Making the San Mateo WWTP the Gem of the Bay

August 19, 2016
Agenda

- Introductions
- Clean Water Program Overview
- WWTP Upgrades
- Potential Water Reuse Opportunities
- Next Steps
Clean Water Program – Drivers & Objectives

Replace Aging Infrastructure

Provide Higher Levels of Treatment & Capacity Assurance

Address Sustainability, Climate Change, & Biosolids/Energy

Bundled Collection System

WWTP

2009 CDO

2013 NPDES Permit

Infrastructure Certification

Water Re-Use Partnerships
CWP – System Wide Approach

Sewer System Upgrades to Prevent SSOs

Basin 1
Basin 2
Basin 3
Basin 4

Wastewater Management

New & Existing WWTP Layout
Current Rendering of MBR WWTP – Primary & Secondary Treatment Facilities

Potential Footprint For Water Reuse Facility
Dry & Wet Weather Flow Layouts

Dry Weather Operations

Extreme Wet Weather Operations
CWP WWTP Capacity

General Treatment Capacity

- Primary: 60 mgd
- Dry Weather with MBRs: 21 mgd
- Wet Weather with BioCEPT: 39 mgd
- Average Dry Weather Flow: 11 mgd

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Max Month (mgd)</th>
<th>Peak Wet Weather (mgd)</th>
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<tbody>
<tr>
<td>Influent</td>
<td>21</td>
<td>78</td>
</tr>
<tr>
<td>Headworks</td>
<td>21</td>
<td>78</td>
</tr>
<tr>
<td>Primary</td>
<td>21</td>
<td>60</td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBR</td>
<td>21</td>
<td>21+</td>
</tr>
<tr>
<td>BioCEPT</td>
<td>0</td>
<td>39</td>
</tr>
<tr>
<td>Outfall</td>
<td>60</td>
<td>60</td>
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</table>
Key Water Quality Goals – Target & Stretch

Target Goals:
- TN 6 mg N/L
- TP < 1 mg P/L

Stretch Goals:
- TN < 3 mg N/L
- TP < 0.1 mg P/L

<table>
<thead>
<tr>
<th>Required For</th>
<th>Parameter</th>
<th>Unit</th>
<th>Months</th>
<th>Average Dry Weather Flow</th>
<th>Average Annual</th>
<th>Average Monthly</th>
<th>Average Weekly</th>
<th>Maximum Daily</th>
<th>Instantaneous Minimum</th>
<th>Instantaneous Maximum</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Permit</td>
<td>Permitted Flow as stated in Permit</td>
<td>mgd</td>
<td>Year Round</td>
<td>15.7</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>40</td>
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<td>NPDES Permit (RW2-213-34006), The 40% peak wet weather design flow for secondary treatment</td>
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<tr>
<td>Design</td>
<td>Design Flow</td>
<td>mgd</td>
<td>Year Round</td>
<td>15.7</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>60</td>
<td>--</td>
<td>--</td>
<td>Design flow</td>
</tr>
<tr>
<td>Design</td>
<td>Design Flow (discharge)</td>
<td>mgd</td>
<td>May 1 - Sept 30</td>
<td>15.7</td>
<td>N/A</td>
<td>17.8</td>
<td>60</td>
<td>--</td>
<td>--</td>
<td>60</td>
<td>Design flow for secondary (add internal recycles)</td>
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<tr>
<td>Permit</td>
<td>Carbonaceous Biological Oxygen Demand, 5-day @ 20°C (dBOD)</td>
<td>mg/L</td>
<td>May 1 - Sept 30</td>
<td>--</td>
<td>15</td>
<td>25</td>
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<td>NPDES Permit (RW2-213-34006)</td>
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<tr>
<td>Permit</td>
<td>Permit Total Suspended Solids (TSS)</td>
<td>mg/L</td>
<td>Oct 1 - April 30</td>
<td>--</td>
<td>20</td>
<td>40</td>
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<td>NPDES Permit (RW2-213-34006), WWTP Quality Goal (influent)</td>
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<td>Permit</td>
<td>Permit Total Ammonia</td>
<td>mg N</td>
<td>Oct 1 - April 30</td>
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<td>40</td>
<td>80</td>
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<td>Design Total Nitrogen</td>
<td>mg N</td>
<td>May 1 - Sept 30</td>
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<td>6</td>
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<td>Effluent Quality Goal (influent) to go down to 6 mg N/L in the future (allow for dilution)</td>
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<tr>
<td>Design</td>
<td>Design Total P</td>
<td>mg P</td>
<td>May 1 - Sept 30</td>
<td>--</td>
<td>&lt;1</td>
<td>--</td>
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<td>WWTP Quality Goal (influent) to go down to 0.1 mg P/L in the future (allow for dilution)</td>
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<tr>
<td>Permit</td>
<td>Permit Total Chlorine Residual</td>
<td>mg/L</td>
<td>Oct 1 - April 30</td>
<td>--</td>
<td>NA*</td>
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<td>NPDES Permit (RW2-213-34006)</td>
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<tr>
<td>Permit</td>
<td>Enterococcus</td>
<td>MPN/100 mL</td>
<td>May 1 - Sept 30</td>
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<td>&lt;35</td>
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<td>NPDES Permit (RW2-213-34006), Monthly Recurrence Mass</td>
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<tr>
<td>Permit</td>
<td>Fecal coliform</td>
<td>cfu/100 mL</td>
<td>Year Round, Discharge</td>
<td>--</td>
<td>&lt;200</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<td>NPDES Permit (RW2-213-34006), The geometric mean fecal coliform density in a calendar month shall not exceed 200 MPN/100 mL, the 90th percentile value of the last 11 values shall not exceed 400 MPN/100 mL</td>
</tr>
<tr>
<td>Design</td>
<td>Design Total Coliforms</td>
<td>MPN/100 mL</td>
<td>Year Round</td>
<td>--</td>
<td>20</td>
<td>20</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>20</td>
<td>California Title 25 non-restricted reuse limit</td>
</tr>
</tbody>
</table>

1 85% removal required for Average Monthly
2 The median number of total coliforms in any sample shall not exceed 2.2 MPN/100 mL, for the last 7 days samples were taken. No more than one sample shall exceed 23 MPN/100 mL total coliform in any 30-day period. The maximum number of total coliforms in any sample shall not exceed 240 MPN/100 mL.
* During the Winter Season, the MBR will operate under nutrient removal mode
Reuse Opportunities

Multiple uses possible, CWP currently has interest in:
- Water partnerships, PPPs
- Irrigation
- Indirect and direct potable reuse
- Groundwater recharge
- Nutrient trading and banking
- And others?
Next Steps

• CWP is interested in finding partners in all tiers of opportunity in order to meet regulatory goals, provide community benefits, and achieve sustainability objectives.
• Considerations moving forward include
  • Have community and Council backing and active support
  • Looking at total resource recovery
  • Pursuing regional solutions versus competition

CONTACT US!
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CLEAN WATER PROGRAM

PROTECTING THE BAY FOR A SUSTAINABLE FUTURE

The Gem of the Bay