

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**MEETING OF DECEMBER 9 AND 10, 2009
HESPERIA**

- ITEM:** 6
- SUBJECT:** **NEW WASTE DISCHARGE REQUIREMENTS FOR SIERRA SUNTOWER, LLC, SIERRA SUNTOWER GENERATING STATION, Los Angeles County**
- CHRONOLOGY:** This is a new permit.
- ISSUE:** Sierra SunTower, LLC, has proposed to construct a Class II Surface Impoundment to accept liquid designated waste from a solar generating power plant. The proposed project includes using fresh water (groundwater source) for power plant cooling. This Order accepts the proposed facilities, specifies requirements for the construction and operation of the Surface Impoundment and requires monitoring.
- DISCUSSION:** Sierra SunTower, LLC (Discharger) is proposing to construct, own, and operate a 7.5-megawatt, solar powered, electrical generating power plant on 85 acres of land in the city of Lancaster, Los Angeles County. The project will use multiple, small mirrors to track the sun with high precision and focus the sun's energy to a tower-mounted receiver (boiler). The focused heat converts the water in the boiler into steam. Steam is piped from each thermal boiler to a traditional extraction-condensing steam turbine, which powers a power generator that produces electricity.
- The steam that expands completely through the exhaust of the turbine is cooled and condensed by a water-cooled condenser and an evaporative mechanical draft cooling tower to condense the steam back to water and repeat the cycle back to the receivers. The process loses about one percent of the flow to cooling tower and receiver blowdown in order to maintain the required water or steam quality for the receivers and steam turbine. This blowdown, plus small amounts of reject water, a liquid designated waste, are discharged from the plant's water treatment process to a Class II Surface Impoundment where the wastewater is evaporated. Fresh water, from an onsite groundwater well, will be used as the water source for all water needs including power plant cooling and steam production. The Discharger has proposed to use this fresh water source until December 2010, when the plant will obtain tertiary-treated water for most of its water source from the nearby County Sanitation Districts of Los Angeles (LACSD), Lancaster Water Reclamation Plant (LWRP). Tertiary-treated water will be available

for plant use after the piping and pre-treatment infrastructure is constructed, which is anticipated to be prior to December 2010.

The Discharger has proposed to discharge wastewater into a lined Surface Impoundment that meets California Code of Regulations (CCR), title 27 prescriptive standards. This Order requires the Discharger to install the Surface Impoundment with a double-liner system that is equipped with a leachate collection and removal system (LCRS).

This Order requires the Discharger to monitor the Surface Impoundment pursuant to CCR, title 27, which includes a groundwater monitoring program.

The Discharger has submitted preliminary plans and cost estimates for closure, post-closure maintenance, and corrective action for a reasonably foreseeable release. The Discharger is required to provide financial assurance documents to cover these costs prior to wastewater discharge.

Regional Board staff has solicited comments from the Discharger and interested parties. All comments received have been addressed.

RECOMMENDATION:

Adoption of Order as proposed.

Enclosure:

1. Proposed Board Order

ENCLOSURE 1

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

BOARD ORDER NO. R6V-2009-[PROPOSED]
WDID NO. 6B190811001

WASTE DISCHARGE REQUIREMENTS

FOR

SIERRA SUNTOWER, LLC
SIERRA SUNTOWER GENERATING STATION

Los Angeles County

The California Regional Water Quality Control Board, Lahontan Region (Water Board) finds:

1. Discharger

On November 12, 2008, December 8, 2008, February 17, 2009, March 2 and 3, 2009, May 27, 2009, and August 3, 2009, Sierra SunTower, LLC, submitted information that collectively constitutes a complete Report of Waste Discharge (RWD) for the Sierra SunTower Generating Station Project evaporation pond (Surface Impoundment). Sierra SunTower, LLC, owns the land underlying the Surface Impoundment. For the purpose of this Water Board Order (Order), Sierra SunTower, LLC, is referred to as the "Discharger."

2. Facility

The Sierra SunTower Generating Station Project (Project) Surface Impoundment is the facility that receives and stores wastewater. For the purposes of this Order, the Project's Surface Impoundment is referred to as the "Facility."

3. Order History

These are new Waste Discharge Requirements (WDRs) for the Project.

4. Reason for Action

The Discharger is proposing to construct, own, and operate the Project on 85 acres of land in the city of Lancaster, Los Angeles County. The Project involves the construction of a 7.5-megawatt (MW) solar power generating station for the purpose of generating utility electrical power from solar power. Multiple, small mirrors track the sun with high precision and focus the sun's energy to a tower-mounted receiver (boiler). The focused heat converts the water in the receiver into steam. Steam is piped from each thermal receiver to a traditional extraction-condensing steam turbine, which powers a power generator that produces electricity.

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The steam that expands completely through the exhaust of the turbine is cooled and condensed by a water-cooled condenser and an evaporative mechanical draft-cooling tower to condense the steam back to water and repeat the cycle back to the receivers. The process loses about one percent of the flow to cooling tower and receiver blowdown in order to maintain the required water or steam quality for the receivers and steam turbine. This blowdown, plus small amounts of reject water, are discharged from the plant's water treatment process to a Class II Surface Impoundment where the wastewater is evaporated.

5. Project Location

The Project site is located in the western portion of Antelope Valley in the Mojave Desert at the southeast corner of the intersection of Sierra Highway and West Avenue G within the city limits of Lancaster, in Los Angeles County. The site is approximately 3 miles north-northwest of the Lancaster city center and is shown on Attachment "A," which is made part of this Order.

6. Description of the Surface Impoundment

Process wastewater, generated primarily as spent cooling water by the project operations, will be disposed to a double-lined, Class II Surface Impoundment equipped with a leachate collection and removal system (LCRS). The Surface Impoundment provides an evaporation surface of 2.20 acres, and has an operating capacity of 0.0168-million-gallons per day. The Surface Impoundment, as shown on Attachment "B," which is made part of this Order, is separated into two, 1.1-acre cells, Cell A and Cell B.

The liner system of the Facility is constructed in ascending order as follows and as shown in Attachment "C," which is made a part of this Order:

- a. A 12-inch recompacted subgrade below the bottom liner, which contains no particles larger than 1/4 inch and is compacted to 90 percent of the maximum dry density per American Society for Testing and Materials (ASTM) Standard D1557, and with a hydraulic conductivity of 1×10^{-6} centimeters/second or less.
- b. A 40-mil (0.030-inch) thick polyvinyl chloride geomembrane bottom liner (secondary liner), covered by a 12-ounce geotextile.
- c. A leachate collection and recovery system (LCRS) layer that consists of an 18-inch (average) thick layer of granular drainage material.
- d. A 45-mil (0.045-inch) thick reinforced polypropylene geomembrane upper liner (primary liner).

The geomembranes will be installed, tested, and inspected in accordance with ASTM Standards D4545 and D4437.

7. Engineered Alternative to Prescriptive Standard for the Surface Impoundment

California Code of Regulations (CCR), title 27, includes prescriptive standards for waste management unit construction, and also allows for engineered alternatives to such standards. CCR, title 27, section 20080, subsections b and c, require that alternatives shall only be approved where the Discharger demonstrates that: a) the construction of prescriptive standard is not feasible because it is unreasonably and unnecessarily burdensome and will cost substantially more than alternatives, which meet the criteria, or is impractical and will not promote attainment of applicable performance standards; and b) there is a specific engineered alternative that is consistent with the performance goal of the prescriptive standard and affords equivalent protection against water quality impairment.

The Discharger has proposed to construct the Surface Impoundment pursuant to CCR, title 27 prescriptive standards for Class II waste management units.

8. Authorized Disposal Site

The authorized disposal site for wastewater at the site is the Surface Impoundment. Optional offsite disposal of wastewater to a wastewater treatment plant is not affected by this Board Order.

a. Water Sources

The Discharger intends to generate steam from tertiary disinfected recycled water (tertiary) from the County Sanitation Districts of Los Angeles (LACSD) Lancaster Water Reclamation Plant (LWRP). The water quality of the tertiary water is tabulated in Attachment "D," which is made a part of this Order. The Project also has an onsite well and will use this water supply until the tertiary water becomes available, and the Project is permitted by the Lahontan Water Board to use the tertiary water. After the initiation of the use of tertiary water, the Project will still have the option to use well water as a back-up water source, in case of a disruption in the tertiary water supply. The onsite well will be used to provide water for domestic use. The water quality of the well water is tabulated in Attachment "E," which is made a part of this Order. All water for the operation of the Project is planned to be provided by recycled water from the LWRP.

All source water, including tertiary water from the LWRP and well water, will be treated using a single pass, reverse osmosis (RO) system to purify the cooling tower make-up water. An ultra-filtration system will be used to remove suspended solids and organics from the RO feed water and to

minimize RO fouling. That portion of the purified water that passes through an RO membrane, known as the permeate, will be piped to the fire water storage tank where it will be stored as necessary, re-pressurized and pumped to the cooling tower, demineralization train, fire sprinklers, and fire hydrants.

b. Surface Impoundment Waste Stream Identification

Wastewater discharge streams to the Surface Impoundment are:

- Cooling-tower blowdown make-up water, which is used to control water chemistry in the cooling tower. The make-up water composition allows the cooling tower to cycle the water multiple times before the concentrations of mineral constituents render the water unfit for further use. This stream will also include the boiler-blowdown stream from the receivers, as this stream is routed to the circulating water return line and through the cooling tower. The boiler-blowdown stream may contribute up to 11 percent of the total wastewater stream.
- Wastewater from the outlet of the oil-water separator (OWS), which includes multi-media filter backwash and boiler RO reject wastewater. The OWS takes floor and equipment drains from the Steam Turbine Generator (STG) building, through the floor drains and sumps, and uses gravity to separate the free oil and grease from the water. The separated water is then pumped out of the bottom of the OWS through underground piping to the Surface Impoundment. This flow is intermittent and dependent on the water treatment equipment operation and any maintenance activities going on at the time. The contribution of the OWS is negligible - about 1 percent of the total wastewater stream.
- Ultra-filter backwash (approximately 32 percent of the total waste discharge).
- RO reject (this is the largest waste stream at 57 percent of the total waste discharge).

The average effluent wastewater volume to the Surface Impoundment is predicted to be about 0.0168-million gallons per day (MGD). The peak wastewater discharge to the Surface Impoundment is predicted to be about 0.0273 MGD.

c. Water Quality of the Surface Impoundment Wastewater

The water quality of wastewater discharged to the Surface Impoundment, as predicated by the Discharger, is included in Attachment "D." The constituents found in the waste streams have been demonstrated to be

compatible with the reinforced polypropylene and polyvinyl chloride Surface Impoundment liners.

9. Waste Classification

The wastewater from the Facility is classified as a liquid designated waste. Designated waste is defined in California Water Code (CWC), section 13173, subsection b, as "nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan."

Residual solids remaining after evaporation are expected to contain non-hazardous concentrations of inorganic salts.

10. Waste Management Unit Classification

The Surface Impoundment is classified as a Class II waste management unit, as defined in CCR, title 27, section 20250.

11. Technical and Monitoring Reports

The Discharger must submit technical and monitoring reports in compliance with this Order as described in Monitoring and Reporting Program No. R6V-2009-**[PROPOSED]**, (MRP), which is attached to, and made part of this Order. The fact that the Discharger is seeking coverage under waste discharge requirements issued by the Lahontan Water Board for one or more proposed discharges supports the requirement that the Discharger submit technical and monitoring reports in compliance with this Order.

12. Water Quality Protection Standard

The Water Quality Protection Standard (WQPS) consists of constituents of concern (COCs [including monitoring parameters]), concentration limits, Monitoring Points, and the Point of Compliance. The standard applies over the active life of the Surface Impoundment, closure and post-closure maintenance period, and the compliance period. The constituents of concern, Monitoring Points, and Point of Compliance are described in the MRP. This Order includes a time schedule for the Discharger to propose concentration limits for all constituents of concern.

13. Statistical Methods

Statistical analysis of monitoring data is necessary for the earliest possible detection of measurably significant evidence of a release of waste from the

Facility. CCR, title 27, section 20415, requires statistical data analysis to determine when there is "measurably significant" evidence of a release from the Unit. The attached MRP includes methods for statistical analyses. The monitoring parameters listed in the MRP are believed to be the best indicators of a release from the Facility.

14. Detection Monitoring Program

Pursuant to CCR, title 27, section 20420, the Discharger has proposed a detection monitoring program (DMP) for the Facility. The DMP for the Surface Impoundment consists of monitoring: the leachate collection and removal system (LCRS) and unsaturated zone monitoring wells for the presence of liquid, and groundwater monitoring wells for the presence of constituents of concern. The program to monitor the LCRS and water-bearing media for evidence of a release, as well as the monitoring frequency, is specified in the MRP.

15. Evaluation Monitoring Program

An evaluation monitoring program (EMP) may be required, pursuant to CCR, title 27, section 20425, in order to evaluate evidence of a release if detection monitoring and/or verification procedures indicate evidence of a release. If there is evidence of a release, based on the data collected, the Discharger must submit an engineering feasibility study for corrective action pursuant to CCR, title 27, section 20420(k)(6), must conduct a COC scan meeting CCR title 27 paragraph 20420(k)(1), and must submit a Report of Waste Discharge amendment, under CCR, title 27 paragraph 20420(k)(5), that proposes suitable revisions to the MRP to establish an EMP meeting CCR, title 27, section 20425, and that includes the justification for any extension beyond the 90 days allowed prior to making the submittals required under paragraphs (b), (c), and (d) of that section in response to the release.

16. Corrective Action Program

A corrective action program (CAP) to remediate released wastes from the Facility must be required pursuant to CCR, title 27, section 20430, in response to a release.

17. Surface Impoundment Closure Specifications

The Discharger plans to clean-close the Surface Impoundment at closure, at which time all residual wastes, including liquids, sludges, precipitates, settled solids, liner materials, and adjacent natural geologic materials contaminated by wastes, will be completely removed, transported, and disposed to a facility permitted to accept such wastes. If, after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the Surface Impoundment

may be closed as a landfill pursuant to requirements contained in CCR, title 27, section 21400.

18. Site Geology

The site lies in the Mojave Desert geomorphic province. The Mojave Desert is typified by relatively flat to gently sloping alluvial plains and valleys punctuated by variously eroded and largely irregular trending mountain ranges. The lowest portions of the alluvial plains and valleys are commonly underlain and/or occupied by dry lake beds, the latter of which may become partially inundated by runoff from the nearby mountains and alluvial plains due to seasonal storms. The Project site lies in a dry lake bed of Lake Thompson. The Project site is directly underlain by sandy silts and silty sands with layers of fine-grained silty sands to a depth of about 20 to 25 feet. Below that depth, the alluvium becomes medium-grained to coarse-grained interbedded with fine-grained silty sands to an approximate depth of 75 feet. From about 75 to 120 feet below ground surface (bgs), soils consist of fine-grained sands. Blue clay was encountered between 120 to 180 feet bgs. Below the blue clay, fine- to coarse-grained sand layers occur to a depth of 500 feet. Gray clay was encountered at about 500 to 580 feet bgs.

19. Site Hydrogeology

The Project site is located in the Lancaster Subunit portion of the Antelope Valley Groundwater Basin. The Project site is directly underlain by at least two aquifers separated by a blue clay layer. The shallow aquifer occurs from the shallowest occurrence of groundwater to approximately the top of the blue clay (the Upper Zone, approximately 120 feet bgs). Beneath the blue clay (below approximately 180 feet bgs), a second, or deeper, aquifer (the Lower Zone) is present. On October 21, 2008, water levels were measured in several offsite wells in the vicinity of the Project. Water levels ranged from 67.59 feet bgs at a well located immediately north of, and across, Avenue G from the proposed Surface Impoundment, to 166.95 feet bgs at a well located immediately south of the southeastern property boundary.

Groundwater movement is generally to the south, towards the cities of Lancaster and Palmdale, at a gradient of approximately about 0.0076 ft/ft. This gradient has been altered by aggressive pumping in the southern part of the subbasin and the development of a pumping depression near the City of Palmdale.

Groundwater quality with respect to total dissolved solids (TDS) in the upper aquifer, as described in the Discharger's RWD, indicates TDS concentrations ranging from 170 milligrams per liter (mg/L) to 344 mg/L and nitrate as nitrogen (nitrate-N) concentrations ranging from less than 1 mg/L to 1.65 mg/L. TDS and nitrate-N concentrations within this basin are described in the City of Lancaster's Recharge Feasibility Study (May 2007), which indicates TDS ranges from less than 125 mg/L up to 250 mg/L in wells in the upper aquifer located approximately

1 mile south of the facility and nitrate-N ranges from less than 1 mg/L to less than 5 mg/L.

20. Protection from Storm Events

The Discharger has provided information to demonstrate that the Surface Impoundment is designed to be able to contain the additional volume of water from a 1,000 year 24-hour storm event, in addition to the maximum design volume.

Precipitation and drainage control systems for the Facility have been designed to accommodate the anticipated seasonal volume of precipitation and peak flows from surface runoff under 50-year, 24-hour precipitation conditions. The Discharger has proposed to implement appropriate best management practices (BMPs) to manage stormwater runoff.

21. Site Topography

Site topography is shown on the Location Map in Attachment "A," which is made a part of this Order.

22. Climate

The annual precipitation in the vicinity of the Facility is approximately 7.4 inches. The net evaporation rate is approximately 111 inches annually (Western Regional Climate Center).

23. Land Uses

The majority of land surrounding the Sierra SunTower site is vacant and zoned for industrial uses; however, there are some residences and commercial buildings just north of the Facility. The nearest sanitary sewer pipeline is located approximately 10,000 feet to the south and west. Wastewater services in the area are provided by LACSD's Lancaster Water Reclamation Plant (LWRP), which is located about 3 miles to the north. There are few storm drains in the vicinity of the site, with the closest about 8,000 feet south of the site and 10,000 feet west of the site.

24. Action Leakage Rate

The Discharger has proposed that the Water Board allow an action leakage rate (ALR) of leachate through the upper liner of the double-lined Surface Impoundment into the leachate collection sump. The ALR is based on design dimensions and proposed design specifications of the Surface Impoundment and a 1992 United States Environmental Protection Agency (U.S. EPA) guidance document, *Action Leakage Rates for Leak Detection Systems, Supplemental Background Document*

for the Final Double Liners and Leak Detection Systems Rule for Hazardous Waste Landfills, Waste Piles, and Surface Impoundments. Using equations in the U.S. EPA guidance document and the recommended assumption of one hole per acre of liner, the Discharger performed calculations for the ALR for each of the two cells of the Surface Impoundment. The numerical ALRs are exhibited in Section II.D of the Requirements and Prohibitions of this Order.

This Order requires the Discharger to immediately take steps to locate and repair leak(s) in the liner system and notify the Water Board if the ALR is exceeded, and to cease discharge and submit a time schedule for installation of a new liner if repairs do not result in a leakage rate less than the ALR.

25. Closure and Post-Closure Maintenance of the Surface Impoundment

The Discharger has submitted a preliminary closure plan for the Surface Impoundment, which proposes that the Surface Impoundment will be clean closed. Any water remaining in the Surface Impoundment at closure will be allowed to evaporate. All residual materials in the Surface Impoundment will be removed and transported for disposal to a permitted facility.

26. Reasonably Foreseeable Release from the Surface Impoundment

The Discharger has submitted a preliminary corrective action plan (CAP) to address a reasonably foreseeable release (RFR).

27. Financial Assurance

Prior to discharge of wastewater to the Surface Impoundment, the Discharger is required to provide three separate sureties to cover the costs for closure, post-closure maintenance, and corrective action (for a reasonably foreseeable release) in accordance with CCR, title 27, sections 22207, 22212, and 22222, respectively.

This Order requires the Discharger to obtain and maintain financial instruments and to report yearly to the water board the amount of money available in the financial instruments. The Discharger must demonstrate in an annual report that the amount of financial assurance is adequate, or increase the amount of financial assurance as required under CCR, title 27, sections 22207, 22212, and 22222.

28. Receiving Waters

The receiving waters are the groundwaters of the Antelope Valley Groundwater Basin (Department of Water Resources, Groundwater Basin Number 6-44, Basin Plan Plate 2B, Groundwater Basins, Region 6, South Lahontan).

29. Lahontan Basin Plan

The Water Board adopted a *Water Quality Control Plan for the Lahontan Basin* (Basin Plan), which became effective on March 31, 1995. This Order implements the Basin Plan.

30. Beneficial Groundwater Uses

The present and potential beneficial uses of the groundwaters of Antelope Valley Groundwater Basin (DWR Basin No. 6-44), as set forth and defined in the Basin Plan, are:

- a. (MUN) - Municipal and Domestic Supply,
- b. (AGR) - Agricultural Supply,
- c. (IND) - Industrial Service Supply, and
- d. (FRSH) - Freshwater Replenishment.

31. Power Plant Cooling Policy

On June 19, 1975, the State Water Resources Control Board (State Water Board) adopted a Water Quality Control Policy on the use and disposal of inland waters used for power plant cooling (Power Plant Cooling Policy, Resolution No. 75-58). The policy states that fresh inland waters should only be used for power plant cooling if other sources of water or other methods of cooling would be environmentally undesirable or economically unsound. The Discharger plans to use tertiary disinfected recycled wastewater (tertiary-treated water) from the LACSD Lancaster Water Reclamation Plant (LWRP) to generate steam and use as cooling. However, tertiary water will be supplied to the Project starting in December 2010. The Discharger plans to use groundwater as a source for steam generation and cooling water until tertiary water is available.

The tertiary-treated water will be delivered through an onsite pipeline, a diversion line coming off the main pipeline, and then treated prior to reverse osmosis filtration for plant use. This onsite piping and pretreatment infrastructure has been scheduled for installation in advance of December 2010. This Order requires the Discharger to provide periodic status reports of this infrastructure installation work and updated completion schedules as applicable.

32. Policy with Respect to Water Reclamation in California

On January 6, 1977, the State Water Board adopted a policy with respect to water reclamation in California (Policy with Respect to Water Reclamation in California, Resolution No. 77-01). The State Water Board and Regional Water Boards shall encourage reclamation and reuse of water in water-short areas of the State where reclaimed water can supplement or replace other water supplies without interfering with water rights or instream beneficial uses or placing an

unreasonable burden on present water supply systems. Reclaimed water will replace or supplement the use of fresh water or better quality water.

This Order does not regulate the use of reclaimed water; however, prior to using reclaimed water at this Plant, the Water Board will consider amending water recycling requirements consistent with the California Department of Public Health requirements.

33. Other Considerations and Requirements for Discharge

Pursuant to California Water Code, section 13241, the requirements of this Order take into consideration:

- a. Past, present, and probable future beneficial uses of water.

This Order identifies existing groundwater quality and past, present, and probable future beneficial uses of water, as described in finding Nos. 19 and 30. The proposed discharge will not adversely affect present or probable future beneficial uses of water including municipal and domestic supply, agricultural supply, industrial service supply, and freshwater replenishment.

- b. Environmental characteristics of the hydrographic unit under consideration including the quality of water available thereto.

Finding No. 19 describes the environmental characteristics and quality of water available. As described in finding No. 19, the total dissolved solids concentrations range from 170 mg/L to 344 mg/L and nitrate-N concentrations range from less than 1 mg/L to less than 5 mg/L.

- c. Water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality in the area. The requirements of this Order, including the lining of the Surface Impoundment, will not affect groundwater quality. The Water Board will use its existing authority and these waste discharge requirements to ensure protection of water quality from these discharges.

- d. Economic considerations.

This Order authorizes the Discharger to operate its wastewater disposal system as proposed by the Discharger. The wastewater disposal system is designed to operate in such a way as to not affect the current water quality conditions, and therefore, revised water quality objectives are not being proposed.

- e. The need for developing housing within the region.

The Discharger is not responsible for developing housing within the region. This Order provides for capacity to collect, store, and evaporate wastewater in the Surface Impoundment.

- f. The need to develop and use recycled water.

After December 1, 2010, this Order provides for increased appropriate use of recycled water.

34. California Environmental Quality Act

This project is subject to the provisions of the California Environmental Quality Act (CEQA, Public Resources Code Section 21000 et seq.) in accordance with CCR, title 14, section 15378. The City of Lancaster is the CEQA Lead Agency for this project under the CEQA Guidelines.

An initial study for this site was conducted in April 2008 and then a revised study in August 2009 to allow for potable water use in the cooling towers until December 1, 2010, by the City of Lancaster, in accordance with the provisions of CEQA. The City of Lancaster issued a Notice of Determination (NOD) on October 2, 2009. Based on the revised initial study, the City prepared a Mitigated Negative Declaration (State Clearinghouse Number 2008051004). The NOD and mitigated negative declaration was filed with the Los Angeles County Clerk on November 6, 2009.

The Water Board, acting as a CEQA Responsible Agency in compliance with CCR, title 14, section 15096, subdivision (g)(2), evaluated the potentially significant impacts to water quality identified in the initial study/MND. The Water Board has determined that additional mitigation measures are necessary to prevent potentially significant water quality impacts as a result of wastewater discharge to the Surface Impoundment. Mitigation measures include designing and constructing lined facilities in accordance with CCR, title 27 for a Class II Surface Impoundment to contain the wastewater. This Order also requires a groundwater and unsaturated zone monitoring program that includes a water quality protection standard. The Water Board finds these mitigation measures, and the monitoring of the effectiveness of the mitigation measures, as specified in this Order, are adequate to reduce water quality impacts to less than significant.

35. Notification of Interested Parties

The Water Board has notified the Discharger and all known interested agencies and persons of its intent to adopt WDRs for the project.

36. Consideration of Interested Parties

The Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the Dischargers shall comply with the following:

I. DISCHARGE SPECIFICATIONS

A. Receiving Water Limitations

The discharge of waste must not cause a violation of any applicable water quality standards. The discharge must not cause the presence of the following substances or conditions in groundwaters of the Antelope Valley Groundwater Basin.

1. Bacteria – Groundwaters designated as MUN, the medium concentration of coliform organisms, over any seven-day period, must be less than 1.1 Most Probable Number per 100 milliliters (MPN/100 mL) in groundwaters.
2. Chemical Constituents – Groundwaters designated as MUN must not contain concentrations of chemical constituents in excess of the Maximum Contaminant Levels (MCL) or Secondary MCL (SMCL) based upon drinking water standards specified in the following provisions of CCR, title 22: Table 64431-A of section 64431 (Inorganic Chemicals); Table 64444-A of section 64444 (Organic Chemicals); Table 64449-A of section 64449 (SMCLs – Consumer Acceptance Contaminant Levels), and Table 64449-B of section 64449 (SMCLs – Consumer Acceptance Contaminant Level Ranges). This incorporation-by-reference is prospective including future changes to the incorporated provisions as the changes take effect.

Groundwaters designated as AGR must not contain concentrations of chemical constituents that adversely affect the water for beneficial uses (e.g., agricultural purposes).

Groundwaters must not contain concentrations of chemical constituents that adversely affect the water for beneficial uses.
3. Radioactivity – Groundwater designated MUN must not contain concentrations of radionuclides in excess of limits specified in CCR, title 22, section 64442, Table 64442, and section 64443, Table 64443, including future changes as the changes take effect.

4. Taste and Odors – Groundwaters must not contain taste or odor-producing substances in concentrations that cause a nuisance or that adversely affect beneficial uses. For groundwaters designated as MUN, at a minimum, concentrations must not exceed adopted SMCLs as specified in CCR, Title 22, Table 64449-A of section 64449 (SMCLs – Consumer Acceptance Contaminant Level) and Table 64449-B of section 64449 (SMCLs – Consumer Acceptance Contaminant Levels Ranges) including future changes as the changes take effect.
5. Color – Groundwaters must not contain color-producing substances from tracers in concentrations that cause a nuisance or that adversely affect beneficial uses.
6. Toxic Substances – Any presence of toxic substances in concentrations that individually, collectively, or cumulatively cause a detrimental physiological response in humans, plants, animals, or aquatic life is prohibited.

B. Discharge Limitations

1. No hazardous waste, as defined in CCR, title 23, chapter 15, section 2521, must be discharged to the Surface Impoundment.
2. There must be no discharge of waste from the Surface Impoundment to the adjacent land areas.
3. The flow of wastewater to the Surface Impoundment must not exceed a total of 0.0168 MGD for any consecutive 12-month period.
4. The maximum average daily flow rate of wastewater to the Surface Impoundment must not exceed 0.0273 MGD.
5. Direct pipeline discharge to the Surface Impoundment must either be equipped with devices, or must have fail-safe operating procedures, to prevent over-filling. Discharges must be stopped immediately in the event of any containment system failure and the system repaired.

II. REQUIREMENTS AND PROHIBITIONS

A. General

1. The discharge must not cause a pollution as defined in California Water Code, section 13050, or threaten to cause a pollution.

2. There must be no discharge, bypass, or diversion of wastewater from the collection, conveyance, or disposal facilities to adjacent land areas or surface waters.
3. All facilities used for the collection, conveyance, or disposal of waste must be adequately protected against overflow, washout, inundation, structural damage, or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 1,000 years (CCR, title 27, section 20365, Table 4.1).
4. The discharge of hazardous waste to the Surface Impoundment or generation of hazardous waste due to evaporation in the Surface Impoundment is prohibited.
5. The discharge of solid wastes, leachate, wastewater, or any other deleterious materials to the groundwaters of the Antelope Valley Groundwater Basin is prohibited.
6. The Discharge of waste, except to the authorized Surface Impoundment is prohibited.
7. Neither the treatment nor the discharge must cause a nuisance as defined in the California Water Code, section 13050.
8. The discharge of waste in a manner that does not maintain a five-foot separation between the waste and the seasonal high groundwater table is prohibited.
9. The Discharger must at all times maintain adequate and viable financial assurances acceptable to the Water Board Executive Officer for costs associated with closure, postclosure maintenance, and corrective action for all known or reasonably foreseeable releases.

B. Facility

1. The Discharger must immediately notify the Water Board of any flooding, un-permitted discharge of waste off-site, equipment failure, damage to or change in the structural integrity of the proposed ponds, or any other change in site conditions which could impair the integrity of containment control structures.

2. The Discharger must maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with these waste discharge requirements.
3. Surface drainage within the Facility must either be contained on-site or be discharged in accordance with applicable state stormwater regulations. All wastewater must be contained. The Discharger must maintain a Stormwater Pollution Prevention Plan (SWPPP) and Monitoring Program and Reporting Requirements in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all stormwater on-site.

C. Surface Impoundment

1. All lined facilities must be effectively sealed to prevent the exfiltration of liquids. For this project, "effectively sealed" facilities are Class II waste management units that are designed and constructed in accordance with the requirements of CCR, title 27.
2. The Surface Impoundment freeboard, the vertical distance between the liquid surface elevation and the lowest part of the pond dike or the invert of an overflow structure, must be a minimum of two feet at all times, as specified in CCR, title 27, section 20375.

D. Leachate Collection and Removal System

1. If leachate generation in an LCRS of the Surface Impoundment exceeds, or is equal to, the required action leakage rate (ALR) 1,100-gallons per day per 1.1-acre cell (1,000-gallons per day per 1 acre), the Discharger must immediately take steps to locate and repair leak(s) in the liner system and comply with the notice of evidence of response to exceeding the ALR requirements presented in Section IV.B.2. of the MRP. If repairs do not result in a leakage rate less than the required ALR, the Discharger must immediately cease the discharge of waste, including leachate, to the Surface Impoundment and notify the Water Board. The notification shall include a timetable for remedial action to repair the upper liner of the Surface Impoundment or action necessary to reduce leachate production.
2. The depth of leachate in each leachate collection sump must be kept at the minimum depth needed to ensure efficient sump dewatering pump operation.

3. The LCRS must be operated to function without clogging throughout the life of the project including closure and post-closure maintenance periods.
4. The LCRS must be tested at least once annually to demonstrate proper operation.
5. The LCRS must be capable of removing twice the maximum anticipated daily volume of leachate from the waste management unit.
6. Any leachate collected in the LCRS must be returned to the Surface Impoundment.

E. Detection Monitoring Program

The Discharger must maintain a detection monitoring program as required in CCR, title 27, section 20420.

F. Evaluation Monitoring Program

The Discharger must establish an evaluation monitoring program when there is a measurably significant evidence of release as required in CCR, title 27, section 20425.

G. Corrective Action Program

The Discharger must institute a corrective action program as required in CCR, title 27, section 20430.

III. WATER QUALITY MONITORING AND RESPONSE PROGRAMS

A. Water Quality Protection Standard

1. The Discharger must propose to the Water Board at least 180 days before discharge to the Surface Impoundment any new constituents of concern. Before a new discharge commences, the Discharger must estimate the concentration for such constituents within the wastewater stream and submit written statistical method(s) in order to detect a release of such constituents.
2. At any given time, the concentration limit for each monitoring parameter and constituent of concern must be equal to the background value of that constituent.

3. If the Discharger or Executive Officer determines that concentration limits were or are exceeded, the Discharger may immediately institute verification procedures upon such determination as specified below or submit an amended RWD within 90 days of such determination in order to establish an evaluation monitoring program.
4. Monitoring Wells MW-1, MW-2, MW-3 and/or additional wells must be used: to obtain background water quality data, to delineate the point of compliance, and to detect a release from the Surface Impoundment to groundwater.

B. Statistical Methods

1. The Discharger must use approved statistical data analysis methods to evaluate Point of Compliance groundwater data in order to determine measurably significant evidence of a release from the Surface Impoundment. Approved methods may include an intrawell statistical analysis approach proposed by the Discharger.
2. The Discharger must determine, within 45 days after completion of sampling, whether there is measurably significant evidence of a release from the Surface Impoundment at each Monitoring Point. The analysis must consider all monitoring parameters and constituents of concern. The Executive Officer may make an independent finding that there is measurably significant evidence of a release or physical evidence of a release.
3. If there is measurably significant evidence of a release, the Discharger must immediately notify the Water Board by certified mail (see notification procedures contained in the MRP). Subsequently, the Discharger may immediately initiate verification procedures as specified below whenever there is a determination by the Discharger or Executive Officer that there is measurably significant evidence of a release.
4. If the Discharger does not use verification procedures to evaluate evidence of a release, and there is confirmation that there is measurably significant evidence of a release, then the Discharger is required to submit, within 90 days of such confirmation, an amended RWD in order to establish evaluation monitoring (see subsection, II.F, entitled "Evaluation Monitoring Program") or make a demonstration to the Water Board that there is a source other than the Surface Impoundment that caused evidence of a release (see notification procedures contained in the MRP).

C. Nonstatistical Methods

The Discharger must determine whether there is significant physical evidence of a release from the Surface Impoundment. Significant physical evidence may include unexplained volumetric changes in the Surface Impoundment, unexplained stress in biological communities, unexplained changes in soil characteristics, visible signs of leachate migration, unexplained water table mounding beneath or adjacent to the Facility, and/or any other change in the environment that could reasonably be expected to be the result of a release from the Facility (see notification procedures contained in the MRP).

D. Verification Procedures

1. The Discharger must immediately initiate verification procedures as specified below whenever there is a determination by the Discharger or Executive Officer that there is evidence of a release. If the Discharger declines the opportunity to conduct verification procedures, the Discharger must submit a technical report as described below, under the heading Technical Report Without Verification Procedures.
2. The verification procedure must only be performed for the constituent(s) that has shown a measurably significant evidence of a release and must be performed for those Monitoring Points at which a release is indicated.
3. The Discharger must either conduct a composite retest using data from the initial sampling event with all data obtained from the resampling event or must conduct a discrete retest in which only data obtained from the resampling event must be analyzed to verify evidence of a release.
4. The Discharger must report to the Water Board, by certified mail, the results of the verification procedure, as well as all concentration data collected for use in the retest, within seven days of the last laboratory analysis.
5. If the Discharger or Executive Officer verify evidence of a release, the Discharger is required to submit a technical report to the Water Board, pursuant to California Water Code, section 13267(b), within 90 days of such a determination that there is, or was, a release. The report must propose an evaluation monitoring program (see subsection, II.F., entitled, "Evaluation Monitoring Program"), or, make a demonstration to the Water Board that there is a source

other than the Facility that caused evidence of a release (see notification procedures contained in the MRP).

E. Technical Report without Verification Procedures

If the Discharger chooses not to initiate verification procedures after there has been a determination made for evidence of a release, a technical report must be submitted pursuant to the California Water Code, section 13267(b). The report must propose an evaluation monitoring program, or, attempt to demonstrate that the release did not originate from the Facility.

IV. PROVISIONS

A. Standard Provisions

The Discharger must comply with the "Standard Provisions for Waste Discharge Requirements," dated September 1, 1994, in Attachment "F," which is made part of this Order.

B. Monitoring and Reporting

1. Pursuant to California Water Code, section 13267(b), the Discharger must comply with the MRP, as specified by the Executive Officer. The MRP may be modified by the Executive Officer.
2. The Discharger must comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made part of the Monitoring and Reporting Program.

C. Claim of Copyright of Other Protection

Any and all reports and other documents submitted to the Lahontan Water Board pursuant to this request will need to be copied for some or all of the following reasons: 1) normal internal use of the document, including staff copies, record copies, copies for Board members and agenda packets, 2) any further proceedings of the Lahontan Water Board and the State Water Board, 3) any court proceeding that may involve the document, and 4) any copies requested by members of the public pursuant to the Public Records Act or other legal proceeding.

If the Discharger or its contractor(s) claims any copyright or other protection, the submittal must include a notice, and the notice will accompany all documents copied for the reasons stated above. If copyright protection for a submitted document is claimed, failure to expressly grant permission for the copying stated above will render the

document unusable for the Lahontan Water Board's purposes and will result in the document being returned to the Discharger as if the task had not been completed.

D. Closure and Post-Closure Maintenance Plan

The preliminary closure and post-closure maintenance plans must be updated if there is a substantial change in operations or costs for closure. A report must be submitted annually indicating conformance with existing operations. Final plans must be submitted at least 180 days prior to beginning any partial or final closure activities, or at least 120 days prior to discontinuing the use of the site for waste treatment, storage, or disposal, whichever is greater. The final plans must be prepared by or under the supervision of either a California registered civil engineer or a certified engineering geologist.

V. TIME SCHEDULE

A. Financial Assurance Documents

At least 60 days prior to the discharge of wastewater to the Surface Impoundment, the Discharger must submit Instruments of Financial Assurance acceptable to the Water Board and adequate to cover the costs of closure, post-closure monitoring, and a reasonably foreseeable release from the Surface Impoundment.

B. Final Construction Quality Assurance Report

Following the completion of construction of the lined Surface Impoundment, and prior to discharge onto the newly constructed liner system, the final documentation required in CCR, title 27, section 20324(d)(1)(C), must be submitted to the Water Board for review and approval. This report must be submitted to the Water Board **no later than 180 days** after completion of construction activities. The report must be certified by a registered civil engineer or a certified engineering geologist. It must contain sufficient information and test results to verify that construction was in accordance with the submitted design plans and specifications and with the prescriptive standards and performance goals of CCR, title 27.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Board, Lahontan Region, on December 9, 2009.

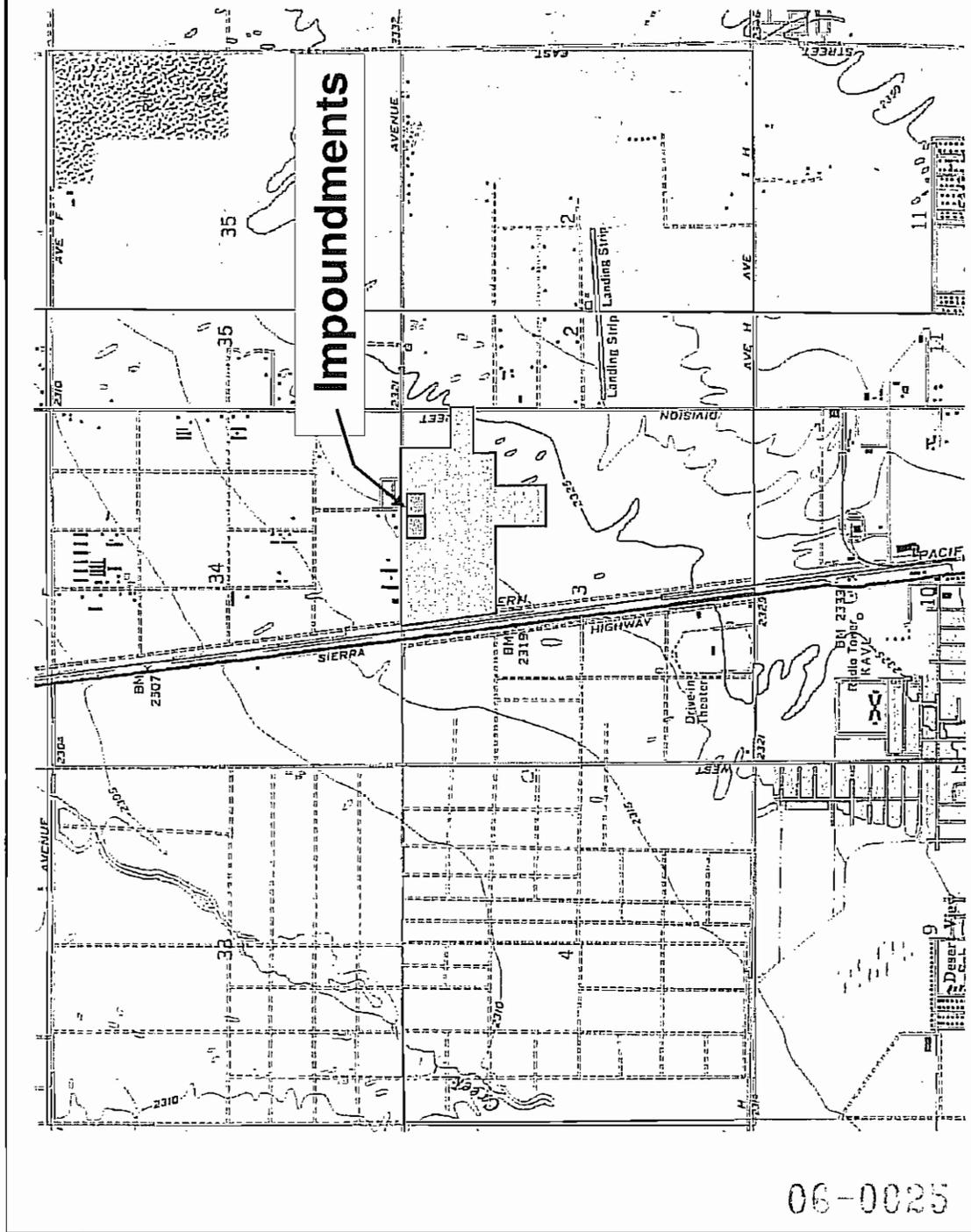
HAROLD J. SINGER
EXECUTIVE OFFICER

- Attachments:
- A. Location Map
 - B. Surface Impoundment Design, Plan View
 - C. Surface Impoundment Design, Cross Section View
 - D. Tertiary Water Quality Data
 - E. Well Water Supply Water Quality Data
 - F. Standard Provisions for Waste Discharge Requirements

CH/rp
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ATTACHMENT A

SIERRA SUNTOWER, LLC
SIERRA SUNTOWER GENERATING STATION
Los Angeles County



Source
USGS LANCASTER EAST AND WEST
15' QUAD SHEETS

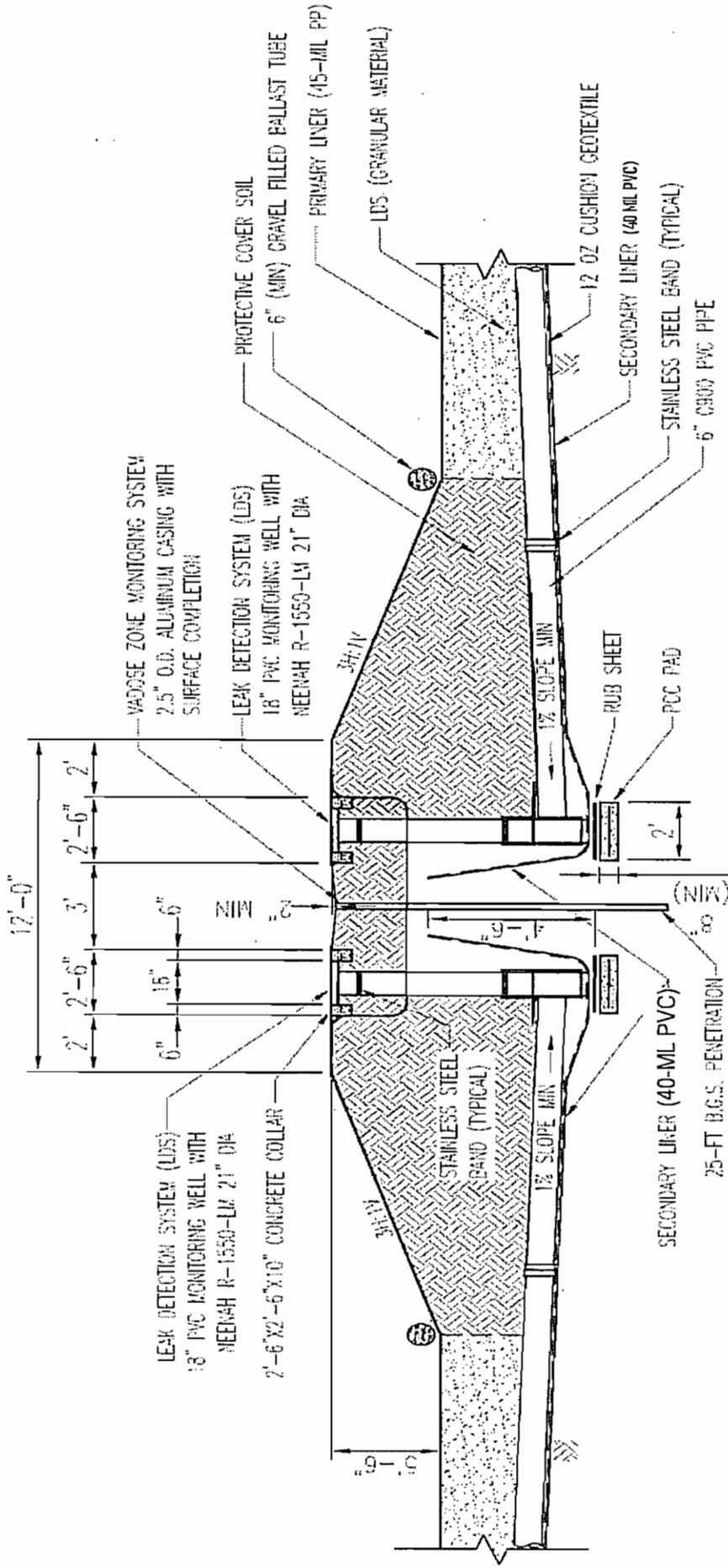
Legend

- EVAPORATIVE PONDS
- PROJECT SITE

06-0025

ATTACHMENT C

SIERRA SUNTOWER, LLC
SIERRA SUNTOWER GENERATING STATION
Los Angeles County



ATTACHMENT D

Tertiary Water Discharge Predictions									
Streams									
Species	Expressed As	Tertiary Water	Tower Blowdown	MF Backwash	R.O. Reject #3	Boiler Blowdown	Plant Outfall	Plant Outfall in lbs./1,000 gal	
pH	---	7.18	8.17	7.18	8.03	11.00	7.90	n/a	
Conductivity (umhos/cm)	---	940	6550.00	940	6260.40	150.00	4311.59	n/a	
TOC (mg/l)	---	4.5	6.04	1.00	1.00	0.01	1.30		
P-Alkalinity (CaCO ₃)	CaCO ₃	0	0.00	0	0.00	0.00	0.00	0.00	0.00
M-Alkalinity (CaCO ₃)	CaCO ₃	126	300.00	126	839.16	100.00	541.89	4.52	
Bromide	Br	0.5	3.02	0.5	3.33	0.01	2.26	0.02	0.02
Chloride	Cl	154	30.22	154	1025.64	0.01	653.51	5.29	0.02
Fluoride	F	0.4	2.42	0.4	2.66	0.01	1.81	0.02	0.02
Nitrate	NO ₃	30.1	6.04	30.1	200.47	0.01	123.89	1.03	0.02
Nitrite	NO ₂	0.5	3.02	0.5	3.33	0.01	2.26	0.02	0.02
Total Phosphate	PO ₄	7.2	6.04	7.2	47.95	0.01	29.95	0.25	0.00
Total Inorganic Phosphate	PO ₄		3.63		0.00	0.01	0.25	0.00	0.00
Dissolved Ortho Phosphate	PO ₄		2.42		0.00	0.01	0.17	0.00	0.00
Resistive Silica	SiO ₂	19.2	179.51	19.2	127.87	30.00	91.91	0.77	0.00
Sulfur	SO ₄	76.2	525.10	76.2	507.49	0.10	345.40	2.91	0.00
Total Hardness:	CaCO ₃	119	566.50	119	792.54	0.01	526.82	4.40	0.00
Calcium Hardness:	CaCO ₃	80.8	454.24	80.8	538.13	0.01	362.44	3.02	0.00
Magnesium Hardness:	CaCO ₃	37.7	112.66	37.7	251.08	0.01	162.34	1.35	0.00
Aluminum	Al	0.05	0.30	0.05	0.33	0.01	0.23	0.00	0.00
Arsenic	As	0.02	0.13	0.02	0.13	0.01	0.09	0.00	0.00
Barium	Ba	0.026	0.39	0.026	0.17	0.01	0.13	0.00	0.00
Beryllium	Be	0.01	0.06	0.01	0.07	0.01	0.05	0.00	0.00
Boron	B	0.362	0.22	0.362	1.41	0.01	1.50	0.01	0.00
Cadmium	Cd	0.01	0.06	0.01	0.07	0.01	0.05	0.00	0.00
Chromium	Cr	0.015	0.06	0.015	0.10	0.01	0.07	0.00	0.00
Cobalt	Co	0.01	0.06	0.01	0.07	0.01	0.05	0.00	0.00
Copper	Cu	0.01	0.06	0.01	0.07	0.01	0.05	0.00	0.00
Iron	Fe	0.052	0.06	1.79	0.55	0.01	0.88	0.01	0.00
Lead	Pb	0.01	0.06	0.01	0.07	0.01	0.05	0.00	0.00
Manganese	Mn	0.028	0.07	0.62	0.19	0.01	0.31	0.00	0.00
Molybdenum	Mo	0.01	0.06	0.01	0.07	0.01	0.05	0.00	0.00
Nickel	Ni	0.01	0.06	0.01	0.07	0.01	0.05	0.00	0.00
Potassium	K	16.5	13.06	16.5	109.89	0.01	68.58	0.57	0.00
Selenium	Se	0.02	0.12	0.02	0.13	0.01	0.09	0.00	0.00
Sodium	Na	141	103.54	141	939.06	0.01	585.34	4.89	0.00
Strontium	Sr	0.31	2.68	0.31	2.06	0.01	1.46	0.01	0.00
Thallium	Tl	0.05	0.50	0.05	0.33	0.01	0.23	0.00	0.00
Tin	Sn	0.014	0.06	0.014	0.09	0.01	0.05	0.00	0.00
Titanium	Ti	0.01	0.06	0.01	0.07	0.01	0.05	0.00	0.00
Vanadium	V	0.014	0.06	0.014	0.09	0.01	0.06	0.00	0.00
Zinc	Zn	0.999	0.46	0.099	0.66	0.01	0.44	0.00	0.00
TDS	TDS	551	1250.92	551	3869.46	73.40	2472.05	20.63	0.00

06-0028

All values are expressed as mg/L, unless otherwise specified.

ATTACHMENT E

Well Water Discharge Predictions										
Species	Expressed As	Well Water	Tower Blowdown	Filter Backwash	R.O. Reject #1	Boiler Blowdown	Plant Outfall	Plant Outfall in lbs./1000 gal.	Streams	
									pH	mg/l
pH	---	8.03	8.17	8.00	8.03	11.00	8.30	mg/l		
Conductivity (umhos/cm)	---	270.00	1890.00	270.00	1080.00	150.00	1464.19	mg/l		
TOC (mg/l)	---	1.00	6.04	1.00	3.92		4.78			
P-Alkalinity (CaCO ₃)	CaCO ₃	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
M-Alkalinity (CaCO ₃)	CaCO ₃	124.00	300.00	124.00	486.08	100.00	373.76	2.70		2.70
Bromide	Br	0.50	3.02	0.50	1.96	0.01	2.39	0.02		0.02
Chloride	Cl	5.00	30.22	5.00	19.60	0.01	23.90	0.20		0.20
Fluoride	F	0.40	2.42	0.40	1.57	0.01	1.91	0.02		0.02
Nitrate	NO ₃	1.00	6.04	1.00	3.92	0.01	4.78	0.04		0.04
Nitrite	NO ₂	0.50	3.02	0.50	1.96	0.01	2.39	0.02		0.02
Total Phosphate	PO ₄	1.00	6.04	1.00	3.92	0.01	4.78	0.04		0.04
Total Inorganic Phosphate	PO ₄	0.60	3.63	0.60	2.35	0.01	2.87	0.02		0.02
Dissolved Ortho Phosphate	PO ₄	0.40	2.42	0.40	1.57	0.01	1.91	0.02		0.02
Reactive Silica	SiO ₂	29.70	179.51	29.70	116.42	20.00	143.27	1.20		1.20
Sulfur	SO ₄	14.00	525.10	14.00	54.88	0.10	336.91	2.81		2.81
Total Hardness	CaCO ₃	94.10	566.90	94.10	374.52	0.01	450.18	1.76		1.76
Calcium Hardness	CaCO ₃	75.40	454.24	75.40	300.09	0.01	360.72	3.01		3.01
Magnesium Hardness	CaCO ₃	18.70	112.66	18.70	74.43	0.01	89.46	0.75		0.75
Aluminum	Al	0.65	3.30	0.05	0.20	0.01	0.24	0.00		0.00
Arsenic	As	0.02	0.13	0.02	0.08	0.01	0.10	0.00		0.00
Barium	Ba	0.07	0.39	0.07	0.25	0.01	0.31	0.00		0.00
Beryllium	Be	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Boron	B	0.04	0.21	0.04	0.15	0.01	0.18	0.00		0.00
Cadmium	Cd	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Chromium	Cr	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Cobalt	Co	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Copper	Cu	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Iron	Fe	0.01	0.06	0.10	0.02	0.01	0.05	0.00		0.00
Lead	Pb	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Manganese	Mn	0.01	0.06	0.10	0.04	0.01	0.06	0.00		0.00
Molybdenum	Mo	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Nickel	Ni	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Potassium	K	2.16	13.06	2.16	8.47	0.01	10.33	0.09		0.09
Selenium	Se	0.02	0.12	0.02	0.08	0.01	0.10	0.00		0.00
Sodium	Na	16.80	101.54	16.80	65.86	0.01	80.31	0.67		0.67
Strontium	Sr	0.44	2.68	0.44	1.74	0.01	2.12	0.02		0.02
Thallium	Tl	0.05	0.30	0.05	0.20	0.01	0.24	0.00		0.00
Tin	Sn	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Titanium	Ti	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Vanadium	V	0.01	0.06	0.01	0.04	0.01	0.05	0.00		0.00
Zinc	Zn	0.08	0.46	0.08	0.30	0.01	0.36	0.00		0.00
TDS	TDS	207.00	1250.92	207.00	812.08	73.40	994.35	8.30		8.30

All values are expressed as mg/L.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**STANDARD PROVISIONS**
FOR WASTE DISCHARGE REQUIREMENTS1. Inspection and Entry

The Discharger shall permit Regional Board staff:

- a. to enter upon premises in which an effluent source is located or in which any required records are kept;
- b. to copy any records relating to the discharge or relating to compliance with the Waste Discharge Requirements (WDRs);
- c. to inspect monitoring equipment or records; and
- d. to sample any discharge.

2. Reporting Requirements

- a. Pursuant to California Water Code 13267(b), the Discharger shall immediately notify the Regional Board by telephone whenever an adverse condition occurred as a result of this discharge; written confirmation shall follow within two weeks. An adverse condition includes, but is not limited to, spills of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance.
- b. Pursuant to California Water Code Section 13260 (c), any proposed material change in the character of the waste, manner or method of treatment or disposal, increase of discharge, or location of discharge, shall be reported to the Regional Board at least 120 days in advance of implementation of any such proposal. This shall include, but not be limited to, all significant soil disturbances.
- c. The Owners/Discharger of property subject to WDRs shall be considered to have a continuing responsibility for ensuring compliance with applicable WDRs in the operations or use of the owned property. Pursuant to California Water Code Section 13260(c), any change in the ownership and/or operation of property subject to the WDRs shall be reported to the Regional Board. Notification of applicable WDRs shall be furnished in writing to the new owners and/or operators and a copy of such notification shall be sent to the Regional Board.
- d. If a Discharger becomes aware that any information submitted to the Regional Board is incorrect, the Discharger shall immediately notify the Regional Board, in writing, and correct that information.
- e. Reports required by the WDRs, and other information requested by the Regional Board, must be signed by a duly authorized representative of the Discharger. Under Section 13268 of the California Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation.

- f. If the Discharger becomes aware that their WDRs (or permit) are no longer needed (because the project will not be built or the discharge will cease) the Discharger shall notify the Regional Board in writing and request that their WDRs (or permit) be rescinded.

3. Right to Revise WDRs

The Regional Board reserves the privilege of changing all or any portion of the WDRs upon legal notice to and after opportunity to be heard is given to all concerned parties.

4. Duty to Comply

Failure to comply with the WDRs may constitute a violation of the California Water Code and is grounds for enforcement action or for permit termination, revocation and re-issuance, or modification.

5. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of the WDRs which has a reasonable likelihood of adversely affecting human health or the environment.

6. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the WDRs. Proper operation and maintenance includes adequate laboratory control, where appropriate, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger, when necessary to achieve compliance with the conditions of the WDRs.

7. Waste Discharge Requirement Actions

The WDRs may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for waste discharge requirement modification, revocation and re-issuance, termination, or a notification of planned changes or anticipated noncompliance, does not stay any of the WDRs conditions.

8. Property Rights

The WDRs do not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

9. Enforcement

The California Water Code provides for civil liability and criminal penalties for violations or threatened violations of the WDRs including imposition of civil liability or referral to the Attorney General.

10. Availability

A copy of the WDRs shall be kept and maintained by the Discharger and be available at all times to operating personnel.

11. Severability

Provisions of the WDRs are severable. If any provision of the requirements is found invalid, the remainder of the requirements shall not be affected.

12. Public Access

General public access shall be effectively excluded from treatment and disposal facilities.

13. Transfers

Providing there is no material change in the operation of the facility, this Order may be transferred to a new owner or operation. The owner/operator must request the transfer in writing and receive written approval from the Regional Board's Executive Officer.

14. Definitions

- a. "Surface waters" as used in this Order, include, but are not limited to, live streams, either perennial or ephemeral, which flow in natural or artificial water courses and natural lakes and artificial impoundments of waters. "Surface waters" does not include artificial water courses or impoundments used exclusively for wastewater disposal.
- b. "Ground waters" as used in this Order, include, but are not limited to, all subsurface waters being above atmospheric pressure and the capillary fringe of these waters.

15. Storm Protection

All facilities used for collection, transport, treatment, storage, or disposal of waste shall be adequately protected against overflow, washout, inundation, structural damage or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 100 years.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

MONITORING AND REPORTING
PROGRAM NO. R6V-2009-[PROPOSED]

WDID NO. 6B190811001

FOR

SIERRA SUNTOWER, LLC
SIERRA SUNTOWER GENERATING STATION

Los Angeles County

I. WATER QUALITY PROTECTION STANDARD

A Water Quality Protection Standard (WQPS) is required by California Code of Regulations (CCR), title 27, section 20390, to assure the earliest possible detection of a release from the Surface Impoundment to the underlying soil and/or groundwater. The WQPS shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

II. MONITORING

The Discharger must comply with the Detection Monitoring Program (DMP) monitoring provisions contained in CCR, title 27, sections 20385 through 20430. The Discharger must also monitor the wastewater flow, wastewater effluent quality, the Surface Impoundment wastewater, and the Surface Impoundment.

A. Wastewater Flow Monitoring

The Discharger must measure and record the following:

1. The volume, in million gallons per day (MGD) of wastewater flow to the Surface Impoundment;
2. The cumulative total of wastewater flow to the Surface Impoundment, in million gallons per month; and
3. The maximum daily flow rate, in MGD, to the Surface Impoundment each month.

B. Wastewater Effluent Monitoring

Annually, the following must be recorded:

1. The sources of wastewater to the Surface Impoundment;
2. The amount and types of chemical additives to the cooling system that may be discharged to the Surface Impoundment; and

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3. A composite effluent grab sample must be collected and analyzed for the following monitoring parameters:

<u>Parameter</u>	<u>Units</u>
chloride	mg/L
sulfate	mg/L
total dissolved solids	mg/L
pH	Units
electrical conductivity	micromhos/cm
oxidation-reduction potential	millivolts
turbidity	Nephelometric Turbidity Units (NTU)

C. Surface Impoundment Monitoring

1. Dikes and Liners

- a) Monthly, measure and record the freeboard, as measured from the top of the lowest part of the dike to the wastewater surface, in the Surface Impoundment. If the Surface Impoundment is dry, indicate that it is dry or empty.
- b) Monthly, the integrity of the Surface Impoundment dikes and liners must be inspected. Should the inspection indicate that any unauthorized discharge has occurred, or may occur, the Water Board must be notified within 48 hours, followed by confirmation in writing.

2. Leachate Collection and Recovery System

The Discharger shall conduct the following inspections and testing of the leachate collection and recovery system (LCRS):

- a) Weekly, visual inspection for liquid in the leakage detection sumps must be conducted. The results of those inspections must be recorded in a permanent log book.
- Any volume of liquid pumped out of the leakage detection sumps must be recorded along with date, time and discharge location, in a permanent log book kept on-site.
 - Upon detection of leachate in a previously dry LCRS (defined here as an event), the Discharger shall immediately collect a grab sample of the leachate and shall sample and analyze the grab samples of the leachate for the parameters, and at the frequencies identified in Table 1 – LCRS Monitoring, in Attachment “A,” which is attached to and made a part of this Monitoring and Reporting Program.

- b) Annually, each LCRS shall be tested to demonstrate proper operation. The results of the testing shall be submitted in the annual monitoring reports. The annual report shall include a description of the method used to test each LCRS.

3. Wastewater Monitoring

Liquid grab samples must be collected at three (3) sample locations in each cell of the Surface Impoundment, composited into one sample per cell by the laboratory, and analyzed for the monitoring parameters and constituents of concern at the frequency identified in Table 2 - Surface Impoundment Monitoring, in Attachment "B," which is attached to and made a part of this Monitoring and Reporting Program.

4. Sludge Monitoring

Annually, in the last quarter of each year, two (2) representative grab samples of the bottom sludge in each pond, if present, must be collected and analyzed for the following constituents:

<u>Parameter</u>	<u>Units</u>	<u>Method</u>
Title 22 metals	mg/L	CCR, title 22, section 66261.24, subsection (a)(2)(A), Table II, list of inorganic persistent and bioaccumulative toxic substances and their soluble threshold limit concentration (STLC) and total threshold limit concentration (TTLC) values.

D. Detection Monitoring

Monitoring of the groundwater and unsaturated zone must be conducted in accordance with the Detection Monitoring Program (DMP). A Monitoring and Reporting Plan and Sampling and Analysis Plan must be submitted 60 days prior to the installation of unsaturated zone monitoring probes and groundwater monitoring wells. No discharge may occur prior to the Executive Officer's acceptance of these plans. All samples, with the exception of field parameters, must be analyzed by a California state-certified laboratory. Using statistical or non-statistical data analysis methods approved in Board Order No. R6V-2009-[PROPOSED] (Board Order), the Discharger must, for each groundwater monitoring event, compare the concentration of each monitoring parameter with its respective concentration limit to determine if there has been a release from the Surface Impoundment. Monitoring must be completed as follows:

1. Unsaturated Zone Monitoring - Neutron Probe

- a) Quarterly, the Discharger must monitor the unsaturated zone beneath the Surface Impoundment. The Discharger must check for moisture below the Surface Impoundment liner using a neutron moisture probe calibrated for use at the site. Background soil moisture for the soil beneath the Surface Impoundment must be measured prior to wastewater discharge. The locations of the proposed neutron probes are shown on Attachment "B" to the WDR. If moisture content is detected above background soil moisture values, taking into account soil characteristics, field verification testing must be performed and the Discharger must notify the Water Board and report physical evidence of a release (see notification procedures below). Field verification testing may include a combination of additional neutron analysis, laboratory analysis of liquids drawn from the neutron probe casing, and visual observation to verify existence of a release.
- b) Annually, the Discharger must submit documentation of instrument calibration and performance checks in the annual report. Performance checks must be a comparison of quarterly results of neutron moisture testing with earlier tests made under comparable conditions to verify proper operation of equipment.

2. Groundwater Monitoring

a) Point of Compliance and Monitoring Points

The Point of Compliance as defined in CCR, title 27, section 20405, is "a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit." Groundwater monitoring wells will be installed at monitoring points upgradient of the Surface Impoundment and at the Point of Compliance as part of the DMP. The Discharger proposes to install three groundwater monitoring wells (MW-1, MW-2, and MW-3) to determine more precisely the groundwater flow direction beneath the Surface Impoundment and, thereby, determine the point of compliance wells, their proposed locations are shown on Attachment "B" to the WDR. Installation of additional groundwater monitoring wells may be required for this DMP.

b) Monitoring Parameters and Constituents of Concern

Quarterly, water samples in monitoring wells MW-1, MW-2, MW-3, and any other monitoring well constructed for groundwater monitoring of the Surface Impoundment, must be collected and analyzed for the monitoring parameters and constituents of concern (COCs) in Table 3 – Quarterly Groundwater Monitoring, in

Attachment "C," which is attached to and made part of this Monitoring and Reporting Program. After the first eight quarters of groundwater monitoring, water samples may be analyzed quarterly for the monitoring parameters only.

Annually, water samples in monitoring wells MW-1, MW-2, MW-3, and any other monitoring well constructed for groundwater monitoring of the Surface Impoundment, must be collected and analyzed for the monitoring parameters and constituents of concern in Table 3 – Quarterly Groundwater Monitoring, in Attachment "C."

c) Concentration Limits

The Discharger has not collected background water quality data for the monitoring parameters and constituents of concern contained in this Monitoring and Reporting Program (MRP). The Discharger must collect at least eight quarters of groundwater quality data to determine background concentration limits for the monitoring parameters and constituents of concern. The Discharger must submit a complete Water Quality Protection Standard, which includes concentration limits that define background water quality for all monitoring parameters and constituents of concern and the point of compliance monitoring points.

d) Aquifer Characteristics

Quarterly, the most recent groundwater potentiometric surface must be illustrated on an 8.5- by 11-inch copy of a site plan showing the parameters listed in the Table - Aquifer Characteristics below, and including the monitoring well locations and the Surface Impoundment.

e) Annually, water in monitoring wells MW-1, MW-2, MW-3, and any other monitoring well constructed for groundwater monitoring of the Surface Impoundment, must be reported in the annual report in tabular and graphical form. Each table must summarize the historical and most recently detected constituent concentrations for all wells sampled, and compare these data to both the WQPS and the Maximum Contaminant Level (MCL) established for each monitoring parameter/COC. Each such graph must be plotted using raw data, and at a scale appropriate to show trends or variations in water quality. For graphs showing the trends of similar constituents, the scale must be the same.

Table - Aquifer Characteristics

<u>Parameter</u>	<u>Units</u>
Depth to Groundwater	Feet below ground surface (bgs)
Static Water Level	Feet above mean sea level
Slope of Groundwater Gradient	Feet/feet
Direction of Groundwater Gradient	Degrees from North
Velocity of Groundwater Flow	Feet/year

III. DATA ANALYSIS

A. General Nonstatistical Data Analysis Method

In order to determine if any new releases have occurred from the Surface Impoundment, evaluation of data will be conducted using non-statistical methods. Non-statistical analysis shall be as follows:

1. Physical Evidence

Physical evidence can include vegetation loss, soil discoloration, or groundwater mounding. Each quarterly report must comment on these physical elements.

2. Time-Series Plots

Quarterly, the Discharger must graph time-series plots of the historical and most recent analytical results from the unsaturated zone monitoring and groundwater monitoring to show any trends in monitoring parameters concentrations through time. Time-series plots must also include applicable MCL and both the mean and median of the WQPS for each respective monitoring parameter.

B. Statistical Data Analysis Method

In order to determine if any new releases have occurred from the Surface Impoundment, evaluation of data will be conducted using statistical methods. The Discharger must propose, in the Water Quality Protection Standard, the statistical test to use for comparing detection monitoring well data to background monitoring data.

IV. RECORD KEEPING AND REPORTING REQUIREMENTS

A. Scheduled Reports To Be Filed With The Water Board

Periodic reports must be submitted to the Water Board as specified below.

1. Quarterly Monitoring Reports

- a) Results of groundwater sampling analysis, including statistical limits for each monitoring parameter at each groundwater monitoring point;
- b) A description and graphical presentation of the velocity and direction of groundwater flow under/around the Surface Impoundment, based upon water-level elevations taken during the collection of the water quality data submitted in the report;
- c) A map and/or aerial photograph showing the locations of observation stations, monitoring points, background monitoring points, and point of compliance along the downgradient boundary of the Surface Impoundment;
- d) The Surface Impoundment monitoring, flow monitoring, effluent monitoring, and an evaluation of the effectiveness of the leachate monitoring and control facilities, and of the runoff/runon control facilities;
- e) Data collected in accordance with the approved Monitoring and Reporting Plan and Sampling and Analysis Plan for unsaturated zone monitoring probes and groundwater monitoring wells; and
- f) A letter transmitting the essential points in each report, including a discussion of any requirement violations found since the last report was submitted and describing actions taken or planned for correcting those violations. If the Discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting this schedule will be satisfactory. If no violations have occurred since the last submittal, this must be stated in the letter of transmittal.

2. Semiannual Monitoring Reports

Until a tertiary-treated water delivery system is in place to provide recycled water as a primary source of water at the Sierra Suntower Generating Station, the Discharger must submit semiannual reports that includes the status of construction activities or other permitting/planning activities related to tertiary water-delivery facilities for use by the power plant. The report must include the anticipated dates of completion, changes in target completion dates, reasons why target dates have been extended, if applicable, and any other appropriate discussions pertaining to the connection and use of tertiary-treated water at the Sierra Suntower Generating Station.

3. Annual Monitoring Reports

The Discharger must submit an annual report to the Water Board. The annual report can be combined with the monitoring report for the last reporting period of that year. If so, the report must include (for that last reporting period) the information under Section IV.A.1, plus the following annual summary information:

- a) A list of all monitoring point/monitoring parameter (MPt/MPar) pairs, by medium, that have exhibited a verified measurably significant increase, together with the respective date (for each) when that increase occurred. Any MPt/Mpar pairs that have shown an increase within that (prior) year shall be bolded-and-underlined. In addition, by medium, list any COCs that have been detected and which are now included with the list of monitoring parameters during that (prior) year, together with the date when that transition occurred.
- b) Time-series data graphs for each MPt/Mpar of the past three years of groundwater, soil gas, and soil moisture analysis. Time-series plots must also include a labeled, horizontal (concentration) line indicating that constituent's MCL (if established), and the median value of that MPt/COC pair concentration limit (background data set).
- c) Four maps, one for each quarter of the last reporting year, showing the groundwater elevation isocontours determined for that quarter, and showing the Surface Impoundment perimeter and the groundwater monitoring point and background monitoring point locations.
- d) Graphical and tabular displays of the monitoring data obtained for the previous calendar year (January – December).

- e) Calibration methods and any flow discrepancies of the wastewater flow meters after calibration is performed.
- f) The compliance record and any corrective actions taken or planned, which may be needed to bring the discharge into full compliance with the discharge requirements.
- g) Evidence that adequate financial assurances for closure, post-closure maintenance, and corrective action for all known or reasonably foreseeable releases is still in effect. Evidence may include a copy of the renewed financial instrument or a copy of the receipt for payment of the financial instrument. Evidence of adequate financial assurance must be signed by the Corporate Officer.
- h) Evidence that the financial assurance amount is adequate or increase the amount of financial assurance by an appropriate amount if necessary, due to inflation, a change in the approved closure plan, or other unforeseen events.
- i) The Discharger must review the preliminary closure plan, post-closure maintenance plan, and corrective action plan for all known or reasonably foreseeable releases annually to determine if significant changes in the operation of the Surface Impoundment warrant an update to any of these plans. Changes to these plans must be submitted to the Water Board in the annual report.

B. Unscheduled Reports To Be Filed With The Water Board

The following reports must be submitted to the Water Board as specified below:

1. Release from the Surface Impoundment

The Discharger must perform the procedures contained in this subsection whenever there is evidence of a release from the Surface Impoundment.

a) Physical or Measurably Significant Evidence of a Release from the Surface Impoundment

The Discharger must immediately notify the Water Board verbally whenever a determination is made that there is physical or measurably significant evidence of a release from the Surface Impoundment. This verbal notification must be followed by written notification via certified mail within seven days of such determination. Upon such notification, the Discharger may initiate verification procedures or demonstrate that another source other

than the Surface Impoundment caused evidence of a release (see below).

The notification must include the following information:

- i. Surface Impoundment that may have released or be releasing;
- ii. General information including the date, time, location, and cause of the release;
- iii. An estimate of the flow rate and volume of waste involved;
- iv. A procedure for collecting samples and description of laboratory tests to be conducted;
- v. Identification of any water-bearing media affected or threatened;
- vi. A summary of proposed corrective actions; and
- vii. For measurably significant evidence of a release – the monitoring parameters and/or constituents of concern that are involved in the measurably significant evidence of a release from the Surface Impoundment; or
- viii. For physical evidence of a release – physical factors that indicate physical evidence of a release.

b) Other Source That May Cause Evidence of a Release From the Surface Impoundment

The Discharger may make a demonstration that a source other than the Surface Impoundment caused evidence of a release. For this case, the Discharger must notify the Water Board of the intention to make this demonstration. The notification must be sent to the Water Board by certified mail within seven days of determining physical or measurably significant evidence of a release.

2. Exceeding the Action Leakage Rate

Exceeding the Action Leakage Rate in Section II.D.1. of this Board Order is an Adverse Condition. The Discharger must immediately notify the Water Board verbally within 24-hours whenever a determination is made that leakage into the LCRS exceeds the Action Leakage Rate. This verbal notification must be followed by written notification via certified mail within 7-days of such determination. This written notification must be followed by a technical report via certified mail within 30-days of such determination. The technical report must describe the actions taken to abate the adverse condition and must describe any proposed future actions to abate the adverse condition.

3. Evaluation Monitoring

The Discharger must, within 90 days of verifying a release, submit a technical report, pursuant to the California Water Code, section 13267, subsection (b), proposing an Evaluation Monitoring Program (EMP). If the Discharger decides not to conduct verification procedures, or decides not to make a demonstration that a source other than the Surface Impoundment is responsible for the release, the release will be considered verified.

The Discharger must, within 90 days of determining "measurably significant" evidence of a release, submit to the Water Board an amended report of waste discharge to establish an evaluation monitoring program meeting the provisions of CCR, title 27, section 20420(k)(5). The report must include the following information:

- a) COC Concentrations — the maximum concentration of each COC at each Monitoring Point as determined during the most recent COC sampling event (i.e., under CCR, title 27, section 20420 (g) or (k)(1));
- b) Proposed Monitoring System Changes — any proposed changes to the water quality monitoring systems at the Surface Impoundment necessary to meet the provisions of CCR, title 27, section 20425;
- c) Proposed Monitoring Changes — any proposed additions or changes to the monitoring frequency, sampling and analytical procedures or methods, or statistical methods used at the Surface Impoundment necessary to meet the provisions of CCR, title 27, section 20425; and
- d) Proposed Delineation Approach — a detailed description of the measures to be taken by the Discharger to assess the nature and extent of the release from the Surface Impoundment.

4. Preliminary Engineering Feasibility Study Report

The Discharger must, within 180 days of verifying the release, submit a Preliminary Engineering Feasibility Study (CCR, title 27, section 20420, subsection (k)[6]) for corrective action.

V. REPORTING

The Discharger must comply with the following reporting requirements:

A. General Provisions

The Discharger must comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, in Attachment "D," which is attached to and made a part of this Monitoring and Reporting Program.

B. Violations

If monitoring data indicate violation of WDRs, the Discharger must provide information indicating the cause of violation(s) and action taken or planned to bring the discharge into compliance.

C. Failure to Furnish Reports

Any person failing or refusing to furnish technical or monitoring reports or falsifying any information provided therein is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation under Section 13268 of the California Water Code.

D. Summary of Reporting Frequency

On January 30, 2010, the first of the regular Quarterly monitoring reports, including any data collected prior to this date, must be submitted to the Water Board. Subsequent monitoring reports must be submitted to the Water Board by the 30th day of the month following each monitoring period, according to the following schedule:

Quarterly Report

<u>Quarter</u>	<u>Monitoring Period</u>	<u>Monitoring Report Due Date</u>
1 st	January 1 — March 31	April 30
2 nd	April 1 — June 30	July 30
3 rd	July 1 — September 30	October 30
4 th	October 1 — December 31	January 30

Semiannual Reports

1 st	January 1 — June 30	July 15
2 nd	July 1 — December 31	January 15

Annual Report

January 1 — December 31 January 30

E. Technical Reports

Pursuant to California Water Code, section 13267. (b):

1. By **April 1, 2010**, the Discharger must submit a technical report discussing the installation of the monitoring system. The report must summarize all work activities associated with the installation of the monitoring system. The report must be certified by a registered civil engineer or a certified engineering geologist. It must contain sufficient information to verify that construction was in accordance with State and/or County well standards.
2. By **December 31, 2011**, the Discharger must propose for approval by the Water Board's Executive Officer a list of monitoring parameters and constituents of concern for the aquifer, including a data analysis method, and a Water Quality Protection Standard, which includes concentration limits that define background water quality for all constituents of concern and for each point of compliance. The report must be certified by a registered civil engineer or a certified engineering geologist.

Ordered by: _____
HAROLD J. SINGER
EXECUTIVE OFFICER

Dated: _____

- Attachments:
- A. Table 1 – LCRS Monitoring
 - B. Table 2 – Surface Impoundment Monitoring
 - C. Table 3 – Quarterly Groundwater Monitoring
 - D. General Provisions for Monitoring and Reporting

ATTACHMENT A

TABLE 1 – LCRS MONITORING		
<u>Parameters</u>	<u>Units</u>	<u>Frequency</u>
<u>Field Parameter</u>		
Flow Rate	gallons per month	Monthly
Specific Conductance	µmhos/cm	Quarterly (unless dry)
Turbidity	NTU	Quarterly (unless dry)
Oxidation-Reduction Potential	millivolts	Quarterly (unless dry)
pH	Units	Quarterly (unless dry)
<u>Monitoring Parameters and Constituents of Concern</u>		
Total Dissolved Solids	mg/L	Once per Event
Fixed Dissolved Solids	mg/L	Once per Event
Volatile Dissolved Solids	mg/L	Once per Event
Alkalinity Series (carbonate, bicarbonate, and hydroxide, and total)	mg/L	Once per Event
Chloride	mg/L	Once per Event
Iron	mg/L	Once per Event
Nitrate (as Nitrogen)	mg/L	Once per Event
Ortho-Phosphate	mg/L	Once per Event
Phosphorous	mg/L	Once per Event
Phosphate	mg/L	Once per Event
Potassium	mg/L	Once per Event
Manganese	µg/L	Once per Event
Magnesium	mg/L	Once per Event
Manganese	mg/L	Once per Event
Molybdenum	mg/L	Once per Event
Sodium	mg/L	Once per Event
Sulfate	mg/L	Once per Event

ATTACHMENT B

TABLE 2 – SURFACE IMPOUNDMENT MONITORING		
<u>Parameters</u>	<u>Units</u>	<u>Frequency</u>
<u>Field Parameter</u>		
Influent Flow Rate	gallons per month	Monthly
Effluent Flow Rate	gallons per month	Monthly
Remaining Capacity	acre-feet	Monthly
Freeboard	feet and tenths	Weekly
Specific Conductance	µmhos/cm	Weekly
Dissolved Oxygen	mg/L	Weekly
Temperature	°F or °C	Weekly
Turbidity	NTU	Weekly
Oxidation-Reduction Potential	millivolts	Weekly
pH	Units	Weekly
<u>Monitoring Parameters and Constituents of Concern</u>		
Total Dissolved Solids	mg/L	Quarterly
Fixed Dissolved Solids	mg/L	Quarterly
Volatile Dissolved Solids	mg/L	Quarterly
Alkalinity Series (carbonate, bicarbonate, and hydroxide, and total)	mg/L	Quarterly
Arsenic	mg/L	Quarterly
Boron	µg/L	Quarterly
Bromide	mg/L	Quarterly
Calcium	mg/L	Quarterly
Chloride	mg/L	Quarterly
Chromium (Total)	µg/L	Quarterly
Chromium (Hexavalent)	µg/L	Quarterly
Fluoride	mg/L	Quarterly
Iron	mg/L	Quarterly
Total Kjeldahl Nitrogen	mg/L	Quarterly
Nitrate (as Nitrogen)	mg/L	Quarterly
Nitrite (as Nitrogen)	mg/L	Quarterly
Ortho-Phosphate	mg/L	Quarterly
Phosphorous	mg/L	Quarterly
Phosphate	mg/L	Quarterly
Potassium	mg/L	Quarterly
Manganese	µg/L	Quarterly
Magnesium	mg/L	Quarterly
Manganese	mg/L	Quarterly
Molybdenum	mg/L	Annually
Selenium	mg/L	Quarterly
Strontium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Sulfate	mg/L	Quarterly

ATTACHMENT C

TABLE 3 – QUARTERLY GROUNDWATER MONITORING		
<u>Parameters</u>	<u>Units</u>	<u>Frequency*</u>
<u>Field Parameter</u>		
Groundwater Elevation	Feet and hundredths, (mean sea level datum)	Quarterly
Specific Conductance	µmhos/cm	Quarterly
Temperature	°F or °C	Quarterly
Turbidity	(NTU)	Quarterly
Oxidation-Reduction Potential	millivolts	Quarterly
pH	Units	Quarterly
<u>Monitoring Parameters and Constituents of Concern</u>		
Total Dissolved Solids	mg/L	Quarterly
Fixed Dissolved Solids	mg/L	Quarterly
Volatile Dissolved Solids	mg/L	Quarterly
Alkalinity Series (carbonate, bicarbonate, and hydroxide, and total)	mg/L	Quarterly
Arsenic	mg/L	Annually
Boron	µg/L	Annually
Bromide	mg/L	Annually
Calcium	mg/L	Annually
Chloride	mg/L	Quarterly
Chromium (Total)	µg/L	Annually
Chromium (Hexavalent)	µg/L	Annually
Fluoride	mg/L	Annually
Iron	mg/L	Annually
Total Kjeldahl Nitrogen	mg/L	Quarterly
Nitrate (as Nitrogen)	mg/L	Quarterly
Nitrite (as Nitrogen)	mg/L	Quarterly
Ortho-Phosphate	mg/L	Annually
Phosphorous	mg/L	Annually
Phosphate	mg/L	Quarterly
Potassium	mg/L	Annually
Manganese	µg/L	Annually
Magnesium	mg/L	Annually
Molybdenum	mg/L	Annually
Selenium	mg/L	Annually
Strontium	mg/L	Annually
Sodium	mg/L	Annually
Sulfate	mg/L	Quarterly

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* All monitoring parameters and constituents of concern must be sampled and analyzed quarterly for the first eight quarters of operations.

ATTACHMENT D

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LAHONTAN REGION

GENERAL PROVISIONS FOR MONITORING AND REPORTING

1. SAMPLING AND ANALYSIS

- a. All analyses shall be performed in accordance with the current edition(s) of the following documents:
 - i. Standard Methods for the Examination of Water and Wastewater
 - ii. Methods for Chemical Analysis of Water and Wastes, EPA
- b. All analyses shall be performed in a laboratory certified to perform such analyses by the California State Department of Health Services or a laboratory approved by the Regional Board Executive Officer. Specific methods of analysis must be identified on each laboratory report.
- c. Any modifications to the above methods to eliminate known interferences shall be reported with the sample results. The methods used shall also be reported. If methods other than EPA-approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Regional Board prior to use.
- d. The Discharger shall establish chain-of-custody procedures to insure that specific individuals are responsible for sample integrity from commencement of sample collection through delivery to an approved laboratory. Sample collection, storage, and analysis shall be conducted in accordance with an approved Sampling and Analysis Plan (SAP). The most recent version of the approved SAP shall be kept at the facility.
- e. The Discharger shall calibrate and perform maintenance procedures on all monitoring instruments and equipment to ensure accuracy of measurements, or shall insure that both activities will be conducted. The calibration of any wastewater flow measuring device shall be recorded and maintained in the permanent log book described in 2.b, below.
- f. A grab sample is defined as an individual sample collected in fewer than 15 minutes.

- g. A composite sample is defined as a combination of no fewer than eight individual samples obtained over the specified sampling period at equal intervals. The volume of each individual sample shall be proportional to the discharge flow rate at the time of sampling. The sampling period shall equal the discharge period, or 24 hours, whichever period is shorter.

2. OPERATIONAL REQUIREMENTS

a. Sample Results

Pursuant to California Water Code Section 13267(b), the Discharger shall maintain all sampling and analytical results including: strip charts; date, exact place, and time of sampling; date analyses were performed; sample collector's name; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.

b. Operational Log

Pursuant to California Water Code Section 13267(b), an operation and maintenance log shall be maintained at the facility. All monitoring and reporting data shall be recorded in a permanent log book.

3. REPORTING

- a. For every item where the requirements are not met, the Discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time, and shall submit a timetable for correction.
- b. Pursuant to California Water Code Section 13267(b), all sampling and analytical results shall be made available to the Regional Board upon request. Results shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.
- c. The Discharger shall provide a brief summary of any operational problems and maintenance activities to the Board with each monitoring report. Any modifications or additions to, or any major maintenance conducted on, or any major problems occurring to the wastewater conveyance system, treatment facilities, or disposal facilities shall be included in this summary.
- d. Monitoring reports shall be signed by:
 - i. In the case of a corporation, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of the facility

from which the discharge originates;

- ii. In the case of a partnership, by a general partner;
 - iii. In the case of a sole proprietorship, by the proprietor; or
 - iv. In the case of a municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.
- e. Monitoring reports are to include the following:
- i. Name and telephone number of individual who can answer questions about the report.
 - ii. The Monitoring and Reporting Program Number.
 - iii. WDID Number.
- f. Modifications

This Monitoring and Reporting Program may be modified at the discretion of the Regional Board Executive Officer.

4. NONCOMPLIANCE

Under Section 13268 of the Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation under Section 13268 of the Water Code.

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