

## INFORMATION SHEET

ORDER R5-2014-\_\_\_  
SOUTH SAN JOAQUIN IRRIGATION DISTRICT  
NICK C. DEGROOT WATER TREATMENT PLANT  
WASTEWATER TREATMENT AND LAND BASED DISCHARGE  
STANISLAUS COUNTY

### Facility Description

The South San Joaquin Irrigation District (SSJID, "Discharger") owns and operates the Nick C. DeGroot Water Treatment Plant located at 5855 Dodds Road, Oakdale, in Stanislaus County. The facility treats approximately 40 million gallons per day (MGD) of fresh water from Woodward Reservoir for use as drinking water for the cities of Tracy, Lathrop and Manteca. The facility was built in 2005, but has not been regulated under Waste Discharge Requirements (WDRs).

The facility comprises approximately 43 acres of land consisting of water treatment operations and water containment and storage areas. Two unlined storm water detention ponds are present at the northeastern portion of the facility. The combined storage capacity of the two unlined ponds is approximately 1.97 million gallons.

The facility has an unused water supply well that was installed in 2003, but is not currently in service. Water level measurements collected from the well during its installation indicated that the depth to groundwater was approximately 88 feet below ground surface.

### Current Wastewater Process and Waste Characterization

The facility operates year-round and treats raw water through pre-chlorination; coagulation and dissolved air flotation for removal of solids and dissolved material; chemical stabilization to minimize internal pipe corrosion; ultrafiltration; and chlorine disinfection. Pre-treated water then flows through an ultrafiltration system where suspended solids and solutes of higher molecular weight are screened out.

There are currently eight ultrafiltration membrane trains that require quarterly cleaning. The cleaning process includes two separate steps to remove organic and inorganic foulants. Each step of the cleaning process generates wastewater. Rinse water from cleaning organic foulants is recycled within the facility; however, wastewater from cleaning inorganic fouling cannot be recycled. The inorganic foulants are removed from the ultrafiltration system by a neutralization process.

The facility was originally designed to return the inorganic wastewater to the treatment process, but it has been determined that the residual citrate adversely affects the primary pretreatment coagulation process by sequestering the coagulant and preventing floc formation. In 2012, the Discharger discontinued the use of ferric chloride as a flocculent and began using aluminum chlorohydrate (ACH) to promote the coagulation of solids during water treatment.

The WTP currently generates approximately 240,000 gallons of wastewater quarterly. Currently, this wastewater is either hauled off-site to a permitted disposal facility or discharged to concrete-lined sludge drying beds for evaporation when excess storage capacity is available.

Wastewater sampling conducted during quarterly ultrafiltration cleaning indicates that sodium, dissolved manganese, and dissolved aluminum are present at concentrations in excess of comparable water quality objectives. The Discharger believes that the presence of manganese is due to impurities in the quicklime used in the water treatment process and/or possibly from the previous use of ferric chloride in cleaning the ultrafiltration membrane trains. The Discharger is currently evaluating alternatives to reduce manganese concentrations in the wastewater. The presence of aluminum in the wastewater is likely related to the use of aluminum chlorohydrate as a coagulant.

#### Land Application Areas

The Discharger proposes to discharge wastewater into two unlined storm water evaporation/percolation ponds for disposal. The two unlined ponds have a combined storage capacity of two million gallons. Based on a saturated percolation rate of 50 gallons per square foot per day, it would take approximately 7.4 hours for the quarterly wastewater volume of 240,000 gallons to completely infiltrate. Therefore, the proposed percolation/evaporation ponds provide sufficient disposal capacity.

#### Basin Plan, Beneficial Uses, and Regulatory Considerations

The facility is located in the Valley Home Hydrologic Area of the San Joaquin Valley Floor Hydraulic unit (535.20). Local drainage is to Lone Tree Creek, which eventually drains to the San Joaquin River. The Basin Plan designates the San Joaquin River as supporting the beneficial uses of municipal and domestic supply; agricultural supply; industrial process supply; hydropower generation; water contact recreation; non-contact recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

#### Flow and Effluent Limitations

Effectively immediately, discharge from quarterly ultrafiltration membrane cleaning events to the two unlined evaporation/percolation shall not exceed 1 million gallons per calendar year.

Based on the recent changes to the flocculation and ultrafiltration membrane cleaning processes, wastewater effluent quality is expected to improve over time. However, is not possible to predict the level of improvement that can be achieved or when it might occur. Therefore, this Order sets wastewater effluent triggers to assure a continued reduction in wastewater constituent concentrations. If the required improvements do not result in significantly improving groundwater quality, the Discharger will be required to implement

additional treatment or control as necessary to bring the discharge into compliance to protect Basin Plan water quality objectives.

Due to first encountered groundwater being in excess of 50 feet below ground surface and the propensity for most soils to adsorb and reduce the mobility of sodium, magnesium, and aluminum, the discharge is not likely to cause exceedance of water quality objectives.

#### Groundwater Limitations

The discharge shall not cause groundwater to contain waste constituent concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations, or contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.