

INFORMATION SHEET

ORDER NO. R5-2008-_____
CITY OF MCFARLAND
WASTEWATER TREATMENT FACILITY
KERN COUNTY

Background

The City of McFarland (Discharger or City) operates a wastewater collection, treatment, and disposal facility (WWTF) for the residents and small industry of the City of McFarland. The WWTF has an average daily flow of about 1.0 million gallons per day (mgd).

The Discharger submitted a report of waste discharge (RWD) dated in June 2004, in support of a discharge to land of 1.55 mgd of wastewater from the existing Wastewater Treatment Facility (hereafter "WWTF"). Additional information was included in a 17 May 2005 Final Geotechnical Investigation report prepared by BSK regarding modification and expansion (hereafter Expansion Project) of the WWTF. The existing WWTF provides secondary treatment of the wastewater stream. Treatment includes screening to remove large solids, aeration, and sedimentation. Effluent is discharged to approximately seven acres of lined (soil cement) aeration lagoons. Effluent then is discharged to approximately 30 acres of unlined evaporation/percolation ponds (Disposal Ponds) and/or an approximately 270-acre Use Area.

Waste Discharge Requirements (WDRs) Order No. 89-154, adopted by the Regional Water Board on 11 August 1989, currently limits the discharge flow to 1.1 million gallons per day (mgd). The WDRs also establish monthly average and daily maximum limits for settleable solids (SS) of 0.2 milliliter per liter (mL/L) and 1.0 mL/L and biochemical oxygen demand (BOD) of 40 milligram per liter (mg/L) and 80 mg/L. WDRs Order No. 89-154 does not reflect the configuration of the Expansion Project.

The Expansion Project consists of constructing a new 30-acre Disposal Pond and re-cropping of city owned land to meet agronomic requirements for discharge of effluent to land. The Discharger has not submitted a technical report describing the construction of the new storage pond. The 17 May 2005 Final Geotechnical Investigation report proposed expanding the eastern wall of the western disposal pond. The expansion project as designed would have added 25 acres of storage and increased the total storage from about 236 acre-feet to 361 acre-feet. Regional Water Board staff concurred with the proposed expansion project in a 22 May 2006 letter to the Discharger. However, during a 16 May 2007 site inspection, it was observed that the eastern wall of the pond had not been removed and a separate 30-acre pond was being constructed in the same area. While the new design appears to be adequate, a technical report describing the storage ponds is required from the Discharger.

The Regional Water Board's 22 May 2007 letter requested the Discharger address the amount of land that would be required to recycle wastewater due to the proposed expansion project removing 20 acres of the available alfalfa. The Discharger earlier provided a 23 June 2006 *McFarland Storage Pond Expansion – Progress Update* indicating that 100 acres of land planted with alfalfa was required to meet the discharge requirements and proposed converting 75-acres planted with Sudan grass to alfalfa as well as converting 80 acres of wine grapes. The proposed 155 acres exceeded the indicated required proposed 100-acre area. However, information provided by the operator in July 2007 indicated the Discharger was now looking

into acquiring additional land (not the vineyard) to meet their recycling requirements and is still discharging wastewater to the nearby wine grape orchard in violation of Discharge Specification No. B.12 of Order No. 89-154 for continuing to irrigate crops other than fodder, fiber, or seed crops. When the WDRs were adopted in 1989, Title 22 also allowed the discharge of non-disinfected secondary treated wastewater to food crops where recycled water does not come into contact with the edible portion of the food crop and where the food crop undergoes commercial pathogen-destroying processing before being consumed by humans. In January 2003, the California Department of Health Services (now the Department of Public Health [DPH]) issued a memorandum stating that contact with recycled water is likely to occur in vineyards and that there may be a potential for pathogens to gain access to the interior of fruits. The DPH now recommends that all vineyards be irrigated with water that meets the requirements of disinfected secondary-2.2 recycled water as defined in Title 22. Regional Water Board staff notified the Discharger of this information in a 9 August 2004 letter. The proposed WDRs require an updated Use Area Management Plan and Final Construction report be submitted.

Solids and Biosolids Disposal

Screenings from the headworks are placed in a dumpster prior to disposal at an offsite landfill. The Discharger removed accumulated solids from the aeration lagoons in 2005 and 2006 because they had indicated the accumulated solids were contributing to the WWTF's recurring exceedance of the effluent BOD and nitrogen limits. This Order will require the Discharger to update the O&M Plan to include a sludge management plan.

The WWTF has no sludge storage facilities. All sludge removed from the ponds will be hauled offsite to an appropriate disposal facility by a licensed disposal carrier.

Groundwater Conditions

Regional groundwater flows west southwesterly and the depth of water occurs at about 90 to 100 feet below ground surface (bgs), according to information recorded in the WWTF monitoring wells. The WWTF appears to be just east of the eastern edge of the "Corcoran Clay" or "E-clay layer." Drillers logs indicate a clay layer at about 200 feet bgs in some borings, but none in others, drawing into question the extent of the clay layer in this area.

In 2001, the City began monitoring groundwater in five wells (MW-1 through MW-5) at the WWTF. Wells MW-1 (northern property boundary) and MW-5 (southeastern property corner) went dry in 2004. The Discharger installed replacement wells MW-1A and MW-5A in January 2007 and added well MW-6 along the southern property boundary. The two-upgradient wells MW-4 and MW-5/5A typically have the highest EC (about 950 to 1,500 umhos/cm) and nitrate as nitrogen concentrations (about 17 to 44 mg/L) indicating these wells likely do not represent true background conditions. Well MW-1 (cross to downgradient) has had high EC (up to 1,700 umhos/cm) and nitrate (up to 48.5 mg/L) concentrations in the past, but concentrations have decreased considerably since 2001. The lowest EC and nitrogen concentrations are observed in downgradient wells MW-2, MW-3, and MW-6.

Compliance History

The Discharger consistently exceeded the effluent limitation for BOD specified in WDRs Order No. 89-154 in 2005 and 2006, but results indicated improvement in 2007. Discharger self-monitoring reports (SMRs) in 2006 show the Discharger exceeded the monthly average BOD and TSS effluent limit of 40 mg/L in 7 and 6 months respectively. During 2007 monitoring events, the discharger exceeded the limit for BOD only three times and TSS four times. Table 1 summarizes the effluent BOD and TSS concentrations from 2007.

TABLE 1. Effluent Quality

<u>Month</u>	<u>BOD (mg/L)</u>	<u>TSS (mg/L)</u>	<u>Month</u>	<u>BOD (mg/L)</u>	<u>TSS (mg/L)</u>	<u>Month</u>	<u>BOD (mg/L)</u>	<u>TSS (mg/L)</u>
Jan-07	54	28	May-07	22	37	Sep-07	24	31
Feb-07	70	60	June-07	20	28	Oct-07	32	37
Mar-07	36	39	July-07	31	23	Nov-07	40	59
Apr-07	35	51	Aug-07	40	27	Dec-07	70	73

Bolded values note violations of the effluent limit

Since 2000, the Discharger was issued five Notice of Violation (NOVs). A November 1999 inspection led to the issuance of a February 2000 NOV issued for exceeding the EC limit of source water plus 500 umhos/cm, failing to monitor for the required constituents at the required frequency, failing to meter flow, failing to maintain a freeboard of 3 feet in the storage ponds, and for failing to provide backup power. A follow up inspection in August 2000 led to the issuance of a 12 March 2001 NOV. The NOV included all of the previous concerns (with the exception of the backup power issue) and included in addition violations concerning overflow of untreated waste, failing to properly dispose of solids, and for submitting incomplete reports. Subsequent NOVs were issued in August 2003 and June 2005 for the same issues as listed above. The Discharger has since made considerable progress in addressing the various issues of violation. The May 2007 pre-WDR inspection by Regional Water Board staff did not reveal operational violations at the WWTF.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The Basin Plan indicates the greatest long-term problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man’s activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. The Regional Water Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental EC limitation of 500 µmhos/cm as a measure of the maximum permissible addition of salt constituents through use.

Discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16 (Resolution 68-16), "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" 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. Policy and procedures for complying with this directive are set forth in the Basin Plan.

Constituents typically elevated in domestic wastewater threaten the beneficial uses of groundwater if not adequately controlled by a treatment process or attenuated in the soil profile prior to discharge to first encountered groundwater. Discharges that rely on percolation for disposal may result in the percolation of excess organic carbon, and the mobilization of other constituents.

The discharge from the Expansion Project will likely not degrade the beneficial uses of groundwater because:

- a. For salinity, the Basin Plan contains effluent limits (EC of the source water plus 500 $\mu\text{mhos/cm}$, or a maximum of 1,000 $\mu\text{mhos/cm}$) that considered Resolution 68-16. The discharge meets these limits and therefore consistent with Resolution 68-16.
- b. For nitrogen, effluent concentrations exceed typical nitrogen limits of 10 mg/L for total nitrogen. However, the McFarland area is known for high nitrate concentrations in groundwater. The effluent nitrogen concentrations are lower than that in background (upgradient) monitoring wells. While the Discharger is required to evaluate its system to ensure it is removing nitrogen efficiently, the current concentrations will not degrade the existing groundwater as it is lower than background concentrations.

Treatment Technology and Control

The Expansion Project will provide treatment and control of the discharge that incorporates:

- a. Secondary treatment of the wastewater;
- b. Appropriate biosolids storage and disposal practices;
- c. An Operation and Maintenance (O&M) manual; and
- d. Certified operators to ensure proper operation and maintenance.

Title 27

Title 27, CCR, section 20005 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 full 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 in a classified waste is acceptable under Title 27 regulations.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, the Discharger has been conditionally exempted from Title 27. Treatment and storage facilities for sludge that are part of the WWTF are considered exempt from Title 27 under section 20090(a), provided that the facilities not result in a violation of any water quality objective. However, residual sludge (for the purposes of the proposed Order, sludge that will not be subjected to further treatment by the WWTF) is not exempt from Title 27. Solid waste (e.g., grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

Accordingly, the municipal discharge of effluent and the operation of treatment or storage facilities associated with a municipal wastewater treatment plant can be allowed without requiring compliance with Title 27, but only if resulting degradation of groundwater is in accordance with the Basin Plan.

CEQA

The Kern County Community Development Program (CDP) circulated an Environmental Assessment/Initial Study for reclamation of sewage at the current WWTF site in September 1997. The Kern County CDP circulated another Environmental Assessment/Initial Study in September 1999 in support of an expansion of the WWTF. The Discharger certified an initial study and mitigated negative declaration (MND) in August 2001 in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et, seq.) and the State CEQA guidelines (Title 14, Division 6, California Code of Regulations, as amended). The MND indicates that the discharge will comply with Regional Water Board regulations, which will mitigate any groundwater impacts. To mitigate the Expansion Project's groundwater quality impacts to less than significant levels, the terms and conditions of this proposed Order and accompanying enforcement order are appropriate and necessary.

Proposed Order Terms and Conditions

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions

The proposed Order prohibits discharge to surface waters and water drainage courses.

The proposed Order would carry over the current Order's monthly average daily discharge flow limitation until the City completes the Expansion Project and submits technical reports documenting the construction of the new pond, a Use Area Management Plan, an update of the Dischargers O&M Plan to include a schedule for sludge removal from the aeration lagoons, and an assessment of the potential effluent stored in the unlined storage ponds and aeration lagoons to impact groundwater. The proposed Order would carry over the previous Order's

effluent limits for BOD of 40 mg/L (monthly average), and 80 mg/L (daily maximum). These limitations are based on Basin Plan minimum performance standards for municipal facilities.

The discharge requirements regarding dissolved oxygen and freeboard are consistent with Regional Water Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

The proposed WDRs would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedance of these objectives or natural background water quality, whichever is greatest.

The WDRs would also require the Discharger assess its discharge on a constituent-by-constituent basis for consistency with Regional Water Board plans and policies, including Resolution No. 68-16. This assessment would identify those constituents that threaten the beneficial uses of groundwater. This may result in the WDRs being reopened and additional or modified effluent limitations imposed.

Monitoring Requirements

Section 13267 of the CWC authorizes the Regional Water 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 an 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 of civil administrative liability where appropriate.

The proposed Order includes influent and effluent monitoring requirements, pond monitoring, groundwater monitoring, water supply monitoring, and septage monitoring. The monitoring is necessary to evaluate groundwater quality and the extent of the degradation from the discharge.

The Discharger must monitor groundwater for constituents present in the discharge that are capable of reaching groundwater and violating groundwater limitations if its treatment and control, and any dependency of the process on sustained environmental attenuation, proves inadequate. For constituents listed in [Section G](#), Groundwater Limitations, of the WDRs, the Discharger must, as a part of each monitoring event, compare concentrations of constituents found in each monitoring well (or similar type of groundwater monitoring device) to the background concentrations or to prescribed numerical limitations to determine compliance.

The proposed Order does not require the Discharger to monitor total coliform organisms (TCO) in the groundwater, but proposes a Groundwater Limitation of 2.2 MPN/100 mL. The Groundwater Limitation is necessary to protect municipal beneficial uses. Given the existing site-specific conditions, it is unlikely that the presence of pathogens resulting from groundwater

monitoring is a result of the percolation of wastewater. The presence of pathogens in groundwater would likely occur from compromises in the monitoring well's construction. The proposed Order may be re-opened or additional groundwater monitoring required if site conditions warrant.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. The proposed Order would set limitations based on the information provided thus far. If applicable laws and regulations change, or once new information is obtained that will change the overall discharge and its potential to impact groundwater, it may be appropriate to reopen the Order.

Proposed Enforcement Order

The Discharger recycles non-disinfected treated wastewater to nearby grape vineyards in violation of Discharge Specification B.12. An accompanying draft Cease and Desist Order would require the Discharger to use recycled water only on fodder, fiver, or seed crops not eaten by humans or used for grazing of non-milking cattle.