Project Timeline

• November 2018
  – Council identified as priority project and awarded contract to Carollo Engineers

• December 2018
  – Staff and Carollo began working on Master Plan (first comprehensive plan)

• March 2020
  – Master Plan analysis and Draft CIP complete
  – Tonight’s objective: Provide update on Master Plan and receive input from City Council
Purpose of Master Plan

20-Yr Roadmap:

- Aging Infrastructure
- New Facilities
- Capital and Maintenance Costs

Condition of Priority Facilities

Hazard Vulnerability

Capacity not analyzed as Staff believes WWTF has sufficient capacity to meet anticipated flows over next 20 years.
Treatment Facility Overview

- City owned/operated
- Service area: Watsonville & County Sanitation Districts:
  - Freedom (SC)
  - Salsipuedes (SC)
  - Pajaro (M)
- Population served: 60,000
- Rated capacity 10.3 mgd Avg Annual
- Current flow 5.3 mgd Avg Annual

Majority of liquid and solids treatment facilities evaluated.
Sewer Pump Stations Overview

- City owned and operated
- 4 Coastal and 8 Inland PS Evaluated
- City staff conducted visual assessment
- Carollo evaluated project needs, priorities, timing, and costs
Condition Assessment and Hazard Vulnerability

- Structural Assets
- Power Distribution System
- SCADA and PLC Network System
- Mechanical Assets
- Seismic Vulnerability
- Flood Risk
# Original Useful Life

<table>
<thead>
<tr>
<th>Asset Category</th>
<th>Description (1)</th>
<th>Original Useful Life (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
<td>Concrete Steel</td>
<td>Up to 50 - Depends on Rebar, Up to 25 - Depends on Coating</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Pumps – Wastewater</td>
<td>15</td>
</tr>
<tr>
<td>Electrical</td>
<td>Motor Control Centers</td>
<td>25</td>
</tr>
</tbody>
</table>

Notes:

### Age of Plant Facilities:
- Most Structures: >35 Yrs
- Preaeration and Sedimentation Basins: >50 Yrs
- Aeration Basins, Blower/RAS-WAS Bldg: 23 Yrs

### Age of Pump Stations:
- Most >35 Yrs
- PS 1 Pajaro Dunes Master: 55 Yrs
Structural Assessment Key Findings

- Replace Anchor Bolts and Grout (Recycle PS)
- Repair Corrosion (Gravity Thickeners)
- Repair Cracks/Spalling (Energy Recovery)
Seismic Assessment Key Findings

Limited Lateral Bracing (Gravity Thickeners)

Staff to evaluate timing and prioritization of seismic retrofits.

Majority of tanks and buildings' seismic vulnerability can be mitigated through retrofit projects.
City staff has been proactive in repairing and replacing equipment as-needed to prolong useful life.
Electrical and Instrumentation

Key Findings

Majority of assets obsolete and near end of useful life.

Age and Obsolescence (Replace Most MCCs)

Corrosion

Relocation (Gravity Thickener Rm)
Flood Hazard Assessment

Considerations:
1. 20-Yr horizon (to 2040).
2. 100-Yr Flood Event, Tsunami, and Sea Level Rise.
3. Facilities prioritized by operational criticality.
Entire facility in high hazard flood zones (100-yr, tsunami)

**KEY FINDING**
- Prioritize improving levee reliability and level of protection.
- WWTF not flooded by projected SLR alone

**RECOMMENDATION**
- Further analysis (geotechnical, survey, maintenance).
- Protect key assets.
Coastal Facilities Flood Assessment

**Coastal facilities in high hazard flood zones (100-yr, tsunami)**

**KEY FINDING**

- Existing Risk: Submerged by tsunami or 100-yr flood
- Future Risk: SLR will exacerbate flood impact

**RECOMMENDATION**

Flood proof facilities and flood-resistant equipment upgrades.
Priority Projects
1. Main Switchgear and Standby Generators

$12.9M Project
Proposed Construction 2022-24

Standby Generators in Energy Recovery Building

Main Switchgear Building and PG&E Transformer

Levee Stabilization Project
Main Switchgear Recommendations

• Most critical part of electrical system at end of service life; needs replacement.
• Vulnerable to tsunami & 100-yr flood.
• Building & equipment replacement, $6M.
Standby Generators Recommendations

- Failure = plant without standby power.
- Vulnerable to tsunami & 100-yr flood.
- Equipment replacement, $4.2M
- Building flood hazard mitigation, $1.1M.

Antiquated Technology

Reliability Concerns

Potential Flood Risk

Seismic Concerns
Coordinate with Levee Stabilization Project

Proposed in 2022-24, $1.6M (Previously identified City project)

Existing Underground Electrical Service to WWTP

PG&E Service Entrance Affected by Proposed Sheet Piles
2. Digester, Digester Building and FOG

$11.3M Project
Proposed Multi-Year Construction

Fats, Oil and Grease (FOG) Station
Digester Control Building

Digesters 1 and 2
Digesters 1 & 2 Recommendations

- Requires multi-step crack repair and lining.
- Proposed in 2020 and 2025/27, $2.2M.

Repair Roof Cracks From Above (#2)

Repair Possible Roof Cracks From Interior (Drone Inspection of #2)

Repair #2 Wall Cracks; Lining
Control Building Area Recommendations

- Digester No. 1 Mixing Replacement, FY 2021-22, $1.3M.
- Digester No. 2 Mixing Improvements, FY 2025-26, $520K.
- Seismic retrofit project, FY 2026-28, $240K.
- Miscellaneous equipment replacement, $500K.

Seismic Separation Needed Between Structures

Improve Digester Mixing Systems
Fats, Oil, and Grease Recommendations

• Existing Receiving Station Improvements, $910K
• New Receiving Station and Thickening, FY2025-30, $5.6M

Existing FOG Receiving Station

Proposed 2nd FOG Receiving Station
3. Headworks and Influent Pump Station

Total Project $12M
Proposed Construction 2026-28

Headworks Screens and Electrical Building

Influent Pump Station
Structure & Mechanical Recommendations

- Facility approaching end of useful life.
- Replace Headworks and Influent PS (previously identified City project).
Headworks Electrical Recommendations

• Replace with new electrical building (previously identified City Project).

Obsolete Equipment
(No Spare Parts)

Space Constraints in Building

New Proposed Location
4. Secondary Treatment Process Upgrade

- Total Project $14.8M
- Proposed Construction Start in 2030

- Recycle PS
- Trickling Filters
- Aeration Basins

Blower and RAS/WAS Building
Trickling Filters

Seismic, Mechanical and Electrical upgrades needed in ~10 yrs due to age and obsolescence.

Mechanical arm replaced by Staff but media nearing end of useful life

Significant seismic deficiencies may be difficult to retrofit
Aeration Basins and Blowers

• Mechanical & Electrical upgrades needed in ~10 yrs due to age and obsolescence.
• Consider regulatory drivers with process upgrades.

Update diffuser system for process efficiency.

Replace centrifugal blowers with high efficiency turbo blowers.
5. Sewer Pump Station Projects

$5.7M Replacement Recommended
(Wet Well, Pump, Electrical)

$3.4M Maintenance Recommended
(Pump and Generator Replacement, New Controls, Wet Well Lining)
6. Priority Sewer Pipeline Projects

Sanitary Sewer System
Sub Basin 7 Boundary
• Construction 2023 - 2027
• Cost $2M

Airport Freedom Sewer Trunk
• Construction Jan 2020 - Sep 2020
• Cost $4.3M

Freedom Blvd. Sewer Replacement, Alta Vista to Green Valley
• Construction 2020 - 2021
• Cost $1M
CIP Cost Development
Capital Improvements Process

1. Key Findings
2. Planning Costs
3. Group by Needs

Prioritize

CIP Projects
## 20-Year CIP Costs

<table>
<thead>
<tr>
<th>Project Description</th>
<th>2020-25</th>
<th>2025-30</th>
<th>2030-40</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>WWTF Main Switchgear, Standby Generators and Plant Electrical System</td>
<td>$12.9M</td>
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<td>$12.9M</td>
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<tr>
<td>WWTF Digesters and FOG Improvements Projects</td>
<td>$2.4M</td>
<td>$8.9M</td>
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<td>$11.3M</td>
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<tr>
<td>WWTF Headworks and Influent Pump Station</td>
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<td>$12.0M</td>
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<td>$12.0M</td>
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<tr>
<td>WWTF Secondary Treatment Process Improvements</td>
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<td>$14.8M</td>
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<td>Collection System Pump Station Improvements</td>
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<td>$9.1M</td>
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<td>Remainder of Identified CIP Projects</td>
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<tr>
<td><strong>Total 20-Yr CIP Costs</strong></td>
<td>$27.2M</td>
<td>$43.7M</td>
<td>$40.4M</td>
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</tbody>
</table>

**Notes:**
1. Refer to Attachment B, Capital Improvement Plan Summary, for detailed breakdowns.
2. Includes Levee Embankment Stabilization Project.
3. Includes both Master Plan and previously identified City Projects.
## 20-Yr CIP Costs - Master Plan/Existing CIP

<table>
<thead>
<tr>
<th>Description</th>
<th>2020-25</th>
<th>2025-30</th>
<th>2030-40</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master Plan Projects</td>
<td>$ 19.0M</td>
<td>$ 22.6M</td>
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<td>Previously Identified City Projects</td>
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<tr>
<td><strong>Total 20-Yr CIP Costs</strong></td>
<td>$ 27.2M</td>
<td>$ 43.7M</td>
<td>$40.4M</td>
<td>$111.3M</td>
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Wastewater Enterprise: 10-Year CIP

Capital Improvement Plan (CIP)

- Headworks Replacement: $39.3 M
- Secondary Treatment: $38.5 M

<table>
<thead>
<tr>
<th>Year</th>
<th>New Electrical System</th>
<th>New Digester</th>
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<td>FY 2020</td>
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<tr>
<td>FY 2030</td>
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In Summary

• Completed Master Plan = strategically plan improvements next 20 years; serve reliably and meet regulatory needs.

• Balance between project prioritization and funding available – avoid emergency repair costs.

• Next steps:
  – Incorporate projects into 5-year rate study.
  – As development and land use changes are updated, reevaluate sewer pump station and pipeline project priorities.
  – Consider funding opportunities (grants, low interest loans).
Questions and Discussion