



San José-Santa Clara  
Regional Wastewater Facility

# CIP

## CAPITAL IMPROVEMENT PROGRAM

Quarterly Status Report:  
January – March 2024

### **MISSION**

Rebuild and revitalize the  
Regional Wastewater Facility  
and deliver the CIP on time  
and within budget.





# CAPITAL IMPROVEMENT PROGRAM

## HOW ARE WE DOING?

Key Performance Indicators (KPIs) Year-to-Date:

### SAFETY

0 Incidents



### EXPENDITURES

On Target



### ENVIRONMENTAL

0 Permit Violations



The San José-Santa Clara Regional Wastewater Facility (RWF) is the largest advanced wastewater treatment facility in the western United States. The RWF has been treating the South Bay's wastewater and protecting public health and the environment without interruption since 1956. The discharge of clean wastewater into the South San Francisco Bay contributes to diverse and thriving fish and wildlife ecosystems.

Much of the RWF's infrastructure is functioning well beyond its intended use. As a result of a long and thoughtful Master Plan process, a \$2.1 billion, 30-year Capital Improvement Program (CIP) is underway to modernize and refurbish the RWF so its critical work can continue. Homes and businesses in Silicon Valley need a modern, reliable, state-of-the-art treatment plant to ensure a high quality of life and a thriving economy. The CIP is rebuilding RWF infrastructure and updating treatment processes with innovative, efficient new technologies. The first phase of the CIP started in 2014 and is nearing completion. The second phase will soon be underway.

This report summarizes the CIP's progress and highlights accomplishments from January to March 2024.

## LEGEND



On Target



Alert



At Risk







## Digested Sludge Dewatering Facility Project: An Innovative Approach to Biosolids Management

By Kerrie Romanow, ESD Director

As we move forward with modernizing the RWF’s infrastructure and updating treatment processes, our responsibility to approach biosolids management with flexibility and innovation is key. The Digested Sludge Dewatering Facility Project exemplifies this innovative approach to evolving state regulations and market changes, diversification of disposition options, and reducing the footprint of RWF’s processing area to free up land for other uses.

An exciting benefit of this project is that the transition to an enclosed mechanical dewatering process, and future decommissioning of existing open-air lagoons and drying beds, will advance the RWF’s goal to reduce odors. This demonstrates our enduring commitment to being good stewards of the environment and community health.

Since construction began in September 2022, significant milestones have been achieved. First, stone column foundations were installed to reduce ground settlement and improve load-bearing capacity in preparation for construction of the new dewatering facilities.



Construction underway at the Dewatering and Truck Loadout Buildings taken March 2024

By early 2024, foundations, walls, structural steel and other appurtenances had been erected for the main dewatering building and the truck loadout facility.

Horizontal directional drilling under Zanker road enabled placement of several underground pipelines that will convey sludge and centrate between the new dewatering facility and RWF process areas across the street. This choice of pipe installation technique had the benefit of minimized environmental disturbance and little impact to traffic on Zanker road.

Other key achievements include: the delivery of critical electrical components, amidst industry-wide supply-chain challenges, necessary for on-time project completion; and recent completion of



Centrifuge and conveyors setup for confirmation testing

centrifuge confirmation testing to verify that performance requirements can be met prior to the full testing, startup and commissioning of the dewatering facilities expected in 2025.

I am excited about the results-driven collaborative efforts between the design-builder, Operations and Maintenance, and CIP teams. I am proud that our team continues to upgrade with the mission to protect environmental and public health through reliable, high quality, cost-effective wastewater treatment.

# How the CIP Delivers Projects

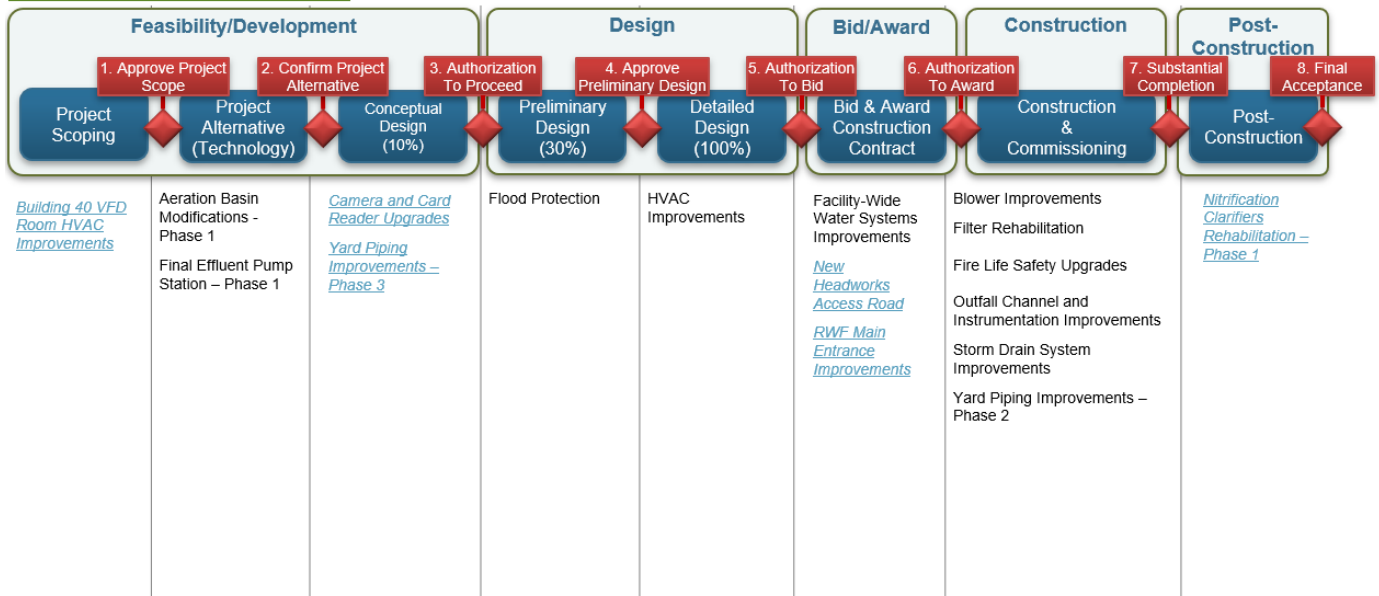
The CIP uses two project delivery methods:

- **Design-bid-build** is a commonly used delivery method in which an owner first procures a professional engineering firm to prepare detailed design plans and specifications for a project. The owner then solicits bids for the project and procures a general contractor to construct the project based on the design completed by the engineer.
- **Design-build** is a two-phase delivery method contracted with a single design-build firm in which the project's design, cost estimating, construction schedule and final guaranteed maximum price (GMP) are developed during the first phase. If the owner and design-builder agree on the schedule and the GMP during the first phase, the final design, construction and commissioning are completed during the second phase.

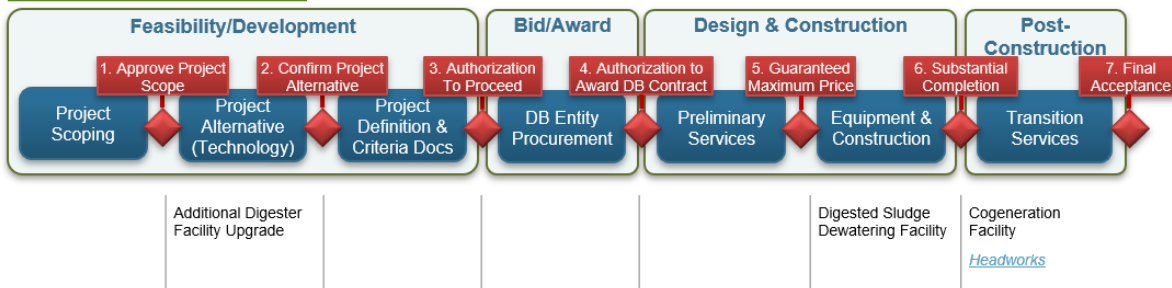
All CIP projects, regardless of project delivery method, follow a consistent process of consecutive delivery stages, each culminating in a stage gate, as presented in the project delivery models below. Stage gates are go/no-go points at which the project team must demonstrate that the project has met predefined evaluation criteria before advancing to the next delivery stage. The benefits of the stage gate process include consistency, quality assurance, ensuring that the scope continues to address existing needs, budget/schedule control, and Operations & Maintenance team engagement.

## Active Projects by Delivery Model

### Design-Bid-Build Active Projects



### Design-Build Active Projects



\*Projects shown underlined and in blue and italics have either been initiated or advanced this reporting period.



# CIP PROJECTS

The CIP includes projects in both design and construction phases. This update outlines accomplishments for the past quarter in two sections: Projects in Design and Projects in Construction. For projects in construction and post-construction phases, the CIP uses cost and schedule baselines monitored through the City's Capital Project Management System. Access project performance information at the following link:

[Project Performance Information](#)

## Projects in Design

- **Camera and Card Reader Upgrades**

During this period, consultant Jacobs completed preliminary fiber optic cable testing; and submitted the final Conceptual Design Report.

- **Facility-wide Water Systems Improvements**

In January, Council approved staff's recommendation to award the construction contract to Ranger Pipelines, Inc. In March, staff issued the construction Notice to Proceed.

- **RWF Main Entrance Improvements**

In January, staff advertised the construction contract and bids were opened in March. The recommendation to TPAC and Council to award the construction contract is scheduled for May and June 2024, respectively.

- **New Headworks Access Road**

In January, consultant Brown and Caldwell submitted the final 100% design packet. Staff advertised the construction contract in February and bids were opened in March. The recommendation to TPAC and Council to award the construction contract is scheduled in May and June 2024, respectively.

- **Yard Piping Improvements – Phase 3**

In January, consultant Black & Veatch completed a condition assessment for the 72" settled sewage influent in the secondary tunnel. In March, the project team completed the alternatives analysis and conceptual design.





# Projects in Construction

This aerial map of the RWF shows the CIP's active construction projects.



1

### Blower Improvements: Oxygenating wastewater with greater energy efficiency



Process Aeration Blowers with improvements

RWF's aeration blower systems, which supply oxygen for breaking down organic material in wastewater, are more than 30 years old. This project will replace blower engines, gearboxes and associated control equipment, extending the system's life and enhancing its energy efficiency.

**Project Budget:** \$48.7 million

**Expected Beneficial Use:** April 2024

**Update:**

- During this period, contractor Monterey Mechanical continued to address punch list items on the new blowers, including fine tuning controls, adjusting flow meters and repairing oil leaks.

2

### Digested Sludge Dewatering Facility: Drying biosolids more efficiently and effectively



Centrifuge #1 arriving at the jobsite

The RWF currently uses an open-air lagoon and drying bed process to stabilize biosolids before landfill disposal. The 2013 Plant Master Plan recommended moving to an enclosed mechanical dewatering process. This project will build a mechanical dewatering facility and support facilities.

**Project Budget:** \$170.3 million

**Expected Beneficial Use:** October 2025

**Update:**

- In February, design-builder Walsh installed centrifuge, pumps and electrical equipment for the centrifuge confirmation testing.
- In March, Walsh started centrifuge confirmation testing and sampling. Walsh also completed all interior and exterior work and final inspection for the two sludge storage tanks; and directional drilling and pulling of 7 of 8 pipes under Zanker road.
- During this period, Walsh continued installation of structural steel and coating, pipe support and plumbing, HVAC, and drywall in the main dewatering building. In the truck load out facility, Walsh installed the truck scales top concrete and continued to install building structural steel.

3

### Filter Rehabilitation: Protecting health and the environment, increasing reliability and capacity



Electrical vault drain installation

The filtration process is one of the final steps in wastewater treatment. The RWF's tertiary filtration process consists of 16 granular media filters and ancillary equipment. Built in the 1970s and 1980s, these components are near the end of their useful lives. The project will

rehabilitate structural, mechanical, electrical and instrumentation elements of the system.

**Project Budget:** \$58.8 million

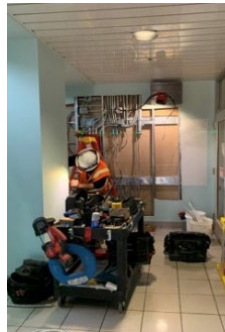
**Expected Beneficial Use:** September 2024

**Update:**

- During this period, contractor Walsh continued replacing electrical equipment. Power was migrated to the new devices as they became available through closely coordinated short-term process shutdowns. Walsh also finished installing the insulation on air headers, repaired drywall, and applied coating in various areas.

4

### Fire Life Safety Upgrades: Improving worker health and safety and the environment



ESB Fire Panel Installation

Several RWF buildings currently lack automated fire alarm systems to monitor and send out a notification in the event of a fire. Fire life safety upgrades are needed to bring the RWF into compliance with current building safety and fire codes.

**Project Budget:** \$7.1 million

**Expected Beneficial Use:** August 2024

**Update:**

- In February, contractor Blocka Construction coordinated testing of the Environmental Services Building (ESB) gas alarm panel.
- In March, Blocka installed fire alarm systems in the ESB and Cogeneration buildings. They also installed the main fire alarm panel in the Administration Building and continued work on panel programming.
- During this period, the project team also continued coordination with the San José Fire Department to obtain permit approvals for fire alarm work in other buildings.





5

### Headworks: Offering better performance and reliability with new wastewater pre-treatment system



Newly installed SBW Flow Meter and Backflow Preventer

Headworks pre-treatment of raw wastewater enhances and protects downstream treatment processes. This project will replace Headworks 1, the oldest RWF facility, with a new Headworks 3, and will also modify Headworks 2.

The new system will be more reliable and will be able to treat projected wet-weather wastewater flows.

**Project Budget:** \$168.4 million

**Achieved Beneficial Use:** December 2023

**Update:**

- During this period, design-builder CH2M completed all remaining punch list items, began site cleanup, and started demobilization efforts. Project Final Acceptance is expected in May 2024.

6

### Nitrification Clarifiers Rehabilitation – Phase 1: Improving secondary treatment infrastructure and efficiency



Contractors Overaa and McGrath changing a light ballast at Basin B1

Central to the RWF's biological nutrient removal process, clarifiers separate sludge from effluent. The 16 existing clarifiers were constructed in the 1970s and 1980s and are near the end of their useful lives. This project will make cost-effective

improvements to enhance the clarifiers' efficiency and minimize unscheduled maintenance on them for the next 30 years.

**Project Budget:** \$52.3 million

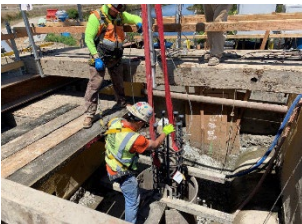
**Achieved Beneficial Use:** October 2023

**Update:**

- During this period, contractor Overaa continued to work on punch list items and project closeout documentation. Project Final Acceptance is anticipated in May 2024.

7

### Outfall Channel and Instrumentation Improvements: Reliable water quality reporting at the edge of the Bay



Placing rebar for 65' pile

The end product of the wastewater treatment process travels through the outfall channel to the Artesian Slough and South San Francisco Bay. This project will replace

older technology with a fiber optic system, install new

instruments, improve the integrity of the weir structure, and construct a large vault structure to install new flow meter technology, making the meters accessible to staff.

**Project Budget:** \$10 million

**Expected Beneficial Use:** May 2024

**Update:**

- In January, the SO2 Building transformer was delivered to the RWF.
- In February and March, contractor Anvil Builders installed and energized the transformer and installed a fence around it. Anvil also continued minor work items like demolishing the old duct bank and vault, and calibrating flowmeters.

8

### Storm Drain System Improvements: Protecting critical infrastructure during 10-year through 100-year storm events



Contractors carry out wet well rehab work

The RWF experiences localized flooding during heavy rainfall events due to runoff, requiring improvements to the existing storm drain system to protect the operational area. This project will improve the existing storm drain system by rehabilitating storm water pump stations, pipes, manholes, catch basins, and other components. The upgrades made by this project will protect RWF's critical structures and equipment during 10-year through 100-year storm events.

**Project Budget:** \$12.6 million

**Expected Beneficial Use:** June 2024

**Update:**

- In January, contractor Ranger Pipelines installed and tested the float switch controls and beacon at the Stores Pump Station.
- In February, Ranger completed functional testing of the new flow meters in effluent pipelines and coordinated with the manufacturer to calibrate the flow meters.
- In March, factory acceptance testing was successfully completed for one of two new pumps to be installed at the Lagoon Pump Station. Ranger also continued to address punch list work, and other project closeout activities.





## Yard Piping Improvements – Phase 2: Repairing and replacing critical pipelines at the RWF



*Installing epoxy inside No. 3 Water Wet Well*

The RWF has 67,000 linear feet of process pipes that carry gas, liquids, sludge, air, steam and other process streams to and from the various treatment areas. These networks of pipeline are critical to RWF operations. Seventy percent of the pipes are more than 25

years old, and 10% are more than 50 years of age. This is the second of a multi-phase project to repair or replace pipe systems that have been identified as high priority or at high risk of failure.

**Project Budget:** \$24.1 million

**Expected Beneficial Use:** January 2025

### Update:

- In January, contractor Michels Trenchless completed the concrete slab placement and stainless steel grating installation at Effluent Junction Structure 1.
- In February, Michels installed aluminum stairs and handrailing at the fish screening structure.
- In March, Michels completed all improvements at the No. 3 Water Wet Well, including pressure washing, cutting a keyway, applying epoxy and testing.































*Daylight Station with newly installed panels and canopy*

## What's Ahead?

In April – June 2024:

- Obtain Council approval to award the construction contracts for the RWF Main Entrance Improvements and New Headworks Access Road projects.
- Achieve Beneficial Use on Blower Improvements, Storm Drain System Improvements, and Outfall Channel and Instrumentation Improvements projects.
- Amend the master agreement with AECOM for general engineering services.
- Amend the master agreement with Hawkins Delafield & Wood for legal services.
- Amend the master services agreement with Black & Veatch for the Yard Piping Improvements project.
- Amend the master services agreement with Kennedy Jenks for the Support Buildings project.
- Request a construction contingency increase for the Fire Life Safety Upgrades project.

## Fiscal Year 2023-2024 Program Performance Summary

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
<b>Stage Gates</b>	90%	100%			100%		
		15/15 <sup>1</sup>			21/21 <sup>2</sup>		
Measurement: Percentage of initiated projects and studies that successfully pass each stage gate on their first attempt. Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
<b>Schedule</b>	90%	50%			40%		
		1/2 <sup>3</sup>			2/5 <sup>4</sup>		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone <sup>5</sup> . Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
<b>Budget</b>	90%	50%			40%		
		1/2 <sup>6</sup>			2/5 <sup>7</sup>		
Measurement: Percentage of CIP projects that are accepted by the City within the approved baseline budget. <sup>5</sup> Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75							
<b>Expenditures</b>	\$241M	\$188M			\$284M <sup>8</sup>		
Measurement: CIP FY23-24 committed costs. Target: Committed costs meet or exceed 70% of planned budget. 70% of \$344M = \$241M. Therefore Fiscal Year End Green: >=\$241M; Red: < \$241M							
<b>Safety</b>	0	0			0		
Measurement: OSHA reportable incidents associated with CIP Delivery for the fiscal year. Criteria: Green: 0 injuries requiring hospitalization, 0 fatality; Amber: 1 to 2 injuries requiring hospitalization, 0 fatality; Red: >2 injuries requiring hospitalization, any fatality							
<b>Environmental</b>	0	0			0		
Measurement: Number of permit violations caused by CIP delivery for the fiscal year. Target: Green: 0 incidents; Amber: 1 to 2; Red: > 2							
<b>Vacancy Rate<sup>9</sup></b>	10%	15%			15%		
		12/81			12/81		
Measurement: Ratio of the number of vacant approved positions to approved positions. Target: Green: <= 10%; Amber: 10% to 20%; Red: > 20%							

Program KPI – Fiscal Year 2023-2024 Information

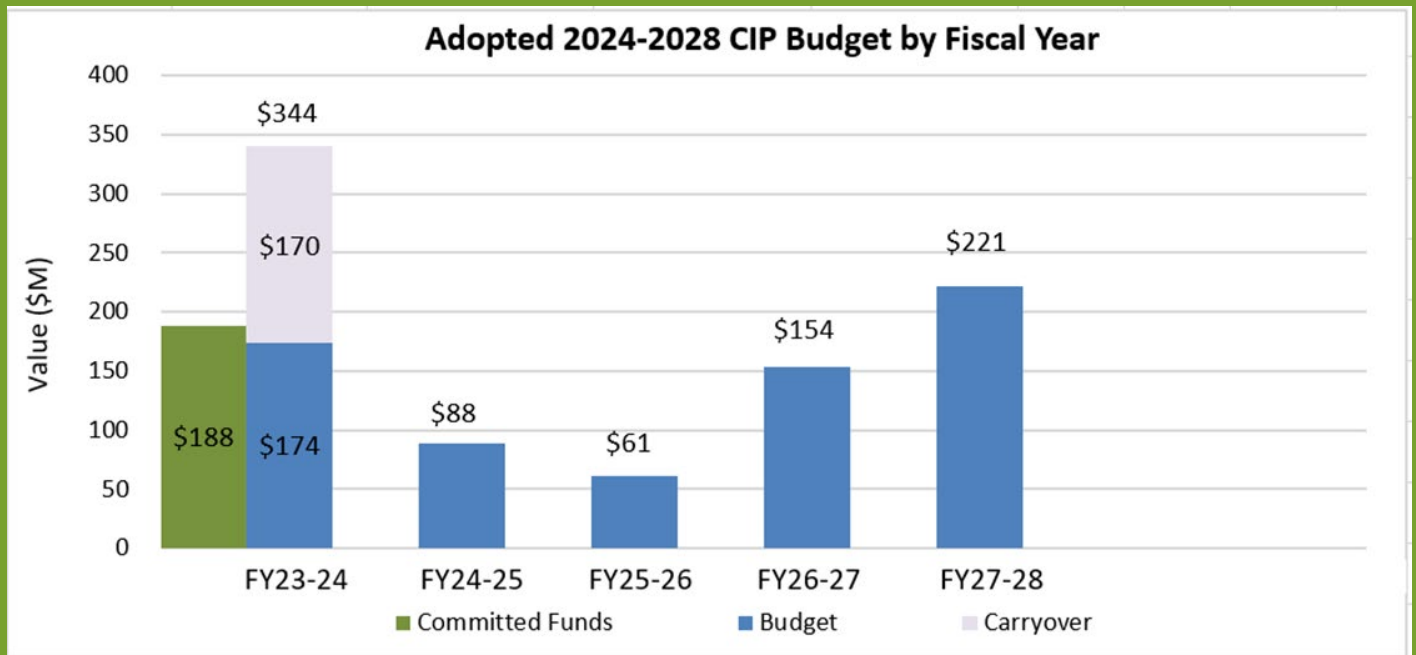




## Program Budget Performance

This section summarizes the cumulative monthly budget performance for FY 2023-24 based on the Adopted 2024-2028 CIP Budget.

### Adopted 2024-2028 CIP Expenditures and Encumbrances



[Budget Performance Information](#)

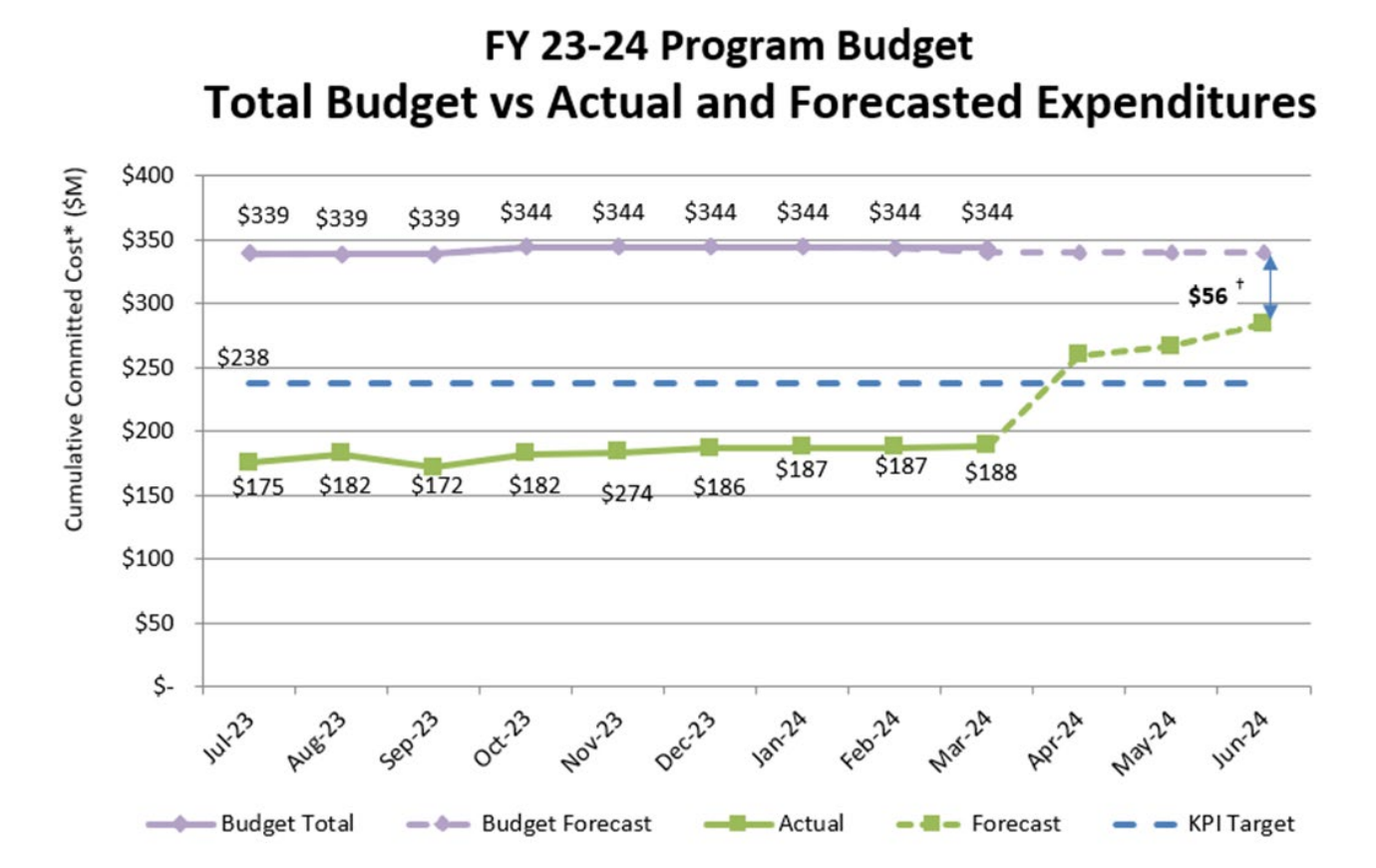




# Fiscal Year 2023-2024 Program Budget Performance

The FY 2023-24 CIP budget is composed of approximately \$174 million in new and re-budgeted funds, plus encumbered carryover of \$170 million, for a total of \$344 million.

## FY 2023-24 Program Budget

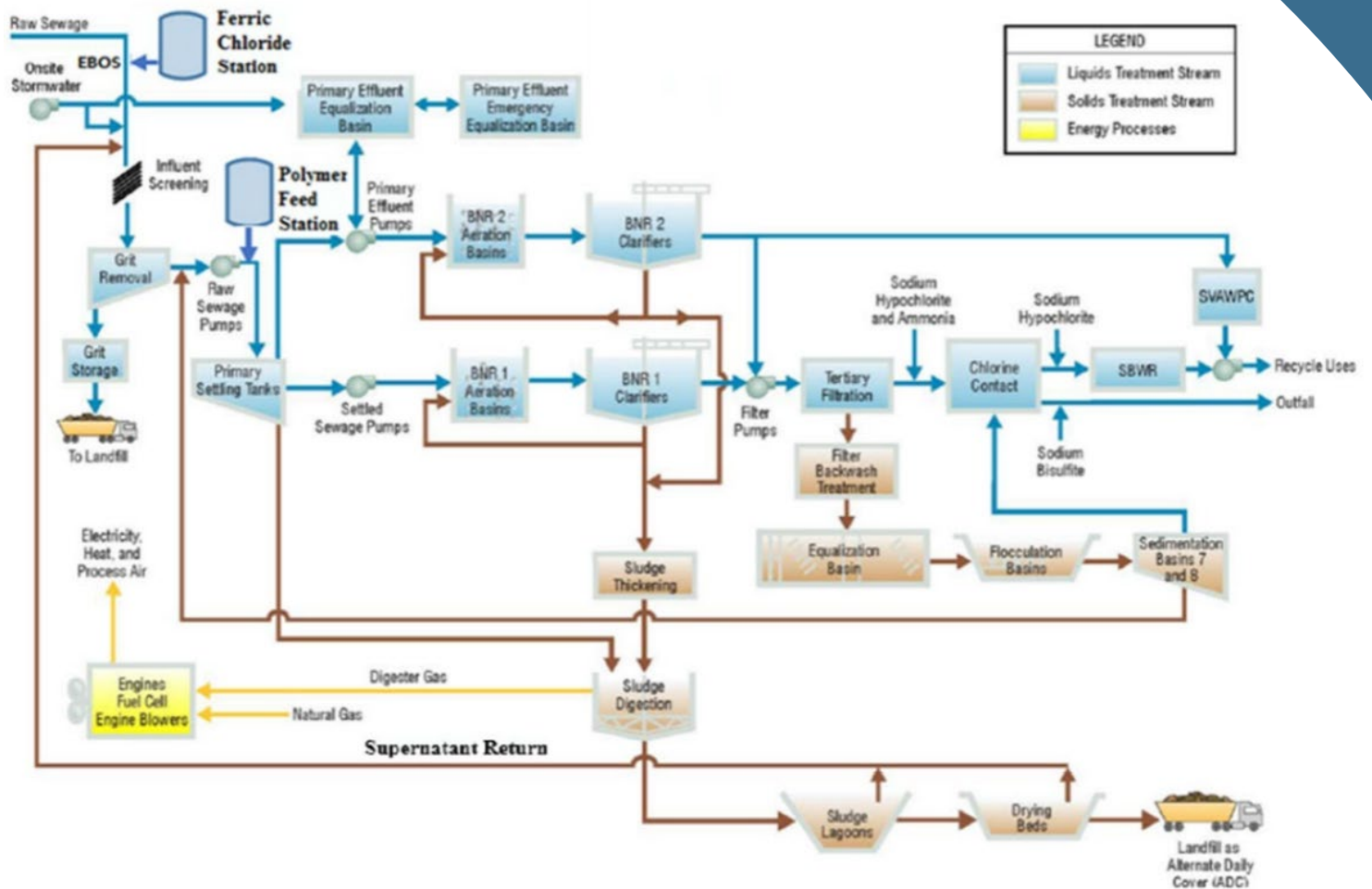


[CIP Program Budget Information](#)



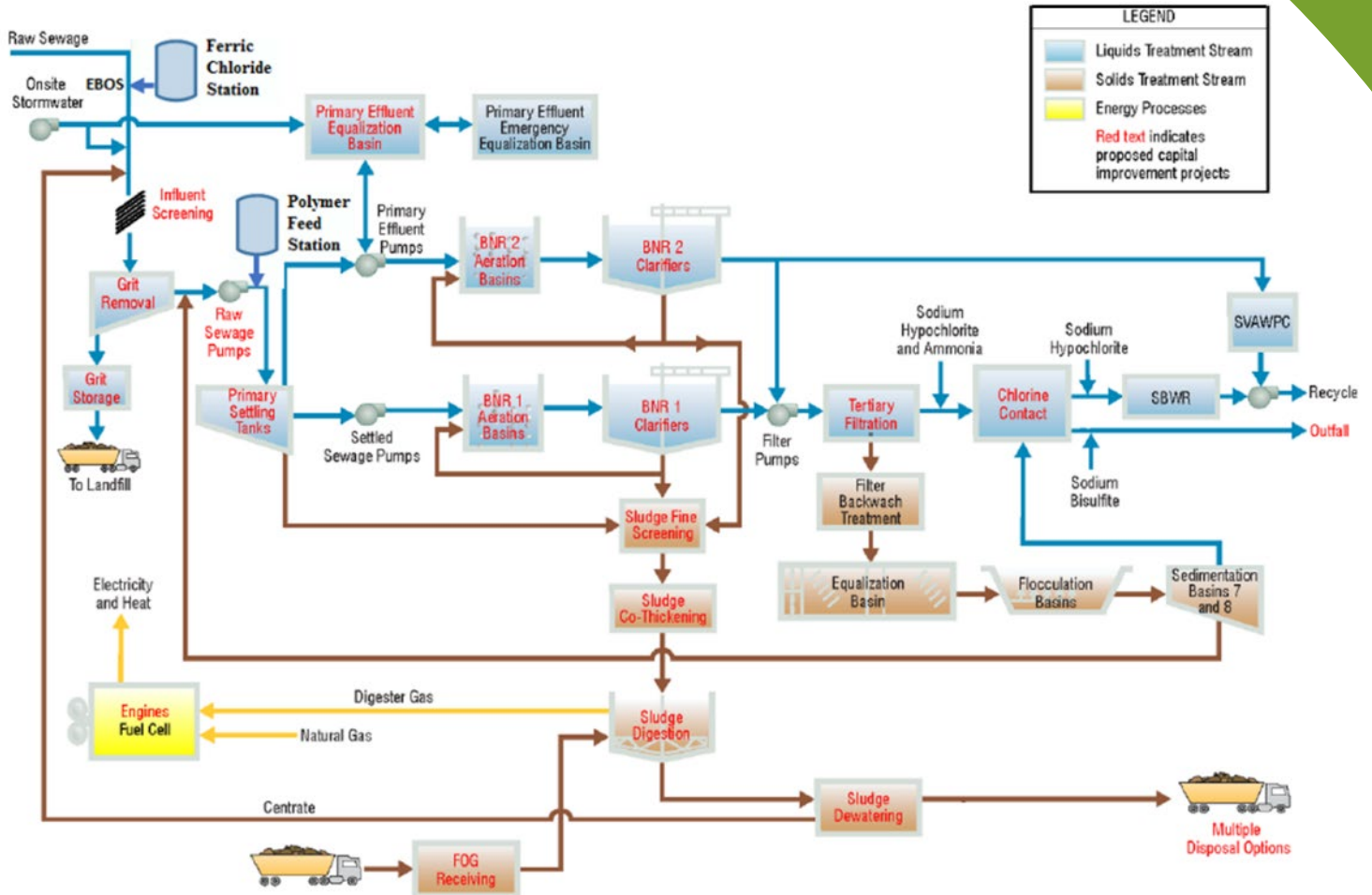
# Regional Wastewater Facility Treatment

## Current Treatment Process Flow Diagram



# Regional Wastewater Facility Treatment

## Proposed Treatment Process Flow Diagram





# Glossary

<b>Beneficial Use</b>	When a CIP project is complete in accordance with contract documents and can be used or occupied by the City, it has achieved beneficial use.
<b>Biogas</b>	A renewable energy source produced by the breakdown of sewage waste in the absence of oxygen. Biogas is composed of methane, carbon dioxide and small amounts of hydrogen sulfide.
<b>Biosolids</b>	Treated sewage sludge.
<b>Bufferlands</b>	Open acreage used by wastewater treatment plants as a buffer between plant operations and nearby communities. Bufferlands minimize odor and operational impacts on plant neighbors and often serve as wildlife habitat.
<b>Commissioning</b>	The process of assuring that all systems and components of a facility, building or plant are designed, installed, tested, operated and maintained according to the owner's requirements.
<b>DAFT</b>	Dissolved air flotation thickener tanks. Dissolved air flotation, or DAF, is a treatment process that clarifies wastewater by removing suspended matter.
<b>DCS</b>	Distributed control system. A computerized system that allows treatment plant staff to remotely monitor and control treatment processes.
<b>EIR</b>	Environmental Impact Report. A public document required under the California Environmental Quality Act to describe potential environmental impacts associated with a project. An EIR also describes measures to mitigate the impacts.
<b>Effluent</b>	Treated wastewater that is discharged from a treatment plant.
<b>Influent</b>	Raw or untreated wastewater that flows into a treatment plant.
<b>FOG</b>	The Fats, Oils and Grease program administered by the City of San José's Environmental Services Department.
<b>Headworks</b>	Facilities that first receive influent at a wastewater treatment plant. The headworks screen and remove sticks, grit and other solid material from influent to protect downstream equipment in the treatment process.
<b>NPDES permit</b>	Under the federal Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program regulates point sources such as pipes and other conveyances that discharge pollutants into water. In California, NPDES permits for the discharge of treated wastewater are issued by the Regional Water Quality Control Boards.
<b>Polymer</b>	Primarily used to help manage the process of drying and consolidating sludge.
<b>Preliminary treatment</b>	The preparatory wastewater treatment stage, in which influent passes through headworks, which screen and remove sticks, rocks and debris; and grit chambers, which remove sand and gravel.
<b>Primary treatment</b>	The initial treatment for incoming wastewater, in which gravity settles solid material and rotating bars skim floating fats, oil and grease from influent.
<b>Secondary treatment</b>	The second stage of wastewater treatment, in which aeration tanks pump air into wastewater to promote the growth of naturally occurring bacteria that remove organic pollutants.
<b>Stormwater</b>	Water from rain that does not seep into the ground but instead flows into storm drains as runoff.
<b>Tertiary treatment</b>	The final stage in advanced wastewater treatment, in which wastewater flows through filter beds, then through chlorinated tanks to become 99% clean.
<b>Wastewater</b>	Water that enters the sanitary sewer system for treatment at a pollution control plant.
<b>Wastewater Cake</b>	Sludge that is compressed after dewatering.
<b>WAS</b>	Waste-activated sludge, or the excess quantity of bacteria and microbes removed from the secondary wastewater treatment process.

