

# Project Description

## San Mateo Clean Water Program – Wastewater Treatment Plant Nutrient Removal and Wet Weather Flow Management Upgrade and Expansion Project

The City of San Mateo (City) collects, conveys, and treats stormwater and wastewater from the City of San Mateo, Estero Municipal Improvement District (EMID), which includes Foster City, the southern portion of the Town of Hillsborough, Crystal Springs County Sanitation District, and a portion of the unincorporated area of the County of San Mateo. The San Mateo/EMID Wastewater Treatment Plant (WWTP) currently treats an average dry weather flow of approximately 11 million gallons per day (mgd) (with a design capacity of 15.7 mgd) and discharges to the San Francisco Bay. The existing primary treatment capacity is 60 mgd and secondary treatment capacity is 40 mgd; therefore, during wet weather events, influent flows greater than 40 mgd and up to 60 mgd (outfall capacity) receive primary treatment and disinfection, and are blended with disinfected secondary effluent prior to discharge. Additionally, the existing WWTP has several facilities and components that are more than 75 years old and nearly half of the system is reaching the end of its useful life.

The Clean Water Program (CWP or Program) was chartered in 2014 to prioritize and implement the Capital Improvement Plan (CIP) recommendations from the Integrated Wastewater Master Plan as validated and refined by the Program. The CWP is a comprehensive plan to upgrade the aging wastewater collection and treatment system with advanced infrastructure that will provide reliable services, increase the wet weather management capacity in the collection system and at the WWTP. The following are specific goals of the Program:

- Replace aging infrastructure and facilities.
- Provide wet weather treatment capacity assurance.
- Meet current and prepare for future regulatory requirements.
- Meet San Mateo's sustainability goals, including more efficient use of energy and recycled water.

This Special Use Permit Formal Application has been prepared for the below mentioned Wastewater Treatment Plant Nutrient Removal and Wet Weather Flow Management Upgrade and Expansion Project (WWTP Upgrade and Expansion Project) that is proposed for construction on the Detroit Drive site,

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adjacent to the existing WWTP. The WWTP Upgrade and Expansion Project, the largest of the projects being implemented under the CWP, will upgrade the WWTP's aging infrastructure with new advanced liquid treatment process facilities and general plant upgrades. The upgrades will increase the plant's capacity for wet weather flow management to eliminate blending and comply with regulatory requirements, improve treatment reliability, produce a higher-quality effluent that meets Title 22 recycled water quality, and meet the City's sustainability goals to protect the Bay for years to come. The WWTP Upgrade and Expansion Project consists of new liquids treatment process facilities, including headworks, primary treatment, five-stage biological nutrient removal/membrane bioreactor (BNR/MBR) process, biological and chemically enhanced treatment (BioCET) process, and other general plant upgrades, including odor control to serve the new facilities. The innovative BioCET process involves dualuse clarifiers and a biological contact tank to provide secondary treatment of wet weather flows to eliminate blending and meet NPDES requirements. The new facilities will be designed to handle influent flows of 21 mgd (maximum month) and 78 mgd (peak wet weather flows with both in-system and onsite storage). In addition, a new administration building will be provided for WWTP operations and maintenance staff, and will house the new main control room and a new laboratory. A new maintenance warehouse will be provided on the existing WWTP site to allow for consolidation of shipping, receiving and storage of parts, materials and supplies required for WWTP maintenance.

Conceptual planning for the WWTP Upgrade and Expansion Project was completed in November 2016. The engineering design phase started in December 2016 and will last approximately 23 months through final design completion in November 2018. Site preparation activities as part of pre-construction phase are anticipated to begin September 2017 and last approximately 10-12 months. Major construction is expected to start in December 2018 and end in May 2023, with full plant commissioning extending until November 2023. To help mitigate the risk associated with the high volume of construction work expected in the Bay Area during the planned construction period and to ensure partnership among all parties during construction, the City adopted the Construction Manager at Risk (CMAR) delivery approach for the project; a contract was executed between the City and the selected CMAR in January 2017.

In accordance with federal and state requirements, a Programmatic Environmental Impact Report (PEIR) was prepared and certified (June 2016) that serves as the primary environmental compliance document for implementation of the CWP projects, including the WWTP Upgrade and Expansion Project. The PEIR analysis focused on the applicability/inapplicability of 13 federal regulatory acts and identified their impact on project design and the mitigation strategies that have been proposed to address potential infractions. The Final PEIR found no anticipated violations of federal or state (California Environmental Quality Act [CEQA]) environmental requirements, thus ensuring minimal construction and operations impacts on service-area residents and local ecosystems.

Refer to the attached Figure 1 for an overview of the WWTP Upgrade and Expansion Project site plan and facilities.

Figure 1 - Site Overview Map



- 1 **New Headworks Facilities** comprised of: realigned and extensions of five influent sewer forcemains, with metering, routed to an influent junction box; preliminary screens with sluiceway, and screenings washing and compacting equipment; aerated grit removal tanks with grit pumps and blowers and grit washing and dewatering; fine screens with integral washer and compactor with screenings conveyance via shaftless screw conveyors; screening and grit handling building; and electrical building.
- 2 **Three Dual Use Clarifiers (DUCs)** that are covered and able to operate in primary, secondary, and chemically enhanced primary treatment modes, and includes a flow split structure, primary sludge pumps, scum pumps, and primary effluent pumping.
- 3 **Dual Use Contact Tank (DUCT)** for use as a return activated sludge (RAS) deoxygenation (DeOx) tank during normal mode operation and as a biological contact tank as part of the BioCET process during wet weather mode operation, along with associated mixers, aeration diffusers, blowers, and pumps.
- 4 **Biological Nutrient Removal (BNR) Facilities** consisting of a 5-stage Bardenpho configuration and divided in four trains, each subdivided in different zones that provide enhanced biological phosphorous removal, nitrification, denitrification, and organic and solids removal. The BNR configuration also includes the DUCT operating in RAS DeOx Mode during Normal Operating Mode.
- 5 **Membrane Bioreactor (MBR) Treatment Facilities** with membrane tanks, permeate pumping, backwash pumping, RAS pumping, air scour blowers, membrane cleaning system, and associated controls.
- 6 **New 15,000-square-foot Administration Building with Control Building** that includes a minimum control room, laboratory, conference room, offices, locker rooms, and restrooms. The building will meet LEED Silver certification.
- 7 **Below-Grade Utility Corridors** connect the DUC gallery and MBR building basement on both sides of the facility. Corridors house waste activated sludge (WAS) and chemical pumping equipment, process piping, and electrical and instrumentation conduit.
- 8 **Influent FEQ Basin** consisting of conversion of the existing aeration basins and addition of FEQ return pumps.
- 9 **Chemical Storage and Feed Facility** for coagulant, polymer, carbon, citric acid, sodium hypochlorite, and alkalinity (future).
- 10 **Disinfection Facilities**, which include improvement of existing chlorination and dechlorination facilities.
- 11 **Odor Control** for the headworks, DUCs, portions of the DUCT, and FEQ basin.
- 12 **Site Work** that included site paving and grading modifications, site improvements to meet City flood protection requirements, and site utilities, including potable water, non-potable water, stormwater, and fire protection.
- 13 **Landscaping** that provides open space surrounding the facility and pedestrian circulation in that open space with connections to the community to minimize visual impacts.
- 14 **New Maintenance Warehouse** with storage mezzanine to store parts and materials currently stored in various locations at the WWTP.