



San José-Santa Clara
Regional Wastewater Facility

CIP

CAPITAL IMPROVEMENT PROGRAM

Quarterly Status Report:
April – June 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 April to June 2024.

LEGEND



On Target



Alert



At Risk





Changes within Organization Create Sustainable Success

By Kerrie Romanow, ESD Director

As the fiscal year comes to an end, I reflect on how much we've accomplished in the last 13 years during my tenure as ESD Director. We have garnered an abundance of recognition and awards, even throughout a pandemic, continuing to achieve a level of excellence we all can be proud of. The awards and recognition attest to the professionalism and collaboration our team has demonstrated as they implement the Capital Improvement Program, the largest public works program in the City's history.

While we've accomplished so much, there is still more work to be done to rehabilitate the RWF. As we look forward, we continue to seek ways to improve. This sometimes involves making critical organizational changes. Recently, the department created two new

RWF positions to help provide a more cohesive reporting structure and improve synergy across the various groups and divisions.

The first new position is the RWF General Manager position, which was filled by former ESD Assistant Director Mariana Chavez-Vazquez in December 2023. This position will oversee the three major groups located at the RWF, including Operations and Maintenance, CIP, and the Environmental Laboratory.

The second new position is the Chief Plant Operator. The position will report to the General Manager and will be responsible for managing the Operations, Maintenance, Energy and Automation, and Biosolids Management teams.

The goal for these changes is to encourage greater collaboration across the teams based at the RWF.

The benefits of this new organizational structure are exemplified by the opportunity for more efficiency in our work and to continue the close-knit feeling among our ESD family. I am excited to see ESD continue to grow and maintain our high level of excellence through the upcoming fiscal year and beyond.

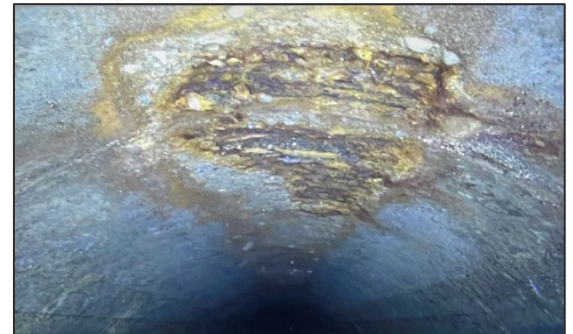
Repairing and Replacing Critical Pipelines at the RWF

The Yard Piping Improvements project is a multi-phase project to rehabilitate and replace critical pipes that carry gas, liquids, sludge, air, steam and other process streams to and from the various treatment areas of the RWF. The pipes being rehabilitated or replaced are, in some cases, decades old and have been operational nonstop during that time. If left unrepaired, failing pipes could affect treatment process operations at the RWF. Yard Piping Improvements Phase 1 was completed January 2022 and Phase 2 is currently in construction, scheduled to be completed January 2025.

Yard Piping Improvements Phase 3 is the final phase of RWF's major process pipe rehabilitation. Condition assessments completed over the last two years identified 11 pipes to be rehabilitated or replaced due to extensive corrosion. One such pipe, the 66-inch Plant Drain, was constructed in 1958 as an original influent sewer and later repurposed to serve as a major drain line for sanitary sewers, storm drains, sump drains, and various plant processes. The 66-inch Plant Drain (PD) was identified to have significant crown corrosion and is proposed to be rehabilitated using Partial Depth Concrete Crown Repair with epoxy coating.

"With the completion of Phase 3, the CIP team will have performed condition assessments for all critical process pipes with varying degrees of corrosion and repaired or replaced those pipes. Yard piping information gathered from these condition assessments and rehabilitation work provide RWF with valuable data to manage pipe assets in the future," said Senior Engineer and CIP Project Manager, **Tie Feng**.

Phase 3 of this project is currently in the Detailed Design phase. Advertisement of the construction contract is expected in January 2025.



Crown corrosion identified in the 66" Plant Drain (PD) pipe.



How the CIP Delivers Projects

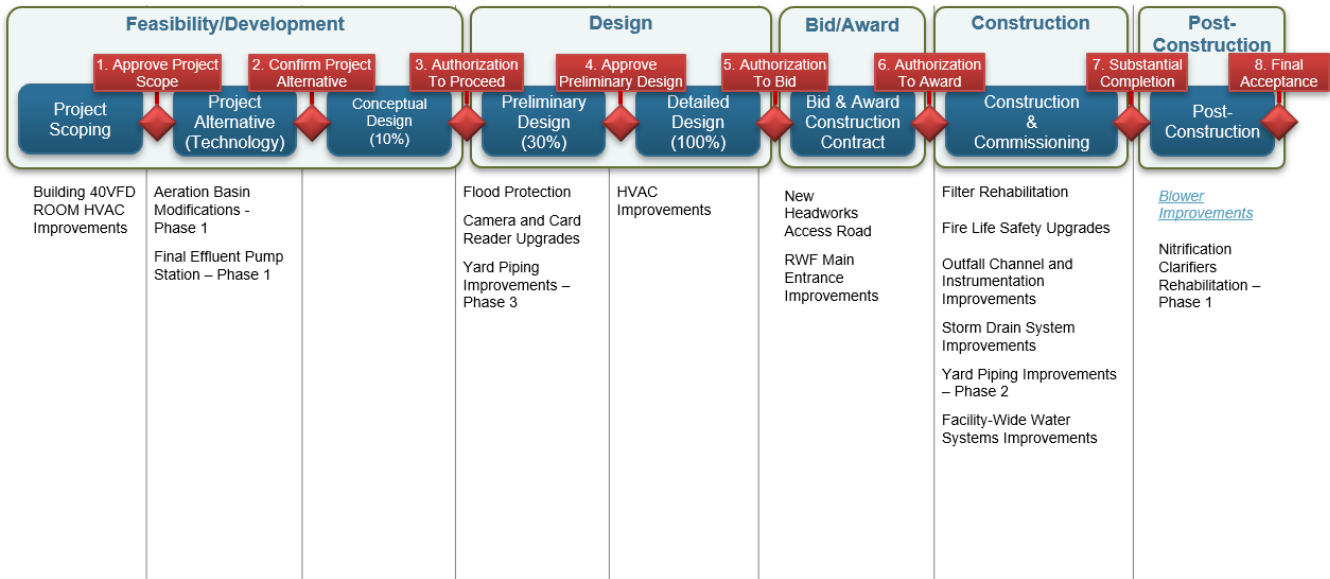
The CIP uses two project delivery methods:

- **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.

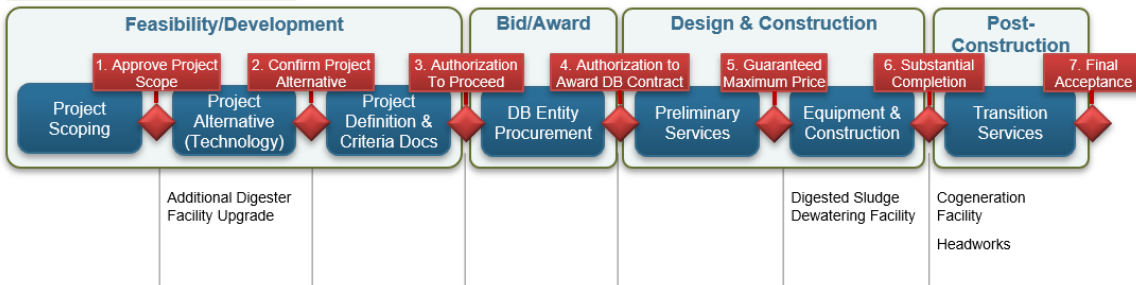
All CIP projects, regardless of project delivery method, follow a consistent process of consecutive delivery stages, each culminating in a stage gate, as presented in the project delivery models below. Stage gates are go/no-go points at which the project team must demonstrate that the project has met 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

- **Additional Digester Facility Upgrades**

During this period, the Owner's Advisor, Carollo, completed initial condition assessments on the mesophilic digesters.

- **RWF Main Entrance Improvements**

In June, Council approved staff recommendation to award the construction contract to W.E. Lyons Construction Co. Staff expect to issue Notice to Proceed to the contractor in July.

- **New Headworks Access Road**

In June, Council approved staff recommendation to award the construction contract to O.C. Jones and Sons, Inc. Staff expect to issue Notice to Proceed to the contractor in July.

- **Yard Piping Improvements – Phase 3**

During this period, consultant Black & Veatch progressed the Preliminary Design, which is expected to be complete in August.



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



Tertiary Blower Building 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

Achieved Beneficial Use: June 2024

Update:

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

2

Digested Sludge Dewatering Facility: Drying biosolids more efficiently and effectively



Truck load-out building structural steel

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 April, contractor Walsh completed centrifuge confirmation testing and successfully verified performance parameters. Walsh also installed a low-voltage switchgear in the main dewatering building.
- In May, Walsh completed installation of all four centrifuges in the main dewatering building. Walsh also finished installing the roof joist in the main dewatering building, and the pipeline and backfill on G-street.
- In June, Walsh completed installation of all four cake bins in the truck loadout facility and completed Factory Acceptance Testing on the automation panels.

3

Facility-wide Water Systems Improvements: Improving performance and reliability



Santa Clara influent control structure

The RWF has five water systems: potable water (1W), groundwater (2W), process water (3W), fire protection water (4W), and recycled water (RW). These systems were constructed at separate times as part of various expansions. The aim of this project is to review, rehabilitate, replace, and/or extend the RWF’s water systems to improve current and future performance and reliability.

Project Budget: \$80.3 million

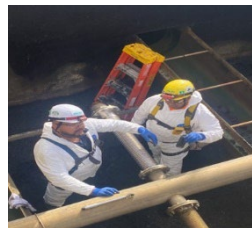
Expected Beneficial Use: June 2027

Update:

- During this period, the project team reviewed submittals by the contractor Ranger Pipelines, in preparation for the start of field activities.

4

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



Air scour flex piping replacement

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: October 2024

Update:

- In April, contractor Walsh installed and anchored a new motor control center and continued other electrical work. Sump pumps in the FIPS building were successfully started up.
- In June, contractor Walsh installed doors in the elevator and electric rooms, energized switchgear S6 and transformer S6-T1, and started excavation for a replacement duct bank near the overflow basin.



5

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



Installing Admin Building duct detectors

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: September 2024

Update:

- In May and June, contractor Blocka completed ceiling reworks in the Administration and Sludge Control buildings and Building 40. In addition, fire alarm training sessions for RWF staff began.

6

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



Final construction progress

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 continued site clean-up and demobilization and finalized project documentation. Project Final Acceptance is expected in July.

7

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



B7 Clarifier baffle reset

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.

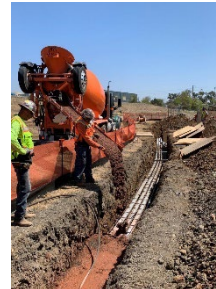
Project Budget: \$52.3 million
Achieved Beneficial Use: October 2023

Update:

- In April, contractor Overaa completed punch list work.
- During this period, Overaa continued to clean, restore, and demobilize from the site. Project Final Acceptance is anticipated in July.

8

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



Constructing electrical and communications improvements

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: August 2024

Update:

- In April, contractor Anvil calibrated the west circular pipe, repaired a leak in the chlorine analyzer and installed conduit tags and labels.
- In May and June, Anvil calibrated all four Daylight Station flow meters and continued to install and program lights at the SO2 Building.

9

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



V-ditch rebar installation

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: August 2024

Update:

- In May, factory acceptance testing was successfully completed for the second new pump to be installed at the Lagoon Pump Station.
- In June, both new pumps arrived at the RWF and were installed at the Lagoon Pump Station. Contractor, Ranger Pipelines also completed all punch list and electrical items.

10

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



Fish screen with newly added perimeter containment wall and grate

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 April, contractor Michels Trenchless installed and tested temporary reroute piping for the 48” Santa Clara Force Main.
- In May and June, Michels started repairs on the 102” nitrification influent and 120” raw sewer pipes and completed a reroute system for the 24” Lamplighter Force Main.



Outfall Channel discharging treated wastewater into the South Bay

What’s Ahead?

In July – September 2024:

- Achieve Beneficial Use on Storm Drain System Improvements, Outfall Channel and Instrumentation Improvements, and Fire Life Safety Upgrades projects.
- File Notice of Completion and Acceptance on Blower Improvements, Headworks, and Nitrification Clarifiers Rehabilitation Phase 1 projects.

Fiscal Year 2023-2024 Program Performance Summary

KPI	Target	Fiscal Year to Date			Fiscal Year End		
		Actual	Status	Trend	Forecast	Status	Trend
Stage Gates	90%	100% 17/17 ¹			100% 17/17		
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%							
Schedule	90%	33% 1/3 ²			33% 1/3		
Measurement: Percentage of CIP projects delivered within 2 months of approved baseline Beneficial Use Milestone ³ . Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75%							
Budget	90%	33% 1/3 ⁴			33% 1/3		
Measurement: Percentage of CIP projects that are accepted by the City within the approved baseline budget. ⁵ Target: Green: >= 90%; Amber: 75% to 89%; Red: < 75							
Expenditures	\$236M	\$278M ⁵			\$278M		
Measurement: CIP FY23-24 committed costs. Target: Committed costs meet or exceed 70% of planned budget. 70% of \$337M = \$236M. Therefore Fiscal Year End Green: >=\$236M; Red: < \$236M							
Safety	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							
Environmental	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							
Vacancy Rate⁹	10%	19% 15/81 ⁶			19% 15/81		
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

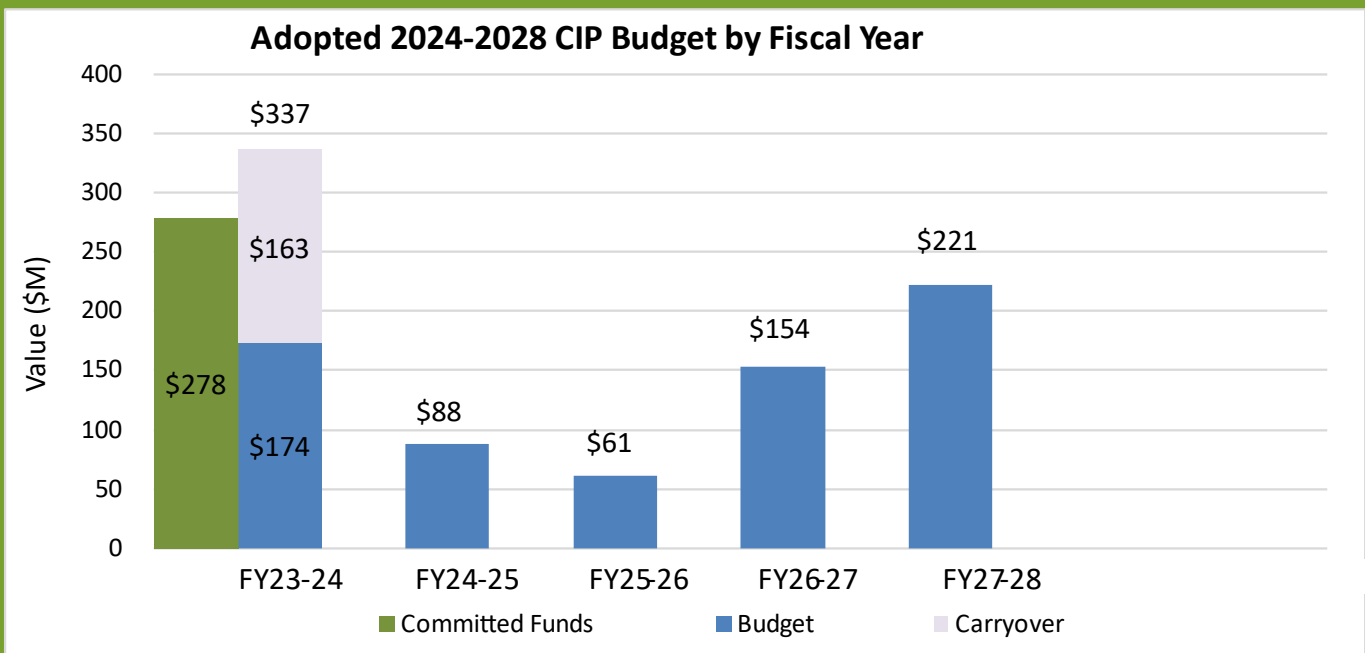




Program Budget Performance

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



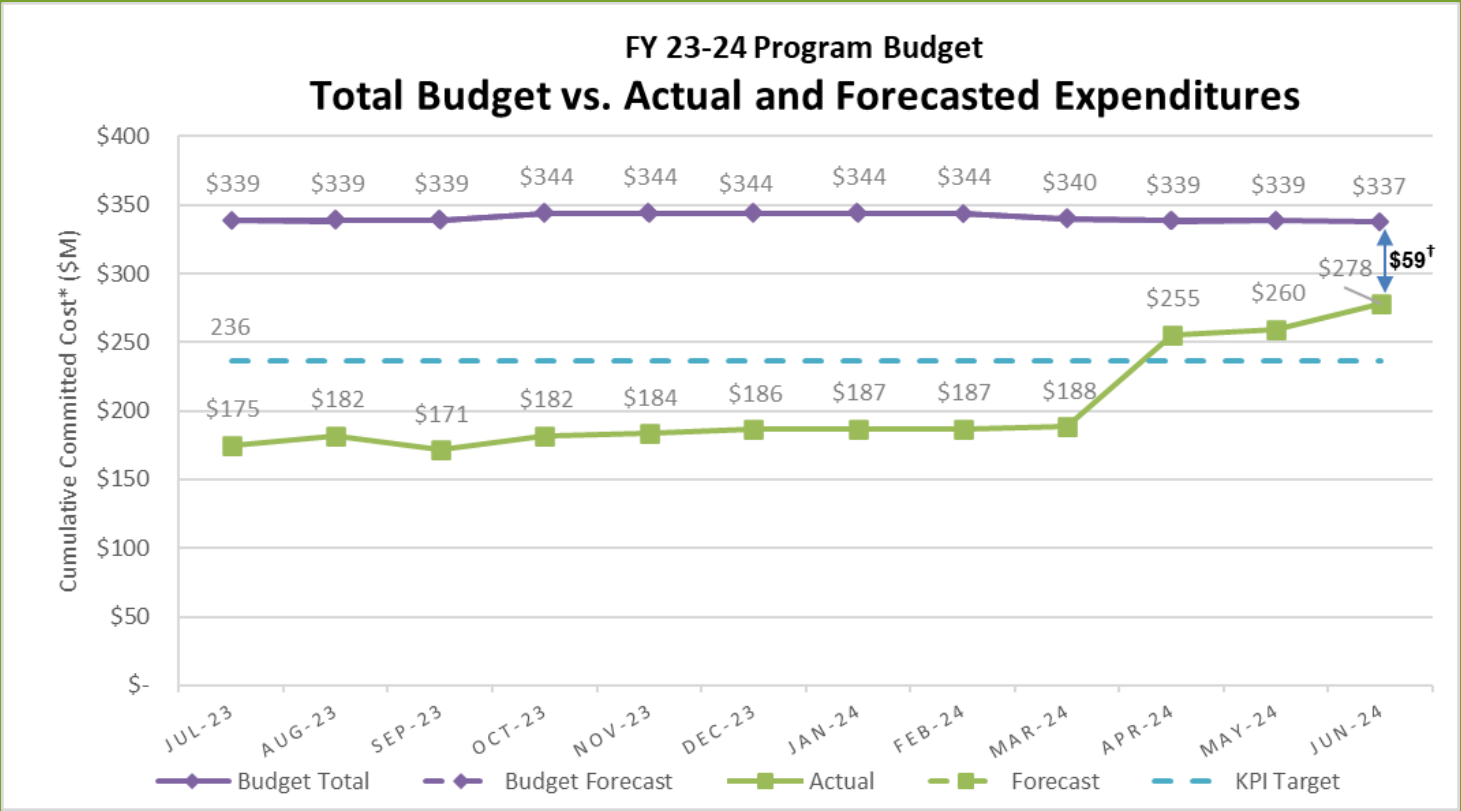
[Budget Performance Information](#)



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 \$163 million, for a total of \$337 million.

FY 2023-24 Program Budget



[CIP Program Budget Information](#)



Filter Project Increases Reliability and Capacity



The Filter Rehabilitation project, featured in [this video](#), will rehabilitate structural, mechanical, electrical, and instrumentation elements of the system.

Want to learn more?



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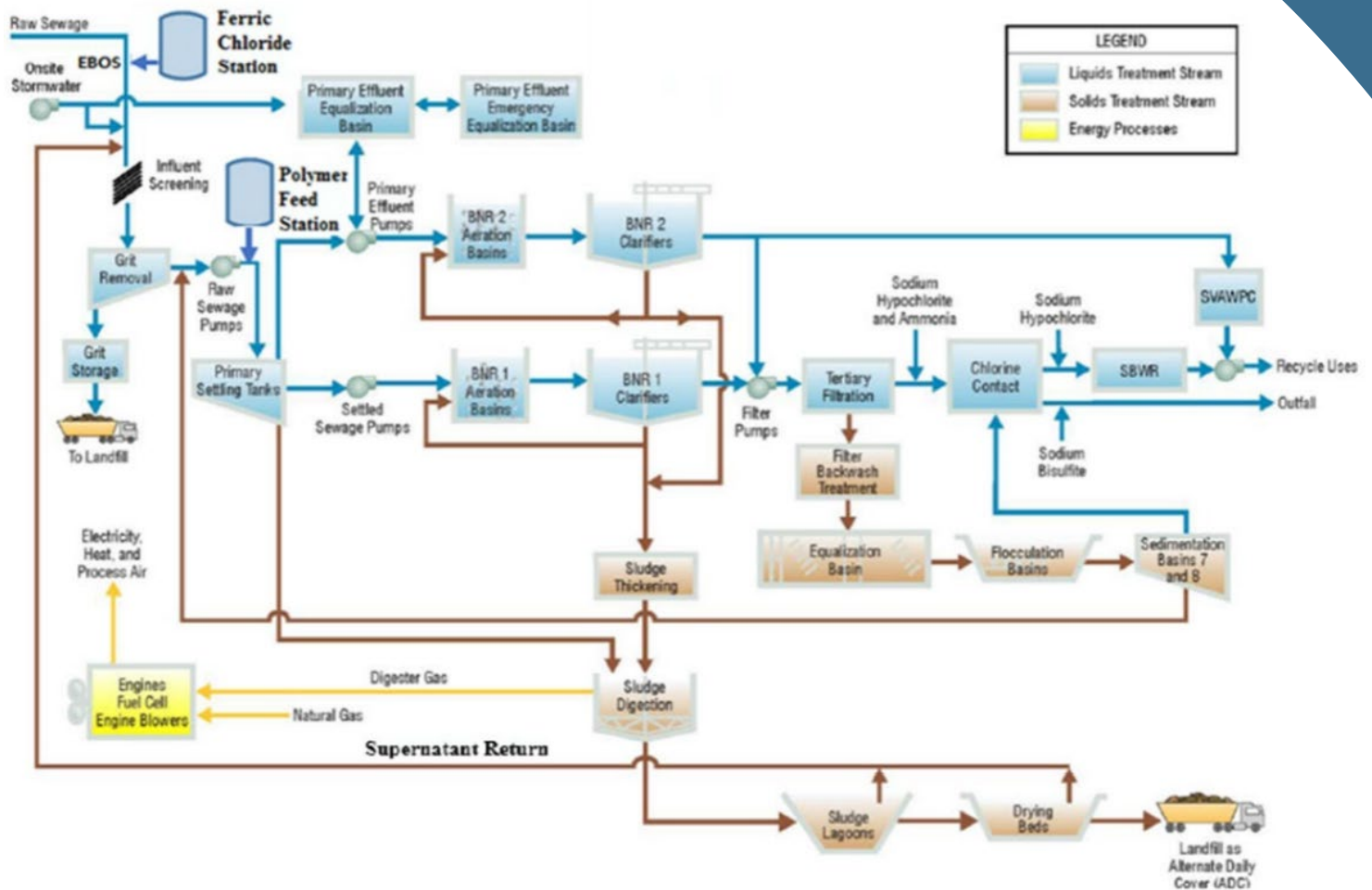


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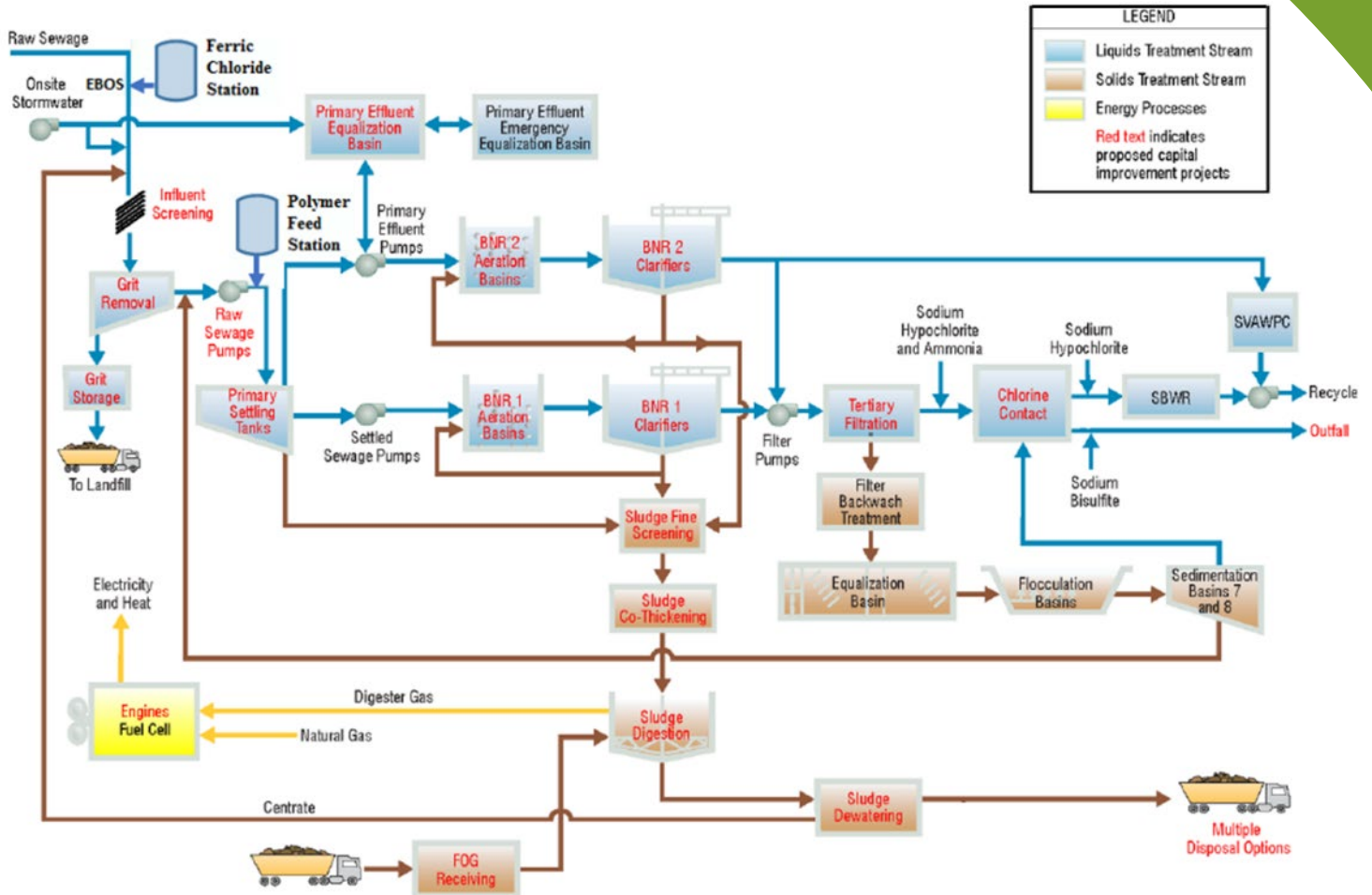
Regional Wastewater Facility Treatment

Current Treatment Process Flow Diagram



Regional Wastewater Facility Treatment

Proposed Treatment Process Flow Diagram



Glossary

Beneficial Use	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.
Biogas	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.
Biosolids	Treated sewage sludge.
Bufferlands	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.
Commissioning	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.
DAFT	Dissolved air flotation thickener tanks. Dissolved air flotation, or DAF, is a treatment process that clarifies wastewater by removing suspended matter.
DCS	Distributed control system. A computerized system that allows treatment plant staff to remotely monitor and control treatment processes.
EIR	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.
Effluent	Treated wastewater that is discharged from a treatment plant.
Influent	Raw or untreated wastewater that flows into a treatment plant.
FOG	The Fats, Oils and Grease program administered by the City of San José's Environmental Services Department.
Headworks	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.
NPDES permit	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.
Polymer	Primarily used to help manage the process of drying and consolidating sludge.
Preliminary treatment	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.
Primary treatment	The initial treatment for incoming wastewater, in which gravity settles solid material and rotating bars skim floating fats, oil and grease from influent.
Secondary treatment	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.
Stormwater	Water from rain that does not seep into the ground but instead flows into storm drains as runoff.
Tertiary treatment	The final stage in advanced wastewater treatment, in which wastewater flows through filter beds, then through chlorinated tanks to become 99% clean.
Wastewater	Water that enters the sanitary sewer system for treatment at a pollution control plant.
Wastewater Cake	Sludge that is compressed after dewatering.
WAS	Waste-activated sludge, or the excess quantity of bacteria and microbes removed from the secondary wastewater treatment process.

