

## INFORMATION SHEET

ORDER NO. \_\_\_\_\_  
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION  
FOR OPERATION OF CLASS II SURFACE IMPOUNDMENTS  
DEUEL VOCATIONAL INSTITUTION  
SAN JOAQUIN COUNTY

On 23 June 2006, the Regional Board adopted Waste Discharge Requirements (WDRs) Order No. R5-2006-0075 for the State Department of Corrections and Rehabilitation (Discharger) to allow construction and operation of a proposed reverse osmosis (RO) water treatment plant at the Deuel Vocational Institution (DVI). Construction of the RO plant was proposed in response to exceedances of the NPDES permit conditions. The Discharger has requested a change in the due date of the *Groundwater Monitoring Installation Report* required in WDRs Order No. R5-2006-0075. This change will not affect the protection of water quality and these revised WDRs continue to require that background concentrations and water quality protection standards be established before waste is placed in the Class II surface impoundments.

DVI is located east of the City of Tracy in San Joaquin County in Section 20, T2S, R6E, MDB&M. Because of the high concentration of total dissolved solids (TDS) in the supply wells, treated wastewater from the wastewater treatment plant continually exceeded the NPDES permit limits. In addition, the supply water exceeded drinking water standards set forth by the California Department of Health Services (DHS). The Regional Board adopted Cease and Desist Order (CDO) No. R5-2003-0066 to address the TDS exceedances.

The Discharger proposed to construct a RO groundwater treatment plant that would comply with the CDO adopted by the Regional Board and meet the DHS's drinking water standards. Groundwater from the onsite supply wells will be treated via RO. The waste from the reverse osmosis plant will be reduced in a brine concentrator and discharged to four lined evaporation basins. WDRs Order No. R5-2006-0075 classified the four brine evaporation basins as Class II surface impoundments in accordance with Title 27, CCR Section 20005, et seq. (Title 27), and this revised order continues that classification.

The concentrated brine from the reverse osmosis water treatment plant is a designated waste. The brine waste characteristics were developed based on feed water quality, RO treatment removal, finished water quality goals and the resulting mass balance. The brine characteristics are as follows:

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<b>Parameter</b>	<b>Concentration</b>	<b>Units</b>
Total Dissolved Solids	313,600	mg/L
Aluminum	7.56	mg/L
Iron	33.6	mg/L
Manganese	58.8	mg/L
Boron	84	mg/L
Calcium	33,600	mg/L
Magnesium	18,200	mg/L
Sodium	39,738	mg/L
Potassium	1,106	mg/L
Barium	21	mg/L
Strontium	1,092	mg/L
Sulfate	30,040	mg/L
Chloride	154,000	mg/L
Total Silica	6,440	mg/L

These are estimated concentrations and the Discharger is required to monitor the waste brine once the treatment plant is constructed and operating. Once additional data is received, the waste characteristics may change and the Monitoring and Reporting Program may be revised.

Monitoring data gathered for the onsite supply wells indicates that deeper groundwater has TDS concentrations ranging between 840 to 2200 mg/l. The predicted direction of groundwater flow is toward the east to northeast.

Background shallow groundwater characterization is unknown. Prior to discharge to the surface impoundments, the Discharger shall, at a minimum, perform groundwater monitoring for one year and submit a Water Quality Protection Standard Report.

The Discharger proposes to install a minimum of three groundwater monitoring wells. Once a true groundwater gradient for the shallow groundwater zone is determined, the Discharger may be required to install additional groundwater monitoring wells such that the detection monitoring system is in compliance with Title 27.

The depth to shallow groundwater ranges from 3.4 to 5.0 feet below grade surface, measured during the geotechnical study performed in May 2005. Title 27, CCR Section 20240(c) requires a minimum separation of five foot between waste and the highest anticipated groundwater elevation. To mitigate the five foot separation requirement, the Discharger has proposed to construct the surface impoundments

within a 16-foot fill pad, with the bottom elevation of each surface impoundment five feet above natural grade.

The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 for the Class II surface impoundments. The engineered alternative consists of the following from the top down:

- a. A primary 60-mil thick high density polyethylene (HDPE) geomembrane.
- b. A geonet drainage layer, as a leachate collection and removal system (LCRS).
- c. A secondary 60-mil thick HDPE geomembrane in lieu of the clay liner.
- d. A geonet drainage layer as a vadose zone monitoring system.
- e. A tertiary 60-mil thick HDPE geomembrane.

The waste management facility is within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 060299 0730 B. In order to mitigate potential washout of the surface impoundments in the event of a 100-year flood event, the ponds will be constructed within a 16-foot fill pad and the berms will be constructed two-feet above the 100-year flood elevation.

Surface drainage is toward the San Joaquin River.