CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION R5-2017-0031

DIRECTING STAFF TO PREPARE AN APPROPRIATE ORDER
FOR
VALLEY WATER MANAGEMENT COMPANY'S MCKITTIRICK 1 & 1-3 FACILITY
TO
COMPLY WITH
WASTE DISCHARGE REQUIREMENTS RESOLUTION NO. 69-199
KERN COUNTY

WHEREAS, the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) finds that:

1. Valley Water Management Company (Valley Water) owns and operates an oil field produced wastewater disposal pond system named the McKittrick 1 & 1-3 Facility (Facility) approximately 8.7 miles west of the community of Buttonwillow.

2. Valley Water has been accepting since the 1950s up to 115,000 barrels (bbls) per day of produced wastewater at the Facility for disposal by evaporation and percolation. The produced wastewater is saline, with reported total dissolved solids concentrations from 7,772 mg/L to 26,000 mg/L, chloride concentrations from 4,100 mg/L to 16,000 mg/L and boron concentrations from 42.5 mg/L to 130 mg/L. These concentrations exceed applicable State drinking water maximum contaminant levels (MCLs) and exceed applicable agricultural water quality objectives. The produced water also contains volatile organic compounds. Reported benzene and toluene concentrations, for example, range from 4.9 to 400 ug/L and 7.2 to 1000 ug/L, respectively. The State drinking water MCLs for benzene and toluene are 1.0 ug/L 150 ug/L respectively.

3. Valley Water's discharges to the produced wastewater disposal ponds are regulated under Waste Discharge Requirements Resolution No. 69-199 (Resolution), adopted by the Central Valley Water Board (Board) on 14 February 1969. The Resolution prohibits the discharges from creating pollution and nuisance. The Resolution issued to Valley Water states in relevant part:

    1. The discharge shall not cause a pollution of ground or surface waters.

4. The *Water Quality Control Plan for the Tulare Lake Basin* (Revised 2016) (Basin Plan) designations of beneficial uses of groundwater for the Cymric Area include: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), and Industrial Service Supply (IND).

5. There is agricultural land 1,500 feet north of the Facility and to the east of the Facility. Agricultural wells in the vicinity that are downgradient of the Facility have total dissolved solids (TDS) concentrations ranging from 2,300 mg/L to 6,800 mg/L. One agricultural well that appears to be impacted by oil field operations has a TDS of 18,000 mg/L. Starrh Family Farms LP owns and operates these wells, and they are reportedly important for operations when surface water deliveries are short. The existence and use of these wells establishes an existing AGR beneficial use of groundwater down gradient from the Facility.

6. Valley Water installed a groundwater monitoring well network in 2002 to investigate whether wastewater discharged to its ponds was migrating down structure to the northeast. Two wells (CYM-19H1 and CYM-17N1) were installed in what is called in Valley Water documents the upper Tulare sand, and one well (CYM-21D1) was installed in the what is called the deeper Tulare sand or aquifer, the location of the regional aquifer. The upper Tulare and deeper Tulare sequences are separated by a silt/clay layer called the Corcoran Clay Equivalent. The network was expanded in 2006 with the addition of three wells (CYM-17K1, CYM-17M1, CYM-17Q1) in the Upper Tulare Formation down gradient of the original wells. These three wells were positioned to be sentinel wells and were reportedly dry at the time of installation. Field notes in Valley Water's self-monitoring reports indicate the sentinel wells may have contained produced wastewater from the ponds as early as 2010 and sampling in 2014 confirmed the presence of produced water from the ponds. Valley Water's 2017 self-monitoring report demonstrates high salinity produced wastewater has migrated beyond the sentinel wells and also impacted groundwater at CYM-21D1 in the Lower Tulare Formation, which contains the regional aquifer.

7. From 2002 to 2017, the TDS concentrations in CYM-21D1 have increased from about 1,200 mg/L to 8,500 mg/L, and the chloride concentrations have increased from 334 mg/L to 2,400 mg/L. The TDS and chloride concentrations now exceed State drinking water MCLs and AGR water quality objectives, indicating a condition of pollution.

8. Clean Harbors Buttonwillow LP (Clean Harbors) operates a Class I hazardous waste disposal facility approximately 1.5 miles to the north-northeast and down structure and down gradient of the Facility. At least two of Clean Harbors' upgradient groundwater monitoring wells have been showing increasing concentrations of TDS and chloride for many years. TDS concentrations in MW-148I have increased from 2,340 mg/L to 5,400 mg/L from 2011 to 2017. Chloride concentrations in MW-148I have increased from about 246 mg/L to 1,200 mg/L from 2009 to 2017. MW-148I appears to be screened in the upper Tulare sand. TDS concentrations in MW-102RL have increased from about 3,040 mg/L to 3,900 mg/L from 2013 to 2017. Chloride concentrations in MW-102RL have increased from about 450 mg/L to 740 mg/L from 2007 to 2017. MW-102RL is screened in the deeper Tulare sand. Given its location directly upgradient, the Facility is the most likely source of the observed TDS and chloride concentrations in the Clean Harbors' groundwater monitoring wells.

9. The information in Findings 2 through 8 indicate that:

   a. There is a plume of produced wastewater migrating from the Facility ponds toward the northeast and east-northeast,

   b. The plume has moved beyond the Facility groundwater monitoring network and likely caused a condition of TDS and chloride pollution in CYM-21D1, which draws from the regional aquifer that is used for AGR, and

c. The plume likely has caused degradation of at least two of Clean Harbors' upgradient groundwater monitoring wells and likely caused a condition of TDS and chloride pollution in MW-148I.

10. The Central Valley Water Board adopted three Wasted Discharge Requirements General Orders for Oil Field Discharges to Land (General Orders) on 6 April 2017. The General Orders address three specific scenarios:

    a. General Order Number One – The discharge meets the Basin Plan effluent limits for TDS, chloride, and boron of 1000 umhos/cm, 200 mg/L, and 1 mg/L, respectively.

    b. General Order Number Two – The discharge exceeds the Basin Plan effluent limits, but will not substantially affect water quality nor cause a violation of water quality objectives; it must meet the requirements of the State Anti-degradation Policy.

    c. General Order Number Three – The discharge must be confined to an area where the first encountered groundwater is of poor quality or there is no first encountered groundwater, or the first encountered groundwater does not support the following beneficial uses identified in the Basin Plan: MUN, ARG, IND, and PRO.

11. Valley Water has requested that discharges from the Facility be regulated under General Order Number Three. General Order Number Three does not require groundwater monitoring, which generally reduces a discharger's costs.

12. Regulation of the Facility's discharges under the General Orders is likely inappropriate for the following reasons:

    a. General Order Number One requires discharges to comply with the Basin Plan effluent limits for EC, chloride, and boron. Valley Water's discharges greatly exceed these limits and, therefore, cannot comply with them.

    b. General Order Number Two requires discharges to comply with the State Anti-degradation Policy. Valley Water's high salinity discharge comingles with better quality groundwater down gradient, and likely will cause degradation of groundwater. Discharges at the Facility likely has already caused pollution in CYM-21D1 and MW-148I. Therefore, the discharges cannot comply with General Order Number Two.

    c. General Order Three requires dischargers to either demonstrate that there is no groundwater beneath the discharge areas and that produced wastewater and constituents associated with other approved wastes discharged will not migrate into areas that there is groundwater with designated beneficial uses, or if there is first encountered groundwater underlying the discharge location, demonstrate that the current Basin Plan groundwater beneficial uses are eligible for de-designation.

       There is first encountered groundwater underlying the Facility and within the influence of the Facility discharges; however, the beneficial uses likely are not eligible for de-designation because locally the quality of this groundwdater is suitable for its designated beneficial uses and is beneficially used within a short distance from the

Facility. Valley Water's monitoring reports indicate that its discharges are likely polluting groundwater in the regional aquifer (CYM-21D1 and MW-148I), which has an active beneficial use of AGR. Additionally, the produced wastewater has migrated to the east and beyond the Facility groundwater monitoring well network. To date, the extent of plume migration has not been fully characterized, but given the local hydrogeology, it is expected to remain uncontained and continue to migrate eastward. Therefore, the discharge likely cannot comply with General Order Number Three.

THEREFORE BE IT RESOLVED that:

The Central Valley Water Board directs staff to take appropriate action to compel Valley Water to come into compliance with existing requirements, to submit for the Board's consideration a report of waste discharge to receive an updated set of individual waste discharge requirements issued under Water Code section 13263, or to cease discharging. Compliance options may include the development of a Cease and Desist Order pursuant to Water Code section 13301 for the Board's consideration or the issuance of a Time Schedule Order under Water Code section 13300, either of which would provide a detailed time schedule of specific actions that Valley Water must take in order to ensure the appropriate protection of underlying groundwater.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on __ April 2018.

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PAMELA C. CREEDON, Executive Officer