

Capital Improvement Plan 2025 to 2045



SESD

Wastewater Treatment
For a Cleaner Environment

South Essex Sewerage District

February 25, 2026

ACCEPTED BY
THE SOUTH ESSEX
SEWERAGE BOARD ON:
March 4, 2026



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Capital Improvement Plan

Purpose of the Capital Improvement Plan

The Capital Improvement Plan (CIP) is a critical planning and budgeting document for the South Essex Sewerage District (SESD or District). It provides a roadmap for maintaining, replacing, and upgrading SESD's capital assets as well as a projection of required short, mid, and long-term capital needs.

This plan was developed by SESD to provide a sustainable financial approach for renewing and replacing our equipment and infrastructure.

The intention of the CIP is to accomplish the following:

- (1) The CIP is meant to serve as a comprehensive document to summarize the annual capital needs at SESD for the next twenty-year planning horizon.
- (2) The CIP is written to be shared with members of the public and other stakeholders to promote and communicate the complexity and magnitude of the required capital plan for SESD.
- (3) The CIP is a dynamic document and will be updated on a regular basis to reflect completion of projects and changing needs in the overall plan.

Introduction

Background of SESD

SESD is a regional utility district established in 1925 to provide wastewater treatment and conveyance services to several communities on the North Shore of Massachusetts.

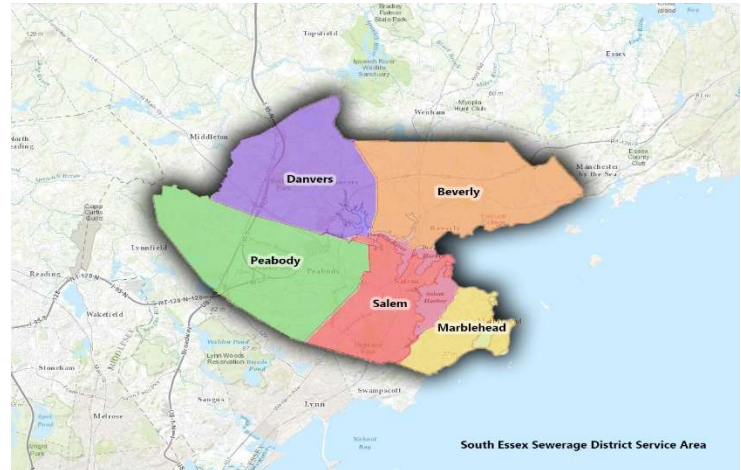
SESD Mission and Vision

MISSION: TO PROTECT PUBLIC HEALTH AND THE QUALITY OF LOCAL WATERWAYS BY ENSURING WASTEWATER IS PROPERLY COLLECTED, CLEANED, AND RETURNED TO THE ENVIRONMENT.

VISION: TO KEEP OUR HOMES, BUSINESSES AND WATERWAYS CLEAN THROUGH EFFECTIVE WASTEWATER MANAGEMENT AND TO PROMOTE A HEALTHY ENVIRONMENT AND ECONOMY.

Communities and Population Served

SESD provides services to approximately 190,000 people in the communities of Beverly, Danvers, Marblehead, Peabody, and Salem, as well as portions of the Town of Middleton and several State entities on the North Shore of Massachusetts. This includes not only the residents of these vital cities and towns, but also the many critical institutional, commercial, and industrial customers that are located within the service area such as numerous hospitals, colleges, and shopping centers as well as the urban core of each community.



SESD Description

SESD provides wastewater conveyance and treatment services to its service area. SESD owns and maintains a secondary wastewater treatment facility with a permitted average daily capacity of 29.7 million gallons a day. SESD's wastewater treatment facility (WWTF) is located on Salem Neck and discharges to an outfall in Salem Sound located off-shore from Beverly. SESD's WWTF has been at its current location for nearly 100 years, starting as a simple pump station and adding infrastructure as treatment standards changed including grease removal facilities in the 1950s, primary treatment and disinfection facilities in the 1970s, and a plant-wide renovation and conversion to secondary treatment which was completed in 1998.

Since the completion of the 1998 secondary upgrade, SESD has continued to maintain the facility and make improvements, but facility wide upgrades have not been completed for the past 27 years. SESD also owns and maintains four off-site regional metering and pumping stations that measure and / or pump the wastewater to the WWTF.

Finally, SESD owns and maintains approximately 27 miles of conveyance infrastructure including interceptors, force mains, siphon pipes, manholes, and other collection system structures. Much of this buried infrastructure dates to the 1970s and 1980s; however, some portions of the conveyance system owned by SESD are more than 100 years old. SESD does not own or maintain the smaller sewer pipes beneath the streets of the member communities or the community-owned pumping stations; these are owned and maintained by the individual cities and towns.

Capital Planning Process

The capital planning process required to prepare this CIP has been several years in the making. A number of different engineering studies and evaluations have been prepared that provide the necessary background including assessment of the existing infrastructure, identification and prioritization of needs, and preparation of cost estimates. The key documents that underly this CIP are summarized below.

- (1) Comprehensive Wastewater Management Plan (CWMP) prepared by SESD Staff – This report synthesizes the evaluations of the three studies below into a CWMP document as defined by the Massachusetts DEP. The CWMP process is a process whereby current and future wastewater needs are assessed, alternatives are developed, and a final plan chosen through careful evaluation of the alternatives. This document is beneficial in helping the SESD develop a sound plan and positioning ourselves for SRF funding eligibility.
- (2) Wastewater Facilities Plan prepared by AECOM – This report includes a comprehensive assessment of SESD’s WWTF and pump stations. It documents existing conditions, provides projections of future flows, identifies needs, provides an alternatives analysis to address the needs, and includes a prioritized list of improvements to address the needs at the WWTF and pump stations over a twenty-year planning horizon including estimates of project costs. It also includes a review of required modifications to address resiliency issues, energy use reduction opportunities, and a long-term road map for residuals management and disposal.
- (3) Collection System Capital Improvement Plan prepared by CDM Smith – This report includes an assessment of the District’s conveyance system infrastructure including force mains, siphon pipes, interceptor pipes, manholes, and outfalls. The CIP builds upon several years of collection system assessment work that SESD has undertaken to assess the conditions of its critical horizontal infrastructure. The report documents the condition, age and materials of construction of the various infrastructure components, assesses system risks including redundancy issues, identifies the overall collection system needs, provides an alternatives analysis to address the needs, and includes a prioritized list of improvements to address the needs over a twenty-year planning horizon including estimates of project costs.
- (4) Capital Finance Overview Memorandum prepared by the Collins Center – This memo provides a recommended plan for funding the overall CIP. It includes an assessment of financing approaches, a detailed revenue and expenditure forecast based on the CIP capital needs, and a capital funding scenario planning model to assess and optimize the overall financing plan and ascertain the impacts to SESD’s member communities.

Identification of Required Projects


A number of methods were used to identify the proposed projects included in the CIP. The large majority of the projects were identified during the Wastewater Facilities Plan and Collection System CIP previously referenced. In addition, plant staff and the Board of the District identified

additional studies, projects and other program level costs that are included in the CIP. A summary list of projects included in the CIP is provided in a subsequent section of this plan. In addition, a Project Data Sheet was developed for each of the proposed projects in the CIP which are also included in this CIP.

Prioritization

While all identified projects are important, SESD realizes that it is not practical to complete them all simultaneously. The capital program will need to be completed in several phases over multiple years due to funding limitations, a constricted plant site, staffing limitations, and construction sequencing requirements.

For each identified project in the CIP, SESD identified the relative priority based on a scale of one (1) being the highest priority and four (4) being the lowest priority. The prioritization took into consideration the condition of the asset identified for rehabilitation / replacement, the risk of failure and consequence of failure of the key assets in each project, and scheduling limitations associated with construction sequencing.



PRIORITIZATION FACTORS:

- RISK OF FAILURE
- CONSEQUENCE OF FAILURE
- IMPROVEMENT OF OPERATIONS
- OPERATIONAL SAVINGS AND ENERGY REDUCTION

Construction Contract Identification and Scheduling

As the first step of scheduling the work, the projects identified in each priority group of the CIP were combined into a series of proposed construction contracts. For instance, projects that are proposed for similar work or projects with the same priority ranking that are to be performed in a single WWTP process area were grouped together into larger construction contracts. This step was taken to simplify future design and construction management and take advantage of economy of scale by having fewer, larger construction projects.

As the next step, phasing of the consolidated list of construction contracts was conducted based on project prioritization as the primary method, followed by an assessment of construction activities sequencing to place projects within each priority group.

In general projects with a priority ranking of one (1) are scheduled to be conducted in the first five years of the twenty year CIP, those with priority ranking two (2) in the next five years (years 6 to 10), those with priority ranking three (3) in years 11 to 15, and those with priority ranking four (4) in years 16 to 20.

Project Cost Estimates

An estimate of project costs was developed for each of the projects identified in the CIP. All costs were initially developed in 2024 dollars and are inclusive of design, construction, permitting, and other costs. An annual cost was estimated for program level costs, such as administration staffing and annual capital expenditures within the operating budget. Further, an annual inflation factor was added to costs for all projects to be completed in the future.

Project cost estimates in the CIP are preliminary in nature and are planning level only. As the cost estimates are refined based on additional study, detailed design work, or construction bids, the costs in the CIP will be adjusted.

Summary of Major Initiatives

Collection System Improvements and Redundancy

In order to protect our water resources, SESD needs to convey the service area's wastewater to the WWTF in Salem for treatment. This is done by a collection system made up of a series of large diameter interceptor pipes, force mains, and siphons. For the past seven years, SESD has undertaken a program to assess the condition of its collection system assets, culminating in the preparation of a Collection System CIP detailing the required work. This Collection System CIP highlights a series of required improvement projects that are planned for the coming years. Three of the projects are highlighted below.

Danvers Force Main and Bass River Siphon Box Repairs – Based on an in-depth condition assessment, several sections of the Danvers Force Main as well as the Bass River Siphon Inlet and Outlet Chamber need rehabilitation. These assets are critical as all of the wastewater from Danvers passes through them.

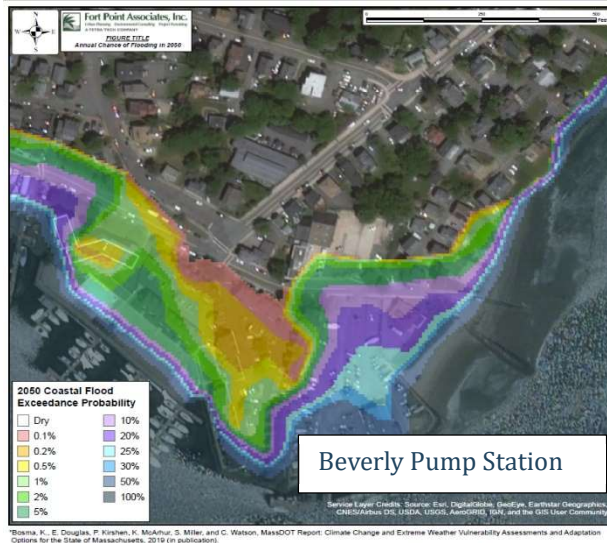


Beverly Force Main – The Beverly Force Main conveys all of the wastewater from Danvers and Beverly to the WWTF through a single pipeline. This force main passes beneath Beverly Harbor. It is forty years old and is in need of replacement or rehabilitation. Further, there is a need to provide a second force main pipe to provide redundancy and operating flexibility at this critical water crossing.

Marblehead Force Main – The Marblehead Force Main conveys all of the wastewater from Marblehead to the WWTF. The pipelines beneath Salem Harbor were recently replaced, but the landward portion consists of a single pipeline constructed nearly 50 years ago. However, due to the material of construction (asbestos cement), SESD is unable to determine the condition of the pipe. Asbestos cement pipe has a lifespan of 50 to 70 years, so there is a need for a new landward pipeline to provide reliable service to Marblehead.

Pump Station Upgrades and Resiliency Improvements

The proliferation of the use of “flushable” wipes in recent years has had profound impacts on the WWTF and causes significant operational and maintenance issues. These wipes pass through SESD’s current bar rack and grinding equipment, which was installed more than 20 years ago before wipes were such an issue. The wipes cause blockages in pipes and pumps, maintenance



issues, and wear and tear on equipment. SESD’s current pre-screening equipment is located at three remote pump stations and one pump station located on our WWTF site. One of the most critical upgrades we are faced with is upgrading to new equipment that will remove these wipes before they enter the WWTF.

Further, the three off-site pump stations are in locations threatened by sea level rise and coastal storm surge. Upgrades to increase the resiliency of these assets are needed in the future to protect them and keep them operational during storm events.

Wastewater Treatment Plant Conditions and Equipment Obsolescence

The SESD WWTF was expanded and upgraded to secondary treatment in the late 1990s and has served the community well for almost 30 years. SESD has a robust asset management plan which is used to proactively maintain and repair aging equipment. However, equipment and process tankage has a finite lifespan and wastewater is typically corrosive in nature which further reduces the lifespan.



Therefore, there is significant work required at the WWTF, including replacing roofs and air conditioning and ventilation systems that are well past their expected 20-year design life, replacing pumps and valves damaged by accumulated waxes, updating electrical systems, and replacing electronic control equipment that is obsolete and no longer available - even on E-Bay! SESD works diligently to maintain and repair its over 2,000 pieces of equipment with in-house staff, but it is nearly impossible to keep old equipment

operational forever with even the best maintenance practices. It is inevitable that critical equipment failures will occur at an accelerated pace if equipment is not proactively replaced.

Residuals and Residuals Disposal

The most significant by-product of the treatment process is sludge, or residuals. The processing of residuals and residuals disposal is a significant component of our operations and has a substantial budget impact. SESD generates two to three truckloads a day of dewatered residuals. The recent discovery of PFAS in residuals has led to several new and proposed state regulations banning or limiting the land application and incineration of residuals in Massachusetts and neighboring states. This has changed the regional disposal marketplace, substantially increasing disposal costs.

This is a quickly developing situation, and regulations are actively under development; therefore, SESD has not yet identified the best long term residuals management strategy. However, our current residuals processing equipment and conveyor systems are 25 years old and in dire need of replacement – we are forced to weld patches to our conveyors and other equipment to get a few more years of service life. SESD needs to move ahead and replace our old and unreliable systems with new processing equipment now. In addition, the upgraded equipment will remove more water and reduce the volume of residuals materials to be disposed. At the same time – we are monitoring the progress of other long-term solutions such as drying technologies or joining a regional residuals management effort.

Capital Improvement Plan (CIP)

The Capital Improvement Plan provided herein was prepared to provide a path forward to resolve the District's needs. The costs to implement this plan are substantial, and it is important to consider that it may be necessary to modify portions of the plan based on the available financial resources of SESD's member communities. The Capital Improvement Plan will likely need to be adjusted and modified over time based on financing and other changing conditions.

Organization of CIP

The CIP is organized to present a comprehensive summary of the projects and programs to be undertaken at SESD over the next twenty years. The following tables and figures provide an overview of the projects including the program and project objective they support and their priority.

In addition, a Project Data Sheet was developed for each of the proposed projects in the CIP. The data sheets provide detailed information on each project including the program, priority, and objectives as well as a summary of the proposed work, the proposed implementation schedule (based on the priority) and preliminary cost estimates. These data sheets are included in the Project Data Sheets section of this document.

CIP Summary

CIP Summary by Priority

As previously discussed, SESD has prioritized all of its capital projects into one of four priority tiers, one (1) being highest priority and four (4) being lower priority. Table 1 below summarizes the projects included in the SESD CIP by priority tier. It should be noted, some work is categorized as a Program Level Costs and does not have a priority tier since they are ongoing and tied to progressing the overall CIP.

Table 1 – Summary of Project Priority Tiers

Priority Group	Number of Projects	Total Costs ¹
Program Management	1	\$25,290,000
Priority Tier 1`	20	\$149,090,000
Priority Tier 2	22	\$227,770,000
Priority Tier 3	7	\$180,670,000
Priority Tier 4	9	\$165,100,000
Total (Rounded)	59	\$747,900,000

¹ Costs were estimated for each project based on recommended work and were prepared in 2024 dollars. All costs include a contingency factor, a factor for additional costs determined during design as well as engineering design and construction administration. Costs were escalated forward to the scheduled construction date with an inflation rate of 3%.

CIP Summary by Program

In organizing the required work, SESD identified four major programs which make up the CIP. These include the following:

- (1) Collection System (COL) – Work supporting improvements to SESD’s collection system including forcemains and interceptors.
- (2) Pump Stations (PSU) – Work supporting improvements to SESD’s pump stations including upgrades and resiliency work.
- (3) Treatment Facilities (WTP) – Work supporting improvements to SESD’s treatment facility, with exception to residuals handling and management.
- (4) Residuals Facilities (RES) – Work supporting upgrades and changes to SESD residuals handling and residuals management.

In addition, there will be expenditures to manage the program (such as an Owner’s Project Manager or temporary construction management support staff) which are also included in the CIP. Table 2 below summarizes the projects included in the SESD CIP by the Programs described above.

Table 2 – Summary of Project Program Areas

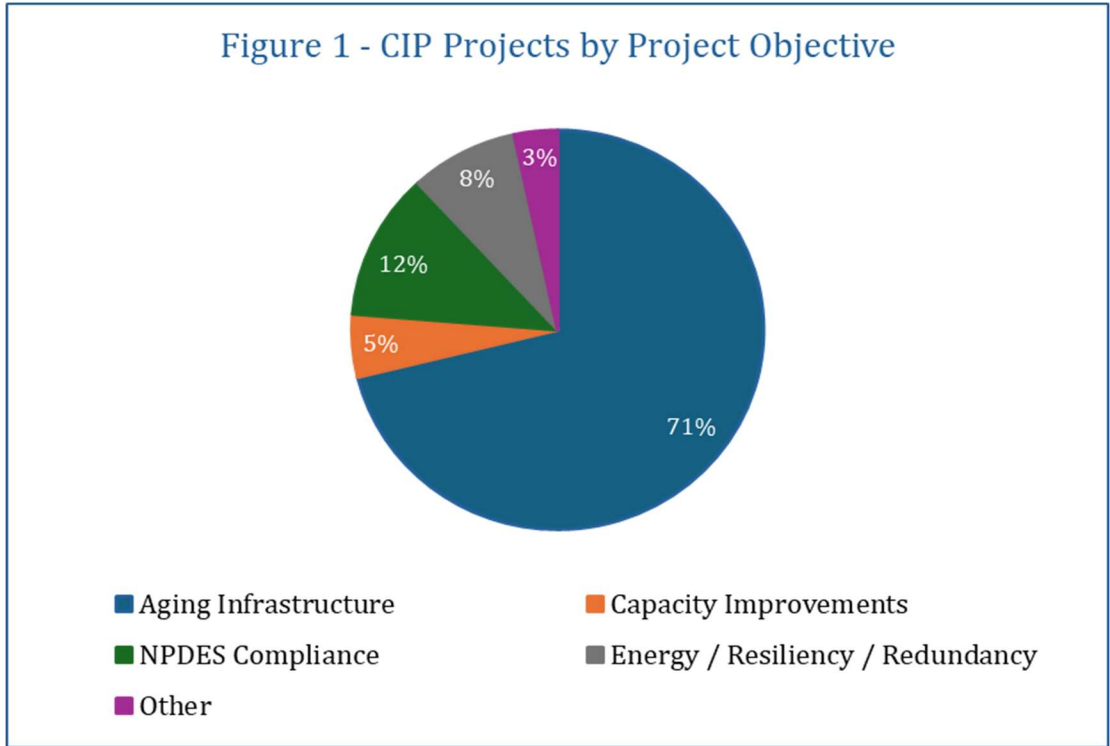
Program Group	Number of Projects	Total Costs
Program Management	1	\$25,290,000
Collection System	16	\$249,380,000
Pump Stations	9	\$114,500,000
Residuals Facilities	5	\$36,300,000
Treatment Facilities	28	\$322,440,000
Total (Rounded)	59	\$747,900,000

CIP by Project Objective

SESD also identified the primary project objective for each of the projects in the CIP, selecting the most appropriate objective from the following:

- (1) Aging Infrastructure – A project primarily addressing aging infrastructure or replacing equipment or systems beyond their design life.
- (2) Capacity Improvements – A project primarily addressing increasing capacity of the pipeline, pump station, or treatment process.
- (3) NPDES Permit Compliance - A project primarily addressing improved compliance with SESD’s NPDES Discharge Permit.
- (4) Energy / Resiliency / Redundancy - A project primarily addressing reduced energy use, increased resiliency, or increased redundancy – all improving sustainability of SESD’s assets.
- (5) Other - A project primarily addressing a different objective such as program management.

Figure 1 presents a breakdown of the capital projects in the CIP by Objective.



Projected CIP Expenditures

Figure 2 presents the projected CIP expenditures by program area over the 20-year CIP duration.

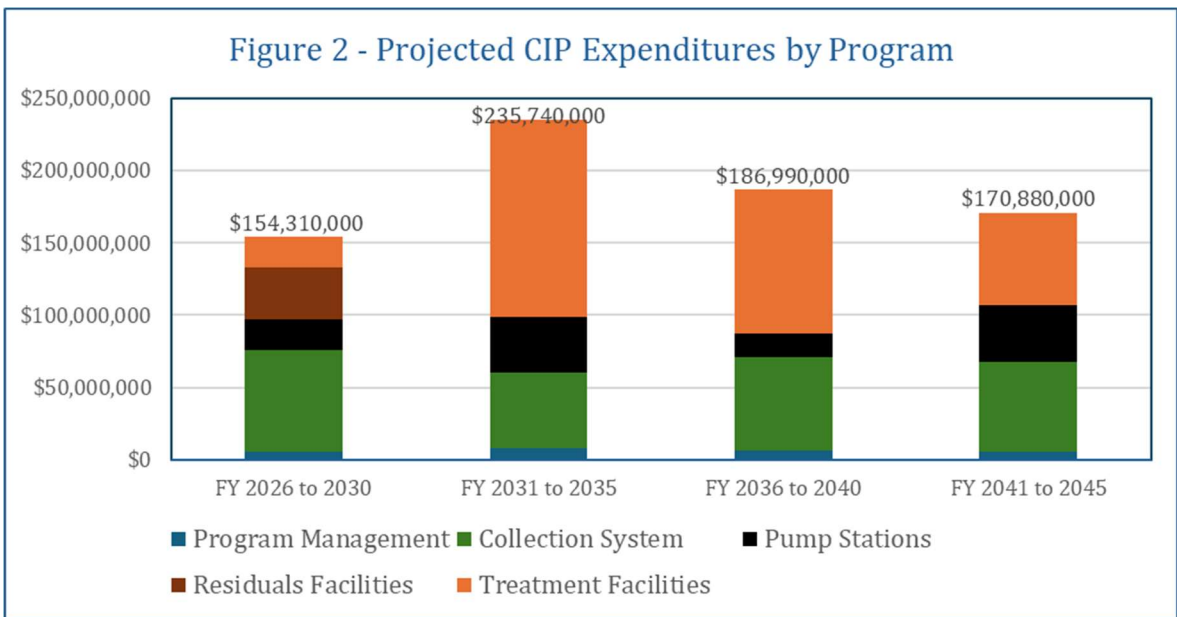
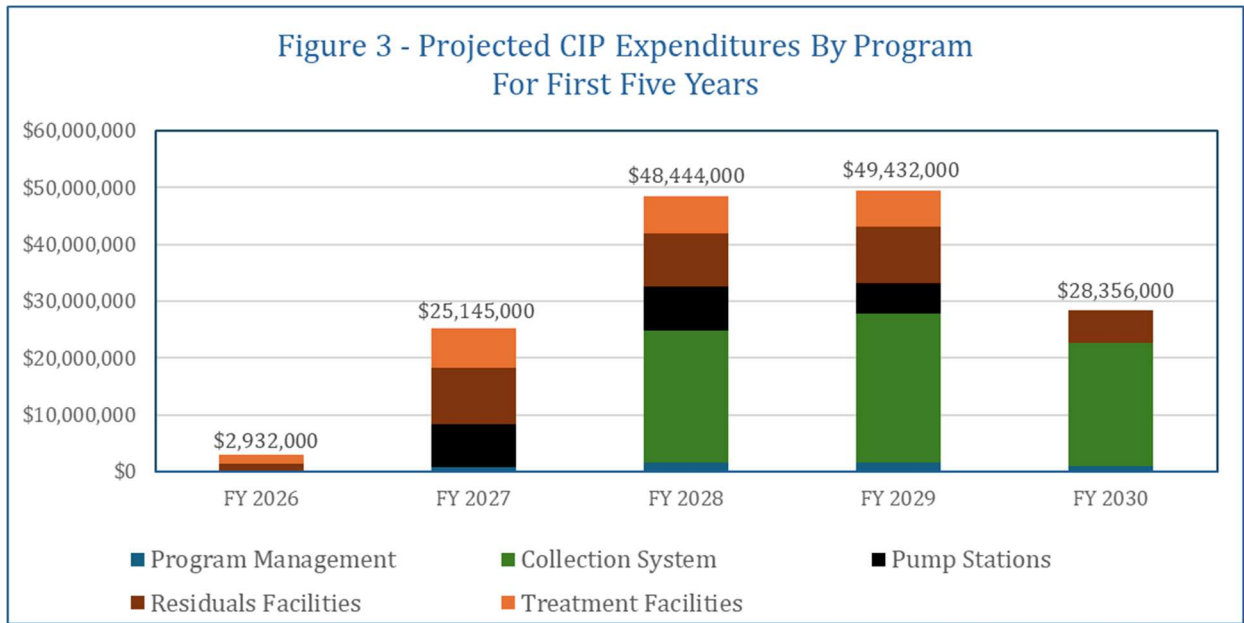


Figure 3 presents the projected CIP expenditures by program area for the first five years of the program.



Projected CIP Expenditures by Member Community / Entity

SESD maintains a system of equitably allocating operating and capital costs to the District member communities and State and other entities. Based on the projected allocation of each project within the CIP and current allocation percentages, SESD prepared an estimate of the allocation of the CIP costs by member community or entity which is summarized in Table 3.

Table 3 – Summary of CIP Costs by District Member Communities and Entities

Community / Entity	FY 2026 to 2030	FY 2031 to 2035	FY 2036 to 2040	FY 2041 to 2045	Total
Beverly	\$35,017,000	\$60,506,000	\$30,062,000	\$25,658,000	\$151,240,000
Danvers	\$24,202,000	\$57,172,000	\$22,601,000	\$82,383,000	\$186,360,000
Marblehead	\$40,069,000	\$23,642,000	\$8,748,000	\$7,452,000	\$79,910,000
Peabody	\$34,957,000	\$58,021,000	\$80,737,000	\$33,000,000	\$206,720,000
Salem	\$18,576,000	\$32,887,000	\$43,352,000	\$17,581,000	\$112,400,000
Comm of MA	\$256,000	\$604,000	\$252,000	\$838,000	\$1,950,000
Middleton	\$544,000	\$1,283,000	\$533,000	\$1,786,000	\$4,150,000
Comm of MA - Jail	\$594,000	\$1,399,000	\$618,000	\$1,859,000	\$4,470,000
Comm of MA - Essex Aggie	\$95,000	\$224,000	\$88,000	\$323,000	\$730,000
Total (Rounded)	\$154,310,000	\$235,740,000	\$186,990,000	\$170,880,000	\$747,900,000

CIP Project List

Table 4 (starting on page 14) presents a summary of all of the CIP projects.

Funding Needs

The SESD CIP identifies a large number of projects to be completed over a twenty-year period. The proposed work and costs are preliminary in nature, and it is anticipated that the plan will change; although, determining these planning level costs and when these costs will be expended is critical to the formation of a funding plan.

SESD has worked with the University of Massachusetts Boston's Edward J. Collins Jr Center for Public Management to develop a financial model and assess different funding mechanisms for the CIP. Five different funding scenarios were evaluated. A funding approach of 49% Water Infrastructure Finance and Innovation Act (WIFIA) loan and 51% General Obligation Bonds was identified as a conservative approach to funding to use for SESD's initial financial planning.

Due to the magnitude of the CIP and the associated annual principal and interest payments, the Collins Center recognized it could be a challenge to authorize and implement such a large capital program at one time. Further, there is great uncertainty forecasting costs and financing rates more than 10 years into the future. Therefore, the Collins Center recommended focusing on funding for only the first two priority tiers (10 years) of the CIP.

Based on the modeling of the recommended funding approach, a total of \$652 million is estimated in debt service payments for Tiers 1 and 2 over a period of 35 years as summarized in Table 5.

Table 5 – Summary of Financing Costs

Project Funding Mechanism	Priority Tier 1	Priority Tier 2	Total
WIFIA Principal (49%)	\$75,611,000	\$115,512,000	\$191,123,000
WIFIA Interest	\$38,335,000	\$62,665,000	\$101,000,000
General Obligation Bond Principal (51%)	\$78,698,000	\$120,226,000	\$198,924,000
General Obligation Bond Interest + BANN	\$60,664,000	\$100,517,000	\$161,181,000
Total Principal (Rounded)	\$154,310,000	\$235,740,000	\$390,050,000
Total Interest (Rounded)	\$99,000,000	\$163,180,000	\$262,180,000
Total Debt Service Payments (Rounded)	\$253,310,000	\$398,920,000	\$652,230,000

SESD is currently actively looking for ways to reduce this burden on our communities. It is imperative that SESD finds additional funding sources, whether it be grants, SRF 0 percent interest loans, or loan principal forgiveness.

Next Steps

SESD is working with its member communities and legislative delegation to seek special legislation which would include a debt exclusion for the work identified in this CIP. In the proposed legislation, SESD is requesting a debt exclusion in an amount necessary to implement the projects included in Priority Tier 1 and Priority Tier 2 during the next ten years.

The CIP presented in this report, including the individual projects listed in Table 4, was prepared to provide a path forward to resolve the needs identified. The CIP will likely need to be adjusted and modified over time based on financing and other changing conditions. As work proceeds, SESD anticipates that the scope of work for some projects will be modified and adjusted based on needs at the time of project execution. Therefore, some elements of projects in Tiers 3 and 4 may be moved forward to be completed under the initial program phases while other elements included in Tiers 1 and 2 may be postponed.

Table 4 – Summary Table of CIP Projects

Project Number	Project Element Name	Program Group	Priority Tier	FY 2026 to FY 2030 ¹	FY 2031 to FY 2035	FY 2036 to FY 2040	FY 2041 to FY 2045
ADM_07	Project Mgmt, Construction Oversight & OPM Support	Program Management	Program Cost	\$5,218,000	\$7,972,000	\$6,323,000	\$5,778,000
ADM_01	Dewatering Pilot	Residuals	1	\$515,000	\$0	\$0	\$0
ADM_02	Co-settling Demonstration	Residuals	1	\$1,569,000	\$0	\$0	\$0
ADM_03	Secondary Treatment Process Optimization Study Phase 1	Treatment Facilities	1	\$515,000	\$0	\$0	\$0
ADM_04	Secondary Treatment Process Study Phase 2 Selective Wasting Pilot and Contact Stab Study	Treatment Facilities	1	\$1,045,000	\$0	\$0	\$0
ADM_05	Odor Control Study Phase I	Treatment Facilities	1	\$515,000	\$0	\$0	\$0
ADM_08	Assessment + Alternatives Analysis	Collection System	1	\$164,000	\$0	\$0	\$0
CSC_01	Bass River Siphon Chambers	Collection System	1	\$5,324,000	\$0	\$0	\$0
CSC_02	Marblehead Force Main	Collection System	1	\$32,537,000	\$0	\$0	\$0
CSC_03	Beverly Harbor Force Main	Collection System	1	\$30,398,000	\$0	\$0	\$0
CSC_13	Peabody Salem Interceptor Heavy Cleaning	Collection System	1	\$2,420,000	\$0	\$0	\$0
PSU_01	Pump Station Screening Upgrades	Pump Stations	1	\$4,738,000	\$0	\$0	\$0
PSU_02	Influent Pump Station High Priority	Pump Stations	1	\$16,067,000	\$0	\$0	\$0
RES_01	Cake Storage	Residuals	1	\$12,024,000	\$0	\$0	\$0
RES_02	Dewatering Upgrade	Residuals	1	\$16,089,000	\$0	\$0	\$0
RES_03	Thickening upgrade or WAS co-settling	Residuals	1	\$6,103,000	\$0	\$0	\$0
WTP_01	Scum Removal Improvements	Treatment Facilities	1	\$10,165,000	\$0	\$0	\$0
WTP_02	Secondary Clarifiers Improvements - effluent visibility and monitoring	Treatment Facilities	1	\$1,913,000	\$0	\$0	\$0
WTP_03	Secondary Clarifiers Improvements - baffle/weir modifications	Treatment Facilities	1	\$3,826,000	\$0	\$0	\$0
WTP_04	Static Mixer Removal	Treatment Facilities	1	\$2,733,000	\$0	\$0	\$0
WTP_05	RV Dump Station	Treatment Facilities	1	\$431,000	\$0	\$0	\$0
ADM_06	Odor Control Study Phase 2	Treatment Facilities	2	\$0	\$1,212,000	\$0	\$0
ADM_09	Danvers Collection System Assessment	Collection System	2	\$0	\$2,424,000	\$0	\$0
CSC_04	Beverly Force Main (landbased portion)	Collection System	2	\$0	\$23,867,000	\$0	\$0
CSC_05	Bass River Siphon Barrels	Collection System	2	\$0	\$6,766,000	\$0	\$0
CSC_06	Beverly Water Street Interceptor	Collection System	2	\$0	\$6,889,000	\$0	\$0
CSC_07	Danvers Doty Avenue Gravity Sewer	Collection System	2	\$0	\$12,302,000	\$0	\$0
PSU_03	Influent Pump Station	Pump Stations	2	\$0	\$5,211,000	\$0	\$0
PSU_04	Beverly Pump Station	Pump Stations	2	\$0	\$16,860,000	\$0	\$0
PSU_06	Marblehead Pump Station	Pump Stations	2	\$0	\$11,664,000	\$0	\$0
PSU_07	Peabody Metering Station	Pump Stations	2	\$0	\$1,576,000	\$0	\$0
WTP_06	RAS System Improvements	Treatment Facilities	2	\$0	\$6,369,000	\$0	\$0
WTP_07	Beverly Metering Station	Treatment Facilities	2	\$0	\$364,000	\$0	\$0

Project Number	Project Element Name	Program Group	Priority Tier	FY 2026 to FY 2030 ¹	FY 2031 to FY 2035	FY 2036 to FY 2040	FY 2041 to FY 2045
WTP_08	Salem Neck Pump Station	Pump Stations	2	\$0	\$2,830,000	\$0	\$0
WTP_09	Oxygen Reactor Controls Improvement	Treatment Facilities	2	\$0	\$1,968,000	\$0	\$0
WTP_10	Oxygen Reactor and Gallery Upgrades	Treatment Facilities	2	\$0	\$7,997,000	\$0	\$0
WTP_11	Selective Wasting	Treatment Facilities	2	\$0	\$6,397,000	\$0	\$0
WTP_12	Contact Stabilization	Treatment Facilities	2	\$0	\$4,183,000	\$0	\$0
WTP_13	Secondary Clarifiers and Buildings and Odor C	Treatment Facilities	2	\$0	\$20,666,000	\$0	\$0
WTP_14	Grit Building Upgrade (Condition)	Treatment Facilities	2	\$0	\$15,861,000	\$0	\$0
WTP_15	Grit Building Upgrade (Process)	Treatment Facilities	2	\$0	\$6,274,000	\$0	\$0
WTP_16	Operations Building	Treatment Facilities	2	\$0	\$54,519,000	\$0	\$0
WTP_17	Primary Clarifiers Buildings	Treatment Facilities	2	\$0	\$11,564,000	\$0	\$0
CSC_08	Peabody Walnut Street Gravity Sewer	Collection System	3	\$0	\$0	\$6,884,000	\$0
CSC_09	Peabody Salem Interceptor	Collection System	3	\$0	\$0	\$53,684,000	\$0
CSC_10	Salem Derby Street Gravity Sewer	Collection System	3	\$0	\$0	\$4,145,000	\$0
PSU_08	Beverly Pump Station Resiliency Upgrades	Pump Stations	3	\$0	\$0	\$16,116,000	\$0
WTP_18	Odor G and B Upgrades	Treatment Facilities	3	\$0	\$0	\$49,092,000	\$0
WTP_19	Odor A and E Upgrades	Treatment Facilities	3	\$0	\$0	\$26,494,000	\$0
WTP_20	Oxygen Generation	Treatment Facilities	3	\$0	\$0	\$24,252,000	\$0
CSC_11	Danvers Doty Avenue Force Main	Collection System	4	\$0	\$0	\$0	\$32,736,000
CSC_12	WWTP Outfall Force Main (Land Based Portion)	Collection System	4	\$0	\$0	\$0	\$20,572,000
CSC_14	SESD Portion of Beverly Beach Interceptor	Collection System	4	\$0	\$0	\$0	\$8,267,000
PSU_05	Danvers Pump Station	Pump Stations	4	\$0	\$0	\$0	\$39,442,000
WTP_21	Chlorination Building	Treatment Facilities	4	\$0	\$0	\$0	\$4,464,000
WTP_22	Effluent Pump Station	Treatment Facilities	4	\$0	\$0	\$0	\$14,384,000
WTP_23	Admin and Maintenance Buildings	Treatment Facilities	4	\$0	\$0	\$0	\$22,322,000
WTP_24	Electrical Building + Medium Voltage Distr. System	Treatment Facilities	4	\$0	\$0	\$0	\$20,958,000
WTP_25	Site Improvements	Treatment Facilities	4	\$0	\$0	\$0	\$1,955,000
TOTAL (Rounded)				\$154,310,000	\$235,740,000	\$186,990,000	\$170,880,000

¹ Costs were estimated for each project based on recommended work and were prepared in 2024 dollars. All costs include a contingency factor, a factor for additional costs determined during design as well as engineering design and construction administration. Costs were escalated forward to the scheduled construction date with an inflation rate of 3%.

Project Data Sheets

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:		Dewatering Pilot
Construction Contract:		Residuals Management Studies
Project Element ID:	ADM_01	Funding Source: CPF 00
Project Driver:	Aging Infrastructure	Cost Allocation Code: Secondary Apport
Project Type:	Planning/Design	Managing Department: Capital / Engineering
Program Name:	Residuals	Priority: 1

Project Need

The existing belt filter presses have performed well for over 25 years, however they are near the end of their useful life. The polymer, washwater, and instrumentation supporting systems are also in need of replacement. The overall goal of selecting new technology is to increase cake solids concentrations (as compared to BFP's) and reduce sludge disposal costs.

Project Description

Pilot study to research and identify new dewatering technology . The goal of the piloting is to establish lowest net present value of centrifuges and screw presses as compared to the existing belt filter presses and appropriate selection or prequalification criteria.

Additional Comments

A key outcome is to compare the different types of equipment performance with previously established performance objectives.

Photos / Exhibits



Example of New Dewatering Technology to Pilot

Estimated Project Schedule (Start Dates)

Start Date	2026
End Date	2026

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$515,000	\$0	\$515,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0



Project Element:	Co-settling Demonstration		
Construction Contract:	Residuals Management Studies		
Project Element ID:	ADM_02	Funding Source:	CPF 00
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Planning/Design	Managing Department:	Capital / Engineering
Program Name:	Residuals	Priority:	1

Project Need

The existing gravity belt thickening equipment as well as the support equipment, polymer, washwater, and instrumentation systems are nearing the end of their useful life. Utilizing co-settling, this equipment may be able to be eliminated. Solids processing costs need to be evaluated with and without mechanical thickening to determine what benefits are achievable with co-settling, and what other impacts may result from this process.

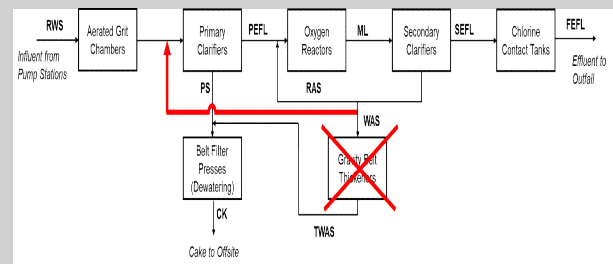
Project Description

A pilot and demonstration study to research and identify whether WAS co-settling can be used in lieu of mechanical thickening equipment. Establish impacts on odor control, seasonal sludge production and primary solids concentrations and production. Develop a net present value for WAS Co-settling and compare to costs for upgrading the existing mechanical thickening equipment.

Additional Comments

Co-settling is the process of sending secondary Waste Activated Sludge (WAS) to the primary clarifiers where it is settled and collected along with primary sludge. This eliminates the need for dedicated mechanical thickening equipment for the WAS stream.

Photos / Exhibits



Pilot Demonstration of Co-settling Process May Reduce or Eliminate Need for Mechanical Thickening

Estimated Project Schedule (Start Dates)

Start Date	2026
End Date	2027

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$1,568,175	\$0	\$772,500	\$795,675	\$0	\$0	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Secondary Treatment Process Optimization Study Phase 1		
Construction Contract:	Secondary Treatment Process Optimization Study Phase I		
Project Element ID:	ADM_03	Funding Source:	CPF 00
Project Driver:	NPDES Compliance	Cost Allocation Code:	Secondary Apport
Project Type:	Planning/Design	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	1

Project Need

The existing secondary clarifiers have shown decreased total suspended solids (TSS) removal at flow rates greater than 65 mgd. The reduced suspended solids removal leads to elevated effluent TSS concentrations and mass discharges that can exceed NPDES permit limits. Improvements to optimize the activated sludge process performance and hydraulic characteristics of the clarifiers may improve TSS removal at higher flow rates.

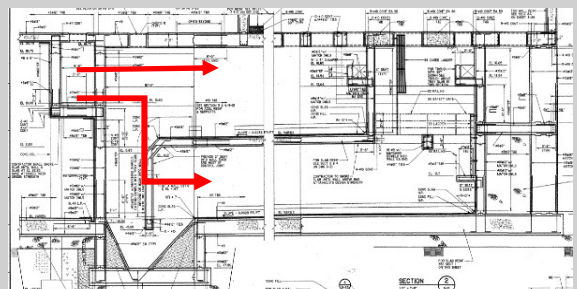
Project Description

This study evaluates process performance including hydraulic enhancements to reduce headloss, increase dispersion, reduce short circuiting and as well as the assessment of modifications to the activated sludge process or oxygen reactors to reduce the potential for solids carry over under high flow conditions.

Additional Comments

Secondary treatment performance enhancements may require process modeling and CFD modeling to analyze the potential benefits of process modifications, baffle, weir and inlet nozzle modifications.

Photos / Exhibits



Process Performance Enhancement
Reduce Short-Circuiting During High Flows

Estimated Project Schedule (Start Dates)

Start Date	2026
End Date	2026

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$515,000	\$0	\$515,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Secondary Treatment Process Study Phase 2 Selective Wasting Pilot and Contact Stab Study		
Construction Contract:	Secondary Treatment Process Study Phase 2		
Project Element ID:	ADM_04	Funding Source:	CPF 00
Project Driver:	NPDES Compliance	Cost Allocation Code:	Secondary Apport
Project Type:	Planning/Design	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	1

Project Need

The existing secondary clarifiers have shown decreased total suspended solids (TSS) removal at flow rates greater than 65 mgd. Reduced suspended solids removal leads to elevated effluent TSS concentrations and mass discharges that can exceed NPDES permit limits. Utilizing enhanced "selective" wasting and / or contact stabilization, there is potential to improve the settleability characteristics of the mixed liquor generated in the Oxygen Reactor to minimize floc disruption and reduce the loss of solids and bio mass during high flow events.

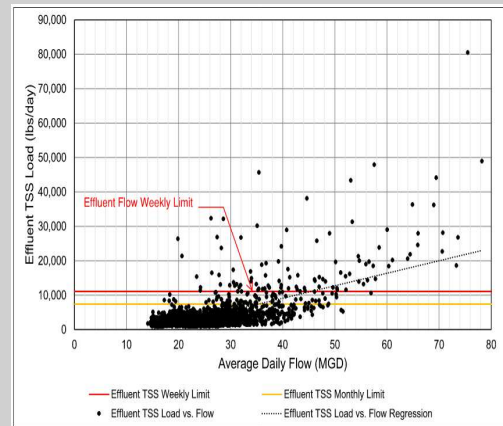
Project Description

Pilot Study to determine the potential benefits of selective wasting technology and the ability to retain solids with the contact stabilization process during high flow events. The goal of this study is to determine ability to increase secondary treatment performance, reduce sludge volume index, minimize floc shear, and retain mixed liquor during high flows.

Additional Comments

Evaluate potential to return overflow from the selective wasting process to the distribution box or an alternative location. See ADM 03, WTP 11 and WTP 12 for additional information.

Photos / Exhibits



Effluent TSS Load vs. Average Daily Flow

Estimated Project Schedule (Start Dates)

Start Date	2026
End Date	2027

Cost Estimate Method **Study / CIP**

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$1,045,450	\$0	\$515,000	\$530,450	\$0	\$0	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Odor Control Study Phase I		
Construction Contract:	Odor Control Study		
Project Element ID:	ADM_05	Funding Source:	CPF 00
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Planning/Design	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	1

Project Need

The existing odor control systems are nearly 30 years old and are in need of rehabilitation. Proposed plant modifications could have an impact on the volume and nature of odorous gasses generated at the treatment plant. A study is needed to characterize these changes and determine the extent of required odor control upgrades. The first step in the process is establishing current baseline conditions and assess potential air permit implications.

Project Description

Study to further understand odor control alternatives and cost; Phase 1 Data Collection relative to existing plant operations. Collect and analyze odor data related to existing process at the wastewater treatment plant and estimate impacts to onsite and offsite sources based on increased and decreased odorous air capture and treatment.

Additional Comments

Also needs to include an evaluation of dispersion and stack height.

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2026
End Date	2026

Cost Estimate Method **Study / CIP**

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$515,000	\$0	\$515,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Odor Control Study Phase 2		
Construction Contract:	Odor Control Study		
Project Element ID:	ADM_06	Funding Source:	CPF 00
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Planning/Design	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

Upon completion of the phase 1 study, an additional study will be required to analyze odor treatment technology and asses how the change in odor treatment will impact SESD's existing air permit.

Project Description

Study to further understand odor control alternatives and cost; Phase 2 Detailed Evaluation. Determine air volume changes to each odor control system and where to combine, increase size or eliminate systems for new residuals storage and management strategy.

Additional Comments

Evaluate air changes needed for storage and Primary Clarifiers for redundancy, seasonal and maintenance modes of operation.

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2032

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$1,211,963	\$0	\$0	\$0	\$0	\$0	\$0	\$1,211,963	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Program, Project Management, Construction Oversight & OPM Support		
Construction Contract:	Program Implementation Technical Support		
Project Element ID:	ADM_07	Funding Source:	CPF 00
Project Driver:	Other	Cost Allocation Code:	Secondary Apport
Project Type:	Planning/Design	Managing Department:	Capital / Engineering
Program Name:	Program Management	Priority:	Program Cost

Project Need

There is a need for technical, project, and program management support to assist SESD engineering and administrative staff in implementing the capital improvement program.

Project Description

This establishes and provides a budget for outside consultants to assist SESD with design engineering review and oversight, construction phasing, contract procurement, and construction and startup and testing oversight for the capital program. Support could be a combination of one or more contract project managers, a third party program management firm, or an owners project manager (OPM).

Additional Comments

Three percent (3%) of the construction costs for each year was set aside for this project element.

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2026
End Date	2045

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$25,291,640	\$0	\$99,138	\$850,311	\$1,638,180	\$1,671,568	\$958,913	\$7,971,697	\$6,323,360	\$5,778,473

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Assessment + Alternatives Analysis		
Construction Contract:	Beverly Beach Interceptor Assessment		
Project Element ID:	ADM_08	Funding Source:	CPF 00
Project Driver:	Aging Infrastructure	Cost Allocation Code:	All Beverly
Project Type:	Planning/Design	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	1

Project Need

The Beach Interceptor in Beverly is a vulnerable asset that conveys a significant quantity of Beverly's wastewater to the Beverly Pump Station. The 48 inch cast iron interceptor was installed in the 1920s and is nearing the end of its life. It is routed along the beach, below the high tide line and has no redundancy. There is a need to assess the condition of this line and develop a feasible alternative to replace or upgrade it and provide reliable service to the City.

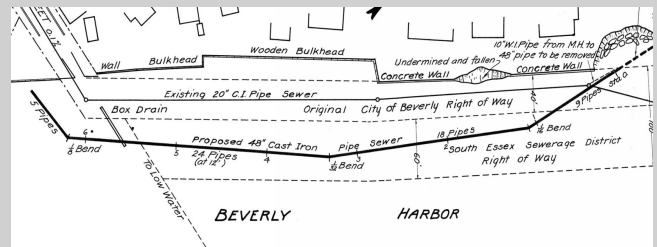
Project Description

This project includes a condition assessment and an identification and evaluation of potential rehabilitation or replacement alternatives of the 600 foot Beach Interceptor.

Additional Comments

This assessment and alternatives analysis will need to be closely coordinated with the City of Beverly, as this interceptor connects directly to the upstream city-owned "Hale Street" interceptor that is also located along the beach along the Beverly coastline.

Photos / Exhibits



Estimated Project Schedule (Start Dates)

Start Date	2028
End Date	2028

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$163,909	\$0	\$0	\$0	\$163,909	\$0	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Danvers Collection System Assessment		
Construction Contract:	Danvers Collection System Assessment		
Project Element ID:	ADM_09	Funding Source:	CPF 00
Project Driver:	Aging Infrastructure	Cost Allocation Code:	2000
Project Type:	Planning/Design	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	2

Project Need

There are a significant amount of gravity sewers within the Danvers Section that need detailed investigation to determine rehabilitation and upgrade needs based on sewer and structure condition assessment with CCTV and MSI. The Danvers Section includes the longest network of sewer pipes that are laid in easements cross-country in roads, bicycle paths, fields and along brooks. Portions of these interceptors are laid in low lying wooded areas and access is limited and difficult. Some of the sewers date from 1920's and 1930's and the remainder were installed in the 1970s.

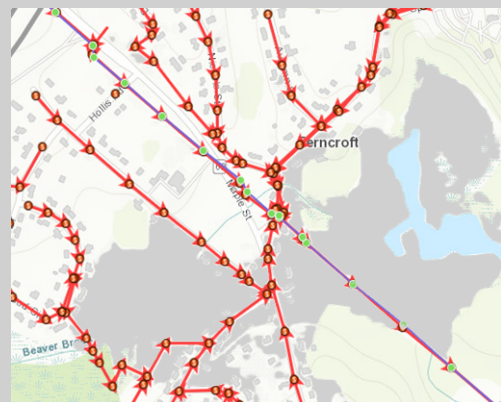
Project Description

This project includes a condition assessment and identification or required rehabilitation of the Danvers gravity system including 18,000 LF of Multi-Sensor Inspection (MSI) and 22,000 LF of CCTV, engineering and implementation.

Additional Comments

The current interceptor sewers were constructed in Contracts 73-10 and 73-11. These sewers also convey flows from Middleton and other State entities through the Danvers collection system.

Photos / Exhibits



Portion of Area Showing Danvers Collection System

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2032

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$2,423,926	\$0	\$0	\$0	\$0	\$0	\$0	\$2,423,926	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Bass River Siphon Chambers		
Construction Contract:	Bass River Siphon Upgrade Phase 1		
Project Element ID:	CSC_01	Funding Source:	CPF 12
Project Driver:	Aging Infrastructure	Cost Allocation Code:	3000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	1

Project Description

Rehabilitate upstream(US) and downstream(DS) chambers. Extensive interior work on US chamber including cable removal, demo, gate replacement, concrete restoration and coating, roof replacement. DS chamber restoration including demo, gate replacement, grating replacement, concrete restoration and coating. The siphon chambers were installed in Contract 81-9B and Contract 81-13A.

Project Need

The upstream chamber has extensive and significant concrete loss and has been attacked by hydrogen sulfide that has deteriorated the three siphon entrance channels and the overflow weirs and gates within the channels. The downstream chamber has concrete loss at the entrance to the forebay and the existing grating is deteriorated and is not structurally sound. There is a need to rehabilitate each siphon entrance channel and the forebay to replace the lost concrete, replace deteriorated resteel and coat the interior with a H2S resistant coating system.

Additional Comments

Partial bypass pumping and fluming of the channels is required to allow the construction to be sequenced and maintain operation of the chambers. Odor control may need to be studied and included within the project to reduce the generation of hydrogen sulfide.

Photos / Exhibits



Bass River Upstream Siphon Chamber With Removable Precast Planks Removed

Estimated Project Schedule (Start Dates)

Start Date	2028
End Date	2029

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$5,323,766	\$0	\$0	\$0	\$2,622,545	\$2,701,221	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Marblehead Force Main		
Construction Contract:	Marblehead Force Main Upgrades		
Project Element ID:	CSC_02	Funding Source:	CPF 13
Project Driver:	Increase Redundancy	Cost Allocation Code:	9000
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	1

Project Description

Installation of new landward force main/pressure pipe within the existing pipe alignment including 5,600LF of 24" HDPE and 6,700 LF of 30" HDPE and appurtenant work. The existing piping was installed in Contracts 74-15 and 74-16.

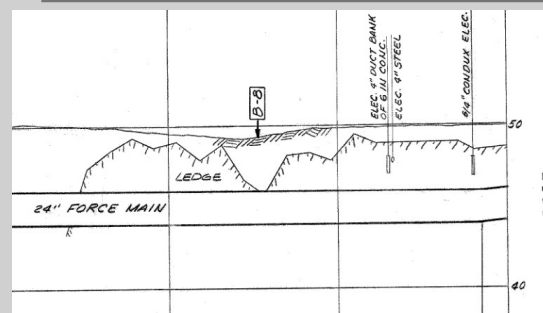
Project Need

The existing landward portion of the force main is 50 years old and is made of asbestos cement pipe. The internal condition of the pipe cannot be determined without taking the pipe out of service. Asbestos cement pipe has a service life of approximately 50 to 75 years. Asbestos cement pipe can become embrittled or the internal material may be attacked by hydrogen sulfide and become eroded or soft and could lead to a pipe failure.

Additional Comments

The alignment of the existing pipe is partially in an easement that is also used for a bike and walking path. Portions of the pipe trench were excavated in ledge such that locating a new pipeline in a parallel trench may not be feasible without damage to the existing pipeline. The design needs to consider these factors.

Photos / Exhibits



Marblehead Forcemain Near Electric Substation

Estimated Project Schedule (Start Dates)

Start Date	2028
End Date	2030

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$32,536,679	\$0	\$0	\$0	\$10,526,603	\$10,842,402	\$11,167,674	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Beverly Harbor Force Main		
Construction Contract:	Beverly Forcemain Upgrade Phase 1		
Project Element ID:	CSC_03	Funding Source:	CPF 12
Project Driver:	Increase Redundancy	Cost Allocation Code:	3000
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	1

Project Description

Replacement of the existing 42-inch ductile iron force main with new dual 42-inch HDPE force mains within the existing adjacent 30-inch force main alignment, connections to existing system, and appurtenant work. The 42-inch force main was completed in Contract 81-9A. The 30-inch force main was installed under Contract 5 in 1930 and is no longer in service.

Project Need

There is one 42-inch force main crossing the Beverly Harbor. The existing force main has been in service since 1985. The condition of the force main cannot be assessed due to very challenging access constraints. Ductile iron force mains have a typical service life of 40-50 years. Therefore there is a need to replace the existing pipeline. Additionally, two pipelines are required for redundancy and operational flexibility.

Additional Comments

The existing 30-inch Force Main is constructed of cast iron and has articulating ball and socket joints such that pipe bursting is not feasible. The easement for the pipe is potentially available for the new dual 42-inch HDPE pipelines.

Photos / Exhibits



42-inch Beverly Force Main Being Installed in 1984.

Estimated Project Schedule (Start Dates)

Start Date	2028
End Date	2030

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$30,397,589	\$0	\$0	\$0	\$9,834,543	\$10,129,579	\$10,433,467	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Beverly Force Main (landbased portion)		
Construction Contract:	Beverly Forcemain Upgrade Phase 2		
Project Element ID:	CSC_04	Funding Source:	CPF 16
Project Driver:	Aging Infrastructure	Cost Allocation Code:	3000
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	2

Project Description

Replacement of the existing landward portion of the Beverly force main with a new 42-inch HDPE force main, including connections to existing system, and appurtenant work. The landward portion was originally constructed in Contract 72-7 which was completed in 1975.

Project Need

The existing landward portion of the Beverly Force Main is comprised of a pipeline of several different materials that with varying construction dates including 42 and 48 inch cast iron pipe installed in the 1920s, and 48 inch PCCP pipe installed in the 1970s and 1990s. Significant portions of this pipeline is nearing the end of its useful life. A condition assessment of the force main was unable to be completed due to limited access and the need to keep the pipe in service at all times.

Additional Comments

The ductile iron force main transitions to a prestressed concrete cylinder pipe near the wastewater treatment plant. This portion of the pipeline may also need to be replaced or rehabilitated since the type and manufacture of the PCCP is known to be prone to failure. There has been no inspection due to difficult access conditions.

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$23,866,502	\$0	\$0	\$0	\$0	\$0	\$0	\$23,866,502	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Bass River Siphon Barrels		
Construction Contract:	Bass River Siphon Upgrade Phase 2		
Project Element ID:	CSC_05	Funding Source:	CPF 17
Project Driver:	Aging Infrastructure	Cost Allocation Code:	3000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	2

Project Description

The project includes the cleaning and cured in place lining of the three (3) siphon barrels. Two barrels are 24-inch in diameter and the third is 30-inches in diameter. Each barrel is 1500 LF long and terminates in the downstream chamber across the Bass River. The siphons were installed in Contract 81-9B in 1985.

Project Need

The siphons have been in service for 40-years. The condition of the main barrel (center) that was inspected was determined to be in acceptable condition with no anomalies found during inspection, however, to extend the life of the barrels it is recommended that CIPP lining be performed similar to the lining in the Porter River siphons in Danvers. Each barrel would be needed to be lined one at a time to maintain operation of the pipelines.

Additional Comments

There were three stainless steel cables installed in the siphon barrels to allow for future cleaning. During the siphon investigation the cable in the main (middle) barrel was removed to allow the condition assessment tool to inspect the main barrel. The two remaining cables will need to be removed to allow CIPP to be installed.

Photos / Exhibits



Alignment of the triple barrel Bass River Siphons

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$6,766,276	\$0	\$0	\$0	\$0	\$0	\$0	\$6,766,276	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Beverly Water Street Interceptor		
Construction Contract:	Beverly Water Street Interceptor Rehabilitation		
Project Element ID:	CSC_06	Funding Source:	CPF 16
Project Driver:	Aging Infrastructure	Cost Allocation Code:	3000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	2

Project Description

The project includes the rehabilitation of an existing large diameter reinforced concrete gravity sewer (approx. 1,900 LF of 54" RCP). The pipe was installed under Contract 81-13B in 1985. The project also includes rehabilitation of the Beverly Beach Interceptor.

Project Need

The Water Street Interceptor, a 54-inch reinforced concrete pipe, has lost concrete due to H2S corrosion in the crown of the pipe and reinforcing steel can be seen at the surface. The wall thickness has been corroded by between 0.7 inches to 3.5 inches at the outlet of the tunnel structure. The wall thickness of the pipe needs to be restored to original thickness and a corrosion resistant coating needs to be applied to protect the pipe from further corrosion. The rehabilitation methods that were considered are geopolymer spray applied lining or a grouted in place spiral liner. The extent of the rehabilitation will need to be determined in preliminary design.

Additional Comments

The Beverly Beach interceptor is a 48-inch cast iron sewer installed in the early part of the century. This pipe requires further assessment prior to rehabilitation.

Both pipes will need to be bypass pumped (or flumed inside the pipe) to allow work to be completed.

Photos / Exhibits



54-inch Reinforced Concrete Pipe Corrosion

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$6,889,300	\$0	\$0	\$0	\$0	\$0	\$0	\$6,889,300	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Danvers Doty Avenue Gravity Sewer		
Construction Contract:	Danvers Doty Avenue Sewer Rehabilitation		
Project Element ID:	CSC_07	Funding Source:	CPF 18
Project Driver:	Increase Redundancy	Cost Allocation Code:	2000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	2

Project Description

The project includes the rehabilitation of approximately 4,900LF of 30x42 inch and 1800LF of 33x34 inch oblong cast in place concrete (non-reinforced) sewer pipe. The 30 x42 inch was installed in Contract 8 in 1927. The 33 x 34 inch was installed in Contract 11 in 1927.

Project Need

The pipe was installed nearly 100 years ago and is in need of rehabilitation. Also, the capacity of the gravity sewer needs to be increased. The increase in capacity will allow the gravity sewer to be used when the force main has to be taken out of service for periods of maintenance. The rehabilitation method may include a combination of methods such as lining and increasing the size of the sewer and repairs to broken laterals entering the pipe.

Additional Comments

There may also be a need to grout the underdrain that was constructed with the original cast-in-place concrete sewer pipe.

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$12,302,321	\$0	\$0	\$0	\$0	\$0	\$0	\$12,302,321	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Peabody Walnut Street Gravity Sewer		
Construction Contract:	Peabody Walnut Street Sewer Rehabilitation		
Project Element ID:	CSC_08	Funding Source:	CPF 22
Project Driver:	Aging Infrastructure	Cost Allocation Code:	4000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	3

Project Description

The project includes the rehabilitation of existing brick gravity sewer lines (approx. 2,400LF of 30", 40", 46", and 48" brick) using CIPPL. The oldest portion of the existing brick sewer was constructed in 1905 and predates the District.

Project Need

The existing brick sewer has several areas that are out of round by 1-2 inches due to erosion and encrustations inside the pipe. There is a need to clean the pipe and repair some areas where infiltration is occurring. CIPPL may provide needed protection and eliminate future infiltration and will also extend the service life of this interceptor.

Additional Comments

Photos / Exhibits



46 x 48 Brick Horseshoe Sewer in Walnut Street

Estimated Project Schedule (Start Dates)

Start Date	2036
End Date	2037

Cost Estimate Method **Study / CIP**

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$6,884,487	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,884,487	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Peabody Salem Interceptor		
Construction Contract:	Peabody Salem Interceptor Rehabilitation Phase 2		
Project Element ID:	CSC_09	Funding Source:	CPF 22
Project Driver:	Aging Infrastructure	Cost Allocation Code:	5000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	3

Project Description

The project includes rehabilitation of existing large diameter gravity sewer lines (approx. 16,000 LF of 78" & 84" RCP) using geopolymer spray applied lining. The interceptor was installed under Contract 71-1, 71-2, and 71-3 in 1975.

Project Need

The condition of the interceptor varies with several areas that have concrete loss due to H2S corrosion. The deterioration is prominent at the upstream siphon head box as it crosses the North River. There are also other areas where wall loss is 2-inches or more and exposing reinforcing steel. During preliminary design the locations of geopolymer lining will be further investigated.

Additional Comments

Exposed reinforcing steel is apparent in several area along the interceptor.

Photos / Exhibits



84-inch RCP showing Corrosion and Deposits

Estimated Project Schedule (Start Dates)

Start Date	2037
End Date	2040

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$53,683,666	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$53,683,666	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Salem Derby Street Gravity Sewer		
Construction Contract:	Salem Derby Street Sewer Rehabilitation		
Project Element ID:	CSC_10	Funding Source:	CPF 22
Project Driver:	Aging Infrastructure	Cost Allocation Code:	7600
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	3

Project Description

The project includes rehabilitation of an existing large diameter gravity sewer (approx. 700LF of 72" brick) using geopolymer spray applied lining. The interceptor was constructed in the 1930's.

Project Need

The bricks are missing and the sewer is worn in several areas with encrustations on the interior of the pipe. Large structural defects and crown cracks are not apparent. The project is required to rehabilitate this pipe and extend its service life.

Additional Comments

Photos / Exhibits



72-inch Brick Interceptor

Estimated Project Schedule (Start Dates)

Start Date	2039
End Date	2040

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$4,145,252	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,145,252	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Peabody Salem Interceptor Heavy Cleaning		
Construction Contract:	Peabody Salem Interceptor Rehabilitation Phase 1		
Project Element ID:	CSC_13	Funding Source:	CPF 22
Project Driver:	Capacity Improvement	Cost Allocation Code:	5000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Collection System	Priority:	1

Project Description

The project includes heavy cleaning of the existing large diameter gravity sewer lines (approx. 16,000 LF of 78" & 84" RCP) as well as disposal of the solids removed during the cleaning. It also includes TV inspection of the "siphon" pipes beneath the North River. The interceptor was installed under Contract 71-1, 71-2, and 71-3 in 1975.

Project Need

During multi-sensor inspection of the interceptor pipeline conducted in 2024, large amounts of solids were found to be deposited along the pipe in multiple locations. These sediments need to be removed and disposed of in a landfill.

Additional Comments

Photos / Exhibits



Estimated Project Schedule (Start Dates)

Start Date	2029
End Date	2029

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$2,419,844	\$0	\$0	\$0	\$0	\$2,419,844	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Pump Station Screening Upgrades		
Construction Contract:	Screening Upgrades		
Project Element ID:	PSU_01	Funding Source:	CPF 14
Project Driver:	Capacity Improvement	Cost Allocation Code:	Split
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Pump Stations	Priority:	1

Project Need

Non flushable wipes and rags are passing through the District's current screening equipment, causing significant maintenance issues at WWTP. The existing Beverly Pumping Station has a 1-inch aperture IDI Climber Screen that is nearing the end of its useful life. A new 3/8 inch aperture mechanical screen and wash press will increase the capture of rags and reduce wear and tear on pumping equipment. In addition, the Marblehead Pumping Station has grinders that do not perform well and must be replaced with a mechanical bar screen (and wash press) to reduce ragging and wear and tear on the pumping equipment.

Project Description

Installation of bar screens at the Beverly, and Marblehead Pump Stations. This project also includes gate replacements and any associated concrete restoration work in and around the wet wells. At the Marblehead pump station this project also includes the replacement of the roof as well as the architectural and site work associated with the replacement of grinders with bar screens.

Additional Comments

Photos / Exhibits



Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2028

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$4,737,979	\$0	\$0	\$2,333,980	\$2,403,999	\$0	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Influent Pump Station High Priority		
Construction Contract:	Influent Pump Station Upgrade Phase 1		
Project Element ID:	PSU_02	Funding Source:	CPF 11
Project Driver:	Aging Infrastructure	Cost Allocation Code:	5000
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Pump Stations	Priority:	1

Project Need

There are a number of high priority needs at the Influent Pumping Station including several items that require bypass pumping to address. The existing influent screens have reached end of their useful life and need to be replaced. New bar screens with tighter bar spacing must be installed to reduce the amount of non flushable wipes and rags currently passing through the screens and damaging downstream equipment. In addition, the main influent and channel gates need to be replaced as well as pump isolation valves and check vales.

Project Description

In addition to the bar screen and gate/valve replacements noted above, this project also includes replacement of the station's flow meter, a failing dresser coupling, pumps, primary electrical distribution equipment and controls systems. The project also includes heating and HVAC upgrades as well as concrete restoration. Bypass pumping around the pumping station is required to complete the majority of this work .

Additional Comments

The influent pump station has two 115kV power lines that are located over the building. The replacement of the existing influent screens with new screens with 3/8 inch openings may require assembly and installation in place rather than installing complete screen assemblies.

Photos / Exhibits



Existing bar screen with 1-inch openings

Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2029

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$16,067,765	\$0	\$0	\$5,198,410	\$5,354,362	\$5,514,993	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Influent Pump Station		
Construction Contract:	Influent Pump Station Upgrade Phase 2		
Project Element ID:	PSU_03	Funding Source:	CPF 19
Project Driver:	Aging Infrastructure	Cost Allocation Code:	5000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Pump Stations	Priority:	2

Project Need

There are a number of architectural, structural, and electrical plumbing systems that are at the end of their useful life and are in need of replacement or rehabilitation.

Project Description

This includes project site work and the remaining architectural, structural, plumbing, electrical items not included in the Influent Pump Station Upgrade Phase 1 project (PSU_02) including pipe and surface coating as well as roof replacement. This project is not anticipated to include bypass pumping around the pumping station.

Additional Comments

Photos / Exhibits



Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2032

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$5,211,441	\$0	\$0	\$0	\$0	\$0	\$0	\$5,211,441	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Beverly Pump Station		
Construction Contract:	Beverly Pump Station Upgrade		
Project Element ID:	PSU_04	Funding Source:	CPF 19
Project Driver:	Aging Infrastructure	Cost Allocation Code:	3000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Pump Stations	Priority:	2

Project Need

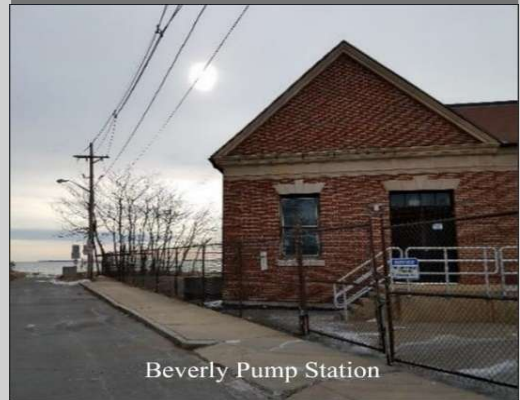
The pumping station infrastructure is aged and in need of rehab including process mechanical systems, the odor control system, structural repairs to wet wells and architectural and instrumentation and controls upgrades. The low voltage electrical equipment is obsolete and in need of replacement.

Project Description

This project for the Beverly Pump Station rehab includes; site work, architectural, structural, process mechanical, odor control, HVAC, plumbing, electrical, and controls upgrades. This does not include the screen replacement, gates replacement, and flood protection which are included in other projects.

Additional Comments

Photos / Exhibits



Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2034

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$16,859,709	\$0	\$0	\$0	\$0	\$0	\$0	\$16,859,709	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Marblehead Pump Station		
Construction Contract:	Marblehead Pump Station Upgrade		
Project Element ID:	PSU_06	Funding Source:	CPF 19
Project Driver:	Aging Infrastructure	Cost Allocation Code:	9000
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Pump Stations	Priority:	2

Project Need

The existing Marblehead Pumping Station is aging and requires replacement or upgrade of architectural components as well as mechanical and electrical systems which are at or near the end of their useful life.

Project Description

This project is an upgrade of the Marblehead Pumping Station and includes: site work, architectural, structural, process mechanical, odor control, HVAC, plumbing, electrical, and controls upgrades. This does not include the replacement of the grinders with screens or the replacement of the roof which are included in a separate project. Site resilience measures may also need to be incorporated.

Additional Comments

Site access to the pumping station may need to be upgraded to secure the facility in the future.

Photos / Exhibits



Marblehead Pumping Station

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2035

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$11,664,470	\$0	\$0	\$0	\$0	\$0	\$0	\$11,664,470	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Peabody Metering Station		
Construction Contract:	Peabody Metering Pump Station Upgrade		
Project Element ID:	PSU_07	Funding Source:	CPF 19
Project Driver:	Aging Infrastructure	Cost Allocation Code:	4000
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Pump Stations	Priority:	2

Project Need

The Peabody Metering Station has several systems in need of replacement or upgrade due to age. Additionally, there are several resiliency upgrades needed to better protect the station from flooding.

Project Description

This project includes site work, architectural, structural, plumbing, electrical, and controls upgrades. Key components include replacement of the flow meter, stairway lighting, roof, drain piping, sample pumping equipment and HVAC equipment.

Additional Comments

Photos / Exhibits



Peabody Metering Station

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2032

Cost Estimate Method **Study / CIP**

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$1,575,552	\$0	\$0	\$0	\$0	\$0	\$0	\$1,575,552	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Beverly Pump Station Resiliency Upgrades		
Construction Contract:	Beverly Pump Station Resiliency Upgrades		
Project Element ID:	PSU_08	Funding Source:	CPF 21
Project Driver:	Resiliency	Cost Allocation Code:	3000
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Pump Stations	Priority:	3

Project Need

The existing Beverly Pumping Station is in an area prone to coastal flooding and has been in close proximity to wind driven surge and site flooding. This upgrade would protect the site from future flooding incidents.

Project Description

This project includes site work, building upgrades, and installation of a flood wall.

Additional Comments

The District has deployable flood walls that may be installed rapidly to protect the pump station screening loadout garage and wetwell from inundation for near term flood protection.

Photos / Exhibits



Beverly Pump Station Sea Level Rise 2030 Water Surface Map 200-yr Return

Estimated Project Schedule (Start Dates)

Start Date	2036
End Date	2038

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$16,115,791	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,115,791	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:		Cake Storage
Construction Contract:		Residuals Process Upgrade
Project Element ID:	RES_01	Funding Source: CPF 15
Project Driver:	Aging Infrastructure	Cost Allocation Code: Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department: Capital / Engineering
Program Name:	Residuals	Priority: 1

Project Need

The existing cake storage silos were taken out of service many years ago. Cake storage is required to decouple dewatering from hauling activities which are currently limited to overnight hours. Increasing the number of hours dewatering can occur reduces the required size and throughput of dewatering equipment, and provides operational flexibility. Providing a system with cake storage will help the District optimize the dewatering process.

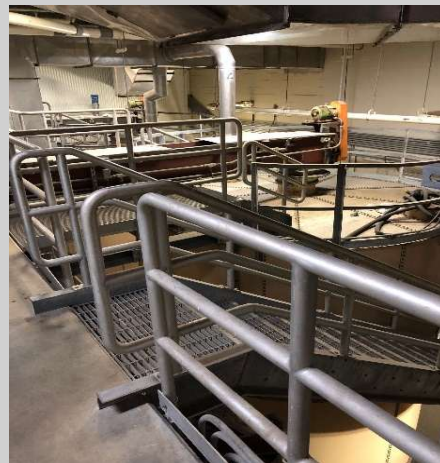
Project Description

This project includes an evaluation and upgrade of the solids management process to include either the installation of new cake storage silos and/or modifications to increase the number of sludge truck loadout bays.

Additional Comments

The existing silos were not designed for dewatered cake storage, resulting in frequent mechanical failures and bridging. This required operations staff to dig them out by hand. This subjects operations staff to significant safety issues.

Photos / Exhibits



Sludge Cake Storage Silos

Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2029

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$12,023,498	\$0	\$0	\$3,889,967	\$4,006,666	\$4,126,866	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:		Dewatering Upgrade
Construction Contract:		Residuals Process Upgrade
Project Element ID:	RES_02	Funding Source: CPF 15
Project Driver:	Aging Infrastructure	Cost Allocation Code: Secondary Apport
Project Type:	Replace w/ New Technology	Managing Department: Capital / Engineering
Program Name:	Residuals	Priority: 1

Project Need

The existing belt filter presses and the auxiliary support systems (polymer, washwater booster pump and filtration pump systems) have reached the end of their useful life. New dewatering equipment is expected to produce a dryer cake, resulting in reduced sludge cake production and reduced disposal costs. The goal of this project is to increase operational flexibility, increase odor control capture and reduce residuals handling costs.

Project Description

This project includes replacement of the dewatering system with new technology such as screw presses or centrifuges and conveying systems. It includes new mechanical, electrical, and controls systems as well as ancillary equipment, including polymer systems, feed pumps and conveyors.

Additional Comments

Refer to Project ADM_01, Dewatering Pilot for additional information.

Photos / Exhibits



Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2030

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$16,089,236	\$0	\$0	\$3,845,763	\$3,961,135	\$4,079,969	\$4,202,369	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Thickening upgrade or WAS co-settling		
Construction Contract:	Residuals Process Upgrade		
Project Element ID:	RES_03	Funding Source:	CPF 15
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Residuals	Priority:	1

Project Need

The existing gravity belt thickeners are near the end of their useful life, existing support systems are failing and auxiliary systems need to be replaced. Additionally one of the goals of this project is to reduce the amount of odor control required for the thickening process.

Project Description

This project includes upgrades of the thickening system to a more effective system that is easier to maintain. Proposed new mechanical equipment may include Rotary Drum Thickeners (RDT)s. It includes mechanical, electrical, and controls systems as well as ancillary equipment including polymer systems and feed and discharge pumps.

Additional Comments

Refer to ADM_02, Co-Settling Demonstration for additional information.

Photos / Exhibits



Gravity Belt Thickeners

Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2030

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$6,102,814	\$0	\$0	\$1,458,738	\$1,502,500	\$1,547,575	\$1,594,002	\$0	\$0	\$0



Project Element:	Scum Removal Improvements		
Construction Contract:	Secondary Process Upgrade Phase 1		
Project Element ID:	WTP_01	Funding Source:	CPF 15
Project Driver:	NPDES Compliance	Cost Allocation Code:	Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	1

Project Need

Secondary scum collection, conveyance and removal are very problematic and difficult to manage. Excess scum impacts NPDES permit compliance, particularly during high flows. There is a need to find a better and more efficient method of collecting and conveying scum from the secondary clarifiers to reduce the likelihood of permit violations at higher flows.

Project Description

This project includes improvements to the secondary scum removal, storage and conveyance systems. It includes new skimming equipment, a hot water system, and the installation of plant water spray headers on the effluent scum troughs in the Secondary Clarifiers. Additionally, a new (or modified) scum storage tank with mixers, float pumps and elutriation pumping equipment is proposed along with modifications to the scum piping allowing for more effective transport of scum from the storage tank to the scum thickening equipment.

Additional Comments

Scum removal is complex and requires hatches to be opened and operators exposed to the open areas to convey the secondary scum down the rotating scum pipe. There is insufficient spraywater for conveyance.

Photos / Exhibits



Secondary Rotating Scum Pipes Access

Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2029

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$10,165,321	\$0	\$0	\$3,288,790	\$3,387,454	\$3,489,077	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Secondary Clarifiers Improvements - effluent visibility and monitoring		
Construction Contract:	Secondary Process Upgrade Phase 1		
Project Element ID:	WTP_02	Funding Source:	CPF 15
Project Driver:	NPDES Compliance	Cost Allocation Code:	Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	1

Project Need

It is not currently possible to visually see the quality of the secondary clarifier effluent without opening hatches over the effluent launders, and standing over the open hatch. Improvements are required to allow operators to monitor effluent quality at each secondary clarifier without the need to open hatches. This will increase staff safety, and provide operators the means to identify performance issues quickly.

Project Description

The project includes the installation of safety railings and/or grating at existing access hatches at the effluent launders of the Secondary Clarifiers . It also includes the installation of turbidity probes for each clarifier and the installation of external flow meters on each RAS pump to monitor and verify RAS flow for each clarifier.

Additional Comments

There is no way to visibly see the secondary effluent without opening hatches and shining a flashlight into the launder. This exposes the operations staff to open hatches and visually looking down into the secondary launder troughs.

Photos / Exhibits



Secondary Effluent Visibility Access

Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2029

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$1,912,829	\$0	\$0	\$618,858	\$637,424	\$656,547	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Secondary Clarifiers Improvements - baffle/weir modifications		
Construction Contract:	Secondary Process Upgrade Phase 1		
Project Element ID:	WTP_03	Funding Source:	CPF 15
Project Driver:	NPDES Compliance	Cost Allocation Code:	Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	1

Project Need

As a result of existing hydraulic characteristics, the performance of the secondary clarifiers is reduced as overflow rates increase during high flow events. This project focusses on addressing existing hydraulic issues to reduce the potential for short-circuiting and floc carryover, increasing clarifier performance at higher flows, and reducing the frequency of permit violations.

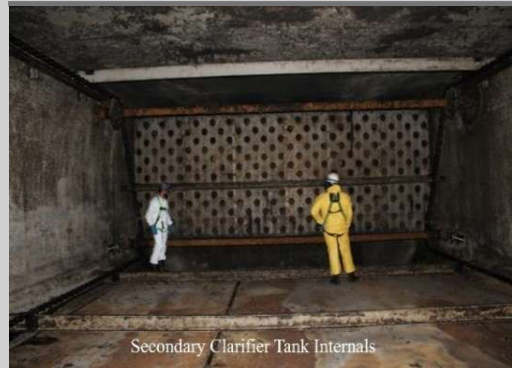
Project Description

The project includes implementation of improvements identified during the study on the hydraulics and optimization of the secondary clarifiers, particularly for inlet nozzle, baffle, and weir improvements.

Additional Comments

See ADM_03, Secondary Treatment Optimization Study Phase 1 for additional information.

Photos / Exhibits



Secondary Clarifier Baffles

Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2029

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$3,825,658	\$0	\$0	\$1,237,717	\$1,274,848	\$1,313,094	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:	Static Mixer Removal		
Construction Contract:	Secondary Process Upgrade Phase 1		
Project Element ID:	WTP_04	Funding Source:	CPF 15
Project Driver:	Capacity Improvement	Cost Allocation Code:	Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	1

Project Need

The existing static mixer is a known hydraulic restriction which limits plant hydraulic capacity. The removal of the static mixer will reduce the hydraulic grade line during peak flow events and reduce backups in the secondary clarifiers. Additionally, replacement with a mechanical induction mixer will increase the effectiveness of sodium hypochlorite, reducing the amount required to provide adequate treatment at all flow rates.

Project Description

The project includes removal of the static mixer located upstream of the chlorine contact basins, installation of an induction mixer for sodium hypochlorite addition, temporary bypass of Chlorine Contact Tanks, and condition-based replacement of sodium hypochlorite and sodium bisulfite piping.

Additional Comments

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2029

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$2,732,613	\$0	\$0	\$884,083	\$910,606	\$937,924	\$0	\$0	\$0	\$0

2026 - 2045 South Essex Sewerage District Capital Improvement Plan



Project Element:		RV Dump Station
Construction Contract:		RV Dump Station Relocation
Project Element ID:	WTP_05	Funding Source: CPF 15
Project Driver:	Other	Cost Allocation Code: Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department: Capital / Engineering
Program Name:	Treatment Facilities	Priority: 1

Project Need

The existing RV dump station is located next to a storm water catch basin. Spills have occurred and lead to RV waste entering Cat Cove. Additionally, due to the amount of construction activity onsite planned in the future it will not be safe for the public access to the existing RV station.

Project Description

The project includes the relocation of RV dump station to a new off-site location.

Additional Comments

The RV Dump Station is immediately adjacent to a storm water basin that connects to the main storm water outfall into Cat Cove.

Photos / Exhibits



RV Dump Station

Estimated Project Schedule (Start Dates)

Start Date	2027
End Date	2028

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$430,725	\$0	\$0	\$212,180	\$218,545	\$0	\$0	\$0	\$0	\$0

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Project Element:	RAS System Improvements		
Construction Contract:	Secondary Process Upgrades Phase 2		
Project Element ID:	WTP_06	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The existing RAS pumps do not have individual flow meters, therefore pumping rates from each secondary clarifier cannot be properly balanced. This results in poor performance of the clarifiers. Additionally, the pumps design does not allow for full speed adjustability, also reducing clarifier performance. The existing secondary clarifier tank drain pumps are not able to provide enough suction lift to draw down the secondary clarifiers completely. This requires plant staff to pump down clarifiers using a large portable trash pump. This is a time consuming and difficult process.

Project Description

This project includes replacement of RAS pumps, WAS pumps, Secondary Clarifier tank drain pumps, modifications to the RAS piping, new RAS flow meters, and other I&C costs for pump controls and monitoring. The proposed RAS flow meters will be ultrasonic and replace the flow monitors installed under project element WTP_02.

Additional Comments

The existing RAS and WAS pumps are 30 years old and nearing the end of their useful life. It is difficult to maintain them since parts are not readily available and maintenance staff has had to obtain parts from secondary sources.

Photos / Exhibits



RAS Pump Gallery

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2034

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$6,369,224	\$0	\$0	\$0	\$0	\$0	\$0	\$6,369,224	\$0	\$0

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Project Element:	Beverly Metering Station		
Construction Contract:	Secondary Process Upgrades Phase 2		
Project Element ID:	WTP_07	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The Beverly Metering Station located on the WWTP site has not been upgraded since the secondary upgrades and is in need of a new flow meter, sample pumps, architectural and structural repairs and electrical upgrades.

Project Description

This project is for the ongoing maintenance of the Beverly Metering station and rehabilitation including a new flow meter, architectural and structural repairs, electrical and controls replacements.

Additional Comments

Photos / Exhibits



Beverly Metering Station

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2032

Cost Estimate Method **Study / CIP**

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$363,589	\$0	\$0	\$0	\$0	\$0	\$0	\$363,589	\$0	\$0

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Project Element:	Salem Neck Pump Station		
Construction Contract:	Secondary Process Upgrades Phase 2		
Project Element ID:	WTP_08	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	7600
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Pump Stations	Priority:	2

Project Need

The mechanical equipment in the Salem Neck Pumping Station is nearing the end of its useful life. The pumps, valves, mechanical, HVAC and electrical systems need replacement or rehabilitation. The control system is outdated and is housed in an outdoor cabinet beside the pump station and needs to be replaced with a new cabinet inside the building.

Project Description

The project includes upgrade of the pump station and rehabilitation including architectural, structural, mechanical, HVAC, electrical, and controls upgrades. The project also includes replacement of the odor control system.

Additional Comments

Photos / Exhibits



Salem Neck Pump Station

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$2,829,534	\$0	\$0	\$0	\$0	\$0	\$0	\$2,829,534	\$0	\$0

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Project Element:	Oxygen Reactor Controls Improvement		
Construction Contract:	Secondary Process Upgrades Phase 2		
Project Element ID:	WTP_09	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The oxygen reactor is in need of a number process control improvements. Existing controls do not allow for optimization or allow simple adjustment of oxygen flow to each reactor. Upgrades are needed to provide operations staff with the data and control ability needed to maximize reactor performance and reduce oxygen demand. Furthermore, a number of the components in system are beyond their design life and in need of replacement with modern equipment.

Project Description

The project includes modifications to improve operation of the Oxygen Reactors, including effluent weir modifications, oxygen piping modifications, new oxygen control valves, new oxygen flow meters, installation of headspace pressure sensors, reactor level sensors, and general instrumentation and control upgrades.

Additional Comments

Photos / Exhibits



Oxygen Reactor Control Panel

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$1,968,371	\$0	\$0	\$0	\$0	\$0	\$0	\$1,968,371	\$0	\$0

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Project Element:	Oxygen Reactor and Gallery Upgrades		
Construction Contract:	Secondary Process Upgrades Phase 2		
Project Element ID:	WTP_10	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The facility is aging and in need of condition based rehabilitation. A number of building components within the reactors and gallery are beyond their useful life and are in need of replacement.

Project Description

The project includes rehabilitation of the Oxygen Reactor and Gallery and assets within the area including architectural, structural, mechanical, HVAC, plumbing, electrical, and controls upgrades. It includes mixer/aerator gearbox replacement; excludes the controls improvements in the "Oxygen Reactor Controls Improvement" project element. The electrical conduit and system buried beneath the soil over the tanks has failed and needs to be replaced.

Additional Comments

The electrical conduit has failed allowing water to enter the oxygen reactor distribution and controls building. This has caused shorting of electrical systems in several instances.

Photos / Exhibits



Oxygen Reactor Controls and Electrical Systems

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$7,996,509	\$0	\$0	\$0	\$0	\$0	\$0	\$7,996,509	\$0	\$0

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Project Element:	Selective Wasting		
Construction Contract:	Secondary Process Upgrades Phase 2		
Project Element ID:	WTP_11	Funding Source:	CPF 20
Project Driver:	NPDES Compliance	Cost Allocation Code:	Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

During wet weather events, the increased velocity of the mixed liquor in the secondary clarifiers caused the floc particles to shear into lighter, less dense particles that do not settle well. This has led to NPDES permit violations for TSS at high flow conditions. This project would promote the formation of stronger more dense floc particles that settle better, increasing secondary clarifier performance at higher flow rates.

Project Description

The project includes the implementation of selective wasting with hydro cyclones or other mechanical enhancements. This process allows for control over the density of mixed liquor floc returned to the process and allows for the wasting of lighter less dense material. This process creates a more stable and denser floc structure, enhancing settling and increasing secondary clarifier performance at higher flow rates. It is not known if this project as well as WTP_12 will both be required.

Additional Comments

See ADM_04 Secondary Treatment Process Study Phase 2 Selective Wasting Pilot Testing and Contact Stabilization Study for additional information.

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$6,397,207	\$0	\$0	\$0	\$0	\$0	\$0	\$6,397,207	\$0	\$0

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Project Element:	Contact Stabilization		
Construction Contract:	Secondary Process Upgrades Phase 2		
Project Element ID:	WTP_12	Funding Source:	CPF 20
Project Driver:	NPDES Compliance	Cost Allocation Code:	Secondary Apport
Project Type:	Upgrade/Improvement	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The secondary clarifiers do not perform well at high flows. During high flow events, biological material within the oxygen reactors can be "washed out" and transported to the secondary clarifiers, overloading them. Contact stabilization protects the biological process within the oxygen Reactor, helping keep the mixed liquor in the oxygen reactors during high flow events. This in turn reduces solids load on the secondary clarifiers under high flow conditions and preserves sludge inventory.

Project Description

This project modifies the configuration of the oxygen reactors and RAS piping to add contact stabilization. Includes new mechanical equipment, controls equipment and additional process piping. It is not known if this project as well as WTP_11 will both be required.

Additional Comments

See ADM_04 Secondary Treatment Process Study Phase 2 Selective Wasting Pilot Testing and Contact Stabilization Study for additional information.

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$4,182,789	\$0	\$0	\$0	\$0	\$0	\$0	\$4,182,789	\$0	\$0

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Project Element:	Secondary Clarifiers and Buildings and Odor C		
Construction Contract:	Secondary Process Upgrades Phase 2		
Project Element ID:	WTP_13	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The existing secondary clarifier buildings and Odor C process has been in service for over 25 years since the completion of the secondary treatment upgrades. There are a number of processes and building components that are well worn and in need of refurbishment or full replacement. The secondary clarifiers are prone to failure and require frequent maintenance.

Project Description

The project is a condition-based rehabilitation of the Secondary Clarifiers Buildings and assets within the buildings including architectural, structural, mechanical, HVAC, plumbing, electrical, and controls upgrades. It includes full replacement of all secondary clarifier mechanical components. The project also includes condition-based rehabilitation of the Odor C equipment including fans and dampers. This project excludes the RAS system, WAS pumps, tank drain pumps, scum removal, effluent visibility/monitoring, and hydraulics improvements.

Additional Comments

Photos / Exhibits



Secondary Clarifier Influent Bldg & Odor C

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2035

Cost Estimate Method: Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$20,666,398	\$0	\$0	\$0	\$0	\$0	\$0	\$20,666,398	\$0	\$0

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Project Element:	Grit Building Upgrade (Condition)		
Construction Contract:	Plant Facilities Upgrades Phase I		
Project Element ID:	WTP_14	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The grit building was constructed in the 1970's and has many building and mechanical components that are well worn or are failing due to the corrosive nature of the atmosphere including important slide gates at the influent channel. Spalling concrete in the channels and tanks is also in need of repair. This project focuses on condition based upgrades as further described below.

Project Description

The project is a condition-based upgrade of the Grit Building and mechanical equipment inside including architectural, structural, mechanical, HVAC, plumbing, electrical, and controls upgrades. This project also includes the repair of the spalling concrete in the channels and replacement or refurbishment of the grit channel influent gates. This project does not include the existing bridge crane and existing grit removal system.

Additional Comments

Photos / Exhibits



Aerated Grit Tanks

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2034

Cost Estimate Method **Study / CIP**

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$15,860,615	\$0	\$0	\$0	\$0	\$0	\$0	\$15,860,615	\$0	\$0

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Project Element:	Grit Building Upgrade (Process)		
Construction Contract:	Plant Facilities Upgrades Phase I		
Project Element ID:	WTP_15	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The existing Grit facility was not designed with a location to store grit once it is removed from the grit removal tanks. Therefore, one of the four grit removal tanks needs to be kept out of service and used for grit storage. This limits operational flexibility and reduces the facilities grit removal performance. Grit that is not removed from the wastewater causes significant wear and tear on downstream equipment. Additionally, the existing overhead grit crane is at the end of its useful life and requires replacement or refurbishment.

Project Description

This project includes the installation of an elevated grit storage hopper to allow all four grit tanks be used for their intended purpose. This project also includes the replacement of the existing bridge crane grit removal system with a new overhead bridge crane grit removal system.

Additional Comments

Photos / Exhibits



Grit Crane Loadout

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method: Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$6,274,184	\$0	\$0	\$0	\$0	\$0	\$0	\$6,274,184	\$0	\$0

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Project Element:		Operations Building
Construction Contract:		Plant Facilities Upgrades Phase I
Project Element ID:	WTP_16	Funding Source: CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code: Secondary Apport
Project Type:	Rehab/Maintain	Managing Department: Capital / Engineering
Program Name:	Treatment Facilities	Priority: 2

Project Need

The last Operations building was last upgraded in the 1990s. There are many features of the Operations Building including both process and non-process areas that need replacement. The locker rooms, offices and control room and elevator are in need of a rebuild to meet current building and plumbing codes. There are also code issues associated with NFPA 820 that need to be addressed.

Project Description

The project is a condition-based rehabilitation of the Operations Building and assets within the building including architectural, structural, mechanical, HVAC, plumbing, electrical, and controls upgrades. Major process systems include the Scum concentration, sludge transfer and feed pumps, polymer makeup and distribution systems, and chemical distribution systems. It excludes dewatering equipment, thickening equipment, and cake storage upgrades.

Additional Comments

Photos / Exhibits



Operations Building

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2035

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$54,518,718	\$0	\$0	\$0	\$0	\$0	\$0	\$54,518,718	\$0	\$0

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Project Element:	Primary Clarifiers Buildings		
Construction Contract:	Plant Facilities Upgrades Phase I		
Project Element ID:	WTP_17	Funding Source:	CPF 20
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Rehab/Maintain	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	2

Project Need

The Primary Clarifier Buildings were constructed in the 1970's and have many building and mechanical components that are worn or failing due to age and the corrosive nature of the atmosphere. The Primary Clarifier Concrete Restoration Project was completed in 2024 which included all new collection equipment within the tanks in addition to the concrete restoration and coating work.

Project Description

The project is a condition-based upgrade of the Primary Clarifier Buildings and equipment inside including architectural, structural, mechanical, HVAC, plumbing and electrical upgrades. This project also includes the scum buildings.

Additional Comments

Photos / Exhibits



Primary Clarifier Influent Building

Estimated Project Schedule (Start Dates)

Start Date	2031
End Date	2033

Cost Estimate Method **Study / CIP**

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$11,564,182	\$0	\$0	\$0	\$0	\$0	\$0	\$11,564,182	\$0	\$0

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Project Element:	Odor G and B Upgrades		
Construction Contract:	Odor Control Upgrades		
Project Element ID:	WTP_18	Funding Source:	CPF 23
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Replace In Kind	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	3

Project Need

The Odor G and Odor B equipment, facilities, buildings and process assets are nearing the end of their useful life. There has not been a major upgrade of these facilities since the construction of the secondary treatment upgrades in the 1990s. There are significant architectural, structural, plumbing and electrical upgrades needed to keep these facilities operating.

Project Description

The project includes a condition-based rehabilitation of the Odor B and G systems and assets within the areas including architectural, structural, mechanical, HVAC, plumbing, electrical, and controls upgrades. The project includes the replacement in kind of wet scrubbers and carbon vessels at Odor B. At Odor G the project includes the demo of the existing wet scrubbers and associated equipment, and the replacement in kind of the carbon vessels.

Additional Comments

Refer to ADM_05 and ADM_06. Air movement and air exchanges in the building and areas that are treated need to be evaluated. There is a possibility of optimizing odor flows and combining these systems.

Photos / Exhibits



Odor G Ductwork and Activated Carbon

Estimated Project Schedule (Start Dates)

Start Date	2036
End Date	2040

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$49,091,892	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$49,091,892	\$0

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Project Element:	Odor A and E Upgrades		
Construction Contract:	Odor Control Upgrades		
Project Element ID:	WTP_19	Funding Source:	CPF 23
Project Driver:	Aging Infrastructure	Cost Allocation Code:	Secondary Apport
Project Type:	Replace In Kind	Managing Department:	Capital / Engineering
Program Name:	Treatment Facilities	Priority:	3

Project Need

The Odor A and Odor E equipment, facilities, buildings and process assets are nearing the end of their useful life. There is a need to replace the equipment in kind and update the structural, architectural, mechanical and electrical systems for each area.

Project Description

The project includes a condition-based rehabilitation of the Odor A and Odor E systems and assets within the areas including architectural, structural, mechanical, HVAC, plumbing, electrical, and controls upgrades. The project includes the replacement in kind of wet scrubbers and carbon vessels at Odor A. At Odor E the project includes the demolition of the wet scrubber, and the replacement in kind of the carbon vessels.

Additional Comments

Photos / Exhibits

Estimated Project Schedule (Start Dates)

Start Date	2036
End Date	2039

Cost Estimate Method **Study / CIP**

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$26,494,366	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$26,494,366	\$0

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Project Element:		Oxygen Generation
Construction Contract:		Oxygen Generation Upgrade
Project Element ID:	WTP_20	Funding Source: CPF 24
Project Driver:	Energy Use Reduction	Cost Allocation Code: Secondary Apport
Project Type:	Replace w/ New Technology	Managing Department: Capital / Engineering
Program Name:	Treatment Facilities	Priority: 3

Project Need

The existing Oxygen Generation Building and the equipment withing in the building are aging and maintenance needs are increasing. The air compressors, aftercoolers, PSA skid system and auxiliary systems have been in continuous service for 25 years. The systems have been well maintained however full replacement is anticipated to be required by 2035. A new vacuum swing pressure adsorption system (VPSA) will use much less energy than the existing pressure swing adsorption (PSA) system.

Project Description

The project includes the replacement of the PSA system with a new VPSA system. The project also includes a condition-based rehabilitation of the Oxygen Generation Building including structural, HVAC, plumbing, electrical, and controls upgrades.

Additional Comments

The existing PSA System instruments and valves require significant maintenance to keep them in good working order. Maintenance staff proactively does PM work on the unit and the air compressors.

Photos / Exhibits



Oxygen Generation Process Equipment

Estimated Project Schedule (Start Dates)

Start Date	2036
End Date	2040

Cost Estimate Method Study / CIP

Planned Expenditures

	Total	Pre-Fiscal 2026	2026	2027	2028	2029	2030	2031 to 2035	2036 to 2040	2041 to 2045
Costs	\$24,251,983	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$24,251,983	\$0

