

INFORMATION SHEET

ORDER R5-
RANCHO MURIETA COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT AND RECLAMATION PLANT
SACRAMENTO COUNTY

Current Facility Description

Rancho Murieta Community Services District (RMCS D or District) owns and operates the Rancho Murieta Wastewater Reclamation Plant (WWRP) located at 15160 Jackson Road in Rancho Murieta. The WWRP receives domestic and a relatively small amount of commercial wastewater from the community of Rancho Murieta.

The WWRP provides secondary and tertiary treatment and disinfection. Secondary treatment takes place in five clay-lined aerated facultative ponds. Undisinfected secondary treated effluent is stored in two clay-lined reservoirs between the months of October and March prior to tertiary treatment and disinfection. The tertiary treatment plant is operated from April through November to provide recycled water to Use Areas.

WDRs Order 5-01-124 allows a 30-day average dry weather influent flow into the secondary wastewater treatment ponds up to 1.5 MGD and a 30-day average dry weather effluent flow from the tertiary plant up to 3.0 MGD. Disinfected tertiary treated wastewater is land applied on two 18-hole golf courses as well as landscape around the WWRP. The recycled water is pumped to the golf course and stored in five unlined irrigation storage reservoirs (Lake Ten, Lake Eleven, Lake Sixteen, Lake Seventeen, and Bass Lake) prior to use. A spray irrigation system is used to discharge the recycled water on to the golf course.

WDRs Order R5-2009-0124 prescribes requirements for the use of disinfected tertiary treated wastewater (produced at the WWRP) at the Van Vleck Ranch (92 acres). An above ground spray irrigation system is used to discharge the recycled water on to the fields. Discharges of recycled water at the Van Vleck Ranch are prohibited after 31 December 2014.

Proposed Changes to the Facility and Discharge

The District requested revised WDRs and a Master Recycling Permit to allow additional recycled water use within the District's service areas and the Van Vleck Ranch property. Expansion of recycled water Use Areas include public area landscape irrigation and ancillary uses of future residential developments within the Rancho Murieta community, front and backyard residential landscaping at specified future residential developments, and expansion of the existing Van Vleck Ranch Use Area from 96 to 282 acres. The locations of existing and future recycled water Use Areas are presented in the table below.

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Recycled Water Use Areas	Existing/Proposed Use Areas	Description	Assessor's Parcel Numbers
North Golf Course	Existing	18-hole golf course	07301900060000, 07301900070000, 07301900080000, 07301900090000, 07301900100000, 07301901080000
South Golf Course	Existing	18-hole golf course	07307900090000, 07307900100000, 07307900210000, 07307900350000
Van Vleck Ranch (Field 1, Field 2, and Field 3)	Existing	Field 1 (49 acres), Field 2 (25 acres), Field 3 (22 acres)	12800800670000, 12800800680000
Wastewater Reclamation Plant	Existing	District office and wastewater treatment site	07301800300000
Van Vleck Ranch (Field 4)	Proposed	150 acre spray field	12800800670000, 12801000290000, 12800800680000
Lakeview	Proposed	99 residential units	07307900460000
Murieta Gardens	Proposed	99 residential units, 50 commercial units, 1-acre park	07304700040000, 07304700050000, 07304700060000
Residences of Murieta Hills	Proposed	198 residential units	07301901060000, 07301901050000
Retreats	Proposed	84 residential units	07307900440000, 07301900990000
Riverview	Proposed	140 residential unit	07307900070000
Stonehouse Park	Proposed	existing 4-acre park	07301900460000
Apartments	Proposed	170 residential units	07301900690000
Escuela	Proposed	40 residential units, 4-acre park	07301900250000
Highlands	Proposed	110 residential units	07308000090000, 07308000050000
Industrial/ Commercial/ Residential	Proposed	100 residential units, 125 commercial units	07301800290000

Recycled Water Use Areas	Existing/Proposed Use Areas	Description	Assessor's Parcel Numbers
River Canyon	Proposed	120 residential units	07307900230000
Terrace	Proposed	177 residential units	07308000080000, 07308000060000, 07308000070000

Landscape irrigation and ancillary recycled water uses include the irrigation of parks; greenbelts; playgrounds; athletic fields; common areas; commercial, highway, and street landscaping; and dust control within the District's service area.

Residential landscaping is proposed for the new developments of Murieta Gardens, Residences at Murieta Hills, Retreats, Lakeview, Riverview, Terrace, Highlands, River Canyon, Apartments, and Escuela.

To support recycled water use in the expanded Use Areas, the following improvements will be implemented as needed to provide recycled water to planned developments.

- An additional 195,000 gallons of chlorine contact basin capacity. This expansion will increase disinfection capacity to 3.0 mgd.
- An additional 240 AF of secondary effluent storage capacity (proposed Reservoir 3).
- Infrastructural improvements to convey recycled water to the new and expanded Use Areas.
- An additional 470 AF of secondary effluent storage capacity (proposed future Reservoir 4) to accommodate an average dry weather wastewater treatment influent flow of 1.55 mgd.

Site-Specific Conditions

Rancho Murieta is bisected by the Cosumnes River and State Highway 16. The District's water supply source is the Cosumnes River. Surrounding land uses are zoned for agriculture (typically cattle ranching). A small portion of the South Golf Course is located within the 100-year flood zone of Consumnes River and a portion of the southern end of the 22-acre Van Vleck Ranch Field 3 Use Area is located within the 100-year flood zone of Arkansas Creek.

The reference evapotranspiration rate (ET_o) is approximately 66 inches per year. The annual average precipitation and 100-year return period annual precipitation is approximately 25 and 45 inches per year respectively.

Groundwater Conditions

Rancho Murieta is located in the lone Formation (quartzose sandstone interbedded with kaolinitic clay and sandy clay and lignite) and near the Valley Springs Formation (rhyolitic tuff, sandstone, siltstone, claystone, and conglomerate). The presence of lignite has been associated with groundwater quality high in sulfate and iron concentrations and low pH values. The near surface materials at the WWRP have likely been influenced by overbank deposits from the Cosumnes River that lies approximately 2,500 feet to the north.

The WWRP is in an area where there are two predominant soil series. Surficial site soils classified as the Mokelumne gravelly loam are mainly at the wastewater storage reservoirs (characterized by low pH 3.6 to 5.0) and dredge tailings near the vicinity of the wastewater treatment ponds (characterized as neutral to slightly acidic pH, 6.1 to 7.3).

The depth to groundwater ranges from 4 to 50 feet below the ground surface. Groundwater flow direction is to the west-southwest. Pre-discharge groundwater data are not available. Groundwater surrounding the WWRP (monitoring wells MW01, MW02, and MW03) has been monitored since 2001; including two observation wells (OW01 and OW02) that were installed during the construction of the storage reservoirs. Three additional wells (MW04, MW05, and MW06) have been monitored since 2006.

The groundwater data from February 2010 to August 2013 shows spatial variability in both upgradient and downgradient wells and salinity constituents and metal constituents (iron and manganese) that exceed water quality objectives. Nitrate concentrations that exceed the water quality objective were observed in one of the three upgradient wells. The high concentrations of general minerals and metal constituents in groundwater are likely the result of soil mineral dissolution related to low pH water.

The groundwater data illustrate high spatial variability and in some cases poor quality of the first encountered groundwater for constituents such as pH, TDS, sulfates, nitrate, iron, and manganese. Based on the soil character and geologic conditions of the site and in consideration of the high quality source water and effluent, the poor quality groundwater is likely naturally occurring and not the result of the discharge.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Local drainage is to Cosumnes River, a tributary to the Mokelumne River, which is a tributary to the Sacramento-San Joaquin Delta. The beneficial uses of Cosumnes River as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; estuarine habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

Antidegradation Analysis

Typical constituents of concern that have the potential to degrade groundwater include salts (primarily TDS and sodium), nutrients, and coliform organisms. Because the WWRP ponds have the greatest potential to degrade groundwater quality, an analysis based on conditions at the WWRP site was performed.

This Order establishes effluent and groundwater limitations for the WWRP that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan.

For pH, TDS, sulfate, iron, manganese, and nitrate groundwater monitoring data indicate that groundwater is not high quality water, has not been degraded by the previous discharge, and that the expanded discharge does not pose a threat of significant degradation in the future. This Order contains effluent limits that will ensure that groundwater quality does not get any worse. The use of recycled water at the Use Areas does not pose a threat of significant degradation because of the high quality of the effluent and the ability of landscaping and crops to consume nitrogen and salts.

Based on the foregoing findings, this Order does not require groundwater monitoring, but does include groundwater limitations that implement Resolution 68-16 and the Controllable Factors Policy of the Basin Plan. If effluent or other future monitoring data indicate an increased threat to groundwater quality, groundwater monitoring may be required at the Executive Officer's discretion.

Discharge Prohibitions, Specification, and Provisions

This Order prohibits the discharge of 'comingled water' (mixtures of untreated surface water or raw water with tertiary recycled water) to the Use Areas until and unless the Discharger has submitted the required reports and documentation that a *Revised Title 22 Engineering Report* has been approved by the Division of Drinking Water.

This Order restricts influent flows to the WWRP as an average dry weather flow (ADWF) of 0.5 MGD until the Discharger can demonstrate that the WWRP has the treatment, storage, and disposal capacity to accommodate an ADWF of 0.7 MGD and up to a maximum of 1.55 MGD.

This Order restricts influent flows to the tertiary treatment and disinfection system as a daily maximum of 2.3 mgd, until the Discharger can demonstrate adequate disinfection system capacity, but shall not exceed a daily maximum of 3.0 mgd.

This Order contains a secondary effluent limit for BOD, TDS, and total nitrogen; a turbidity limit of the filtered effluent prior to disinfection; and a tertiary effluent limit for total coliform organisms prior to discharge to the Use Areas. Effluent limits are prescribed to ensure that the discharge will not cause exceedance of a water quality objective in groundwater and comply with Title 22.

This Order prescribes groundwater limitations that ensure the discharge does not affect present and anticipated future beneficial uses of groundwater.

This Order is also a Master Recycling Permit with requirements consistent with the Water Code section 13523.1, including the requirement to establish and have authority to enforce rules and/or regulations for recycled water Users governing the design and construction of recycled water use facilities and the use of recycled water in accordance with water recycling criteria established in Title 22, California Code of Regulations and this Order.

The Monitoring and Reporting Program is designed to verify compliance with effluent limitations and operational requirements of the WDRs.