

Orange County Sanitation District

CAPITAL IMPROVEMENT PROGRAM

ANNUAL
REPORT
2023/24



*Years of
Environmental Excellence*

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1947
Construction of a 7,000 foot long ocean outfall using 78-inch diameter pipes.

A-Side Clarifiers Replacement at Plant No. 2, Project No. P2-98A, in the City of Huntington Beach.





MESSAGE FROM THE DIRECTOR OF ENGINEERING

1963

*Plant No. 2 in the City of
Huntington Beach.*

For the past 70 years, the Orange County Sanitation District (OC San) has been successful providing reliable and cost-effective wastewater services for central and northern Orange County. We have been successful through our Board of Director's vision and support, staff's hard work and dedication, close collaboration across OC San's departments and external stakeholders, drive to be a leader in the industry, and commitment to being good stewards of the public's money.

The new Headquarters has brought OC San staff from nine different office locations across Plant No. 1 into one building. In a short time, this has already increased collaboration across the organization and the Engineering Department, especially for those hired during the pandemic. As a director, I really enjoy having my entire Plant No. 1 staff in one location, allowing me to continue to build a strong Engineering Department team.

Over this past year, with the continued rising costs, we had to make some important decisions on a few of our Capital Improvement Program (CIP) projects. For the Digester Gas Facilities Rehabilitation, we decided to continue to maintain our gas compressors versus replacing them to maintain the project budget. For the Digester Replacement at Plant No. 2, we decided to execute this project in two phases. The first phase

will construct six new digesters that can produce Class B biosolids. The second phase will construct additional facilities to achieve Class A biosolids if the biosolids market drives the need for this product. This will also allow us time to pilot the supercritical water oxidation (SCWO) technology and see if it is a viable technology for OC San.

The collaboration across OC San's Departments has been excellent, allowing projects to be well defined, timely executed, and well coordinated to meet the needs of Operations and Maintenance.

We have made the important decision this year to execute select projects using the progressive design-build (PDB) delivery method. We will be using a PDB Owner Advisor to develop the contract documents and scope of work templates and support the execution of the Ocean Outfalls Rehabilitation and upcoming Laboratory Replacement at Plant No. 1 through the PDB process. This delivery method aligns well with OC San's current collaborative working style. I am excited to have this option as another project delivery method.

On behalf of the Engineering Department, I would like to extend our gratitude to the Board of Directors for their continued support of our Capital Improvement Program.

Mike Dorman, PE
Director of Engineering

AGENCY INFORMATION

The Orange County Sanitation District (OC San) is responsible for collection, treatment, and recycling of wastewater for the northern and central portion of Orange County, California.

479

square miles of service area

388

miles of regional sewers

15

pump stations

2

reclamation facilities;
Plant No. 1 in Fountain Valley and
Plant No. 2 in Huntington Beach

192

average daily flow of
wastewater received in mgd
(million gallons per day)

2.6

million people served

100%

of reclaimable flow recycled

*Digesters at Reclamation
Plant No. 1 in the City
of Fountain Valley.*

Celebrating 70 Years

This year marks 70 years of environmental excellence that has allowed OC San to go beyond its role from just a simple wastewater treatment plant to an essential resource recovery facility that has helped establish our legacy as a leader in the industry. It originally started in 1921 with the formation of the Orange County Joint Outfall Sewer. In 1954, the County Sanitation Districts of Orange County officially took over duties and the responsibility of sewage treatment for the service area. We later became the Orange County Sanitation District in 1998 and rebranded to OC San in 2020. Today we treat wastewater, recycle water, produce energy, and create nutrient-rich organic matter.

The traditional gift for the 70th anniversary is the precious metal platinum. It symbolizes durability and longevity which is the very focus of OC San today. OC San will continue to provide wastewater collection, treatment, recycling, infrastructure maintenance, ocean monitoring, and many other services for the next 70 years and more. Our goal is to provide the best quality of service while keeping rates among the lowest in California.



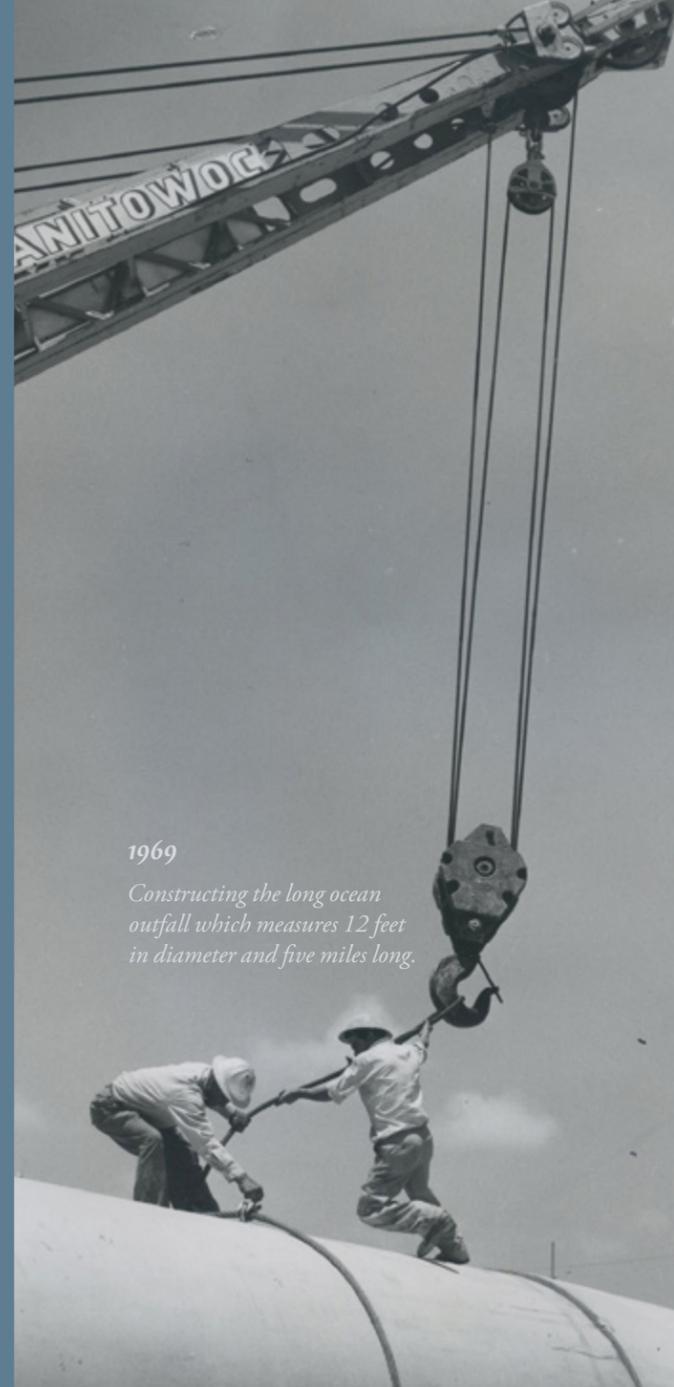
1927

*Constructing the
Joint Outfall Sewer.*

CAPITAL IMPROVEMENT PROGRAM OVERVIEW

OC San's Capital Improvement Program (CIP) is a long-term plan to rehabilitate, replace, and improve our infrastructure and facilities to provide a reliable, resilient, and safe system for current and future generations. Current CIP projects will rehabilitate or replace aging facilities to maintain reliability, incorporate climate resiliency, mitigate seismic risk, and incorporate improved technologies in the projects we execute.

The Engineering Department is responsible for executing the CIP and delivering world class engineering projects through skilled staff, technical excellence, proactive project planning, collaboration with stakeholders, and efficient project delivery. Projects vary in size and scope, and during the Fiscal Year 2023/24, projects worked on had budgets ranging from \$64,000 to \$555,000,000 with construction durations anywhere between months to upwards of seven years.



1969
Constructing the long ocean outfall which measures 12 feet in diameter and five miles long.



The Engineering Department's Construction Management Division in front of the new Headquarters.

Several large multi-year construction projects contribute to the top spending for the fiscal year. Projects include the Headworks Rehabilitation at Plant No. 1, completion of the new Headquarters Building, A-Side Primary Clarifiers Replacement at Plant No. 2, Outfall Low Flow Pump Station, and Gisler-Red Hill Interceptor and Baker Force Main Rehabilitation. These projects, among several other significant CIP projects, are highlighted throughout the report. More information about all active CIP projects is included in tables at the end of the report.

For additional information on OC San's CIP please visit our website at www.ocsan.gov/construction.

FISCAL YEAR 2023/24 CIP OVERVIEW

102

active projects and studies

33

projects in construction

\$262.3

million net CIP outlay

PLANNING STUDIES

The Planning Division within the Engineering Department maintains a long-term Capital Improvement Program to ensure our infrastructure is adequately sized, reliable, and resilient through cost-effective and properly timed projects.

Planning studies help to evaluate various areas and topics associated with operating a wastewater treatment plant. Study topics can contrast from flow monitoring, master planning, urban runoff, facility improvements, seismic resiliency, and much more. Results can lead to a pilot project, changes in how we operate our facilities, or scope requirements for future CIP projects.

The following active planning studies represent the work typically performed.

PROCESS SIMULATION MODEL FOR CENGEN FACILITIES

OC San's two plants have central generation (CenGen) facilities operated and maintained by OC San staff. Plant No. 1 has three gas engines and Plant No. 2 has five. The CenGen facilities use biogas to generate electricity. Heat from the engines is used to heat the digesters and heat and cool occupied buildings at Plant No. 1 and the new Headquarters. This study will prepare a process model for each CenGen facility to support ongoing planning, maintenance, and operations activities for the heating and cooling systems.

INTEGRATED NITROGEN MANAGEMENT

OC San operates under a National Pollutant Discharge Elimination System (NPDES) permit administered by the Environmental Protection Agency (EPA). While 100 percent of our reclaimable flows are recycled, our non-reclaimable flows are discharged through a five-mile-long ocean outfall pipe. Excess nitrogen can cause algae blooms which are detrimental to various endangered marine species. This study will evaluate the current effluent nitrogen levels discharged to the ocean and evaluate the need and feasibility of performing further nitrogen reduction at the reclamation plants under an integrated nitrogen management plan.

URBAN RUNOFF OPTIMIZATION STUDY

This is a partnership study between OC San, Orange County Public Works and Orange County Water District. This comprehensive study will identify feasible opportunities where additional dry weather urban runoff may be captured to both increase water recycling and improve downstream water quality throughout the county and at our beaches.

The CenGen facilities at Plant No. 2 has five 16-cylinder engines, averaging about 4,000 horse power.

ASSET MANAGEMENT

OC San's infrastructure operates continuously day and night, requiring that we proactively manage the condition of more than \$14 billion assets to ensure reliable operation. The Asset Management Program is responsible for assessing and monitoring the condition of existing assets.

An annually updated Asset Management Plan includes strategic approaches for addressing asset condition and performance issues. The plan lays out how we will rehabilitate or replace those assets to deliver the required level of service at the lowest life cycle cost with an acceptable level of risk. With close collaboration with Operations and Maintenance, prioritizing critical asset repair or replacement through condition assessment can help prolong existing facilities.

During the annual budget validation process, OC San uses this current asset condition information to update the timing of future CIP projects to manage risks with aging facilities.



Routine field walk and collaboration between Engineering, Operations and Maintenance staff to review asset conditions and issues.



Troubleshooting to improve system operation and facility longevity.



Major equipment replacement at Plant No. 2 to maintain reliability.

RESEARCH PROGRAM

As a leader in the industry, we continue to explore emerging technologies to find solutions to existing concerns and issues. OC San's Research Program investigates solutions for current and anticipated regulatory changes.

SUPERCRITICAL WATER OXIDATION DEMONSTRATION AT PLANT NO. 1

This research project is a pilot using a new technology for solids treatment called supercritical water oxidation. This treatment method looks to address constituents of emerging concern such as PFAS and microplastics. Partnering with 374Water for this effort, high temperature and pressure will oxidize complex compound materials into more basic and benign compounds. We will be able to look at the results of the demonstration pilot project to see if the technology can open up opportunities to address other challenges such as costs associated with solids processing and finding efficiencies in wastewater treatment.



The assembled unit will be housed inside the storage container as part of the demonstration project.

PROJECT HIGHLIGHTS

Project design is the phase of a project where technology is evaluated and selected, detailed design decisions are made, and design progresses from concept to final design. The project can take several years to progress from preliminary design through final design before it goes into construction. Projects in construction is when the physical work occurs. When all the physical work has been completed, the facilities are tested and put into service for us to operate and maintain.

The following pages highlight just a glimpse of larger CIP projects in our collection system and reclamation plants during Fiscal Year 2023/24.

Project details are based on its status at the time of publishing and the current Fiscal Year 2024/25 and 25/26 budget.

A ribbon cutting ceremony for the new Headquarters was held May 2024.



COLLECTION SYSTEM PROJECTS



1950's

Construction of a regional sewer pipeline down the center of a residential street.

COLLECTION SYSTEM PROJECTS

OC San provides the essential service of wastewater collection for its 2.6 million customers in our 479 square mile service area through 388 miles of regional pipelines. These pipelines, along with 15 pump stations, transport wastewater from residents, businesses, and industrial sources to our treatment plants.

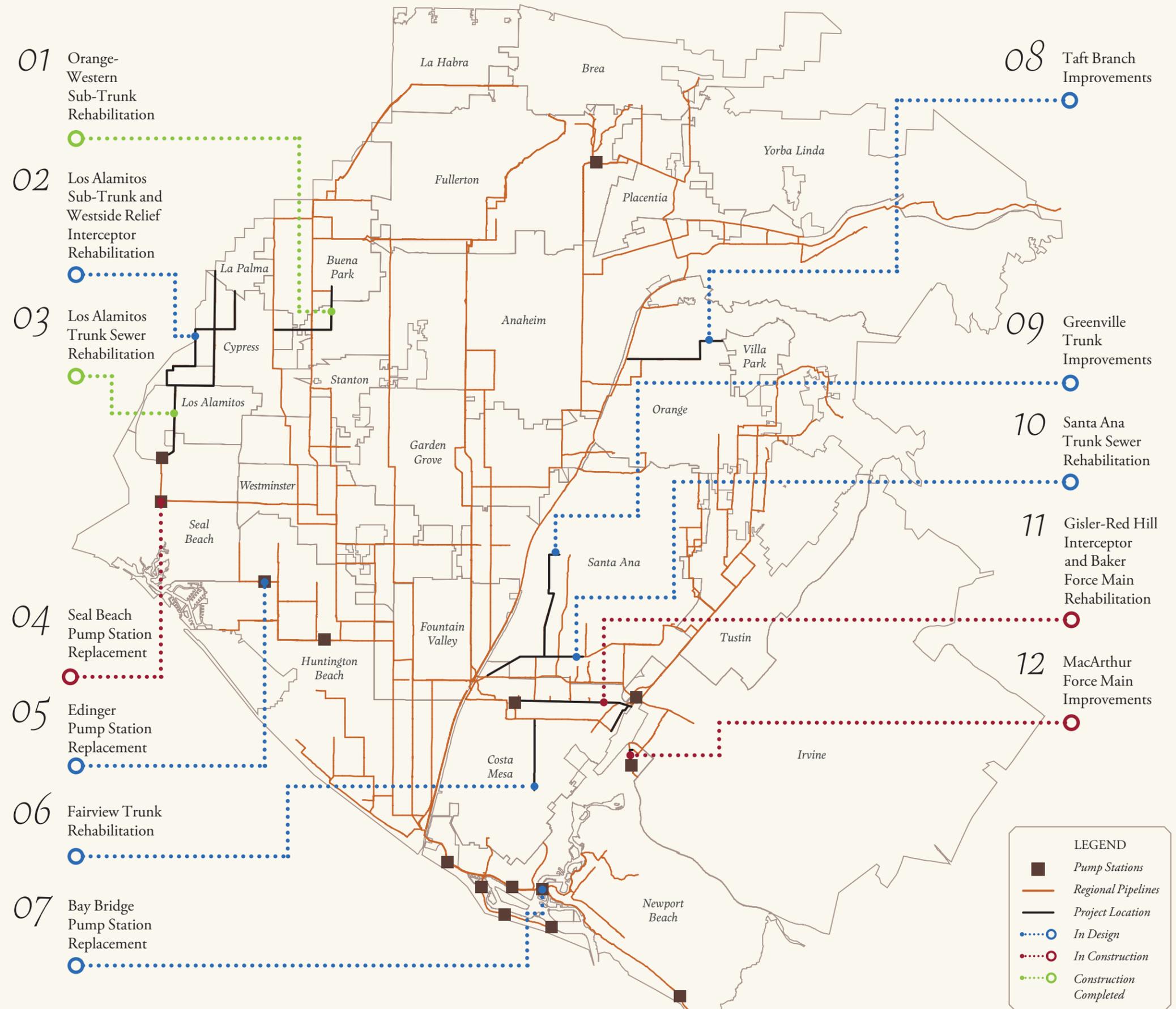
COMMUNITY OUTREACH PROGRAM

The landscape of what was originally constructed 50 or more years ago is much different today. The population has grown, buildings and utilities have multiplied, roadways have expanded, and traffic has increased.

We understand that both large or small construction projects in the collection system have temporary impacts to the community, such as noise, traffic delays, and odors. Being communicative is key.

The Community Outreach Program aims to be transparent and to communicate early and often. Projects are not “one size fits all” and community liaisons use a variety of communication methods for the most effective reach to the public. Traditional construction alert flyers, mailers, website updates, text alerts, community meetings, social media posts, surveys, quarterly newsletters, and other tools are used to connect with our community. The program’s intentions are to ensure the community we serve is minimally impacted and well informed.

See the map of featured CIP projects in design, in construction, or completed within the collection system. Additional project information is on the following pages.



01 Orange-Western Sub-Trunk Rehabilitation

(Contract No. 3-64A)

Location: Anaheim, Buena Park, Cypress, and Los Alamitos

Project Budget: \$26.8 million

Phase: Construction Completed

Construction Schedule: 2021-2024

Construction Contract: \$17.9 million

Originally constructed in 1959, two miles of pipeline and 35 manholes have been rehabilitated to extend its useful life another 50 years. Portions of the existing pipeline were rehabilitated with cured-in-place-pipe lining to extend the useful life.

*This project is combined with the Los Alamitos Trunk Sewer Rehabilitation under one contract.

02 Los Alamitos Sub-Trunk and Westside Relief Interceptor Rehabilitation

(Contract No. 3-64C)

Location: Cypress, La Palma, and Los Alamitos

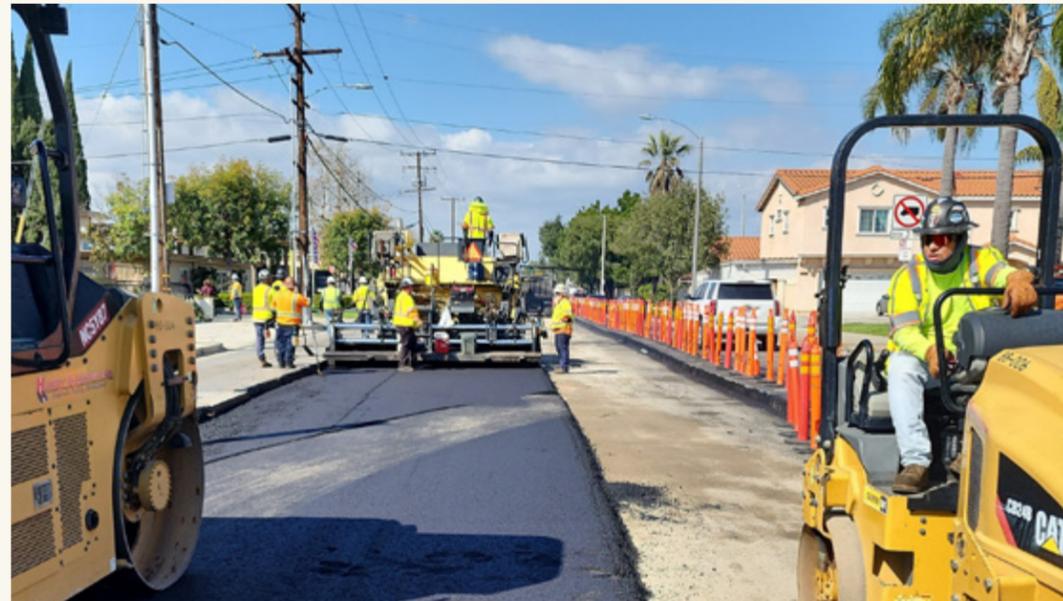
Project Budget: \$50.9 million

Phase: Advertising for Construction

Construction Schedule: 2025-2028

Construction Budget: \$29 million

The Los Alamitos Sub-Trunk, constructed in 1959, and the Westside Relief Interceptor, constructed in 1975, make up over seven miles of sewer pipeline in the western region of our service area. The project will upsize portions of the pipeline using open cut and pipe bursting methods and rehabilitate the remaining pipelines with cured-in-place-pipe lining. Pipe joints will be grouted to stop water intrusion in portions of the pipeline not being rehabilitated or upsized. Approximately 100 manholes will also be replaced or rehabilitated.



03 Los Alamitos Trunk Sewer Rehabilitation

(Contract No. 3-64B)

Location: Los Alamitos, Seal Beach, and unincorporated Rossmoor

Phase: Construction Completed

Construction Schedule: 2021-2024

Over five miles of pipeline along Katella Avenue, Los Alamitos Boulevard, and Seal Beach Boulevard were recently rehabilitated by removing calcium buildup at various pipe joints and injecting chemical grout to stop water intrusion. Rehabilitation or replacement also occurred on over 70 manholes. Construction was completed February 2024.

*This project is combined with the Orange-Western Sub-Trunk Rehabilitation under one contract.

04 Seal Beach Pump Station Replacement

(Project No. 3-67)

Location: Seal Beach

Project Budget: \$134 million

Phase: Construction

Construction Schedule: 2024-2027

Construction Budget: \$97 million

The pump station was initially constructed in 1970. Construction has commenced to replace the existing pump station. It will have a 50-foot deep wet well to accommodate future construction of a deep gravity sewer and allow us to eliminate an upstream pump station. New odor control facilities and a standby emergency generator will also be constructed. The new structure will have a Spanish mission architectural style to blend with the City of Seal Beach City Hall.

*From top to bottom:
Removing an existing sewer pipeline; Installing a new pipeline;
and Street base paving on the Orange-Western Sub-Trunk
Rehabilitation, Contract No. 3-64A in the City of Anaheim.*

05 Edinger Pump Station Replacement

(Project No. 11-33)

Location: Huntington Beach

Project Budget: \$36.5 million

Phase: Preliminary Design

Construction Schedule: 2027-2029

Construction Budget: \$20.7 million

The Edinger Pump Station and associated force mains are critical elements to OC San’s collection system conveying flows from northwest Huntington Beach and Seal Beach. The existing pump station is underground in the public right of way. It was constructed in 1965 and is near the end of its lifespan. It will be replaced with a new pump station in a nearby location adjacent the Westminster Channel.

06 Fairview Sewer Rehabilitation

(Project No. 6-20)

Location: Costa Mesa

Project Budget: \$25 million

Phase: Design

Construction Schedule: 2026-2029

Approximately 1 ½ miles of the Fairview Trunk Sewer located on Fairview Avenue will be rehabilitated to extend the life of the pipeline by approximately 50 years. The pipeline was originally constructed in 1952.



Architectural rendering of the Bay Bridge Pump Station Replacement, Project No. 5-67.



The existing Edinger Pump Station is located completely underground and accessed through a hatch that requires the closure of the sidewalk along a school and park.

07 Bay Bridge Pump Station Replacement

(Project No. 5-67)

Location: Newport Beach

Project Budget: \$145.4 million

Phase: Preliminary Final Design

Construction Schedule: 2025-2029

Construction Budget: \$90.1 million

The existing pump station, constructed in 1966, handles 50 percent of the wastewater flows from the City of Newport Beach. The project will replace the pump station and the dual force mains under Pacific Coast Highway and Newport Channel using microtunneling. The pump station and force main system are critical to ensure the continuous collection of wastewater flow.

08 Taft Branch Improvements

(Project No. 2-49)

Location: Orange

Project Budget: \$31.2 million

Phase: Construction

Construction Schedule: 2024-2026

Construction Budget: \$20.5 million

The Taft Branch sewer is a vitrified clay gravity sewer varying in size from 12 to 24 inches and was built in 1960. The sewer is located in both residential and commercial areas and crosses Highway 55. The project will add capacity by upsizing the existing pipeline to mitigate risk of a spill under peak wet weather flows. Two miles of pipeline along Taft Avenue will be replaced and upsized to larger diameter pipe. A portion of sewer running along Tustin Street will be relocated down a residential street. A construction contract was awarded, and construction will commence this fall 2024.



Preliminary architectural rendering for the Edinger Pump Station Replacement, Project No. 11-33.

09 Greenville Trunk Improvements

(Project No. 1-24)

Location: Santa Ana

Project Budget: \$48.6 million

Phase: Design

Construction Schedule: 2028-2032

Originally constructed in 1952, this project upsizes the Greenville Trunk Sewer to increase capacity in approximately 3 miles of pipeline.

10 Santa Ana Trunk Sewer Rehabilitation

(Project No. 1-23)

Location: Costa Mesa and Santa Ana

Project Budget: \$54.6 million

Phase: Design

Construction Schedule: 2025-2027

Construction Budget: \$31.6 million

Located north of the Interstate 405, the Santa Ana Trunk Sewer was originally constructed in the 1950's. The project will rehabilitate nearly three miles of large diameter sewers ranging from 3 ½ – 4 feet using the cured-in-place-pipe method. Work also includes rehabilitating associated manholes and improving manhole access.

New dual force mains and access structure on the MacArthur Force Main Improvements, Project No. 7-68.



Installing an angled piece of pipeline on the Baker Force Main Rehabilitation, Project No. 7-65, in the City of Costa Mesa.

11 Gisler-Red Hill Interceptor and Baker Force Main Rehabilitation

(Project No. 7-65)

Location: Costa Mesa and Irvine

Project Budget: \$55.5 million

Phase: Construction

Construction Schedule: 2023-2026

Construction Budget: \$44.7 million

The Gisler-Red Hill Interceptor was constructed in the early 1960's and consists of approximately 3 ½ miles of vitrified clay pipe. It crosses several high-volume roads including Interstate 405, Highway 55, and Highway 73. The Baker Force Mains were constructed in 1991 and consists of one mile of dual force mains. The force mains are used to transport wastewater flows from the Main Street Pump Station. The project also includes replacing valves and piping at the Main Street Pump Station located in the City of Irvine.

12 MacArthur Force Main Improvements

(Project No. 7-68)

Location: Newport Beach

Project Budget: \$8.2 million

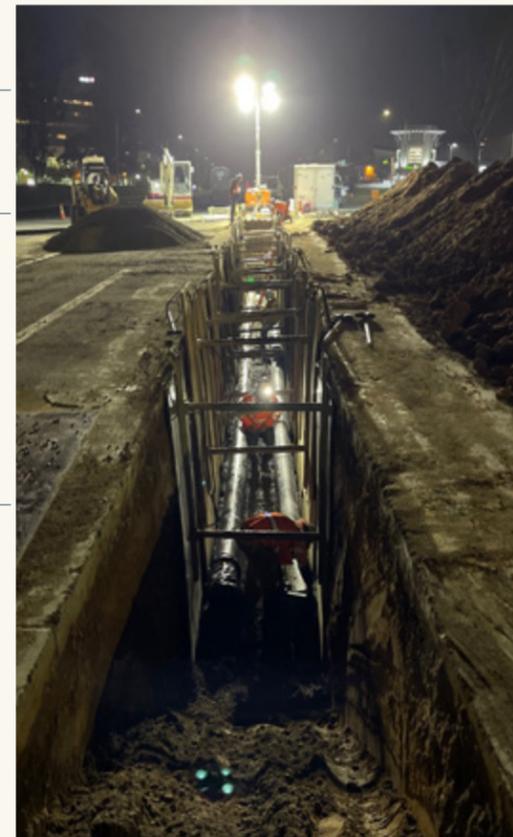
Phase: Construction

Construction Schedule: 2023-2024

Construction Budget: \$3.9 million

The force mains were constructed in the early 1960's along the west side of MacArthur Boulevard in close proximity to Highway 73 and John Wayne Airport that serves Orange County. Construction is almost complete with replacing a half mile of dual force mains within the street right of way.

Most of the construction occurred during the nighttime hours to reduce impacts to the business community and traveling public on the MacArthur Force Main Improvements, Project No. 7-68, in the City of Newport Beach.



PLANT NO. 1 PROJECTS

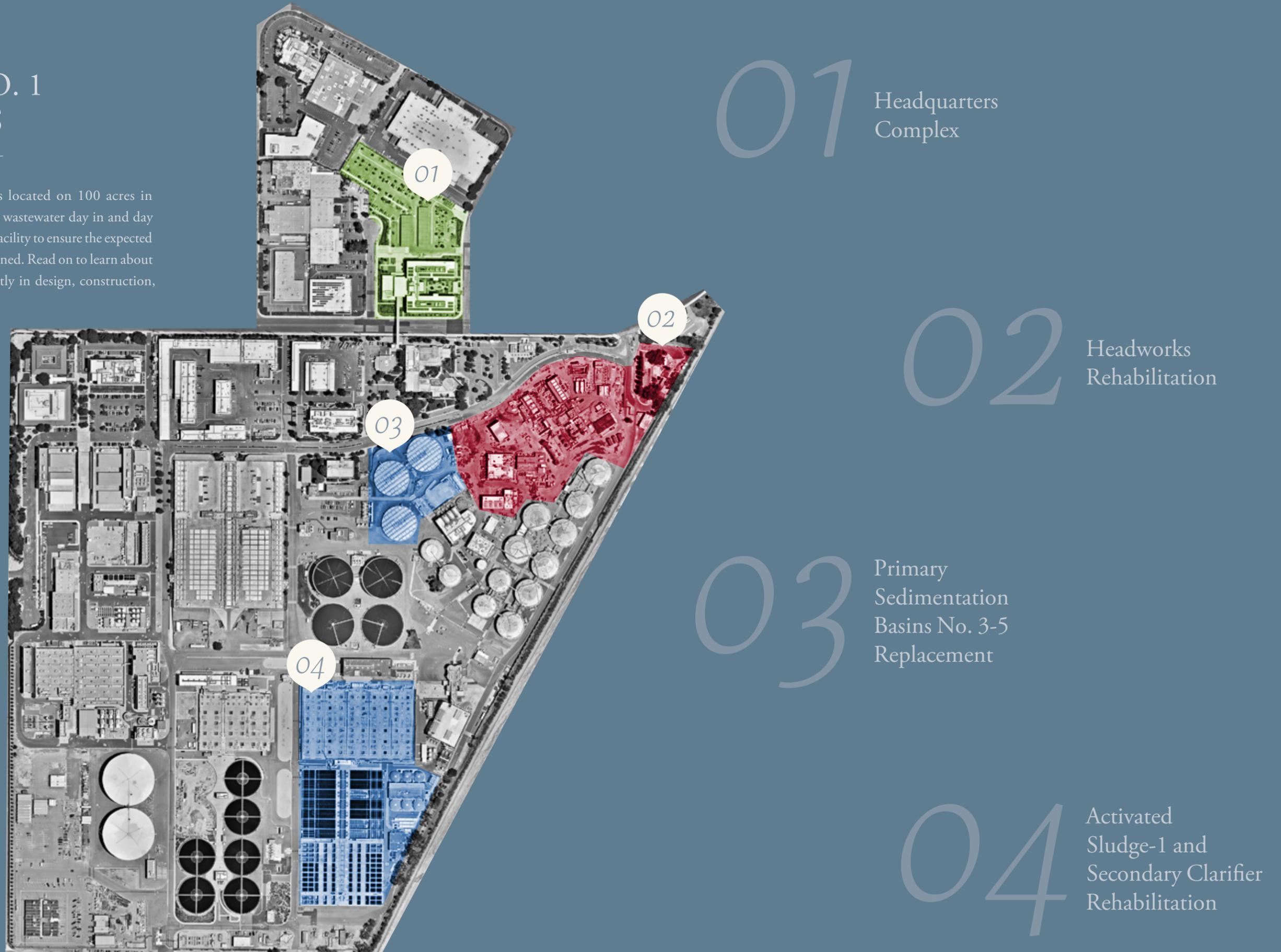


1950's

*Construction of a
new digester.*

PLANT NO. 1 PROJECTS

OC San's Plant No. 1 is located on 100 acres in Fountain Valley. Treating wastewater day in and day out requires upkeep of the facility to ensure the expected levels of service are maintained. Read on to learn about large-scale projects currently in design, construction, or completed.



LEGEND

- *In Design*
- *In Construction*
- *Construction Completed*

01 Headquarters Complex

02 Headworks Rehabilitation

03 Primary Sedimentation Basins No. 3-5 Replacement

04 Activated Sludge-1 and Secondary Clarifier Rehabilitation

The New Headquarters Complex, Project No. P1-128A, was completed earlier this year located at 18480 Bandilier Circle in the City of Fountain Valley.

01

Headquarters Complex

(Project No. P1-128A)

Construction Schedule: 2021-2024

Project Budget: \$167.8 million

Phase: Construction Complete

Construction Contract: \$106.9 million

OC San has a new Headquarters building in Fountain Valley. As we celebrate 70 years of history, we have also expanded our footprint in the city with the new Headquarters building across the street from Plant No. 1. This will allow us to preserve Plant No. 1 for future process treatment facilities while still having administrative staff closely connected with a pedestrian skybridge spanning over a heavy traffic road. City residents have adopted the motto “A Nice Place to Live.” Following the city motto, the addition of the Headquarters is “A Nice Place to Work” for the workforce of over 300 professionals who relocated to the new building in June 2024. The remaining workforce are located at the two reclamation facilities.

A noticeable design feature is the use of mass timber combined with steel-braced frames. The wood elements provide a natural warmth to the interior of the building while reducing the overall carbon footprint of its construction. Other sustainable design features that target LEED (Leadership in Energy and Environmental Design) Gold certification and net-zero energy certification include photovoltaic panels on the roof and parking lot, sun-shading and building orientation to maximize daylighting while reducing glare and solar heat gain, and as a resource recovery agency, 100 percent of the Headquarters building heat is provided from the plant operations.



1964

Staff in front of the then new Administration Building.



03

Primary Sedimentation Basins No. 3-5 Replacement

(Project No. P1-126)

Construction Schedule: 2027-2031

Project Budget: \$183 million

Phase: Design

Construction Contract: \$114 million

The primary treatment facilities were built between 1955 and 1965 and have varying levels of deterioration due to corrosion and wear and tear. This project will replace the existing primary sedimentation basins and all associated facilities, which are responsible for the first step in the wastewater treatment process.

02

The Headworks Rehabilitation, Project No. P1-105 has been in construction for over three years.

Headworks Rehabilitation

(Project No. P1-105)

Construction Schedule: 2021-2028

Project Budget: \$340 million

Phase: Construction

Construction Contract: \$226 million

This is a comprehensive rehabilitation effort to the headworks facilities, the first point of entry of wastewater into Plant No. 1. The headworks facilities were built in 1989. The work needs to occur all while still treating the average 124 million gallons per day of wastewater received at Plant No. 1. The project includes rehabilitation of the metering and diversion structure, bar screen building, main sewage pumps, and grit handling facility and new grit pump station, power building, electrical building, standby generation facility, and odor control. This complex project requires extensive coordination with plant operations for shutdowns, confined space entries, and working with live flows.

04

Activated Sludge-1 and Secondary Clarifier Rehabilitation

(Project No. P1-140)

Construction Schedule: 2027-2033

Project Budget: \$470 million

Phase: Design

Construction Budget: \$346 million

The original Activated Sludge Facility No. 1 was constructed in 1973. Over the years projects have increased capacity and converted biochemical oxygen demand treatment to a nitrification/denitrification treatment. This project will perform a comprehensive rehabilitation of the Activated Sludge-1 Facility. The activated sludge process in wastewater treatment involves the use of microorganisms and oxygen to break down organic matter and remove pollutants.



1975

Activated Sludge facility at Plant No. 1.

1959

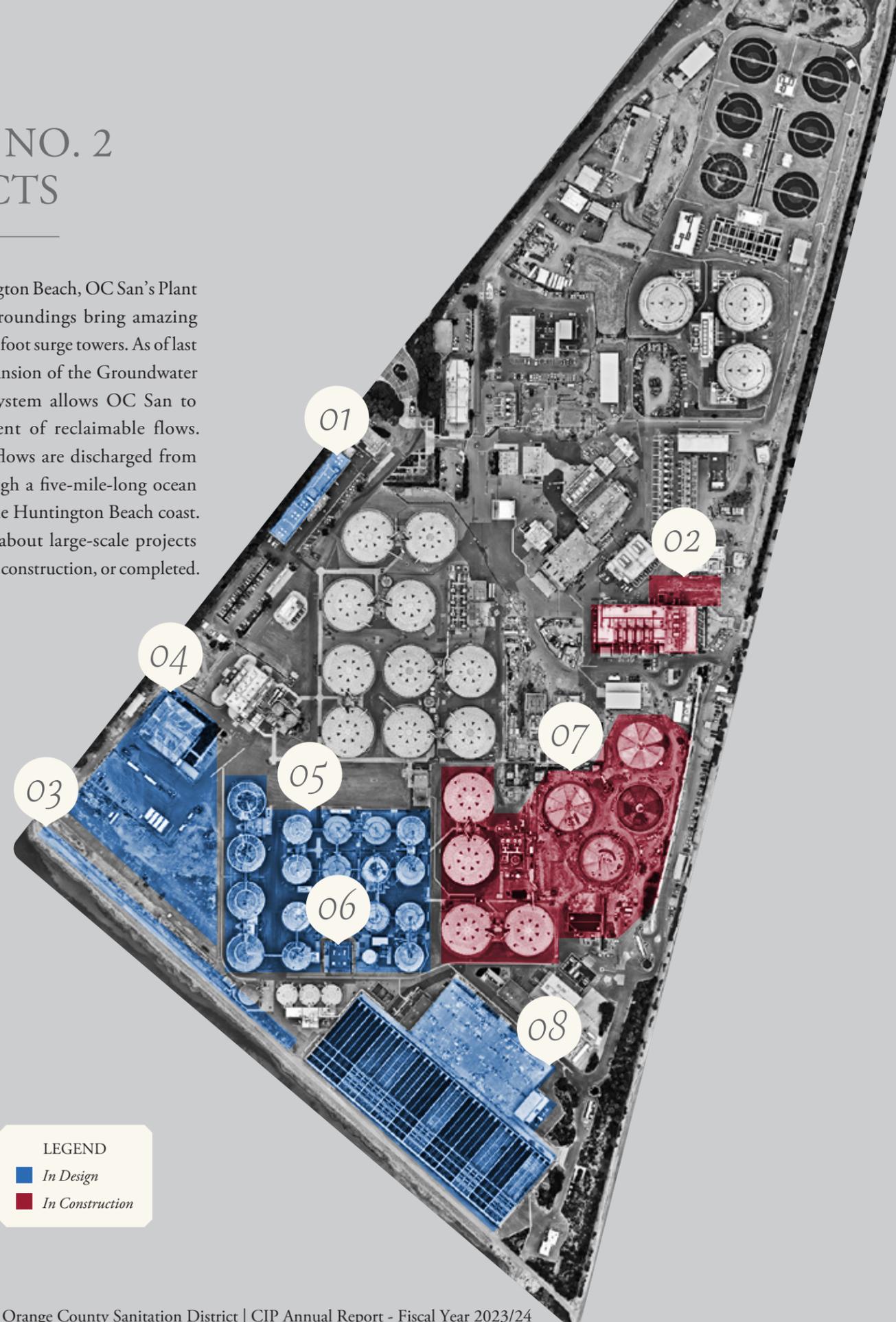
*Plant No. 2 in the City
of Huntington Beach.*

PLANT NO. 2 PROJECTS



PLANT NO. 2 PROJECTS

Located in Huntington Beach, OC San's Plant No. 2 coastal surroundings bring amazing views atop the 100-foot surge towers. As of last year, the final expansion of the Groundwater Replenishment System allows OC San to recycle 100 percent of reclaimable flows. Non-reclaimable flows are discharged from Plant No. 2 through a five-mile-long ocean outfall pipe into the Huntington Beach coast. Read on to learn about large-scale projects currently in design, construction, or completed.



LEGEND

- *In Design*
- *In Construction*

- 01 Operations and Maintenance Complex
- 02 Outfall Low Flow Pump Station
- 03 South Perimeter Wall and Soil Improvements
- 04 Digester Replacement
- 05 Digesters Rehabilitation
- 06 Digester Gas Facilities Rehabilitation
- 07 A-Side Primary Clarifiers Replacement
- 08 Activated Sludge Aeration Basin Rehabilitation

01

Operations and Maintenance Complex

(Project No. P2-138)

Construction Schedule: 2027-2030

Project Budget: \$126.5 million

Phase: Design

Construction Budget: \$78.3 million

Just like process area facilities that need rehabilitation or replacement, occupied spaces like the Operations Center and Maintenance buildings also age and need to be replaced. The complex is designed to house Operations, Maintenance, Collections, and Construction Management staff.



New Low Flow and Plant Water Pump Station as part of the Outfall Low Flow Pump Station, Project No. J-117B.

Fastening pieces of the plant water pump station discharge piping on the Outfall Low Flow Pump Station, Project No. J-117B.



02

Outfall Low Flow Pump Station

(Project No. J-117B)

Construction Schedule: 2019-2025

Project Budget: \$140.4 million

Phase: Construction

Construction Contract: \$86.5 million

Currently the longest duration project under construction at Plant No. 2. This project rehabilitates the mechanical, electrical, and instrumentation systems of the ocean outfall pump station that discharges non-reclaimable flows to the ocean outfall system. Because we are now able to recycle 100 percent of reclaimable flows, the flow through the ocean outfall is lower and requires a smaller pump station to handle the lower daily flows. This project also replaces the plant water pump station to allow it to use reclaimable water that can be recycled, replaces the electrical equipment in the CenGen facility, provides a plant-wide electrical power monitoring and control system, provides a new plant-wide fiber optic network, and provides new server rooms for process and IT equipment.

03

South Perimeter Wall and Soil Improvements

(Project No. P2-128A)

Construction Schedule: 2024-2027

Project Budget: \$33 million

Phase: Bid and Award

Construction Budget: \$25.8 million

OC San's Climate Resiliency Study identified 2070 projections of sea level rise. A new wall will be constructed along the Talbert Marsh at the southwest corner of Plant No. 2 replacing the existing chain link fence. It acts in conjunction with the existing levee to protect the Plant from a 100-year flood and is designed to withstand a maximum tsunami event. It will also protect us from lateral spread into the Talbert Marsh, increasing seismic resiliency of our facilities. When completed, the new wall will have a wave-like pattern with stamped concrete artwork.

04

Digester Replacement

(Project No. P2-128)

Construction Schedule: 2028-2036

Project Budget: \$555 million

Phase: Design

Construction Budget: \$408 million

This project will build six new anaerobic digesters at Plant No. 2, to be initially operated in mesophilic mode to produce Class B biosolids product and designed for future thermophilic operation to produce Class A product. Supporting facilities and equipment will include sludge pumping, heating, mixing, odor control, power distribution, and instrumentation and controls. Future conversion to the thermophilic process as well as replacement and/or demolition of existing digesters will be part of a future project.

05

Digesters Rehabilitation

(Project No. P2-137)

Construction Schedule: 2025-2028

Project Budget: \$41.3 million

Phase: Design

Construction Budget: \$17 million

Continuing 70 years and beyond of environmental excellence, many projects are driven by rehabilitation and replacement. This project is no different. There are 18 concrete digesters that were built between 1959 and 1979. The rehabilitation includes the repair of the digester exterior concrete and walkway bridges and replacement of digester electrical equipment and associated instruments to extend the life of the existing facilities until future replacement is necessary.



Construction of exterior concrete walls of a new electrical building for the A-Side Primary Clarifiers Replacement, Project No. P2-98A.

06

Digester Gas Facilities Rehabilitation

(Project No. J-124)

Construction Schedule: 2027-2032

Project Budget: \$190 million

Phase: Design

Construction Budget: \$113 million

This project will rehabilitate the existing gas compressor facilities at both plants that were constructed in the early 1990's. The project originally began as a replacement project, but as the project progressed and after further evaluating the work, schedule, and costs, it was determined that the gas compressors can be rehabilitated and extend the life 25 years with the support of our in-house mechanics group who are skilled to perform gas compressor overhauls.

07

A-Side Primary Clarifiers Replacement

(Project No. P2-98A)

Construction Schedule: 2021-2027

Project Budget: \$165.9 million

Phase: Construction

Construction Contract: \$45.6 million

Four primary clarifiers dating back to the 1960's are being replaced along with the existing odor control facility. Once construction is completed, the existing primary clarifiers will be demolished.

08

Activated Sludge Aeration Basin Rehabilitation

(Project No. P2-136)

Construction Schedule: 2027-2030

Project Budget: \$65.6 million

Phase: (Preliminary) Design

Construction Budget: \$40.6 million

This project includes structural rehabilitation of the aeration basin's deck and adjacent concrete structures. All of the mechanical equipment, components, piping, gates, and valves will be replaced.



The A-Side Primary Clarifiers Replacement at Plant No. 2, Project No. P2-98A, will construct four new primary clarifiers.

ANNUAL VALIDATION

On an annual basis, OC San staff review the scope, schedule, cost, resources, and risks of current and future CIP projects to validate the budgetary requirements. The CIP is approved annually by the Board of Directors as part of the overall budget process.

102

active projects
and studies

33

projects in
construction

6

construction contracts
completed

2

planning studies
awarded

2

professional design service
contracts awarded

*Activated Sludge
Secondary Clarifier
at Plant No. 1.*

9

construction contracts
awarded

\$262.3

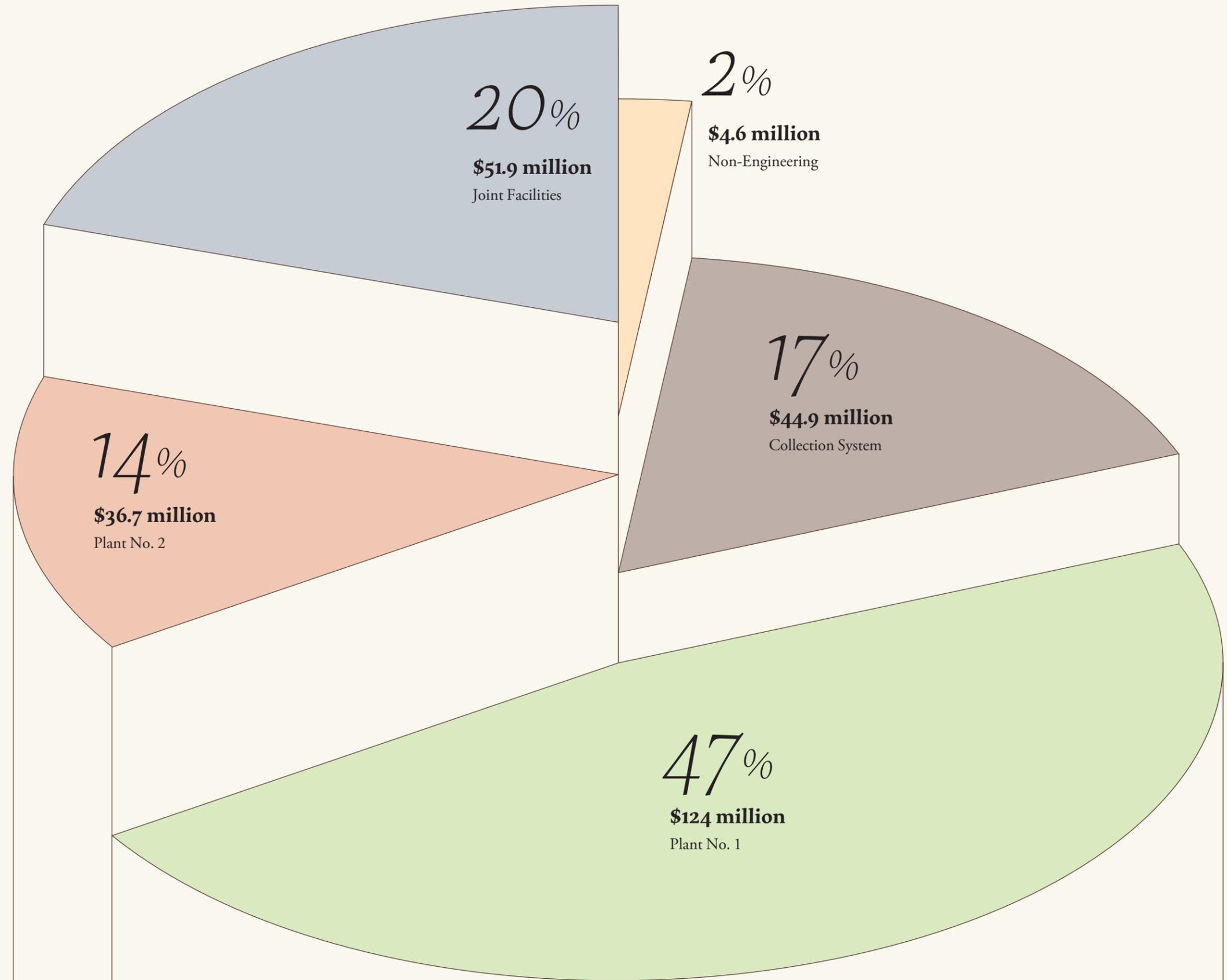
million in CIP
spending

FINANCIAL DATA

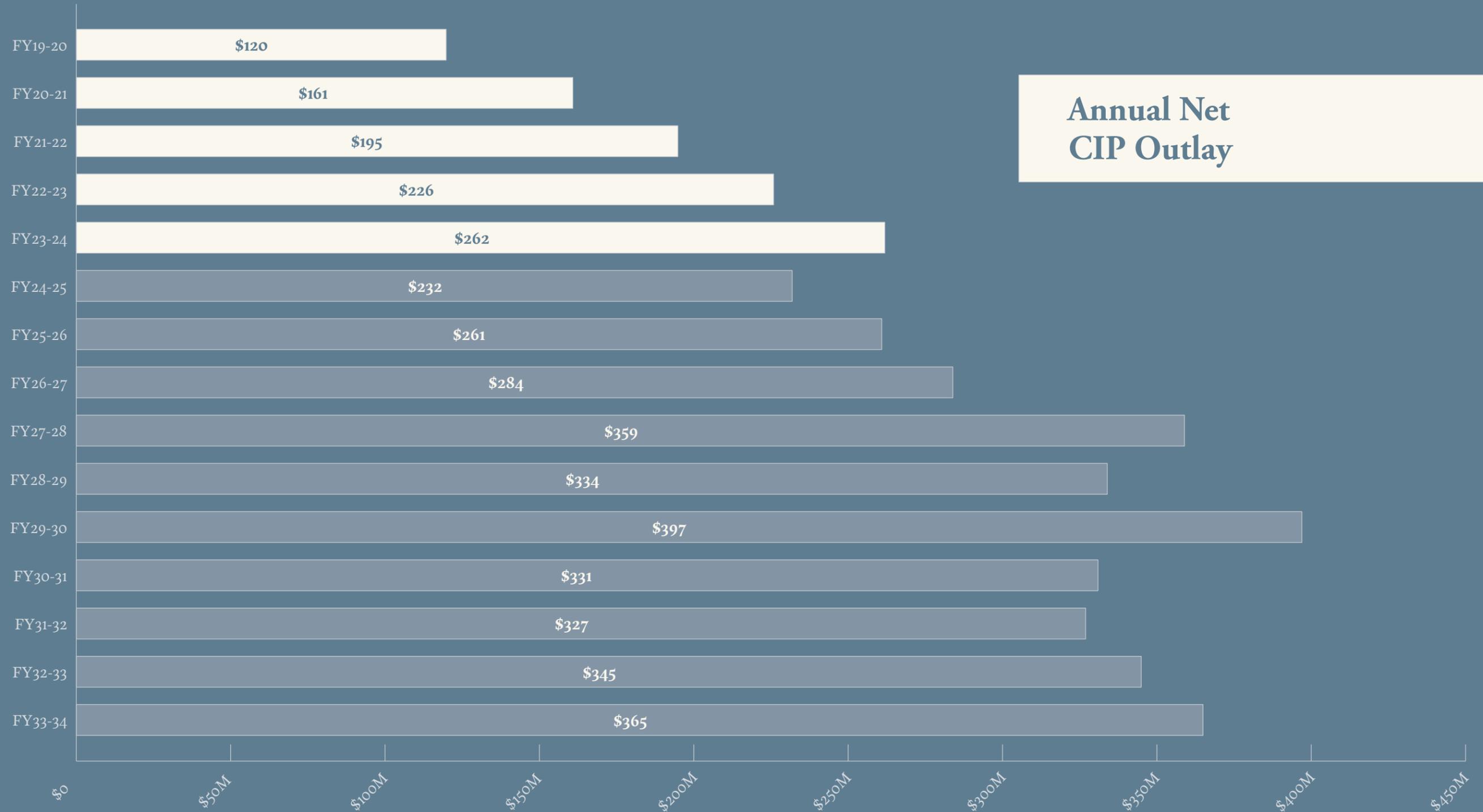
A total of \$262.3 million was spent on the CIP for Fiscal Year 2023/24. Of that spending, nearly half of the projects took place at Plant No. 1, including the Headworks Rehabilitation and the completion of the Headquarters.

Fiscal Year 2023/24 CIP Expenditures

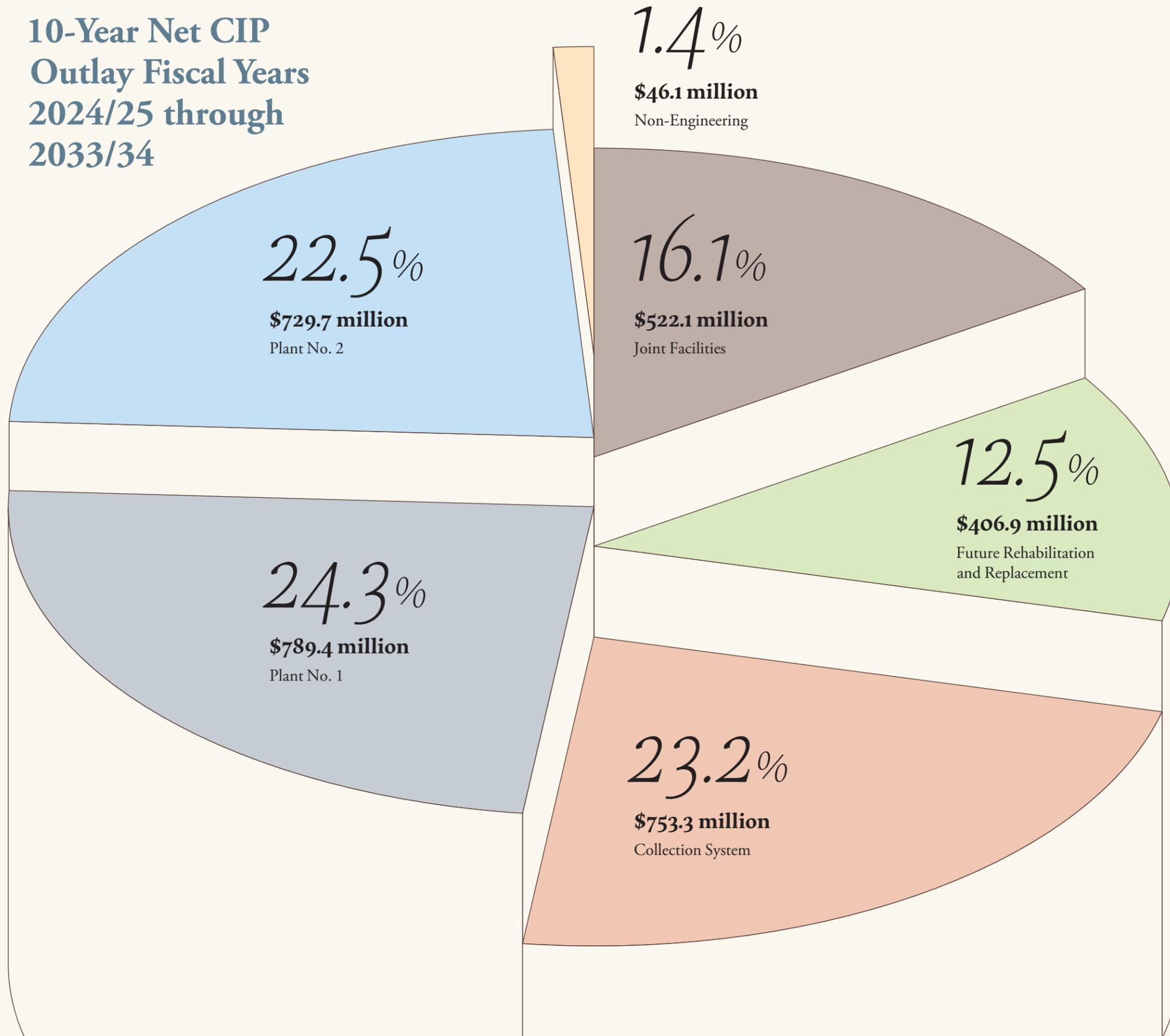
*Total
\$262.3 million*



The CIP is a long-term plan that forecasts future cash flows. With each annual validation, all current and future projects are reviewed to determine if any adjustments in budget or timing need to be made. If budgets or project timing are adjusted, the projected spending forecast, or net CIP outlay, is also revised. The Annual Net CIP Outlay chart shows the historical actuals over the past five years and the projected budget for the next ten years.



10-Year Net CIP Outlay Fiscal Years 2024/25 through 2033/34



By the end of Fiscal Year 2023/24, there were a total of 33 active projects in construction. An increase of spending in the future years is due to more projects transitioning from design into construction. For the next ten years, spending is evenly distributed with projects at both plants and the collection system.

Total
\$3.25 billion

Planning Studies Contracts Awarded

Date of Award	Project No.	Project Name	Consultant	Contract Amount	Location(s)
February 2024	PS21-07	Process Simulation Model Development for CenGen Facilities	Intelliflux Controls	\$150,308	Plant Nos. 1 and 2
October 2023	PS21-10	Integrated Nitrogen Management	Hazen and Sawyer	\$247,000	Plant Nos. 1 and 2
				\$397,308	

CONTRACT ACTIVITY

These are the contracts awarded for planning studies, design contracts, construction contracts, construction contracts completed, and closed out during Fiscal Year 2023/24.

Design Contracts Awarded

Date of Award	Project No.	Project Name	Consultant	Contract Amount	Location(s)
September 2023	3-60	Knott - Miller Holder Artesia Branch Rehabilitation	Dudek	\$3,125,590	Buena Park, La Palma
October 2023	P2-136	Activated Sludge Aeration Basin Rehabilitation at Plant No. 2	Carollo Engineers, Inc.	\$5,891,599	Plant No. 2
				\$9,017,189	



Manhole rehabilitation work in a diversion channel.

Construction Contracts Awarded

Date of Award	Project No.	Project Name	Contractor	Contract Amount	Location(s)
July 2023	7-68	MacArthur Force Main Improvements	SRK Engineering, Inc.	\$3,897,000	Newport Beach
September 2023	P2-127	Collections Yard Relocation	Archico Design Build, Inc.	\$6,500,000	Plant No. 2
December 2023	3-67	Seal Beach Pump Station Replacement	Walsh Construction Company II, LLC	\$97,032,743	Seal Beach
February 2024	FE22-02	Liquid Oxygen Tank B Replacement at Plant No. 2	J.R. Filanc Construction Company, Inc.	\$3,098,000	Plant No. 2
March 2024	FE19-02	CenGen Plant Water Pipe Replacement at Plant No. 1	Innovative Construction Solutions	\$3,385,000	Plant No. 1
April 2024	FE23-01	Digester Gas Compressor Dryer Replacements at Plant Nos. 1 and 2	Innovative Construction Solutions	\$5,942,500	Plant Nos. 1 and 2
April 2024	FE23-08	Power Buildings 7 and 8 HVAC Replacement at Plant No. 1	Trane U.S. Inc.	\$687,708	Plant No. 1
May 2024	2-49	Taft Branch Improvements	Big Ben Inc.	\$20,458,250	Orange
June 2024	FE20-02	Digester C,D,F, and G Mechanical Rehabilitation at Plant No. 2	J.F. Shea Construction Inc.	\$3,694,000	Plant No. 2
				\$144,695,201	

Construction Contracts Completed

Date of Completion	Project No.	Project Name	Contractor	Contract Amount	Location(s)
August 2023	FE19-12	Rebuild Shop Fume Extractor Installation at Plant No. 1	RAN Enterprises, Inc	\$235,319	Plant No. 1
December 2023	7-66	Sunflower and Red Hill Interceptor Repairs	Charles King Company	\$5,271,952	Costa Mesa, Irvine
January 2024	P1-134	South Perimeter Security and Utility Improvements at Plant No. 1	Tovey/Shultz Construction, Inc.	\$4,848,230	Plant No. 1
February 2024	FE19-06	EPSA Motor Cooling Improvements at Plant No. 2	MMC, Inc.	\$897,916	Plant No. 2
February 2024	FE21-06	Chemical Dosing Station Installation at Westside Pump Station	RP Controls, Inc.	\$62,565	Unincorporated Orange County
April 2024	3-62	Westminster Boulevard Force Main Replacement	Teichert Energy - Utilities Group, Inc.	\$31,618,135	Seal Beach, Westminster
				\$42,934,117	

Planning and Research Studies

Project No.	Project Name	Status	Project Budget
PS18-06	Go/No-Go Lights and Signage	Completed	\$495,000
PS19-03	Laboratory Rehabilitation Feasibility Study	Completed	\$450,000
PS20-02	Collection System Flow Level Monitoring Study	Active	\$743,000
PS20-09	Thickening & Dewatering Plant Water Study at Plant No. 1	Active	\$400,000
PS21-01	Exterior Lighting Study at Plant Nos. 1 and 2	Active	\$346,000
PS21-02	Public Announcement and Fire System at Plant Nos. 1 and 2	Active	\$500,000
PS21-04	Energy and Digester Gas Master Plan	Active	\$1,785,000
PS21-05	CAD Design Manual Update for 3D Design	Active	\$758,000
PS21-06	Urban Runoff Optimization Study	Active	\$1,100,000
PS21-07	Process Simulation Model Development for Cen Gen Facilities	Active	\$211,000
PS21-10	Integrated Nitrogen Management	Active	\$372,000
PS22-02	Onsite Oxygen Generation Feasibility Study at Plant No. 2	Completed	\$295,000
PS23-01	Fleet Facilities Improvements Study	Active	\$350,000
PS23-02	Staff Parking Study at Plant No. 2	Completed	\$64,000
PS23-03	2025 Outfall Initial Dilution Model	Active	\$708,000
PS23-04	Digital Asset Management Study	Active	\$630,000
PS23-05	Utility Water Planning Study at Plant Nos. 1 and 2	Active	\$1,100,000
PS23-06	Seismic Resilience Study at Plant No. 2	Active	\$946,000
RE20-06	Co-Thickened Sludge Pump Trial at Plant No. 1	Active	\$160,000
RE21-01	Supercritical Water Oxidation Demonstration at Plant No. 1	Construction	\$7,941,000

ENGINEERING CIP PROJECTS

Tables of active CIP projects during Fiscal Year 2023/24 are listed on the following pages. The status is at the time of report publishing and project budgets are based on the Fiscal Year 2024/25 and 2025/26 budget book, rounded to the nearest thousand.

Non-engineering projects that include Information Technology and Maintenance projects are not detailed in this report or included in the tables.

Concrete pour of new primary clarifier in construction on the A-Side Primary Clarifiers Replacement at Plant No. 2 Project P2-98A.

Collection System Projects

Project No.	Project Name	Status	Project Budget	Location(s)
1-23	Santa Ana Trunk Sewer Rehabilitation	Design	\$54,620,000	Costa Mesa, Santa Ana
1-24	Greenville Trunk Improvements	Preliminary Design	\$48,600,000	Santa Ana
2-49	Taft Branch Improvements	Construction	\$31,200,000	Orange
3-60	Knott - Miller Holder Artesia Branch Rehabilitation	Preliminary Design	\$16,500,000	Buena Park, La Palma
3-62	Westminster Blvd Force Main Replacement	Close-Out	\$43,900,000	Seal Beach, Westminster
3-64A & 3-64B	Orange-Western Sub-Trunk and Los Alamitos Trunk Sewer Rehabilitation	Construction	\$26,804,000	Anaheim, Buena Park, Cypress, Los Alamitos, Seal Beach
3-64C	Los Alamitos Sub-Trunk and Westside Relief Interceptor Rehabilitation	Design	\$50,900,000	Cypress, la Palma, Los Alamitos
3-67	Seal Beach Pump Station Replacement	Construction	\$134,000,000	Seal Beach
5-67	Bay Bridge Pump Station Replacement	Design	\$146,000,000	Newport Beach
5-68	Newport Beach Pump Station Pressurization Improvements	Construction	\$2,700,000	Newport Beach
6-20	Fairview Sewer Rehabilitation	Preliminary Design	\$25,000,000	Costa Mesa
7-65	Gisler-Red Hill Interceptor and Baker Force Main Rehabilitation	Construction	\$55,500,000	Costa Mesa, Irvine
7-66	Sunflower and Red Hill Interceptor Repairs	Close-Out	\$6,750,000	Costa Mesa, Irvine
7-68	MacArthur Force Main Improvements	Construction	\$8,150,000	Newport Beach
7-69	North Tustin-Orange Sewer Improvements	Project Development	\$59,100,000	Orange, Tustin, unincorporated Orange County
11-33	Edinger Pump Station Replacement	Preliminary Design	\$36,500,000	Huntington Beach

Plant No. 1, Plant No. 2, and Joint Projects

Project No.	Project Name	Status	Project Budget
P1-105	Headworks Rehabilitation at Plant 1	Construction	\$340,000,000
P1-126	Primary Sedimentation Basins No. 3-5 Replacement at Plant No. 1	Preliminary Design	\$183,000,000
P1-128A	Headquarters Complex at Plant No. 1	Construction	\$167,819,000
P1-132	Uninterruptable Power Supply Improvements at Plant 1	Construction	\$9,600,000
P1-133	Primary Sedimentation Basins No. 6-31 Reliability Improvements at Plant No. 1	Construction	\$12,100,000
P1-134	South Perimeter Security and Utility Improvements at Plant No. 1	Close-Out	\$8,150,000
P1-137	Supports Buildings Seismic Improvements at Plant No. 1	Design	\$27,600,000
P1-138	Industrial Control System and IT Data Center Relocation at Plant No. 1	Project Development	\$16,500,000
P1-140	Activated Sludge-1 Rehabilitation at Plant No. 1	Preliminary Design	\$470,000,000
P1-141	Administrative Facilities Demolition	Project Development	\$4,286,000
P1-142	Trickling Filter Media Replacement at Plant No. 1	Project Development	\$47,000,000
P2-98A	A-Side Primary Clarifiers Replacement at Plant 2	Construction	\$165,894,000
P2-122	Headworks Modifications at Plant No. 2 for GWRS Final Expansion	Close-Out	\$30,400,000
P2-123	Return Activated Sludge Piping Replacement at Plant 2	Close-Out	\$10,000,000
P2-127	Collections Yard Relocation and Warehouse Demolition at Plant No. 2	Construction	\$8,800,000
P2-128	Digester Replacement at Plant No. 2	Design	\$555,000,000
P2-128A	South Perimeter Wall and Soil Improvements at Plant No. 2	Design	\$33,000,000
P2-135	Chemical Systems Rehabilitation at Plant No. 2	Design	\$9,200,000

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Plant No. 1, Plant No. 2, and Joint Projects continued

Project No.	Project Name	Status	Project Budget
P2-136	Activated Sludge Aeration Basin Rehabilitation at Plant No. 2	Preliminary Design	\$65,600,000
P2-137	Digesters Rehabilitation at Plant No. 2	Design	\$41,320,000
P2-137A	Digester P and R Dome Tendon Repair	Design	\$3,680,000
P2-138	Operations and Maintenance Complex at Plant No. 2.	Preliminary Design	\$126,500,000
P2-139	Emergency Overflow Pipes and Wingwalls Rehabilitation at Plant No. 2	Project Development	\$7,500,000
P2-140	Truck Loading Bay Odor Control Improvements at Plant No. 2	Project Development	\$8,356,000
J-98	Electrical Power Distribution System Improvements	Design	\$29,000,000
J-117B	Outfall Low Flow Pump Station	Construction	\$140,357,000
J-120	Process Control Systems Upgrades	Construction	\$31,700,000
J-120A	Control Room Reconfiguration at Plant No.1	Design	\$3,800,000
J-124	Digester Gas Facilities Replacement	Design	\$190,000,000
J-127	Natural Gas Pipelines Replacement at Plant Nos. 1 and 2	Close-Out	\$2,177,000
J-128	Project Management Information System	Construction	\$2,280,000
J-135B	Engine and Generator Overhauls at Plant No. 1 and 2	Construction	\$36,638,000
J-137	Ocean Outfalls Rehabilitation	Project Development	\$82,000,000

Small Projects

Project No.	Project Name	Status	Project Budget	Location(s)
FE18-06	CenGen Instrument Air Compressors Replacement at Plant No. 1	Design	\$1,150,000	Plant No. 1
FE18-13	Redhill Relief Sewer Relocation at State Route 55	Construction	\$3,550,000	Santa Ana
FE18-14	Plant Water Pipeline Replacement in Kinnison, Lindstrom, and Scott Tunnels at Plant No. 2	Close-Out	\$2,300,000	Plant No. 2
FE18-15	Plant Boiler System Relief at Plant No. 2	Close-Out	\$675,000	Plant No. 2
FE19-01	Pump Station Portable Generator Connectors	Construction	\$2,570,000	OC San Service Area
FE19-02	CenGen Plant Water Pipe Replacement at Plant No. 1	Construction	\$5,725,000	Plant No. 1
FE19-03	Trickling Filter Sludge and Scum Pumps Replacement at Plant No. 1	Construction	\$3,200,000	Plant No. 1
FE19-04	Sunflower Pump Replacement at Plant No. 1	Construction	\$4,300,000	Plant No. 1
FE19-06	EPSA Motor Cooling Improvements at Plant No. 2	Close-Out	\$1,825,000	Plant No. 2
FE19-08	Secondary Treatment VFD Replacements at Plant No. 2	Construction	\$2,900,000	Plant No. 2
FE19-10	Digesters C, D, F, G and I Gas Balance Lines Replacement at Plant No. 2	Design	\$176,000	Plant No. 1
FE19-11	Primary Clarifiers Nos. 6-31 Lighting and Alarm Improvements at Plant No. 1	Construction	\$1,250,000	Plant No. 1
FE19-12	Rebuild Shop Fume Extractor Installation at Plant No 1	Close-Out	\$560,000	Plant No. 1
FE20-01	Wastehauler Station Safety and Security Improvements	Close-Out	\$2,923,000	Plant No. 1
FE20-02	Digester C, D, F, and G Mechanical Rehabilitation at Plant No. 2	Construction	\$6,622,000	Plant No. 2

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Small Projects continued

Project No.	Project Name	Status	Project Budget	Location(s)
FE20-03	Return Activated Sludge Discharge Piping Replacement at Activated Sludge Plant No. 1	Construction	\$6,840,000	Plant No. 1
FE20-04	CenGen Cooling Water Pipe Replacement at Plant No. 2	Construction	\$5,180,000	Plant No. 2
FE20-05	Plant Water Piping Replacement at Secondary Clarifiers 1-26 at Plant No. 1	Bid and Award	\$1,545,000	Plant No. 1
FE20-08	Olive Sub-Trunk Siphon Rehabilitation at Santa Ana River	Construction	\$3,500,000	Anaheim, Orange
FE20-09	CenGen Smoke Detection Improvements at Plant No. 1 and No. 2	Close-Out	\$950,000	Plant Nos. 1 and 2
FE21-01	Plasma Cutting Fume Extractor installation at Plant No. 1 Rebuild Shop	Design	\$400,700	Plant No. 1
FE21-04	Thickening and Dewatering Facility Handrail Installation at Plant No. 1	Construction	\$510,000	Plant No. 1
FE21-06	Chemical Dosing Station Installation at Westside Pump Station	Close-Out	\$560,000	Unincorporated Orange County
FE21-07	Liquid Oxygen Tank A Replacement at Plant No. 2	Construction	\$3,800,000	Plant No. 2
FE21-08	Newhope-Placentia Sewer Manhole Replacements	Bid and Award	\$1,225,000	Fountain Valley, Garden Grove, Orange
FE22-01	Platform Modifications for Process Areas at Plant No. 1 and No. 2	Bid and Award	\$1,300,000	Plant Nos. 1 and 2
FE22-02	Liquid Oxygen Tank B Replacement at Plant No. 2	Construction	\$4,200,000	Plant No. 2
FE23-01	Digester Gas Compressor Dryer Replacements at Plant Nos. 1 and 2	Construction	\$8,000,000	Plant Nos. 1 and 2
FE23-03	Wetwell Level Monitoring Upgrade at Collections Pump Stations	Preliminary Design	\$4,005,000	OC San Service Area
FE23-04	Truck Loading Scale Replacement at Plant No. 2	Construction	\$916,000	Plant No. 2

Trough grout operation on the Sunflower Pump Replacement at Plant No. 1, Project No. FE19-04.



Small Projects continued

Project No.	Project Name	Status	Project Budget	Location(s)
FE23-05	Primary Clarifier Nos. 6-31 Scum Pump Replacement at Plant No. 1	Project Development	\$3,789,000	Plant No. 1
FE23-06	HVAC Replacements at Plant Nos. 1 and 2	Design	\$2,840,000	Plant Nos. 1 and 2
FE23-08	Power Buildings 7 and 8 HVAC Replacement at Plant No. 1	Construction	\$850,000	Plant No. 1
FE23-09	Primary Clarifiers F and G Rotating Mechanism Rehabilitation at Plant No. 2	Design	\$3,585,000	Plant No. 2

BOARD OF DIRECTORS

CITIES	ACTIVE DIRECTOR
Anaheim	Stephen Faessel
Brea	Christine Marick
Buena Park	Joyce Ahn
Cypress	Scott Minikus
Fountain Valley	Glenn Grandis
Fullerton	Bruce Whitaker
Garden Grove	Stephanie Klopfenstein
Huntington Beach	Pat Burns
Irvine	Farrah N. Khan
La Habra	Rose Espinoza
La Palma	Debbie Baker
Los Alamitos	Jordan Nefulda
Newport Beach	Brad Avery
Orange	Jon Dumitru (Vice Chairman)
Placentia	Chad Wanke
Santa Ana	Johnathan Ryan Hernandez
Seal Beach	Schelly Sustarsic
Stanton	David Shawver
Tustin	Ryan Gallagher (Chairman)
Villa Park	Robbie Pitts

AGENCIES

Costa Mesa Sanitary District	Robert Ooten
Midway City Sanitary District	Andrew Nguyen
Irvine Ranch Water District	John Withers
Yorba Linda Water District	Phil Hawkins
Member of the Board of Supervisors	Doug Chaffee



1959

Board of Directors at a new primary clarifier at Plant No. 1.



OC San Headquarters

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Fountain Valley,
California 92708

Reclamation Plant No. 1

10844 Ellis Avenue
Fountain Valley,
California 92708

Reclamation Plant No. 2

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