

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

STAFF REPORT FOR REGULAR MEETING OF NOVEMBER 13-14, 2014

Prepared on October 30, 2014

ITEM NUMBER: 21

SUBJECT: Waste Discharge Requirements, Order No. R3-2014-0047, for Cambria Community Services District Class II Surface Impoundment, San Luis Obispo County.

KEY INFORMATION:

Location: Approximately 2 miles north of Cambria along Highway 1
Owner/Operator: Cambria Community Services District (Discharger)
Type of Waste: Non-hazardous designated waste (reverse osmosis brine)
Capacity: Approximately 6.2 million gallons
Disposal: Class II surface impoundment
Liner System: Engineered alternative. Two 60-mil high-density polyethylene (HDPE) liners, one geosynthetic clay liner, leachate collection and removal system, and a vadose zone monitoring system.
Existing Orders: None – new facility
Other Orders: Construction General Permit Order No. 2009-0009-DWQ

This Action: Adopt Waste Discharge Requirements Order No. R3-2014-0047

SUMMARY

Cambria Community Services District (Discharger) provides water supply and wastewater collection and treatment to residents in and around the unincorporated area of Cambria. The Discharger currently serves a population of approximately 6,032 as well as a large number of tourists and visitors to the community. On January 30, 2014, the Discharger's Board of Directors declared a Stage 3 Water Storage Emergency in Cambria. The Discharger relies on groundwater for municipal drinking water supply and drought conditions have limited the recharge of local aquifers. To increase recharge to the municipal drinking water supply aquifer, the Discharger is proposing construction and operation of emergency water facilities at their existing San Simeon well field and percolation pond system property. The emergency project will include construction and operation of an extraction well (existing well 9P7), an Advanced Water Treatment Plant (AWTP), a treated water injection well to the groundwater basin at one of the Dischargers water supply well fields (San Simeon well field), a surface impoundment including a mechanical spray evaporator system (blowers) to enhance evaporation, and three monitoring wells for the surface impoundment (See Figure 1). The Discharger plans to operate the emergency water project for six-month operating periods during severe drought situations.



Figure 1

Central Coast Regional Water Quality Control Board (Water Board) staff proposes Waste Discharge Requirements (WDRs) Order No. R3-2014-0047 (Order or Order No. R3-2014-0047) for the Cambria Community Services District Class II Surface Impoundment (surface impoundment) to specify design and operation requirements. This Order only pertains to the surface impoundment and not the other emergency water supply facilities. The surface impoundment will contain brine wastes from a reverse osmosis system that treats brackish groundwater prior to reinjection of the treated water into the groundwater aquifer used for municipal drinking water supply. The design and operation requirements contained in this proposed Order will protect water quality from wastes discharged into the surface impoundment.

Water Board staff is proposing a separate Order for the Cambria Community Services District Emergency Water Treatment Facility Recycled Water Re-injection Project (Board Item No. 21, Proposed Order No. R3-2014-0050) for the discharge of treated water to the groundwater basin at the San Simeon well field. Separate Orders are proposed because the waste discharge associated with the Class II surface impoundment is significantly different (potential surface water and groundwater impacts from brine discharges) than the waste discharges associated with the groundwater injection for potable water use project (Title 22 recycled water requirements). The surface impoundment must meet or exceed requirements in California Code of Regulations Title 27 (Title 27). The groundwater injection project is subject to California Code of Regulations Title 22 recycled water requirements. The significant differences between the nature of the respective discharges for these two project components make the adoption of

separate Orders necessary to allow Water Board staff to efficiently permit the project to protect water quality and beneficial uses.

DISCUSSION

The Discharger submitted a report of waste discharge on August 29, 2014, to facilitate the issuance of WDRs to authorize the discharge of reverse osmosis brine into a surface impoundment. The Discharger submitted supplemental information and several amendments to the report of waste discharge on September 2, 2014, September 8, 2014, September 12, 2014, and September 16, 2014. Water Board staff considered the report of waste discharge complete on September 17, 2014.

The proposed Order provides a description and includes operational and monitoring requirements for the surface impoundment. The design and construction specifications within the proposed Order meet or exceed the requirements specified in Title 27, which pertain to siting, design, construction, and operation of a Class II surface impoundment.

Designated waste is identified in Title 27, Section 20210, as a nonhazardous waste that consists of, or contains pollutants which, under ambient environmental conditions at the waste management unit, could be released at concentrations in excess of applicable water quality objectives, or that could reasonably be expected to affect beneficial uses of waters of the state. The discharge of reverse osmosis brine could be released at concentrations in excess of applicable water quality objectives and could reasonably be expected to affect beneficial uses of waters of the State if discharged. Therefore, the discharge is a designated waste and, as such, the Discharger must discharge the brine to a Class II surface impoundment pursuant to Title 27.

Facility Description: The Discharger will build the AWTP to supply treated water for injection to the groundwater basin near the Discharger's San Simeon well field. The Discharger will treat brackish groundwater extracted from well 9P7 in the AWTP utilizing membrane ultrafiltration and reverse osmosis. The reverse osmosis system will produce and discharge approximately 57,000 gallons of brine per day to the surface impoundment.

The wastewater consists of concentrated brine from the reverse osmosis water treatment plant. The Discharger developed brine waste characteristics using a model and the predicted waste stream constituents of concern are based on feed water quality, reverse osmosis treatment removal, finished water quality goals, and the resulting mass balance. The estimated concentrations in brine are as follows:

<u>Parameter</u>	<u>Concentration (mg/L¹)</u>
Total Dissolved Solids	17,376
Chloride	4,899
Nitrate (as Nitrogen)	50.8
Sulfate	1,997
Calcium	1,036
Iron	1.5
Potassium	348
Magnesium	835
Sodium	3,305

¹ milligrams per liter

<u>Parameter</u>	<u>Concentration (mg/L¹)</u>
Barium	1.9
Boron	0.43
Copper	0.04
Lead	0.003
Manganese	0.094
Nickel	0.04
Strontium	7.8

¹ milligrams per liter

The Discharger will construct the surface impoundment using an engineered alternative to the prescriptive liner requirements of Title 27 for the Class II surface impoundment. The liner will include a primary 60-mil thick high density polyethylene (HDPE) geomembrane, a secondary 60-mil thick HDPE geomembrane liner with a drainage component as the leachate collection and recovery system (LCRS), a geosynthetic clay liner, and a 60-mil thick HDPE geomembrane pan lysimeter under the LCRS trench. The alternative liner system is equal to, or exceeds, the waste containment capability of the regulatory prescriptive design. Additionally, this liner design is similar to other approved engineered alternative liners in the state.

The LCRS and vadose zone monitoring systems will provide liner leak detection. In the event leachate is detected in either the LCRS or vadose zone monitoring systems, the Discharger will either implement an Executive Officer-approved Response Action Plan or cease discharge to the surface impoundment. The Discharger is required to identify the leak(s) and repair the liner system. The discharge of wastes to the surface impoundment will not be allowed again until Water Board staff has determined that repairs to the liners are complete and pond containment is restored.

The surface impoundment will have the capacity to store approximately 6.2 million gallons of brine. The Discharger estimates that it will produce up to 10.6 million gallons of brine and cleaning waste in a six month operating period. Natural evaporation rates are expected to evaporate 0.6 million gallons per year. Blowers will be operated to enhance natural evaporation. The Discharger estimates the blowers will provide enough evaporation to allow brine discharge into the surface impoundment for two six-month operating cycles before reaching capacity. Additionally, the proposed WDRs require the surface impoundment be constructed to contain the waste and the volume of rain which falls onto the surface impoundment areas in a 1,000-year, 24-hour storm event, while maintaining two feet of freeboard. The requirement to contain the 1,000-year, 24-hour storm event and two feet of freeboard are Title 27 requirements specific to Class II impoundments.

The blowers for the surface impoundment will be connected to an onsite weather station, limiting operation to preset specific wind direction and wind speeds to avoid brine drift outside of the surface impoundment. The WDRs require that all brine must be contained within the surface impoundment. The blowers will be constructed over containment structures that drain to the surface impoundment in case the blowers leak. The blowers will be enclosed on three sides with sound dampening material to reduce noise impacts in an effort to comply with the County of San Luis Obispo noise ordinance requirements. The Discharger's property is fenced to exclude public access to the blowers and surface impoundment.

Title 27 requires the Discharger to submit a closure plan and a corrective action plan for a Reasonably Foreseeable Release. Title 27 requires the Discharger provide financial assurance to

cover the cost for closing the site and for corrective actions necessary if the surface impoundment leaks. If the surface impoundment leaks, the Discharger will be required to remove all waste from the surface impoundment and perform corrective actions.

Surface Water: The surface impoundment is located outside of the 100-year flood plain. The surface impoundment is bordered by Van Gordon Creek to the east and San Simeon Creek to the south. Van Gordon Creek flows into San Simeon Creek which flows to the Pacific Ocean. The Discharger will route surface drainage around the surface impoundment and because the Discharger is required to keep two feet of freeboard between the waste and the top of the liner discharges to surface water are not expected.

Groundwater: The highest anticipated groundwater is estimated at depths of approximately nine feet below the bottom of the surface impoundment. Based on available local groundwater information, groundwater flows in a southerly direction. The onsite supply well (9P7) for the reverse osmosis treatment system is located approximately 800 ft from the surface impoundment. Groundwater flow direction may vary depending on the volume of water pumped from well 9P7 when the Discharger extracts water to supply the AWTP. The Discharger expects groundwater gradients to shift towards extraction well 9P7 during pumping. The 9P7 pumping impacts on gradients near the surface impoundment are not well established and will require additional groundwater elevation data to fully evaluate. The Discharger provided a map indicating there are twelve irrigation supply wells, four domestic supply wells, and one public supply well within one mile of the surface impoundment.

Groundwater Quality: The Discharger collected one groundwater sample from each of the three groundwater monitoring wells around the surface impoundment. The limited data indicates sodium and chloride concentrations exceed their respective Basin Plan water quality objectives for agricultural supply. Once the surface impoundment is constructed the Discharger will collect additional groundwater samples from the monitoring wells located upgradient and downgradient of the surface impoundment.

Proposed Order: The proposed Order requires the Discharger to properly construct, operate, and maintain the surface impoundment and all components associated with the surface impoundment to protect water quality.

MONITORING AND REPORTING PROGRAM

The Monitoring and Reporting Program (MRP) includes:

Part I – Monitoring and Observation Schedule: This section requires periodic routine inspections of the surface impoundment, the leachate collection system, the vadose zone monitoring system, the blowers, and detailed analytical monitoring of groundwater and leachate.

Part II – Sample Collection and Analysis: This section establishes criteria for sample collection and analysis, methods to determine concentration limits, and specifies how the Discharger must maintain these records.

Part III – Statistical and Non-Statistical Analysis of Data: This section establishes methods for the Discharger to determine surface impoundment compliance with water quality protection standards based on laboratory analytical information.

Part IV – Reporting: This section establishes formats and requirements that the Discharger must follow when submitting analytical data, annual reports, and summaries to Water Board staff.

Part V – Definition of Terms: This section defines specific terms used in the MRP.

ENVIRONMENTAL SUMMARY

This Order contains prohibitions, discharge specifications, water quality protection standards, and provisions intended to protect the environment by mitigating or avoiding impacts of the surface impoundment operations on water quality.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

By proclamations dated January 17, 2014, and April 25, 2014, the Governor declared a state of emergency in California due to the ongoing extraordinary drought. Each proclamation included a directive that suspended the environmental review required by the California Environmental Quality Act (CEQA) to allow certain directive from the Governor to take place as quickly as possible. The project is consistent with the following directive from the April 25, 2014, proclamation: Directive 12: The State Water Resources Control Board Department of Drinking Water (DDW), the Office of Emergency Services, and the Office of Planning and Research will assist local agencies that the Department of Public Health has identified as vulnerable to acute drinking water shortages in implementing solutions to those water shortages. Under Directive 19 of the April 25, 2014 Proclamation, environmental review required by CEQA is suspended for actions taken pursuant to Directive 12, and for all necessary permits needed to implement those actions, when the Office of Planning and Research “concurs that local action is required.”

DDW has identified the Cambria Community Services District (district) as having critical drinking water shortages, meaning that the city will deplete its available supplies within 60 to 90 days. The Office of Emergency Services has indicated that the project described in the attached Notices of Exemption is necessary to solve this critical drinking water shortage. The Office of Planning and Research concurred that local action is required on September 12, 2014. Therefore, the project is exempt from CEQA because the Governor suspended CEQA for this project pursuant to Directives 9 and 12 of the April 25, 2014 proclamation.

The project is also consistent with the statutory exemption for an emergency project. CEQA defines emergency as follows: “‘Emergency’ means a sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. ‘Emergency’ includes such occurrences as fire, flood, earthquake, or other soil or geologic movements, as well as such occurrences as riot, accident, or sabotage.” [Public Resources Code Section 21060.3.] Specific actions necessary to prevent or mitigate an emergency are exempt from CEQA. Emergency activities do not include long-term projects undertaken for the purpose of preventing or mitigating a situation that has a low probability of occurrence in the short-term. [Title 14 California Code of Regulations, Section 15269(c).] The basis for claiming the exemption is that the Discharger’s water situation is dire, and the Emergency Water Supply Project will avoid potentially disastrous consequences from not having adequate water for health, safety, sanitation and fire protection and will mitigate the effects of the drought emergency declared by the Governor and emergencies that result from future critical water shortages.

PUBLIC NOTICE AND COMMENTS ON ORDER NO. R3-2014-0047

Central Coast Water Board staff distributed the draft Order No. R3-2014-0047 and MRP No. R3-2014-0047 on September 17, 2014, to a list of interested parties and agencies and surrounding landowners that have been involved with the Cambria Community Services District surface impoundment project. At the end of the 30-day public comment period, which closed on October 17, 2014, Water Board staff received 382 letters supporting adoption of Draft Order No. R3-2014-0047, and six letters with concerns regarding adoption of the proposed order. Water Board staff attached one example comment letter from the large number of letters supporting the proposed Order and all of the other comments letters as Attachment 3 to this staff report. Water Board staff considered all submitted comments. Response to comments are provided below.

Richard Hawley – Greenspace The Cambria Land Trust
September 27, 2014

Comment 1: *Will birds be harmed landing in the pit? How about other forms of wildlife? How will birds be protected from the brine?*

Water Board Staff Response: The Discharger is evaluating the installation of wires to prevent birds from landing in the surface impoundment and is installing fencing and barriers to prevent wildlife from accessing the surface impoundment. The Discharger will be operating blowers to enhance natural evaporation. The operating blowers should discourage birds from entering the impoundment.

By proclamations dated January 17, 2014, and April 25, 2014, the Governor declared a state of emergency in California due to the ongoing extraordinary drought. Each proclamation included a directive that suspended the environmental review required by the California Environmental Quality Act (CEQA) to allow certain directives from the Governor to take place as quickly as possible. This includes all actions taken by local agencies that are identified by DDW as vulnerable to acute drinking water shortages and that are necessary to implement solutions to such shortages if the Office of Planning and Research “concur that local action is required.” (Proclamation No. 4-25-2014, #12 & #19). Cambria was identified as having critical water shortages and the Office of Planning and Research concurred that local action is required. Therefore, under the Governor’s proclamations, CEQA is suspended for this project, including CEQA for the draft Order.

Under normal permitting conditions wildlife mitigation measures would be placed on the project during the CEQA process. Because CEQA is suspended for this project, impacts to wildlife have not been analyzed. However, consistency with Local Coastal Program requirements, potential impacts to wildlife and other environmental impacts will be addressed through CEQA as part of the San Luis Obispo County coastal development permitting process. The initial concentrations of brine in the surface impoundment will be less concentrated than ocean water and therefore impacts are expected to be minimal. However, as the liquid evaporates the concentration of constituents in the surface impoundment will increase and the Discharger should address potential wildlife impacts.

Comment 2: *The mist that the evaporators create will be more toxic and molecules containing dangerous chemicals will attach to the fog creating acid fog. The fog will certainly move beyond the project site and have consequences to the public, agricultural products, and livestock.*

Water Board Staff Response: Prohibition B.1 in the proposed Waste Discharge Requirements Order (WDR) No. R3-2014-0047 prohibits the discharge of brine outside of the surface impoundment, including drift from the blower system. If mist from the brine drifts outside of the surface impoundment the discharger is required to discontinue use of the blowers and will be subject to enforcement action. The San Luis Obispo County Air Pollution Control District has been working with the Discharger to address potential air pollution issues associated with the project.

Comment 3: *It is imperative that the discharge permit be examined with more thought to what may happen with public health and safety than the current draft order addresses. The potential to harm people and wildlife has grown exponentially with the evaporation design. Mitigation and preventative actions are missing and the order is remiss in protecting the public and environment.*

Water Board Staff Response: The proposed WDRs prohibit the discharge of brine anywhere other than within the surface impoundment. The facility is fenced to keep the public from accessing the surface impoundment. All brine must be kept within the lined portion of the surface impoundment and there are specific monitoring requirements included in the proposed WDRs to ensure brine does not leak from the surface impoundment. Additionally, if brine drifts outside of the surface impoundment lined areas the mechanical blowers will be shut down. Prohibition B.1 in the proposed WDR Order No. R3-2014-0047 prohibits the discharge of brine outside of the surface impoundment, including drift from the blower system. WDR Order No. R3-2014-0047 Specification C.4 requires the Discharger maintain a minimum of two feet of freeboard in the surface impoundment. Freeboard is defined as the distance between the water surface within the impoundment and the top of the lined impoundment. The surface impoundment must be constructed to contain the waste and the volume of rain which falls onto the surface impoundment areas in a 1,000-year, 24-hour storm event, while maintaining two feet of freeboard. The piping from the advanced water treatment facility to the surface impoundment is double walled to contain potential leaks. Prohibition B.2 in the proposed WDR Order No. R3-2014-0047 prohibits the discharge of waste to waters of the State, including surface water and groundwater.

Comment 4: *Has there been any test to assure the public that the pit liner can withstand the chemical corrosive action on the liner membrane?*

Water Board Staff Response: The surface impoundment is constructed with high density polyethylene (HDPE) liner material that is chemically² resistant to the brine that will be discharged to the impoundment. Additionally, the Discharger is required to inspect the liner on a daily basis to ensure liner integrity.

Comment 5: *The potential of contaminating the high value ecosystem and ground water basin has gone from near zero percent to something likely to happen with the brine pit design and there is simply not enough planning to address spills, leaks and accidents.*

Water Board Staff Response: The surface impoundment liner is designed in accordance with California Code of Regulations (CCR) Title 27 requirements. The surface impoundment

²<http://www.ineos.com/Global/Olefins%20and%20Polymers%20USA/Products/Technical%20information/INEOS%20HDPE%20Chemical%20Resistance%20Guide.pdf>

includes two layers of HDPE liner and an additional layer of geosynthetic clay liner all designed to prevent the migration of brine to groundwater. The surface impoundment includes a leachate collection and recovery system to detect leaks in the top liner and a vadoze zone monitoring system to detect leaks from the second liner. There are three groundwater monitoring wells in place to detect any changes in groundwater quality that may result from an undetected leak through all three layers of the liner system.

The Discharger is prohibited from discharging brine to the surface impoundment if adequate capacity is not available. Adequate capacity is two feet of freeboard plus volume to hold the 1,000-year 24-hour storm event. The pipeline from the reverse osmosis treatment facility to the surface impoundment is double walled in case of leaks. If the surface impoundment leaks the Discharger is required to remove all material (liquids) from the impoundment, identify the leaks, repair the leaks, and the Discharger will not be allowed to discharge brine to the impoundment until Water Board Executive Officer approves of the repairs. Monitoring and Reporting Program (MRP) R3-2014-0047 requires the Discharger inspect the surface impoundment berms, liner, piping system, and blowers on a daily basis. The Discharger is required to sample the three groundwater monitoring wells twice per year. Groundwater quality will be evaluated by Water Board staff to ensure the surface impoundment is not impacting groundwater quality.

Comment 6: *How often will the liner need to be replaced due to normal UV exposure? What is the protocol on liner replacement and what happens to the concentrated toxic sludge at the bottom of the holding pit? Where will it go?*

Water Board Staff Response: Based on field and laboratory data³, exposed HDPE liners have a life expectancy exceeding 30 years. The proposed MRP R3-2014-0047 requires the Discharger inspect the surface impoundment daily for damage. At the end of the liner life the designated waste will be removed and hauled to an authorized disposal facility. The brine is considered non-hazardous waste and Prohibition B.3 in the proposed WDR Order No. R3-2014-0047 prohibits the discharge or storage of hazardous waste in the surface impoundment. If the brine is found to be hazardous it will be hauled to a hazardous waste facility.

Comment 7: *No one knows how to mix the many chemicals required to make this thing work or what to do if something goes wrong. We have no skilled operators. Who will respond to chemical leaks and accidents on site? First responders will likely be State Parks, CalFire and the Cambria Fire Department. Will they know what chemical constituents they are dealing with and what to do?*

Water Board Staff Response: The chemicals used at the advanced water treatment plant (AWTP) will include sodium hypochlorite, aqueous ammonia, sulfuric acid, hydrogen peroxide, sodium hydroxide, calcium chloride, and antiscalants. First responders are trained to respond to incidents involving the chemicals that will be used at the facility. Facility operators are licensed through the State Water Resources Control Board Office of Operator Certification. The operator certification requirements include proper chemical handling and knowledge of chemical compatibilities. The proposed WDR No. R3-2014-0050 for the Cambria Community Services District Emergency Water Treatment Facility Recycled Water Re-injection Project requires the Discharger to provide a trained operator at the AWTP site at all times when the facility is producing water. Following the first six months of operation, the Discharger may submit a

³ *GRI White Paper #6 on Geomembrane Lifetime Prediction: Unexposed and Exposed Conditions*, R.M. Koerner, Y.G. Hsuan, and G.R. Keorner, February 2011

request to the Division of Drinking Water (DDW) and the Water Board for an alternative operator schedule.

Comment 8: *How will the campground be evacuated if the weather station malfunctions and the evaporators continue to spew toxic mist over unsuspecting hikers, beach goers, farm workers and nearby residents, livestock and wildlife? Is there a plan for State Parks to implement if all these high-tech components fail and created an emergency?*

Water Board Staff Response: The proposed MRP R3-2014-0047 requires the Discharger inspect the surface impoundment and blowers daily. If a system malfunction occurs the Discharger is required to shut down the blowers. Prohibition B.1 in the proposed WDR Order No. R3-2014-0047 prohibits the discharge of brine outside of the surface impoundment, including drift from the blower system.

Christine Heinrichs – Cambria Resident
October 14, 2014

Comment 9: *The evaporation pond site, with the associated blowers, is adjacent to a popular State Park Campground. The noise and potentially noxious or even toxic spray will impact that campground.*

Water Board Staff Response: Prohibition B.1 in the proposed WDR Order No. R3-2014-0047 prohibits the discharge of brine outside of the surface impoundment, including drift from the blower system. All brine must be kept within the lined portion of the surface impoundment. If brine has the potential to drift outside of the surface impoundment lined areas the mechanical blowers will be shut down. To address potential noise issues the blowers will be enclosed on three sides with sound dampening material to reduce noise impacts to comply with the County of San Luis Obispo noise ordinance requirements. The brine is considered non-hazardous waste and Prohibition B.3 in the proposed WDR Order No. R3-2014-0047 prohibits the discharge or storage of hazardous waste in the surface impoundment. If the monitoring required by MRP indicates the brine is hazardous it will be hauled to a hazardous waste facility.

Comment 10: *Although CEQA has been suspended for emergency projects, the area in question is sensitive habitat to several endangered species. In protecting them, we protect ourselves. This project should not go forward without addressing those considerations.*

Water Board Staff Response: See response to comment 1 above.

Eugene (Lou) Blanck – Cambria Resident
October 17, 2014

Comment 11: *The Cambria CSD proposed Title 27 impoundment is placed on the meandering channel deposits of San Simeon Creek and is within the 24 hour/1000 year flood plain. Erosion from the design event could cause the impoundment to lose containment. The impoundment is located within the San Luis Obispo County Safety Element 100 year Flood Hazard Zone for San Simeon Creek.*

Water Board Staff Response: CCR Title 27 requires that surface impoundments be designed to prevent inundation or washout due to floods with a 100-year return frequency. The surface impoundment is located outside of the 100-year flood zone as indicated on the Federal Emergency Management Agency flood map⁴ which is the map used in the San Luis Obispo County Safety Element.

The Discharger is not required to protect the surface impoundment from a 1,000-year flood event. CCR Title 27 and proposed WDRs R3-2014-0047 Specification C.5 require the Discharger construct the surface impoundment and associated drainage control facilities surrounding the surface impoundment to withstand a 1,000-year 24-hour precipitation event and the resulting rise in water elevations in Van Gordon Creek without causing inundation, erosion, slope failure, washout, and overtopping of the surface impoundment during such an event. CCR Title 27 prohibits the construction of a surface impoundment within the 100-year flood zone and requires it be constructed to withstand runoff associated with a 1,000-year 24-hour storm event. Storm events are based on recurrence intervals and the probability of a storm event occurring in any given year (1,000 year storm has a 0.1 percent chance of occurring in any given year). Floods are based on recurrence intervals; however they are also based on extent of rainfall in a watershed, soil saturation prior to the storm, and the relation between the size of the watershed and the duration of the storm, meaning a 100-year storm event will not necessarily produce a 100-year flood.

Comment 12: *Seismic Shaking – Slopes, equipment and piping for the Cambria CSD proposed Title 27 impoundment have insufficient design to withstand the expected seismic shaking at the site. The PG&E Diablo Canyon Nuclear Power Plant Long Term Seismic Survey and subsequent regional seismic setting work has mapped an active network of tectonic faults on the Central Coast that are tied to the plate boundary with links to the modern San Andreas fault on the North, South or both ends. Since the Hosgri fault system would be the second longest potential earthquake fault source in California, earthquake magnitudes above 8 are reasonable to assume and vertical accelerations above 2 g from a fault a stones throw offshore are also reasonable assumptions.*

Water Board Staff Response: The Discharger utilized appropriately conservative seismic design values to evaluate surface impoundment stability. The closest active fault to the surface impoundment site is the San-Simeon-Hosgri Fault Zone which consists of two fault zones: the San Simeon Fault Zone and the Hosgri Fault Zone. The on-shore portion of the San Simeon Fault extends north from San Simeon Point and is approximately four miles northwest of the evaporation pond. The Hosgri Fault is offshore and approximately two miles west of the pond site. The Discharger used 2-foot standard freeboard, with a characteristic earthquake magnitude of 7.3, and site-specific 0.52 g peak ground acceleration. The commenter provided no evidence or justification as to why a magnitude 8 or greater earthquake (versus a magnitude 7.3) was appropriate for the site or the estimated peak ground acceleration greater than 2g was appropriate. The Discharger used values consistent with CCR Title 27 requirements. The surface impoundment design and the stability analysis conducted by the Discharger comply with the CCR Title 27 requirements.

Comment 13: *Surface Fault Rupture – Active traces of the Cambria fault may traverse under the foundation of the proposed Cambria CSD Title 27 impoundment, which should have the*

⁴ Federal Emergency Management Agency Flood Insurance Rate Map Number 06079C0530G for San Luis Obispo County

entire footprint trenched pursuant to California Fault Special Studies Zones to verify the unit will not be subject to active fault rupture and resulting liner failure.

Water Board Staff Response: There is no evidence to support that the Cambria fault traverses the project site. There is no known active (Holocene) fault within 200 feet of the site. The distance to active faults is great enough that the primary hazard is ground shaking and not surface rupture. The Discharger used appropriately conservative values for estimating earthquake magnitudes and ground motions and Water Board staff find the impoundment design meets CCR Title 27 requirements with respect to active faults and seismic stability.

Comment 14: *Liquefaction* – *The Cambria CSD proposed Title 27 impoundment is located within the San Luis Obispo County Safety Element Liquefaction Hazard Zone for San Simeon Creek. In addition, groundwater has been identified at 9 feet below the base of the propose Title 27 impoundment in typical sandy fluvial deposits notorious for liquefaction. The impoundment plans include no mitigation for the liquefaction hazard and differential settlement during liquefaction will likely result in liner offset, containment failure and potential impoundment failure. At a minimum This Title 27 impoundment should be designed according to California Geological Survey: Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California, The Resource Agency, Mike Chrisman, Secretary for Resources, 2008 and specifically Chapter 6 for liquefaction.*

Water Board Staff Response: The surface impoundment is located in an area with low to moderate liquefaction potential. The Discharger performed an analysis indicating that liquefaction settlement at the surface impoundment would be minimal in part because the potentially liquefiable layers are capped with thicker layers of non-liquefiable soils. The Discharger used appropriately conservative values in the liquefaction analysis and Water Board staff find the impoundment design meets CCR Title 27 requirements with respect to potential for liquefaction.

Comment 15: *Tsunamis* – *The Cambria CSD proposed Title 27 impoundment is within the historic inundation area of Central California Coast tsunamis. The impoundment is located within the San Luis Obispo County Safety Element Tsunami Hazard Zone for San Simeon Creek, which grossly underestimates the historic tsunami hazard published in documents from the SLO City/County Library.*

Water Board Staff Response: The surface impoundment is not located within the Tsunami inundation area as indicated on the State of California Department of Conservation Tsunami map⁵ for San Luis Obispo County.

Comment 16: *Subsidence and Hydro-consolidation* – *The Cambria CSD Title 27 impoundment is located above coastal fluvial stream sediments similar to those in Santa Rosa creek that have historically been documented to have experienced differential settlement offsetting building foundations due to aquifer overdraft. The Cambria CSD project associated with the proposed Title 27 impoundment is adjacent to areas of proposed new groundwater extraction and treated water injection that the literature is full of articles documenting the proposed changes as the source of differential subsidence and hydroconsolidation. No geotechnical investigation of the*

⁵http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/SanLuisObispo/Documents/Tsunami_Inundation_Cambria_Quad_SLO.pdf

materials beneath the proposed Title 27 impoundment have been conducted regarding their propensity for subsidence, differential settlement and/or hydroconsolidation.

Water Board Staff Response: Water Board staff evaluated the possibility that the proposed groundwater withdrawals will cause land settlement and compromise the surface impoundment liner. Water Board staff evaluated site specific information to estimate potential settlement of approximately 0.3 feet, assuming that groundwater is homogeneously confined beneath the liner. Based on the lithologic log from boring log B-5 from the surface impoundment area, Water Board staff estimated that a 30-foot layer of clay beneath the liner could potentially be compacted three percent of its original thickness by a reduction in pressure head caused by pumping of the nearby extraction well 9P7. Water Board staff finds that potential ground settlement from operating groundwater extraction well 9P7 will not be significant enough to compromise liner integrity and that the impoundment design meets CCR Title 27 requirements.

Comment 17: *The brine evaporation pond will likely become a “toxic pit” (banned in California since 1989) as a result of the composition of influent and the double concentration methods of Reverse Osmosis (RO) brine discharge and subsequent evaporation. Toxic heavy metals are likely to concentrate in the evaporation pit from naturally occurring metals (e.g. arsenic, chromium, asbestos and mercury) from Santa Rosa and San Simeon Creek and corroded metals derived from the dis-similar metals (copper, chromium, steel, lead, etc.) in Cambria plumbing that is sacrificed into solution by the anode battery effect. Also, maintenance of the RO includes use of toxic chemicals that would also end up as part of the brine discharge.*

Water Board Staff Response: A toxic pit is an impoundment that contains hazardous waste as defined in CCR Title 22 Section 66261. The Discharger’s surface impoundment will contain designated waste and will not contain hazardous waste. Designated waste is defined in the California Water Code Section 13173 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.

The Discharger performed an analysis utilizing source water quality data and the expected concentration of constituents in the surface impoundment. The analysis indicates that none of the constituents will concentrate to hazardous levels in the surface impoundment. The Discharger is required to sample surface impoundment brine twice per year. If concentrations of constituents in the surface impoundment are found to exceed hazardous waste concentrations, the Discharger will be required to remove the brine and haul it to a facility permitted to receive the waste. Semiannual monitoring will provide data that the Discharger and Water Board staff will use to evaluate whether the materials in the surface impoundment are approaching hazardous concentrations.

Comment 18: *No practical solution has been proposed to excavate evaporate deposits in the Cambria CSD Title 27 impoundment (if it ever dries out) without causing damage and compromising the liner and leachate collection system.*

Water Board Staff Response: The Discharger has indicated that it will haul the brine material prior to it drying to a solid state (Report of Waste Discharge: Technical Memorandum 4⁶). Once

⁶ http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T1000006221

solids begin to precipitate and solids build up is observed, the Discharger will pump the slurry out of the impoundment and will haul the material to a waste disposal facility permitted to receive the waste. If the Discharger needs to remove solids from the surface impoundment, Specification C.18 in proposed WDR Order No. R3-2014-0047 requires the Discharger submit a solids removal plan. The plan will include provisions for removing solids from the surface impoundment without causing liner damage. The solids removal plan will be reviewed by Water Board staff and must be approved by the Executive Officer prior to the Discharger removing solids from the surface impoundment.

Comment 19: *The toxic soup in the Cambria CSD Title 27 impoundment will become a local version of the Kesterson environmental disaster that poisons birds and any critter that crawls, slithers or hops into the pit. No provisions appear to be attempted to protect wildlife from exposure to the toxins in this Title 27 impoundment.*

Water Board Staff Response: See response to Comment 1 above.

Comment 20: *The project will extract a significant percentage of sewage wastewater from the adjacent wastewater discharge pits into the RO. There is no disinfection and the use of mechanical evaporators will send aerosolized pathogens into neighboring wetlands, campgrounds, and the town of Cambria. Where are the epidemiological studies of the impacts on human health and the health of the threatened and endangered species?*

Water Board Staff Response: The Discharger will add sodium hypochlorite to the reverse osmosis feed water to prevent membrane fouling. Sodium hypochlorite is a disinfectant and should reduce any bacteria levels in the reverse osmosis system feed water. Ultimately the Discharger is required to contain all brine within the surface impoundment and prevent any brine from drifting outside of the surface impoundment liner area. See response to Comment 9 above.

Comment 21: *The CCSD has a track record of regular spills from its' wastewater treatment plant, storage tanks and piping system, so spills (overflows) from the evaporation pond (toxic pit) into the coastal wetland should be expected. These impacts have not been considered.*

Water Board Staff Response: WDR Order No. R3-2014-0047 Specification C.4 requires the Discharger maintain a minimum of two feet of freeboard in the surface impoundment. Freeboard is defined as the distance between the water surface within the impoundment and the top of the lined impoundment. The surface impoundment must be constructed to contain the waste and the volume of rain which falls onto the surface impoundment areas in a 1,000-year, 24-hour storm event, while maintaining two feet of freeboard. The piping from the advanced water treatment facility to the surface impoundment is double walled to contain potential leaks.

Lynne Harkins – Cambria Resident
October 17, 2014

Comment 22: *There are unanswered questions about the impacts of the legacy of mercury mining in both San Simeon Creek and the Santa Rosa Creek watersheds which Cambria draws all of its water. Cambria CSD should proceed with caution in terms of holding and evaporating large quantities of RO toxic brine.*

Water Board Staff Response: The project has the potential to mobilize and modify environmental mercury in and among various involved environmental media (soil, sediment, surface water, groundwater and air) and anthropogenic media (wastewater, waste solids, brine, precipitates, possibly other). Insufficient data exist to determine the likelihood of that potential. Mercury was not detected (at suitably low detection limits of 0.02 ug/L) in two samples of wastewater treatment plant effluent and in two samples of groundwater extracted from well 9P7, indicating, for the time those samples were collected, mercury was not being contributed to those two waste or product streams, and those streams were not contributing mercury to the hydrologic system. Those two waste or product streams likely vary chemically through time.

The Discharger conducted an analysis utilizing source water quality data and the expected concentration of constituents in the surface impoundment. The analysis indicates that none of the constituents will concentrate to hazardous levels in the surface impoundment. The Discharger is required to sample the material in the surface impoundment twice per year and if concentrations of constituents in the surface impoundment are found to exceed hazardous waste concentrations, the Discharger will be required to remove the material and haul it to a facility permitted to receive the waste. Semiannual monitoring will allow the Discharger and Water Board staff to evaluate whether the materials in the surface impoundment are trending to or approaching hazardous concentrations.

Comment 23: *There's research regarding total and methylmercury being transported and deposited by means of fog...important because that's what you would be permitting here: a year-round artificial fog machine. The average content in CA coastal fog testing was 3.5 parts per trillion...intermittently and seasonally. I think we ought to consider very carefully before creating a situation that could amplify that kind of airborne mercury situation.*

Water Board Staff Response: As indicated in response to Comment 22, Mercury was not detected in two samples of wastewater treatment plant effluent and in two samples of groundwater extracted from well 9P7, indicating, for the time those samples were collected, mercury was not being contributed to those two waste or product streams, and those streams were not contributing mercury to the hydrologic system. The Discharger is required to monitor for mercury (along with other constituents) in the surface impoundment twice per year. Water Board staff will evaluate mercury concentrations in the surface impoundment. The San Luis Obispo County Air Pollution Control District has also been working with the Discharger to address potential air pollution issues associated with the project.

Mary Webb – Greenspace-the Cambria Land Trust
October 17, 2014

Comment 24: *An analysis by the Board of the reasonableness of the CSD's use of waters of the state and the impacts to public trust resources resulting from that use is required by Article X, section 2 of the California Constitution, section 275 of the Water Code, and the Public Trust Doctrine.*

Water Board Staff Response: The Water Board does not have authority to regulate withdrawals of water from surface or groundwater and does not have the authority to regulate impacts to the public trust doctrine from those withdrawals.

The commenter also excerpts comments by other agencies on the Discharger's draft CEQA document, which are outside the purview of this Order due to the suspension of CEQA under the Governor's proclamations.

Comment 25: *Central Coast Regional Water Quality Control Board 7-22-14 and 7-11-14 letter to CSD Water Board staff and their consultants continue to work on addressing the various issues including regulatory considerations and waste discharge permits that are needed but not yet obtained, additional need for environmental review, permitting and assessment for potential water quality impacts, no contingency for pond failure and the "document does not provide sufficient technical details necessary to provide comments on the pond design." "Water Board staff still needs to evaluate whether the contents of the brine pond will adversely affect wildlife."*

Water Board Staff Response: The Discharger submitted a report of waste discharge⁷ including specific surface impoundment design information. The Discharger is working with resource agencies to address potential wildlife impacts from the surface impoundment. See response to Comment 1 regarding wildlife issues.

Comment 26: *What analysis has been done on the adverse effects of the chemical waste reservoir on wildlife?*

Water Board Staff Response: See response to Comment 1.

Comment 27: *What is the contingency for chemical waste reservoir failure?*

Water Board Staff Response: If the surface impoundment fails to contain the brine discharge as designed, the Discharger will be required to remove all waste from the impoundment, locate the leak/failure, and correct the leak/failure prior to resuming brine discharges to the surface impoundment (draft WDR Specification C.15). The Discharger is required to maintain a financial assurance mechanism, such that there is financing available to correct problems associated with surface impoundment leaks and/or failures (draft WDR Provision E.15).

Comment 28: *What are the effects of brine discharges and chemical waste storage reservoirs at the confluence of two creeks that contain endangered species?*

Water Board Staff Response: The WDRs require the Discharger to design the surface impoundment to meet Title 27 regulations. Therefore, there should be no impact on surface water bodies in the area as the WDRs require the Discharger to contain all waste within the surface impoundment. Additionally, the Discharger is adding barriers and fencing, both above- and underground, to prevent animals from encroaching on the impoundment.

Comment 29: *On June 11, 2014 the Central Coast Water Board warned that the CSD had not started the process for obtaining permits from the CA Department of Fish and Wildlife, the US Fish and Wildlife, and the California Dept. of Public Health. What is the status of these permits?*

Water Board Staff Response: The California Department of Public Health Drinking Water Program is now part of the State Water Resource Control Board (Division of Drinking Water – DDW). DDW staff is participating and has provided input into the development of draft Order No. R3-2014-0050 for the Cambria Community Services District Emergency Water Treatment Facility Recycled Water Re-injection Project.

⁷ http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T1000006221

Water Board staff does not know the status of permits with California Department of Fish and Wildlife or the US Fish and Wildlife. As indicated in response to Comment 1, the emergency project is exempt from CEQA and as a result wildlife mitigation measures have not been placed on the project except for those noted in this staff report and draft Order. Potential impacts to wildlife will be addressed through the California Environmental Quality Act (CEQA) process as part of San Luis Obispo County coastal development permitting.

Richard Hawley – Greenspace The Cambria Land Trust
October 20, 2014

Comment 30: *We feel that the toxic brine pond will attract migratory birds and create a “Kesterson” like scenario.*

Water Board Staff Response: See response to Comment 1.

CONCLUSION

The proposed Order provides design, operational, and monitoring requirements for the Cambria Community Services District surface impoundment to protect groundwater and surface water through required engineering controls and containment systems, preventative inspections, and monitoring. The surface impoundment does not pose a significant risk to groundwater and surface water with the engineered alternative liner system, controls, and monitoring requirements included in the proposed Order.

RECOMMENDATION

Adopt Waste Discharge Requirements Order No. R3-2014-0047 with Monitoring and Reporting Program No. R3-2014-0047.

ATTACHMENT

Attachment 1: Proposed Waste Discharge Requirements Order No. R3-2014-0047
Attachment 2: Proposed Monitoring and Reporting Program No. R3-2014-0047
Attachment 3: Comment Letters