary:

- a. For each Monitoring Point addressed by the report, a description of: 1) the method and time of water level measurement, 2) the method of purging and purge rate and well recovery time, and 3) field parameter readings.
- b. For each Monitoring Point addressed by the report, a description of the type of sampling device used, its placement for sampling, and a description of the sampling procedure (number of samples, field blanks, travel blanks, and duplicate samples taken; the date and time of sampling; the name and qualification of the person actually taking the samples; and description of any anomalies).

7. Leachate Collection and Detection Systems:

A summary of the total volume of leachate collected each month since the previous Monitoring Report for both the leachate collection and leachate detection systems. Also, include fluid level measurements in the LCRS(s) along with transducer calibration records. Tabulate and graph the LCRS(s) fluid level measurements and fluid volumes in the semiannual reports.

8. Standard Observations:

A summary of Standard Observations (**Part I**) made during the Monitoring Period.

9. Map(s):

The base map for the Monitoring Report must consist of a current aerial photograph or include relative topographical features, along with Monitoring Points and features of the surface impoundment facility.

## **B. ANNUAL SUMMARY REPORT**

The Discharger must submit an annual report to the Water Board covering the previous monitoring year. The annual Monitoring Period ends on December 31 each year. Submit this Annual Summary Report no later than January 31 of each year. The Discharger may combine the Annual Summary Report with the Second Semiannual Monitoring Report of the year. The annual report must include the information outlined in **Part IV. A.** above and the following:

1. Discussion:  
Include a comprehensive discussion of the compliance record as it relates to Waste Discharge Requirements Order No. R3-2012-0225, a review of the past year's significant monitoring system and operational changes, a summary of corrective action results and milestones, and a review of construction projects, with water quality significance, completed or commenced in the past year or planned for the upcoming year.
2. Statistical Limit Review:  
The Discharger must review the statistically derived concentration limits a minimum of annually, and revise them as necessary. The Discharger must discuss data collected during the past year and consider for inclusion in, and determination of, proposed limits for the coming year. For statistical limits that are changed from the previous year, include a comprehensive discussion of the proposed limit for Executive Officer review and consideration.
3. Analytical Data:  
Complete historical analytical data for detected analytes presented in tabular form in Excel™ format or in another file format acceptable to the Executive Officer.
4. Leachate Collection and Detection System:  
The Discharger must submit the results of the annual leachate collection and leachate detection system testing, as required by **Part I.F.** Submit annually testing that shows the leachate is non-hazardous, if leachate is used for dust control.
5. Map(s):  
A map, or set of maps, that indicate(s) the type of cover material in place (final, long-term intermediate, or intermediate) over inactive and completed areas.

### C. CONTINGENCY RESPONSE

1. Leachate leak: If leachate is detected in the vadose zone monitoring system of a surface impoundment (indicating a leak in the containment structures) the Discharger shall:
  - a. Immediately cease discharge of waste, excluding leachate to the surface impoundment, until the leaks can be found and repaired.
  - b. Verbally notify the Regional Board that the containment structures have failed within 24 hours.
  - c. Submit written notification of the release to the Regional Board within seven days, the notification should include a time schedule to repair the containment structures.
  - d. The discharge of wastes to the surface impoundment shall not resume until the Regional Board has determined that repairs to the liners are complete and there is no further threat to water quality.

2. Initial Release Indication Response:

Should the initial statistical or non-statistical comparison (under **Part III. A or B**) indicate that a new release is tentatively identified, the Discharger must:

- a. Within 24 hours, notify the Water Board verbally or by email of the Monitoring Point(s) and constituent(s) or parameter(s) involved;
- b. Provide written notification by certified mail within seven days of such determination; and
- c. Either of the following:
  - i. Carry out a discrete re-test in accordance with **Part III.C**. If the re-test confirms the existence of a release or the Discharger fails to perform the re-test, the Discharger must carry out the requirements of **Part IV.C.4**. In any case, the Discharger must inform the Water Board of the re-test outcome within 24 hours of results becoming available, following up with written results submitted by certified mail within seven days, or;
  - ii. Make a determination, in accordance with CCR Title 27, §20420(k)(7), that a source other than the surface impoundment(s) caused the release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation, or by natural variation in the groundwater, surface water, or the unsaturated zone.

3. Physical Evidence of a Release:

If either the Discharger or the Executive Officer determines that there is significant physical evidence of a new release pursuant to CCR Title 27, §20385(a)(3), the Discharger must conclude that a release has been discovered and must:

- a. Within seven days notify the Executive Officer of this fact by certified mail (or acknowledge the Executive Officer's determination);
- b. Carry out the requirements of **Part IV.C.4** for potentially-affected medium; and
- c. Carry out any additional investigations stipulated in writing by the Executive Officer for the purpose of identifying the cause of the indication.

4. Release Discovery Response:

If the Discharger concludes that a new release has been discovered the following steps must be carried out:

- a. Within seven days of receiving the laboratory analytical results, the Discharger must notify the Executive Officer, by certified mail, of the concentration of Monitoring Parameter at each Monitoring Point. This notification must include a synopsis showing, for each Monitoring Point, those constituents that exhibit an unusually high concentration;
- b. The Discharger must, within 90 days of discovering the release, submit to the Executive Officer a Revised Report of Waste Discharge proposing an

- Evaluation Monitoring and Reporting Program that meets the requirements of CCR Title 27, §20420 and §20425 by committing to install at least one monitoring well directly down gradient of the center of the release;
- c. The Discharger must, within 180 days of discovering the release, submit to the Executive Officer a preliminary engineering feasibility study meeting the requirements of CCR Title 27, §20420; and
  - d. The Discharger must immediately begin delineating the nature and extent of the release by installing and monitoring assessment wells as necessary to assure that the Discharger can meet the requirements of CCR Title 27, §20425 to submit a delineation report within 90 days of when the Executive Officer directs the Discharger to begin the Evaluation Monitoring Program.
5. Release Beyond Facility Boundary:  
Any time the Discharger or the Executive Officer concludes that a new release from a surface impoundment has migrated beyond the facility boundary, the Discharger must notify persons who either own or reside upon the land that directly overlies any part of the plume and are immediately down gradient of the plume (Affected Persons).
- a. Initial notification to Affected Persons must be accomplished within 14 days of making this conclusion and must include a description of the Discharger's current knowledge of the nature and extent of the release.
  - b. Subsequent to initial notification, the Discharger must provide updates to Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
  - c. Each time the Discharger sends a notification to Affected Persons (under a. or b. above), the Discharger must, within seven days of sending such notification, provide the Executive Officer with both a copy of the notification and a current mailing list of Affected Persons.

## **PART V: DEFINITION OF TERMS**

### **A. AFFECTED PERSONS**

Individuals who either own or reside upon the land, which directly overlies any part of that portion of a gas, or liquid phase release that may have migrated beyond the facility boundary.

### **B. CONCENTRATION LIMITS**

The Concentration Limit for any given Monitoring Parameter in a given monitored medium must be either:

1. The constituent's statistically determined background value or tolerance limit, established using an Executive Officer approved method (**Part III**); or

2. In cases where the constituent's MDL is exceeded in less than 10 percent of historical samples, the MDL is the concentration limit defined in **Part II. A.1.**

### **C. MATRIX EFFECT**

Any increase in the MDL or PQL for a given constituent as a result of the presence of other constituents, either of natural origin or introduced through a release, that are present in the sample being analyzed.

### **D. METHOD DETECTION LIMIT (MDL)**

The lowest concentration at which a given laboratory, using a given analytical method to detect a given constituent, can differentiate with 99 percent reliability, between a sample which contains the constituent and one which does not. The MDL must reflect the detection capabilities of the specific analytical procedure and equipment used by the laboratory.

### **F. MONITORED MEDIUM**

Those media that are monitored pursuant to this Monitoring and Reporting Program (groundwater, surface water, liquid, leachate, gas condensate, and other as specified).

### **G. MONITORING PARAMETERS**

A short list of constituents and parameters used for the majority of monitoring activities. The Monitoring Parameters for these surface impoundments are listed in **Part I. F.**

### **H. MONITORING PERIOD (frequency)**

The duration of time, during which a sampling event must occur. The Monitoring Period for the various media and programs is specified in **Part I.F.**

### **I. PRACTICAL QUANTITATION LIMIT (PQL)**

The lowest acceptable calibration standard (acceptable as defined for a linear response, or by actual curve fitting) times the sample extract dilution factor times any additional factors to account for Matrix Effect. The PQL must reflect the quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. PQLs reported by the laboratory must not simply be re-stated from US EPA analytical method manuals. Laboratory derived PQLs are expected to agree closely with published US EPA estimated quantitation limits (EQL).

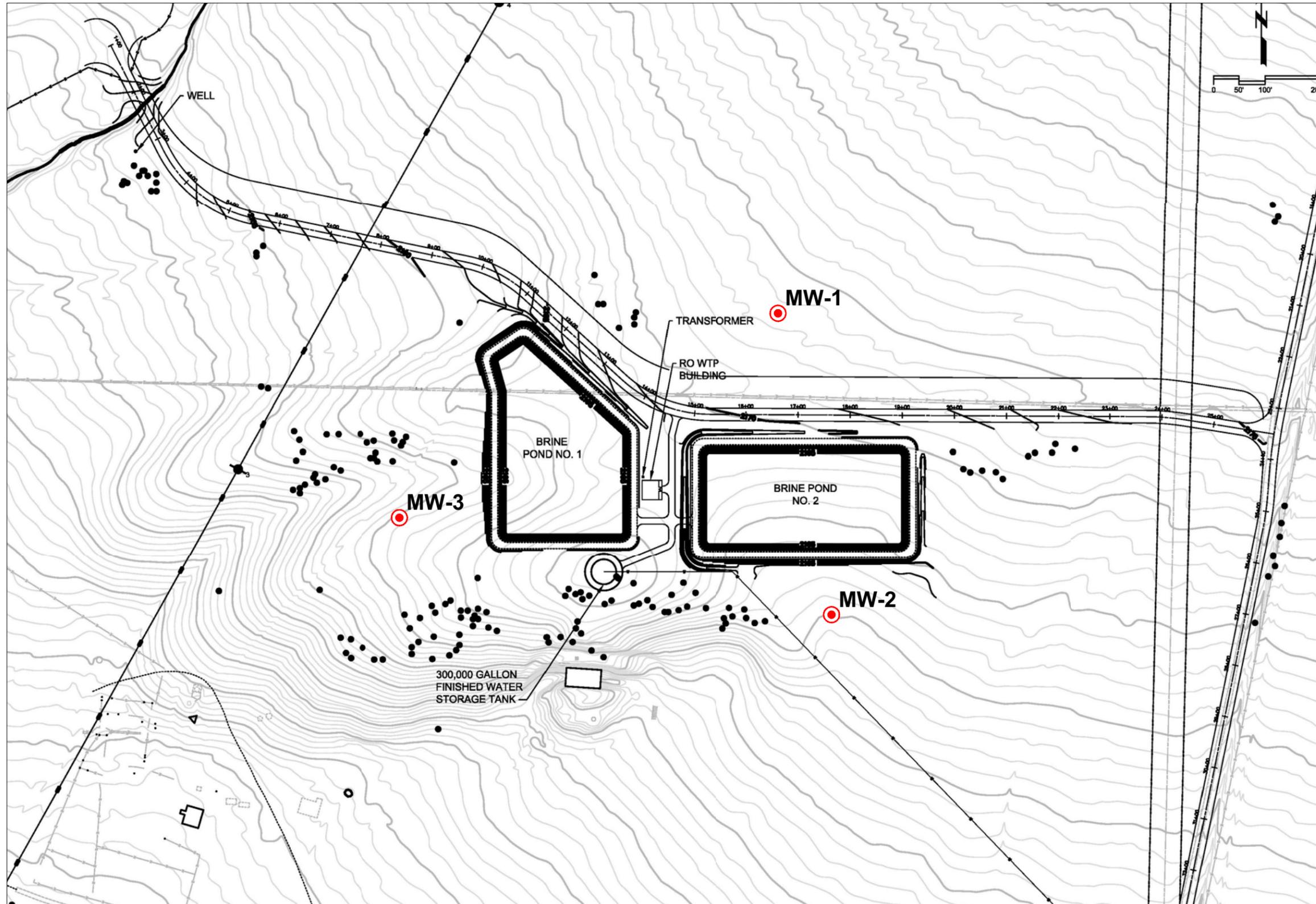
**J. RECEIVING WATERS**

Any surface water, which actually or potentially receives surface runoff, or groundwater, which pass over, through, or under waste materials or contaminated soils.

**ORDERED BY:** \_\_\_\_\_  
**Executive Officer** **Date**

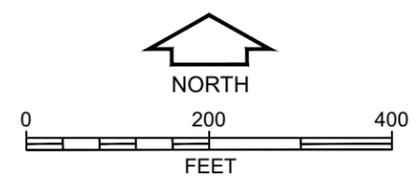
Figure: Surface Impoundment Monitoring Network, Figure 1

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**LEGEND**

Proposed location of Monitoring Well



BASE MAP SOURCE: Site Plan & Facility Index, California Valley Solar Ranch, Phase 1, North Coast Engineering, Inc. (Sheet C-01, 2011).

**WELL SITE PLAN**  
 California Valley Solar Ranch  
 San Luis Obispo, California  
 Figure 1