

INFORMATION SHEET

ORDER NO. R5-2012- XXXX
FORMER OCCIDENTAL CHEMICAL COMPANY
GROUNDWATER REMEDIATION PROJECT
LATHROP FACILITY
SAN JOAQUIN COUNTY

Background

Occidental Chemical Company (OCC) retains the liability for implementing remedial actions at the Former Best Fertilizers Company site located at 16777 Howland Road in Lathrop, San Joaquin County, California (Site). OCC is managing remediation activities at the Site through Glenn Springs Holdings, Inc. (GSHI, hereafter collectively referred to as Discharger), a wholly-owned subsidiary of Occidental Petroleum Corporation. The Site occupies approximately 340 acres, most of which is paved or covered with buildings. The Site has been owned and occupied by the J.R. Simplot Company (J.R. Simplot) since 1 January 1983. The Site is underlain by relatively flat-lying unconsolidated silts, sands, and clays to a depth of approximately 230 feet bgs.

Historically, contaminants of concern (COCs) associated with the Discharger's past operations include pesticides 1,2-dibromo-3-chloropropane (DBCP) and ethylene dibromide (EDB) as well as 2,3,4,5-tetrahydrothiophene-1,1-dioxide, commonly known as sulfolane, which was used as a solvent for cleaning process equipment. Groundwater beneath and in the vicinity of the Site is also contaminated with sulfate, nitrate, chloride, lindane and other isomers of benzene hexachloride (BHC).

The Discharger, as directed by the Central Valley Regional Water Quality Control Board (Central Valley Water Board), has been performing the cleanup of groundwater beneath the Site. The current groundwater remedial system extracts groundwater from up to 10 (ten) extraction wells. Extracted groundwater is treated using a bioreactor and granular activated carbon (GAC), and then disposed of by injection into two deep wells IW-01 and IW-02 that are completed in the confined aquifer beneath the Corcoran Clay, 230 to 300 feet below ground surface (bgs). To enhance remediation, the Discharger has proposed to add eleven (11) extraction wells and to discharge treated oxygenated water into both above and below the Corcoran Clay . The Discharger also proposes to extract groundwater from J.R. Simplot's existing backup water supply well and operate a wellhead treatment system to remove sulfolane from extracted groundwater.

In 2012, the maximum concentrations of sulfolane, DBCP, and EDB in groundwater were 180,000 µg/L, 2,400 µg/L and 10 µg/L, respectively. Maximum concentrations of sulfate, nitrate and chloride in groundwater were 9,050 mg/L, 320 mg/L, and 2,210 mg/L, respectively. Concentrations of gamma-BHC, alpha-BHC, beta-BHC, and delta- BHC were 0.34 µg/L, 2.2 µg/L, 1.8 µg/L, and 2.9 µg/L, respectively.

Groundwater Remediation Project

The groundwater remedial system has operated since 1982. Groundwater extraction and treatment has reduced the concentrations and extent of sulfolane, DBCP and EDB. As of August 16, 2012, concentrations of sulfolane, DBCP and EDB in groundwater in the combined influent to the treatment system were 850, 1.2, and 0.0045 micrograms per liter ($\mu\text{g/L}$), respectively. To date, the system has removed approximately 12,300 pounds (lbs) of sulfolane, 4,000 lbs of DBCP, and 220 lbs of EDB. EDB and DBCP have not been detected in the injection zone monitoring wells below the Corcoran Clay since at least 1996.

In recent years, in addition to routine operation and maintenance of the system, the Discharger has reconditioned the treatment system and optimized pumping from the extraction well network; installed additional extraction wells EW-8A, EW-8B, and EW-9; investigated a suspected source area of sulfolane with high sulfolane soil concentrations; added additional groundwater monitoring wells PW27-40, PW28-40, and PW29-40; and confirmed stable or shrinking pollutant plumes. The Discharger also modified the bioreactor/GAC treatment flow configuration from up-flow parallel to down-flow series, increased the dissolved oxygen concentration added prior to GAC treatment by using an oxygen delivery system in order to improve the aerobic biodegradation of sulfolane. With these modifications, each GAC vessel can now be separately adjusted to improve aerobic biological treatment of sulfolane in the lead vessel and sorption of EDB and DBCP in the lag vessel.

The Discharger has proposed to increase the total extraction rate, including extraction from J.R. Simplot's backup water supply well, to an average flow of 750 to 1,000 gpm, with a potential maximum flow rate of 2,000 gpm. The disposal of the treated groundwater under Order No. 83-039 was below the Corcoran clay. The new disposal will have up to 750 gpm disposed to IW-1 and IW-2 below the Corcoran Clay and up to 1,250 gpm to the proposed injection wells screened above the Corcoran Clay. The average flowrate from the backup supply well is expected to be approximately 250 gallons per minute (gpm) and the maximum flowrate would be 700 gpm. The extraction and injection flow rates will not exceed the demonstrated treatment system capacities. The current treatment system capacity is 750 gpm. The Discharger will install a new remediation system to treat sulfolane from the additional water from J.R. Simplot's backup supply well.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the maximum contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation

The antidegradation directives of Section 13000 of the California Water Code require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan (including by reference State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation" Policy).

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Board to evaluate that fully characterizes:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degradation to water quality objectives.

In allowing a discharge, the Board must comply with CWC section 13263 in setting appropriate conditions. The Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

As stated above, groundwater will be extracted, treated and recharged into both above and below the Cocoran Clay. Groundwater quality will be monitored to assess the impacts due to the project. The groundwater flowing from the project area will be captured by the extraction system installed by the Discharger. No degradation should occur as a result of the discharge.

Title 27

Title 27, CCR, section 20380 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of

groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable. The proposed discharge will not degrade groundwater quality. The discharge is exempt from the Title 27 requirements.

Proposed Order Terms and Conditions

Discharge Prohibitions and Specifications

The proposed Order establishes a discharge flow limit of 750 gallons per minute (gpm) above the Corcoran Clay, and 750 gpm below the Corcoran Clay. Injection flow rates shall not exceed the demonstrated treatment system capacities.

Monitoring Requirements

Section 13267 of the CWC authorizes the Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

This Order requires effluent and groundwater monitoring requirements, including flow rates. In order to adequately characterize its discharge, the Discharger is required to monitor for sulfolane, DBCP, and EDB.

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