



North San Mateo County Sanitation District – Recycled Water Treatment Facility



**Bay Work Workshop on Wheels
February 22, 2017**

Daly City: Tertiary Treatment System Overview

In 2002 the Daly City Wastewater Treatment Plant & Carollo Engineering began construction modifications to include tertiary facilities. In August 2004 the city commenced the delivery of recycled water. The purpose of the tertiary facilities is to provide recycled water for the irrigation of four major golf courses: Olympic Golf Club, Lake Merced Golf Club, San Francisco Golf Club & Harding Park Golf Club. Previously these golf courses relied on groundwater for irrigation. Use of recycled water alleviates the demand placed on the Westside Basin Groundwater Aquifer and helps preserve the aquifer as a drinking water supply.

The tertiary facilities include six DynaSand filters. These filters are upflow, deep bed, granular media filter (course sand) with continuous backwash. The filter media is cleaned by a simple internal washing system that does not require backwash pumps or storage tanks. The absence of backwash pumps results in lower energy consumption. These filters are rated to handle 3-5gpm/ft² with an influent solids concentration of 20-50ppm SS.

Under the San Francisco Regional Water Quality Control Board, Daly City is permitted 2.77MGD of filter effluent to be used according to our Title 22 permit. A 40HP vertical turbine pump is used to deliver up to 1,923gpm which is dosed with Aluminum Chloride Hydroxide (Alum coagulant) into a 37,000 gallon flocculation basin before entering the six DynaSand filters. Effluent flows over a weir and through a manifold into a 187,000 gallon serpentine contact basin for disinfection by Sodium Hypochlorite. The filter backwash flows through a 4" plastic pipe back to the plant influent channel.

After adequate disinfection the water flows over a weir and is dosed with a powder & water gypsum slurry, requested by the four golf clubs to reduce sodium concentrations. The water then flows through a recycled effluent pump sump and over a second weir downstairs into two 650,000 gallon equalization storage tanks. During the night as the golf clubs begin to irrigate the night shift operators will pump directly to the golf club storage tanks as needed. The recycled effluent pump station is equipped with five recycled water pumps ranging from 50-100HP delivering 1,200-2,500GPM.

Below are Title 22 tertiary filter effluent parameters that have to be continuously met while producing recycled water:

pH: 6.5-8.4

Dissolved Oxygen: 1.0mg/l minimum

Dissolved Sulfide: 0.1mg/l maximum

Total Coliform: 2.2 MPN per 100/ML

Chlorine residual: 5.0mg/l minimum

Filter effluent flow: 1,923gpm maximum

Disinfection contact time: 90 min contact time through chlorine contact basin

Turbidity: NTU daily average of 2.0 and cannot exceed 5.0 more than 5% of the time and never to exceed 10.0

