

Nansemond Treatment Plant

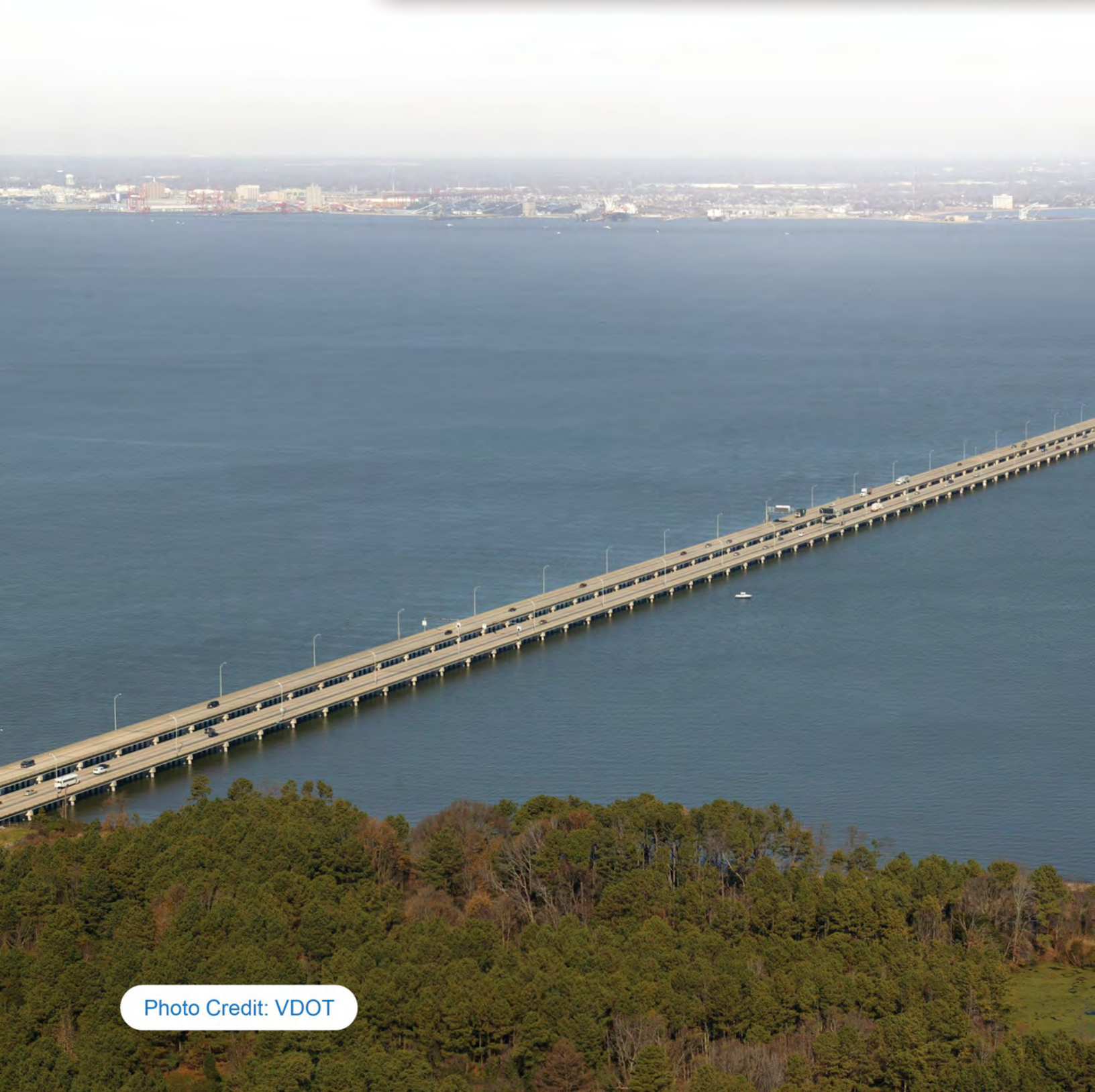
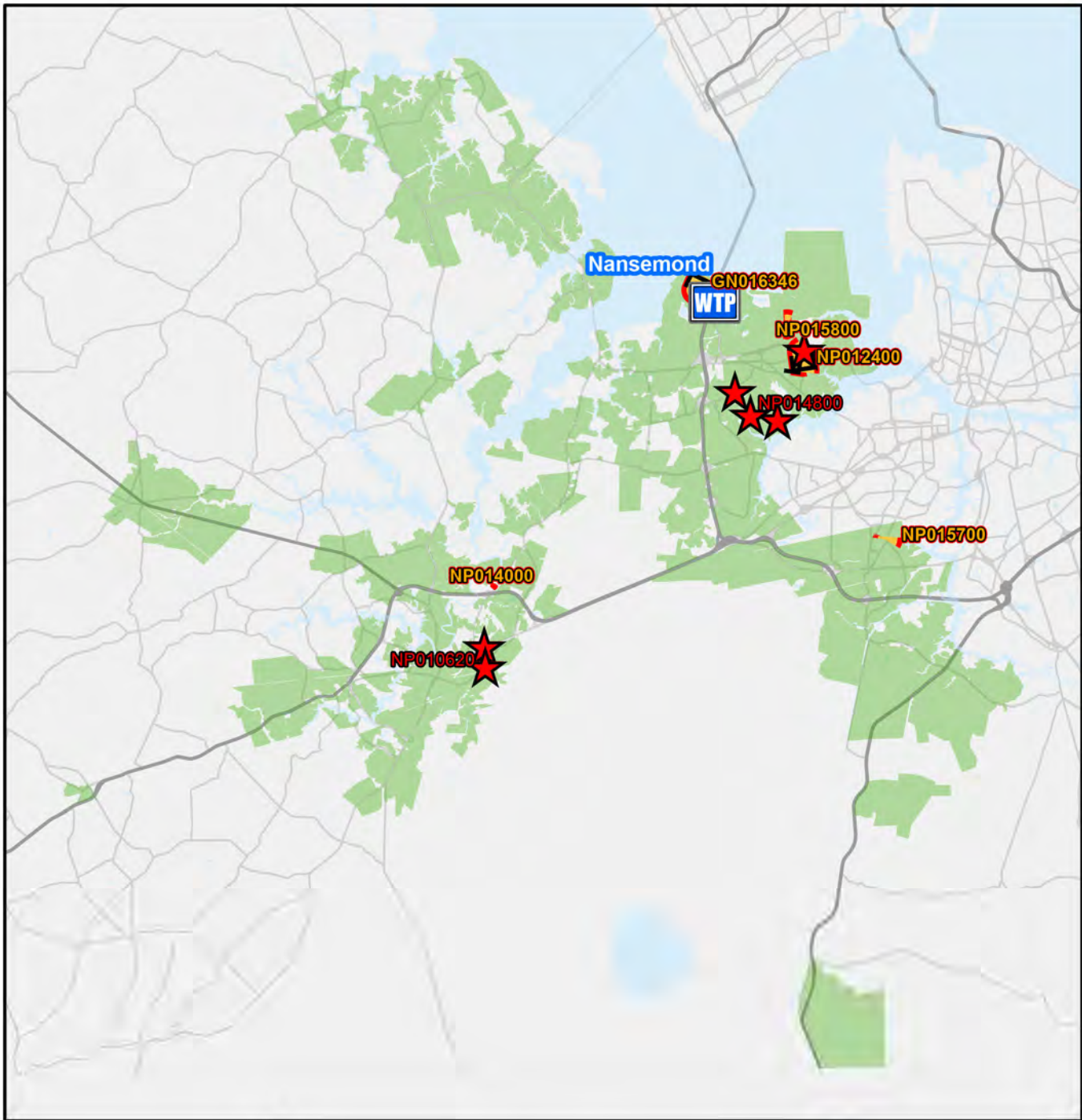


Photo Credit: VDOT



Legend

-  Nansemond Treatment Plant
-  CIP Interceptor Point
-  CIP Pump Station Point
-  CIP Interceptor Line
-  CIP Abandonment
-  Treatment Plant Service Area
-  HRSD Interceptor Force Main
-  HRSD Interceptor Gravity Main
-  HRSD Treatment Plant
-  HRSD Pressure Reducing Station
-  HRSD Pump Station

0 5,000 10,000 20,000 30,000 40,000 Feet


Nansemond Treatment Plant Service Area CIP Projects

Treatment Plant Projects		
GN016346	NP013820	NP016000
GN016380	NP014500	
GN016381	NP014700	
NP013000	NP015100	
NP013700	NP015900	

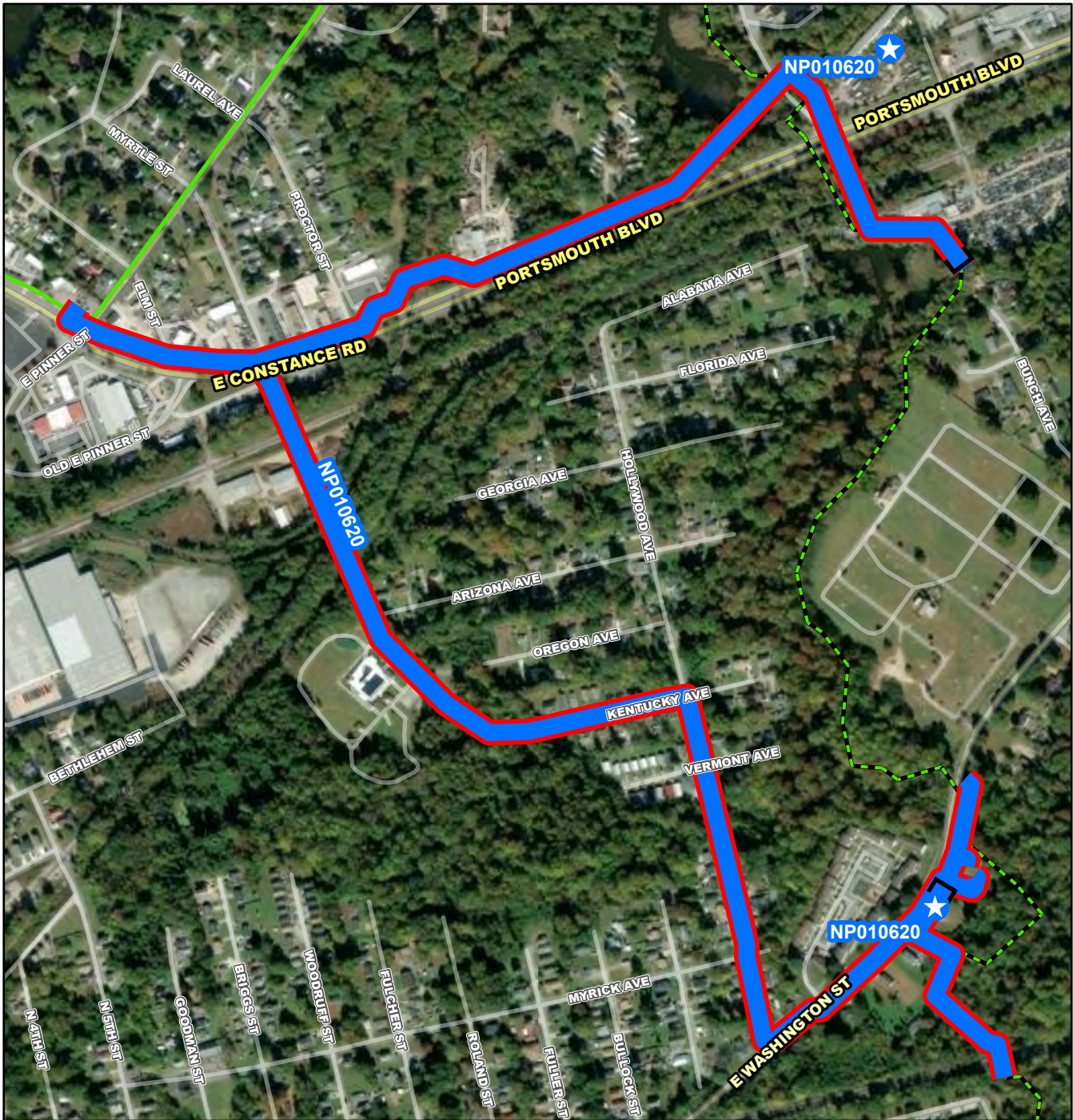


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CIP Location



Service Area

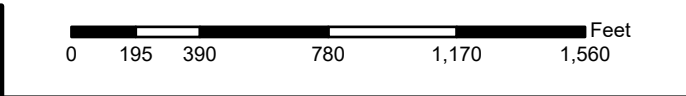


NP010620

- Project Interceptor Line
- Project Interceptor Point
- Project Location Point
- Project Area

Legend

- CIP Interceptor Point
- CIP Pump Station Point
- CIP Interceptor Line
- CIP Abandonment
- CIP Project Area
- HRSD Interceptor Force Main
- HRSD Interceptor Gravity Main
- HRSD Treatment Plant
- HRSD Pressure Reducing Station
- HRSD Pump Station



NP010620

Suffolk Pump Station Replacement

CIP Location

System: Nansemond
 Type: Pump Stations

Driver Category: I&I Abatement-Rehabilitation Plan
 Project Phase: Pre Construction
 Regulatory: Rehab Plan Phase Two

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$51,317	\$10,276	\$25,860	\$15,182	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project is to relocate and replace the existing HRSD Suffolk Pump Station. In lieu of constructing one replacement pump station, two pump stations will be constructed. One pump station will be retained by HRSD as a replacement for the existing Suffolk Pump Station, the other pump station will be transferred to the City of Suffolk. The benefit of the two pump station scenario includes abandonment/removal of approximately 6,500 linear feet (LF) of 24-inch gravity sanitary sewer and 34 manholes along Shingle Creek. The existing Shingle Creek gravity sewer is located in wetlands with ongoing concerns for potential overflows, pipe failure and difficult access for maintenance. This project will include construction of two new pump stations, 8,000 LF of force main, 2,100 LF of gravity sanitary sewer, 12 sanitary sewer manholes, demolition of the existing Suffolk Pump Station and abandonment/removal of 6,500 LF of 24 inch gravity sewer and 34 manholes. The project includes six trenchless crossings under both CSX and Norfolk Southern Railroad tracks.

PROJECT JUSTIFICATION

This project will replace the existing Suffolk Pump Station with a station that meets the current capacity needs and provides for future expansion to meet anticipated growth. The existing pump station site does not provide the needed space for expansion, is difficult to access with large maintenance equipment/vehicles, and creates nuisance traffic to the surrounding residential neighborhood. The incoming Shingle Creek Gravity Sewer has rehabilitation needs identified in the Rehabilitation Plan. Relocation of the pump station could provide efficiencies in combining these two projects to eliminate a siphon system and creek crossing.

FUNDING TYPE CONTACTS

Funding Type: Revenue Bond

Contacts-Requesting Dept: Operations-Interceptors
 Contacts-Dept Contacts: Tim Marsh
 Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE COST ESTIMATE

PrePlanning	02/01/2013
PER	03/31/2013
Design Delay	06/02/2014
Design	09/03/2018
Bid Delay	10/30/2024
PreConstruction	11/01/2024
Construction	04/01/2025
Closeout	02/01/2027

Cost Estimate Class:	Class 1 (-3% to +15%)
PrePlanning	\$0
PER	\$154,150
Design	\$3,619,562
PreConstruction	\$20,000
Construction	\$47,426,728
Closeout	\$96,785
Est. Program Cost	\$51,317,225
Contingency Budget	\$4,553,100
Est. Project Costs	\$55,870,325



NP012400

- Project Interceptor Line
- Project Interceptor Point
- Project Location Point
- Project Area

Legend

- CIP Interceptor Point
- CIP Pump Station Point
- CIP Interceptor Line
- CIP Abandonment
- CIP Project Area
- HRSD Interceptor Force Main
- HRSD Interceptor Gravity Main
- HRSD Treatment Plant
- HRSD Pressure Reducing Station
- HRSD Pump Station

Feet

0 195 390 780 1,170 1,560

NP012400

Western Branch Sewer System Gravity Improvements

CIP Location

System: Nansemond
 Type: Pipelines

Driver Category: I&I Abatement-Rehabilitation Plan
 Project Phase: Design
 Regulatory: Rehab Plan Phase Two

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$13,469	\$1,914	\$8,667	\$2,889	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project is to rehabilitate and/or replace 5600 linear feet (LF) of gravity pipeline with associated manholes. Pipe diameters range from 15 to 30-inches. Project extends from MH-SG-035-18453 to MH-SG-034-14607 and from MH-SG-033-1782 to MH-SG-035-16720.

PROJECT JUSTIFICATION

Condition assessment activities originally indicated that these assets present a material risk of failure due to I/I and the repair was deemed a High Priority Project. A subsequent HART study suggested capacity upgrades were required for approximately 1700 LF. Observations from flow monitoring suggested borderline capacity sufficiency and the HRSD opted to increase capacity along SG-035 in concert with the HPP.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

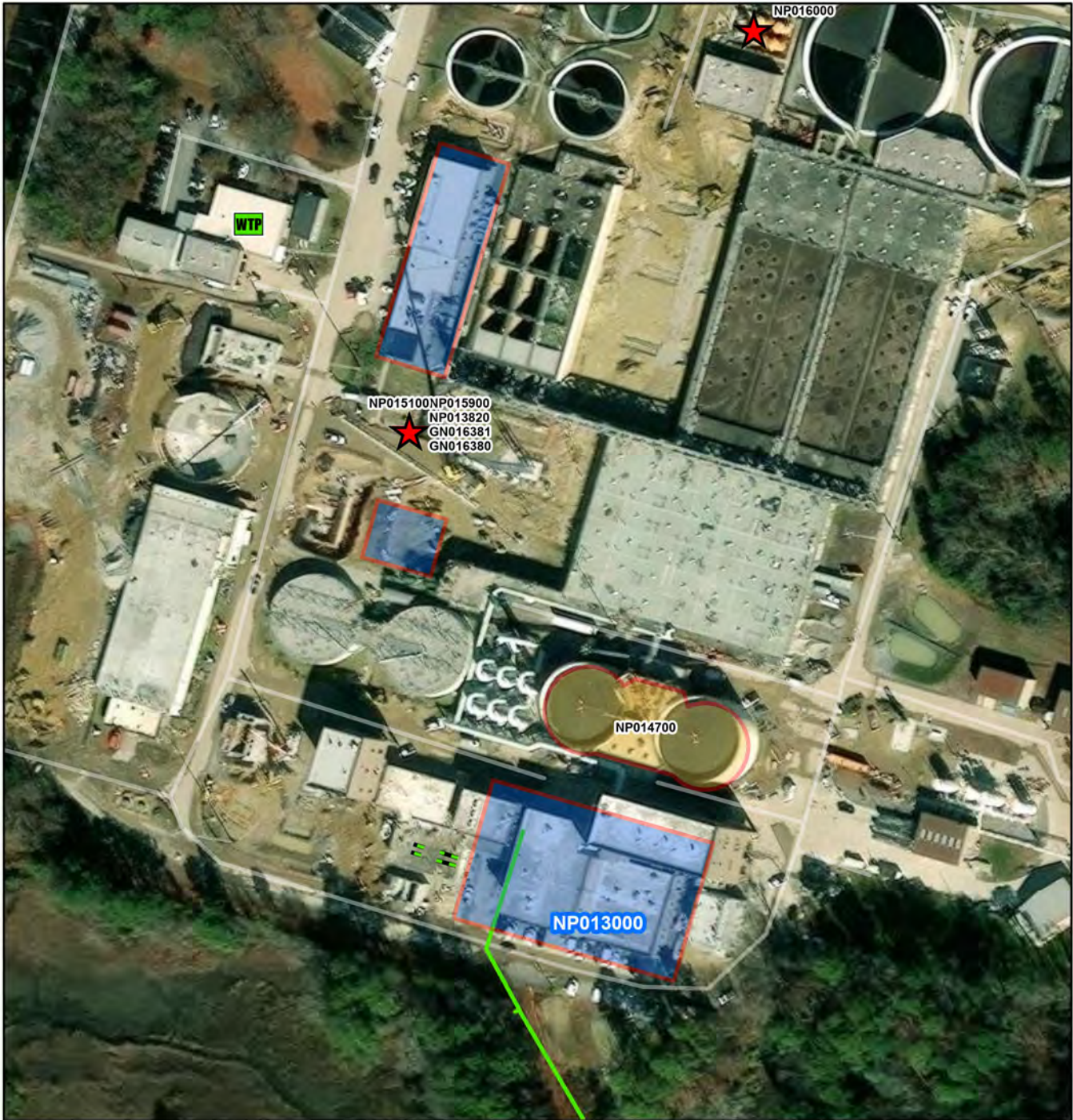
Contacts-Requesting Dept: Operations-Interceptors
 Contacts-Dept Contacts: Nick Taschner
 Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

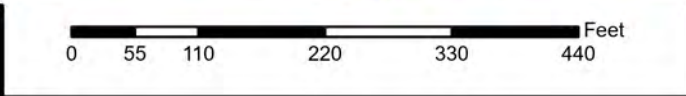
PrePlanning	04/01/2021
PER	03/01/2022
Design Delay	10/07/2022
Design	12/01/2022
Bid Delay	03/01/2025
PreConstruction	04/01/2025
Construction	05/01/2025
Closeout	11/01/2026

COST ESTIMATE

Cost Estimate Class:	Class 2 (-5% to +20%)
PrePlanning	\$0
PER	\$69,388
Design	\$380,000
PreConstruction	\$20,000
Construction	\$13,000,000
Closeout	\$0
Est. Program Cost	\$13,469,388
Contingency Budget	\$1,300,000
Est. Project Costs	\$14,769,388

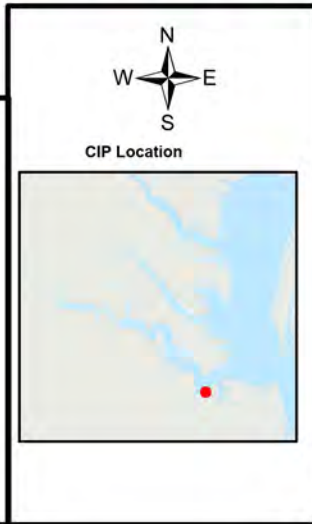


- NP013000**
- Project Interceptor Line
 - Project Interceptor Point
 - Project Location Point
 - Project Area
- Legend**
- CIP Interceptor Point
 - CIP Pump Station Point
 - CIP Interceptor Line
 - CIP Abandonment
 - CIP Project Area
 - HRSD Interceptor Force Main
 - HRSD Interceptor Gravity Main
 - HRSD Treatment Plant
 - HRSD Pressure Reducing Station
 - HRSD Pump Station



NP013000

Nansemond Treatment Plant Motor Control Center Replacements





System: Nansemond
Type: Electrical

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$3,388	\$2,465	\$923	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project is to replace six motor control centers (MCCs). The MCCs were installed in the early 1980s. The MCC's feed the primary pump station #1, Float Thickening Building, Primary Pump Station #2, Clarified Recycle (CRCY) Pump Station, and Nitrified Recycle (NRCY)/CRCY Pump Station.

PROJECT JUSTIFICATION

This project will replace 32 year old MCC's nearing the end of their useful life. The main breakers on the MCC's are no longer available and replacement parts are not available. The replacement of the MCC's will improve reliability to ensure critical unit processes are not adversely impacted. In addition, this project will reduce hazards to employees associated with arc flash.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

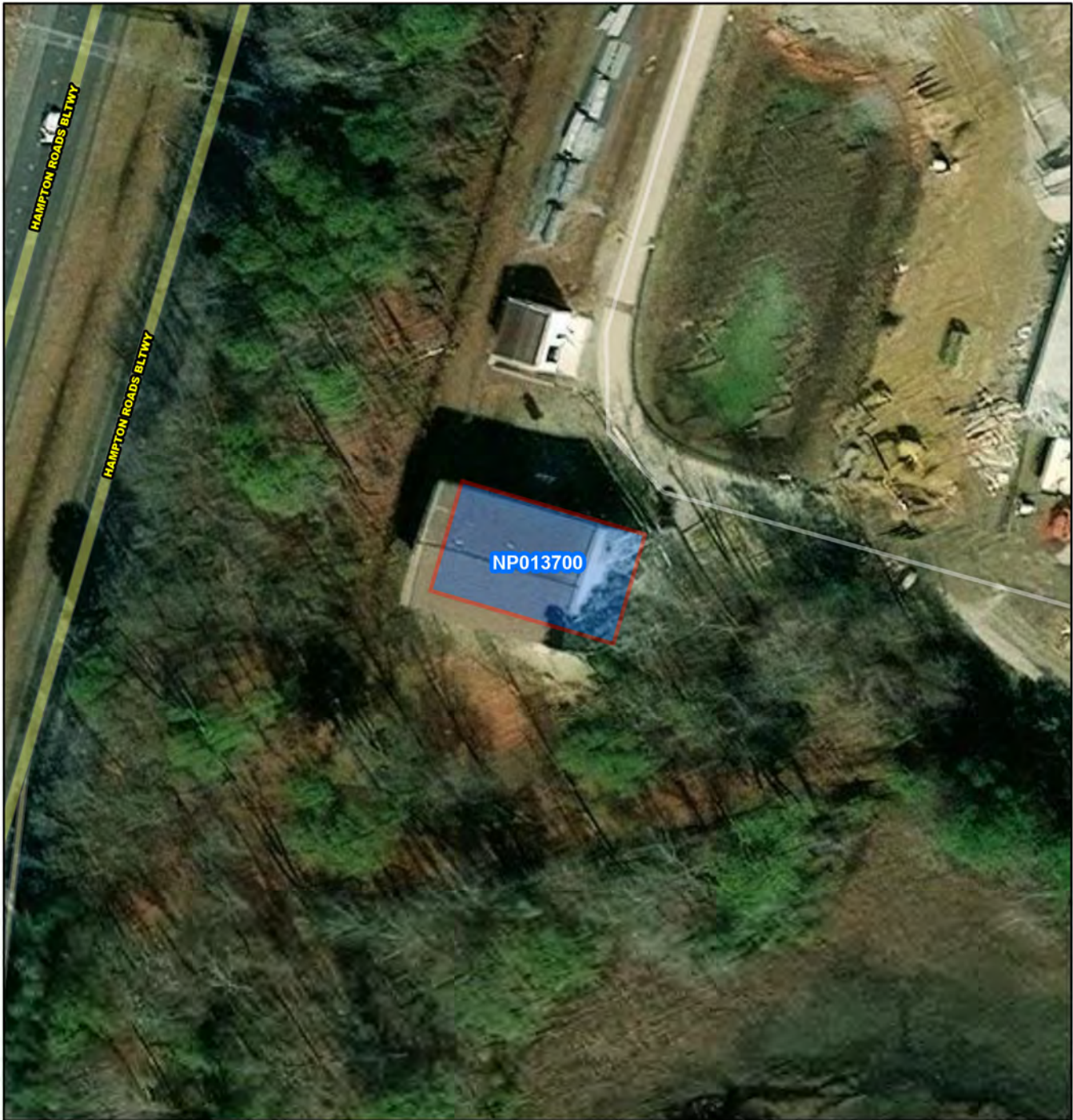
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Sherman Pressey
Contacts-Managing Dept: Operations-Support Systems

PROPOSED SCHEDULE START DATE

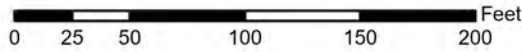
PrePlanning	05/01/2017
PER	05/01/2017
Design Delay	05/01/2017
Design	05/01/2017
Bid Delay	05/01/2017
PreConstruction	05/01/2017
Construction	01/01/2018
Closeout	10/01/2025

COST ESTIMATE

Cost Estimate Class: Class 5 (-20% to +100%)	
PrePlanning	\$0
PER	\$0
Design	\$0
PreConstruction	\$0
Construction	\$3,388,492
Closeout	\$0
Est. Program Cost	\$3,388,492
Contingency Budget	\$320,780
Est. Project Costs	\$3,709,271



- NP013700**
- Project Interceptor Line
 - Project Interceptor Point
 - Project Location Point
 - Project Area
- Legend**
- CIP Interceptor Point
 - CIP Pump Station Point
 - CIP Interceptor Line
 - CIP Abandonment
 - CIP Project Area
 - HRSD Interceptor Force Main
 - HRSD Interceptor Gravity Main
 - HRSD Treatment Plant
 - HRSD Pressure Reducing Station
 - HRSD Pump Station



NP013700

Nansemond Treatment Plant Struvite Recovery Facility Improvements



System: Nansemond
 Type: Wastewater Treatment

Driver Category: Performance Upgrades
 Project Phase: Construction
 Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$46,779	\$37,547	\$9,221	\$12	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project involves the implementation of the WASSTRIP (Waste Activated Sludge Stripping to Remove Internal Phosphorus) process and improvements to the Struvite Recovery Facility (SRF). The WASSTRIP process consists of the storage of thickened WAS in a tank for a period sufficient to allow phosphorus and magnesium release, followed by post thickening, and transfer of thickened solids to digestion. The thickening filtrate (WASSATE) will be transferred to the SRF separate from the centrate stream. This project includes the addition of a solids removal step for centrate and WASSATE and a small equalization tank for the WASSATE. The SRF upgrade includes the transition from magnesium chloride and sodium hydroxide to a magnesium oxide slaker and feed system, overall control system upgrades, additional reactor capacity, and replacement of the struvite product drying equipment. This project will be completed as one construction project in unison with NP014700.

PROJECT JUSTIFICATION

This project will achieve the following improvements for NTP: Improve biological phosphorus removal reliability and decrease effluent phosphorus concentrations, which is important for the decrease in the James River waste load allocation; Allow for treatment of all centrate flow through the SRF and overcome capacity limitations that currently require bypassing of some centrate; provide SRF reactor redundancy to allow for maintenance activities; Improve solids dewatering performance and decrease polymer demand; Nearly quadruple facility production of Crystal Green (when considering Boat Harbor flow); Decrease the frequency of digester cleaning due to less struvite accumulation; and Decrease operational costs associated with nuisance accumulation of struvite in piping and equipment upstream of the SRF.

FUNDING TYPE CONTACTS

Funding Type: Cash

Contacts-Requesting Dept: Operations-Treatment
 Contacts-Dept Contacts: Angela Weatherhead
 Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE COST ESTIMATE

PrePlanning	08/01/2017
PER	08/01/2017
Design Delay	04/02/2018
Design	04/02/2018
Bid Delay	01/03/2022
PreConstruction	01/03/2022
Construction	07/01/2022
Closeout	05/01/2026

Cost Estimate Class:	Class 1 (-3% to +15%)
PrePlanning	\$0
PER	\$86,879
Design	\$2,531,174
PreConstruction	\$14,173
Construction	\$44,079,872
Closeout	\$67,218
Est. Program Cost	\$46,779,316
Contingency Budget	\$3,326,390
Est. Project Costs	\$50,105,706

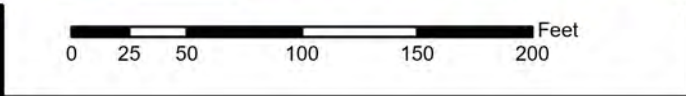


NP013820

-  Project Interceptor Line
-  Project Interceptor Point
-  Project Location Point
-  Project Area

Legend

-  CIP Interceptor Point
-  CIP Pump Station Point
-  CIP Interceptor Line
-  CIP Abandonment
-  CIP Project Area
-  HRSD Interceptor Force Main
-  HRSD Interceptor Gravity Main
-  HRSD Treatment Plant
-  HRSD Pressure Reducing Station
-  HRSD Pump Station



NP013820

**Nansemond Treatment Plant Advanced Nutrient
Reduction Improvements Phase II**



N
W —+— E
S

CIP Location



Nansemond Treatment Plant Advanced Nutrient Reduction Improvements Phase II

PR_NP013820

System: Nansemond
Type: SWIFT

Driver Category: Nutrient Reduction
Project Phase: Construction
Regulatory: Integrated Plan-SWIFT

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$312,936	\$225,017	\$61,011	\$26,908	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project is for the design and construction of improvements to Nansemond Treatment Plant to support reliable treatment of raw, screened wastewater from the Boat Harbor Treatment Plant service area and raw influent from the Nansemond Treatment Plant service area. A Capacity Study determined that nutrient removal and hydraulic upgrades would be required to treat both flows and loads to meet the targeted effluent concentrations. The scope includes equalization of primary effluent and upgrades to preliminary and secondary treatment, disinfection facilities, odor control system, effluent pump station and drain pump station. This effort will include all associated pumping, piping, tankage, mechanical, and electrical equipment. This estimate assumes all necessary ancillary facilities will be upgraded as required.

PROJECT JUSTIFICATION

These improvements will be required to treat the flows from the Boat Harbor Treatment Plant Service area and provide stable source water quality that meets the influent requirements of the full scale SWIFT facility at Nansemond Treatment Plant.

FUNDING TYPE

Funding Type: WIFIA

CONTACTS

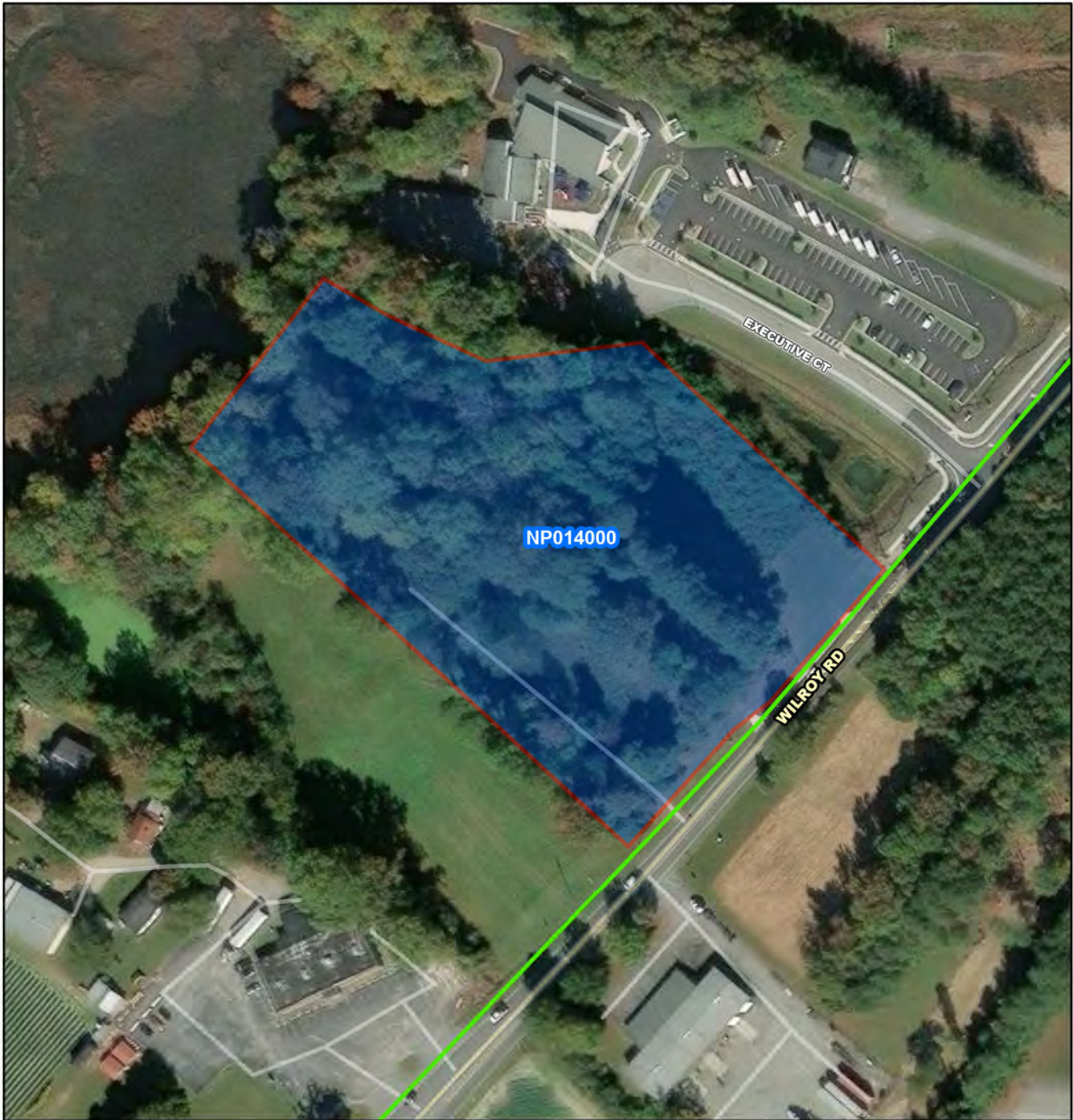
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Adam Werner
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

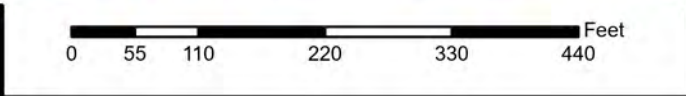
PrePlanning	04/01/2020
PER	11/02/2020
Design Delay	01/30/2023
Design	02/24/2022
Bid Delay	06/29/2021
PreConstruction	06/03/2021
Construction	03/01/2023
Closeout	12/01/2026

COST ESTIMATE

Cost Estimate Class:	Class 1 (-3% to +15%)
PrePlanning	\$0
PER	\$2,743,291
Design	\$18,373,822
PreConstruction	\$663,264
Construction	\$291,155,900
Closeout	\$0
Est. Program Cost	\$312,936,278
Contingency Budget	\$8,206,854
Est. Project Costs	\$321,143,132

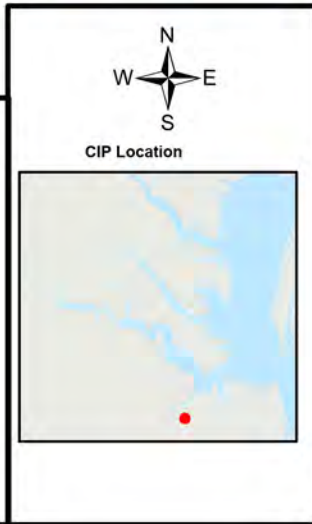


- NP014000**
- Project Interceptor Line
 - Project Interceptor Point
 - Project Location Point
 - Project Area
- Legend**
- CIP Interceptor Point
 - CIP Pump Station Point
 - CIP Interceptor Line
 - CIP Abandonment
 - CIP Project Area
 - HRSD Interceptor Force Main
 - HRSD Interceptor Gravity Main
 - HRSD Treatment Plant
 - HRSD Pressure Reducing Station
 - HRSD Pump Station



NP014000

Wilroy Pressure Reducing Station and Off-line Storage Facility



System: Nansemond
 Type: Offline Storage

Driver Category: I&I Abatement-IP/RWWMP
 Project Phase: Design
 Regulatory: Integrated Plan-HPP 1

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$57,931	\$5,320	\$27,673	\$24,938	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

The project will install a new pressure reducing station (PRS) and a new 3-million gallon storage tank. These facilities are required as part of the Integrated Plan and are needed to reduce the likelihood of sanitary sewer overflows (SSOs) in the Cities of Chesapeake and Suffolk.

PROJECT JUSTIFICATION

As part of HRSD's Integrated Plan, a program of High Priority RWWMP Projects (HPP) will be constructed through 2030. These projects were selected based on their ability to provide the greatest environmental and human health benefits. Further, this \$200+ million program investment will reduce SSO volume at the 5-year level of service by 47 percent.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
 Contacts-Dept Contacts: Rebecca Currall
 Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/04/2021
PER	12/01/2021
Design Delay	01/02/2023
Design	01/02/2023
Bid Delay	03/01/2025
PreConstruction	04/01/2025
Construction	09/01/2025
Closeout	04/01/2027

COST ESTIMATE

Cost Estimate Class:	Class 1 (-3% to +15%)
PrePlanning	\$0
PER	\$598,849
Design	\$4,255,000
PreConstruction	\$50,000
Construction	\$52,977,000
Closeout	\$50,000
Est. Program Cost	\$57,930,849
Contingency Budget	\$5,298,000
Est. Project Costs	\$63,228,849



NP014500

-  Project Interceptor Line
-  Project Interceptor Point
-  Project Location Point
-  Project Area


Legend

-  CIP Interceptor Point
-  CIP Pump Station Point
-  CIP Interceptor Line
-  CIP Abandonment
-  CIP Project Area
-  HRSD Interceptor Force Main
-  HRSD Interceptor Gravity Main
-  HRSD Treatment Plant
-  HRSD Pressure Reducing Station
-  HRSD Pump Station

0 25 50 100 150 200 Feet


NP014500

**Nansemond Treatment Plant Regional Residuals
Facility Upgrade**



N
W — E
S

CIP Location





System: Nansemond
Type: Wastewater Treatment

Driver Category: Performance Upgrades
Project Phase: Construction
Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$4,302	\$2,707	\$1,591	\$4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will entail the installation of a new mechanical screen, pump station and Fats Oils & Grease (FOG) separator at the Nansemond Treatment Plant Regional Residuals Facility (RRF). The screen will be installed upstream of the new pump station, which will pump up to the FOG separator where concentrated FOG will be conveyed to a dumpster and the underflow will drain to the RRF's existing pump station. The existing pump station will also be upgraded to handle additional channel, bay and equipment washdown water.

PROJECT JUSTIFICATION

Regional pump station wet well cleaning produces a significant number of truckloads per month that carry primarily grease and water and are light on residuals (grit). The number is significant enough that plant staff has had to dedicate bays at the RRF strictly for grease loads and bays strictly for heavy residual (grit) loads. The heavy grease loads complicate RRF operation, plugging up drains and leading to increased manpower and a greater presence of grease in downstream processes.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	11/30/2020
PER	02/08/2021
Design Delay	05/03/2021
Design	05/03/2021
Bid Delay	01/18/2023
PreConstruction	01/18/2023
Construction	04/01/2024
Closeout	08/01/2025

COST ESTIMATE

Cost Estimate Class:	Class 1 (-3% to +15%)
PrePlanning	\$42,947
PER	\$0
Design	\$269,808
PreConstruction	\$0
Construction	\$3,979,577
Closeout	\$10,000
Est. Program Cost	\$4,302,332
Contingency Budget	\$295,915
Est. Project Costs	\$4,598,247



NP014700

- Project Interceptor Line
- Project Interceptor Point
- Project Location Point
- Project Area

Legend

- CIP Interceptor Point
- CIP Pump Station Point
- CIP Interceptor Line
- CIP Abandonment
- CIP Project Area
- HRSD Interceptor Force Main
- HRSD Interceptor Gravity Main
- HRSD Treatment Plant
- HRSD Pressure Reducing Station
- HRSD Pump Station

0 25 50 100 150 200 Feet

NP014700

Nansemond Treatment Plant Digester Capacity Upgrades

N
W —+— E
S

CIP Location



Nansemond Treatment Plant Digester Capacity Upgrades

PR_NP014700

System: Nansemond
Type: Wastewater Treatment

Driver Category: Capacity Improvements
Project Phase: Construction
Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$37,950	\$32,788	\$5,154	\$8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will improve and replace peripheral equipment associated with the Nansemond Treatment Plant (NTP) anaerobic digester process in advance of receiving consolidated wastewater from the Boat Harbor Treatment Plant (BHTP) service area. The following equipment will be evaluated under this CIP for capacity and condition and required upgrades or replacements to meeting projected FY2026 loading will be designed and constructed: Digester mixing pumps and piping; centrifuge feed pumps; process boilers; sludge heat exchangers; digester gas collection, metering and waste gas burners, digestion process instrumentation and controls; digestion process electrical systems. Additionally, this project will construct a new final dewatering centrate equalization tank and a new sidestream nitrogen removal (SNR) process (deammonification). This project will be completed as one construction project in unison with NP013700.

PROJECT JUSTIFICATION

Wastewater from the BHTP service area is to be diverted and combined with existing NTP primary influent beginning in the first half of FY2026. The additional loading on NTP will require capacity upgrades to the anaerobic digestion process, including the ability of the current digestion system to treat pre-dewatered primary and waste activated solids up to a concentration of 7% total dry solids. By providing the capability of treating thicker solids in the existing anaerobic digesters, this project alleviates the need to construct additional anaerobic digester volume, which reduces overall NTP upgrade costs and reserves limited on-site space for future needs. Additionally, this project will include SNR for nitrogen removal upstream of the SRF.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

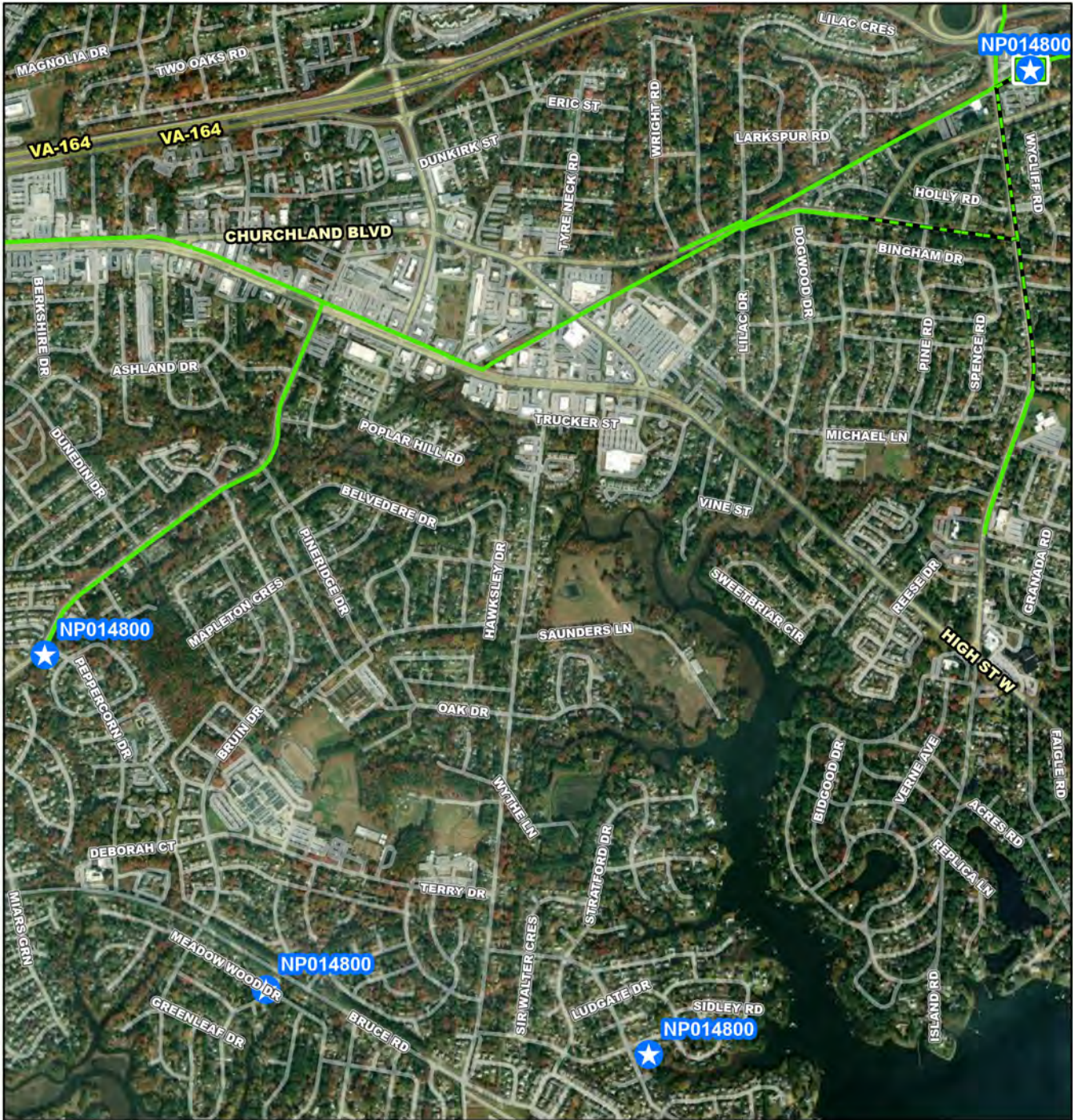
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	
PER	12/01/2020
Design Delay	05/17/2021
Design	05/01/2021
Bid Delay	01/01/2022
PreConstruction	01/01/2022
Construction	07/01/2022
Closeout	02/01/2026

COST ESTIMATE

Cost Estimate Class:	Class 1 (-3% to +15%)
PrePlanning	\$0
PER	\$194,603
Design	\$1,746,625
PreConstruction	\$48,068
Construction	\$35,894,519
Closeout	\$66,004
Est. Program Cost	\$37,949,820
Contingency Budget	\$2,671,562
Est. Project Costs	\$40,621,382



NP014800

- Project Interceptor Line
- Project Interceptor Point
- Project Location Point
- Project Area

Legend

- CIP Interceptor Point
- CIP Pump Station Point
- CIP Interceptor Line
- CIP Project Area
- HRSD Interceptor Force Main
- HRSD Interceptor Gravity Main
- HRSD Treatment Plant
- HRSD Pressure Reducing Station
- HRSD Pump Station

0 500 1,000 2,000 3,000 4,000 Feet

NP014800

High Priority Projects Round 2 Project 8

N
W —+— E
S

CIP Location

System: Nansemond
 Type: Pipelines

Driver Category: I&I Abatement-IP/RWWMP
 Project Phase: Proposed
 Regulatory: Integrated Plan-HPP 2

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$5,528	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,159	\$2,369

PROJECT DESCRIPTION

High Priority Project (HPP) Round 2 Project 8 consists of the following Regional Wet Weather Management Plan (RWWMP) Project IDs and general descriptions:
 NA-RWWMP-14 Cedar Lane Pump Station Upgrade
 NA-RWWMP-16 Western Branch Pressure Reducing Station
 NA-RWWMP-19 Chesapeake City System Improvements

PROJECT JUSTIFICATION

As part of the RWWMP submitted to the DEQ and EPA, HRSD developed an approach to recognize the highest-priority system improvements with the greatest relative environmental benefit. The result being the identification of High-Priority Projects (HPPs). The initial HPPs (Round 1) were identified in the RWWMP, submitted to EPA in September of 2017, and are scheduled to be constructed between plan approval and 2030. Further review of RWWMP projects was conducted in 2019 to find beneficial solutions to implement as a second set of HPPs (identified as Round 2). A prioritization methodology was used to identify improvements to minimize sanitary sewer overflow (SSO) volume.

Rounds 1 and 2 of High-Priority Projects were scheduled with consecutive 10-year implementation periods starting with Round 1 being completed between plan approval and 2030. Prior to commencement, HRSD will review the Round 2 projects to confirm that they are still expected to meet the desired result and confirm this in a check in with the EPA/DEQ. To modify the list of specific Round 2 HPP projects, HRSD will show that the revised set of projects will attain a minimum of the same percent reduction, or better.

FUNDING TYPE CONTACTS

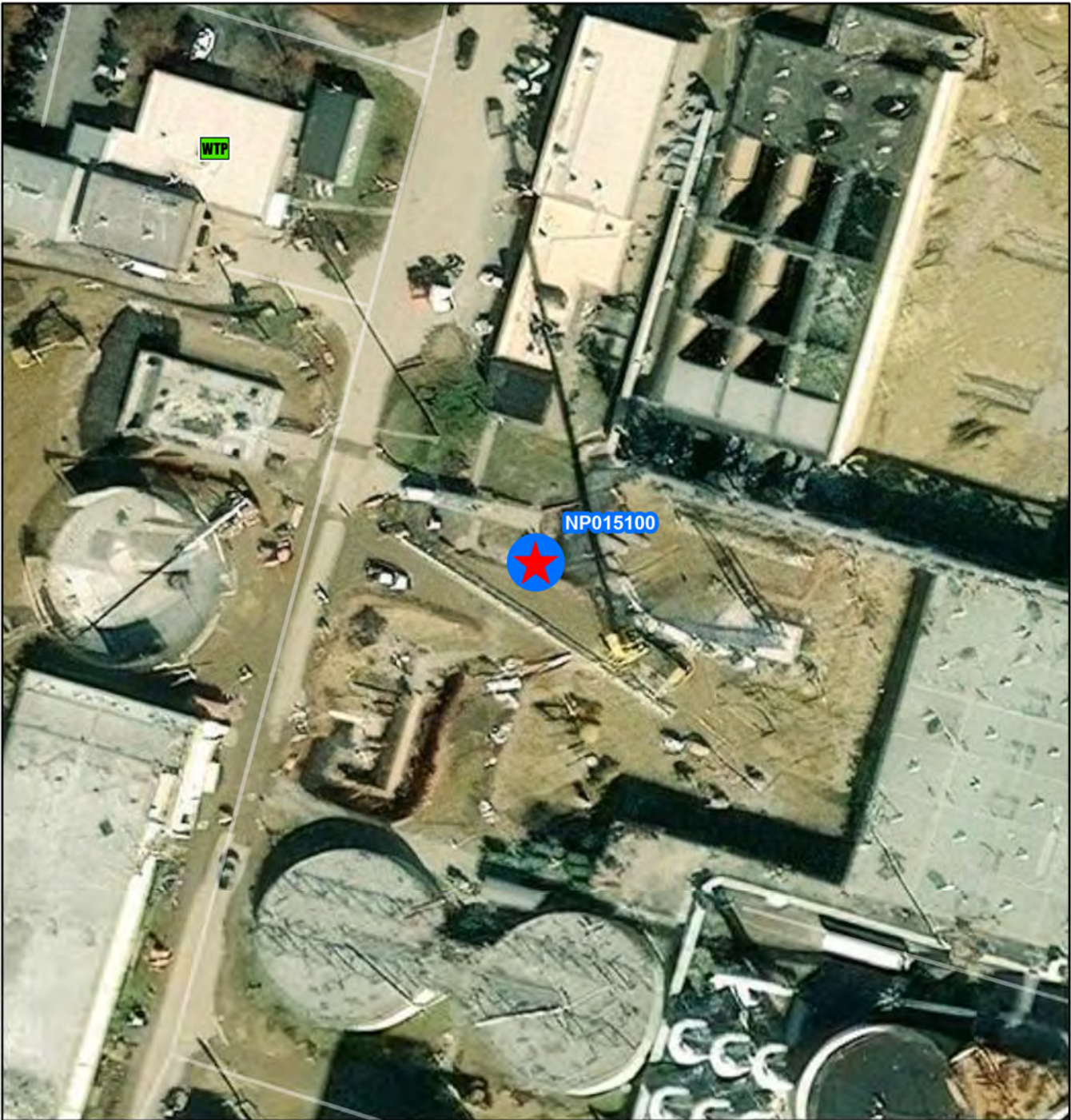
Funding Type: Revenue Bond

Contacts-Requesting Dept: Engineering
 Contacts-Dept Contacts: John Dano
 Contacts-Managing Dept: Engineering

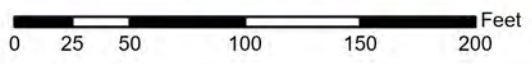
PROPOSED SCHEDULE START DATE COST ESTIMATE

PrePlanning	07/01/2033
PER	08/01/2033
Design Delay	10/01/2033
Design	06/01/2034
Bid Delay	09/01/2034
PreConstruction	05/02/2035
Construction	07/02/2035
Closeout	04/02/2038

Cost Estimate Class:	Class 10
PrePlanning	\$1,480,752
PER	\$1,480,752
Design	\$2,961,504
PreConstruction	\$0
Construction	\$17,769,024
Closeout	\$0
Est. Program Cost	\$23,692,032
Contingency Budget	\$5,923,008
Est. Project Costs	\$29,615,040



- NP015100**
-  Project Interceptor Line
 -  Project Interceptor Point
 -  Project Location Point
 -  Project Area
- Legend**
-  CIP Interceptor Point
 -  CIP Pump Station Point
 -  CIP Interceptor Line
 -  CIP Abandonment
 -  CIP Project Area
 -  HRSD Interceptor Force Main
 -  HRSD Interceptor Gravity Main
 -  HRSD Treatment Plant
 -  HRSD Pressure Reducing Station
 -  HRSD Pump Station



NP015100

Nansemond Treatment Plant Administration Building Replacement



System: Nansemond
Type: Facilities, Buildings and Capital Equipment

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Pre Planning
Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$13,315	\$129	\$566	\$6,610	\$6,000	\$9	\$1	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

The purpose of this project is to replace the current outdated administration building with a new facility which will consolidate all administrative, shop, locker and staff facilities into one facility, while accounting for additional spacing needs, such as an appropriate lab space.

PROJECT JUSTIFICATION

The Nansemond Treatment Plant staff is currently located in two separate buildings on site, as well as, Electrical and Instrumentation (E&I) and Condition Assessment staff. HRSD recently approved an internal hauling operation, and the future staffing will be based out of the Nansemond Treatment Plant.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2024
PER	03/01/2025
Design Delay	10/01/2025
Design	10/01/2025
Bid Delay	05/01/2026
PreConstruction	05/01/2026
Construction	08/01/2026
Closeout	08/01/2028

COST ESTIMATE

Cost Estimate Class:	Class 10
PrePlanning	\$0
PER	\$225,000
Design	\$450,000
PreConstruction	\$30,000
Construction	\$12,600,000
Closeout	\$10,000
Est. Program Cost	\$13,315,000
Contingency Budget	\$3,281,500
Est. Project Costs	\$16,596,500

System: Nansemond
Type: Biosolids

Driver Category: Risk Mitigation
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$312	\$66	\$197	\$49	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project is to perform an initial feasibility study for a biosolids processing facility at Nansemond Treatment Plant (NTP) after closure of Boat Harbor Treatment Plant (BHTP) and startup for NTP SWIFT facilities. The product of such a facility would be suitable for distribution and marketing as a Class A/EQ biosolids derived fertilizer product or capable of further thermal processing such as combustion or pyrolysis. The feasibility study will identify suitable technologies to meet HRSDs capacity and risk-management goals as well as inform HRSD on the benefits and costs of various delivery approaches and timelines.

PROJECT JUSTIFICATION

Upon closure of BHTP and startup of NTP SWIFT facilities, NTP will produce approximately double the amount of residual biosolids as it does presently in CY2023. Wastewater biosolids are under increased scrutiny for trace constituent content. The increased solids production from NTP presents a risk to HRSD should our current biosolids management strategies become excessively costly, unreliable, or unavailable due these market pressures. The implementation of a large technically complex biosolids management facility will require advanced planning in order to effectively manage capital resources, make well-informed technology and logistical decisions, and take advantage of potential beneficial partnerships in the construction and use of such a facility. As such, this feasibility study is scheduled to commence in substantially in advance of the expected implementation timeline.

FUNDING TYPE

Funding Type: Cash

CONTACTS

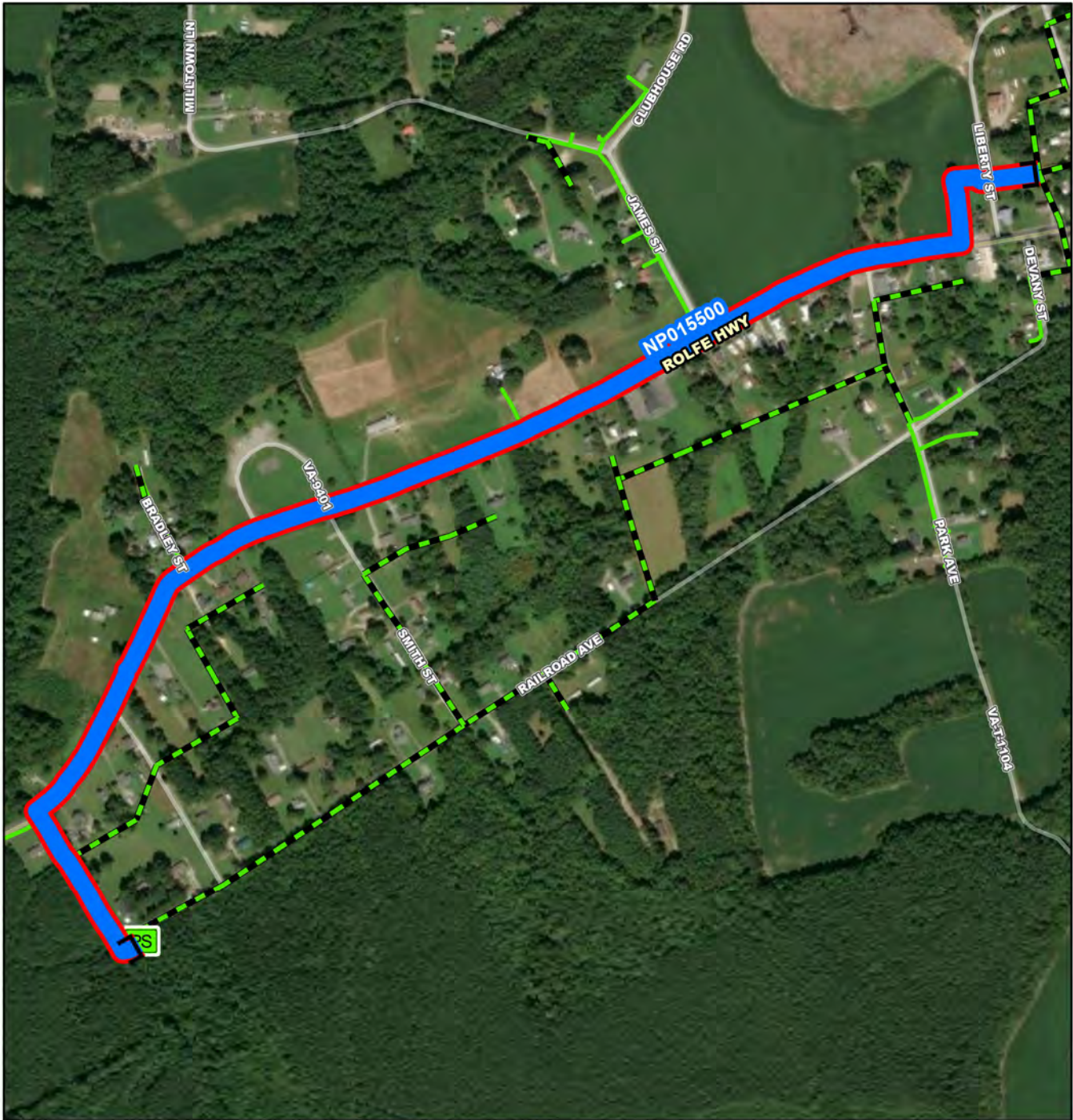
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Virginia Opp
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	03/01/2026
PER	10/01/2026
Design Delay	10/01/2026
Design	10/01/2026
Bid Delay	10/01/2026
PreConstruction	10/01/2026
Construction	10/01/2026
Closeout	10/01/2026

COST ESTIMATE

Cost Estimate Class:	Class 5 (-20% to +100%)
PrePlanning	\$312,000
PER	\$0
Design	\$0
PreConstruction	\$0
Construction	\$0
Closeout	\$0
Est. Program Cost	\$312,000
Contingency Budget	\$0
Est. Project Costs	\$312,000



NP015500

- Project Interceptor Line
- Project Interceptor Point
- Project Location Point
- Project Area

Legend

- CIP Interceptor Point
- CIP Pump Station Point
- CIP Interceptor Line
- CIP Abandonment
- CIP Project Area
- HRSD Interceptor Force Main
- HRSD Interceptor Gravity Main
- HRSD Treatment Plant
- HRSD Pressure Reducing Station
- HRSD Pump Station

0 220 440 880 1,320 1,760 Feet

NP015500

Town of Dendron Discharge Force Main Replacement

CIP Location

System: Nansemond
 Type: Pipelines

Driver Category: Capacity Improvements
 Project Phase: PER
 Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$2,629	\$275	\$197	\$1,617	\$541	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will replace 6,300 linear feet of 3-inch PVC force main of PS-01 Dendron B in Surry, VA. The force main's current alignment is adjacent to Rolfe Highway and discharges into a gravity system located between Liberty Street and First Church Street. This project will evaluate the Dendron B service area and make improvements to the pump station and discharge force main, as necessary, to eliminate wet weather sanitary sewer overflows.

PROJECT JUSTIFICATION

The Town of Dendron Sanitary Sewer pipeline was constructed by the Town of Surry in 2007 and turned over to HRSD. PS-01 Dendron B has had numerous overflows since 2020 due to the pump station becoming locked out because it is unable to overcome the friction losses in the force main during rain events. This project will evaluate the Dendron B service area and make improvements to the pump station and discharge force main, as necessary, to eliminate wet weather sanitary sewer overflows.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
 Contacts-Dept Contacts: Virginia Opp
 Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/03/2023
PER	08/01/2023
Design Delay	07/01/2025
Design	07/01/2025
Bid Delay	07/01/2026
PreConstruction	07/01/2026
Construction	10/01/2026
Closeout	10/01/2027

COST ESTIMATE

Cost Estimate Class:	Class 4 (-15% to +50%)
PrePlanning	\$41,806
PER	\$232,820
Design	\$196,600
PreConstruction	\$10,000
Construction	\$2,142,623
Closeout	\$5,000
Est. Program Cost	\$2,628,849
Contingency Budget	\$341,000
Est. Project Costs	\$2,969,849

System: Nansemond
 Type: Pump Stations

Driver Category: Performance Upgrades
 Project Phase: Proposed
 Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$8,169	\$0	\$0	\$0	\$0	\$0	\$450	\$3,395	\$4,324	\$0	\$0	\$0

PROJECT DESCRIPTION

This project includes installation of a new pump station and force main for the Lawnes Point Service area to include the Lawnes Point Subdivision and Isle of Wight service areas in this corridor. The pump station will be constructed with a new 8-inch Interceptor Force Main (IFM) to connect to existing Surry IFM. Once completed, the existing Lawnes Point Treatment Plant will be abandoned. The existing storage ponds will be preserved and utilized for wet weather storage purposes.

PROJECT JUSTIFICATION

On February 29, 2016, the HRSD Commission adopted an agreement and formally assumed ownership of the Lawnes Point Treatment Plant and its associated sewer collection facilities. In order to effectively deliver sewer services to the residents of Lawnes Point, HRSD initiated a pump and haul operation in lieu of operating the treatment plant. In 2022, HRSD completed the Surry Transmission Force Main Project allowing flows to be conveyed from Surry to the Nansemond Treatment Plant. Recognizing that Lawnes Point Treatment Plant will never be operational, even upon full development of Lawnes Point, this project will allow for Lawnes Point and other areas within Isle of Wight to be served. The construction of a permanent conveyance system for Lawnes Point's wastewater is necessary to end pump and haul operations of this facility. Once completed, this system will allow for the decommissioning of the Lawnes Point Treatment plant and the elimination of its permit and associated outfall.

FUNDING TYPE CONTACTS

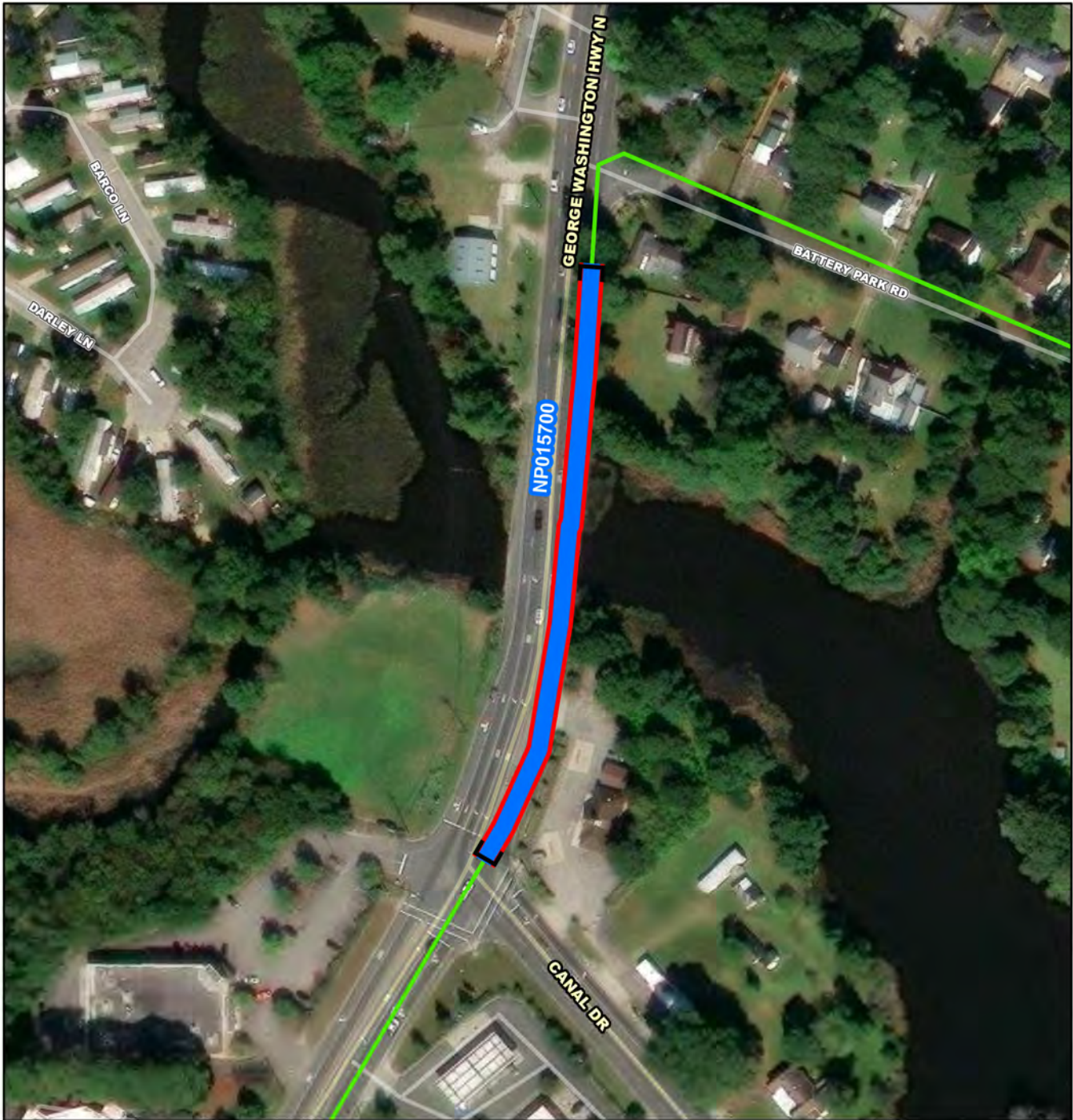
Funding Type: Revenue Bond

Contacts-Requesting Dept: Operations-Interceptors
 Contacts-Dept Contacts: Michael Johnson
 Contacts-Managing Dept: Operations-Interceptors

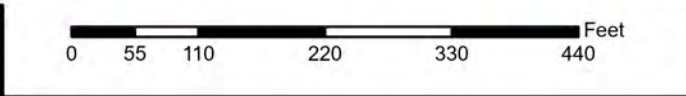
PROPOSED SCHEDULE START DATE COST ESTIMATE

PrePlanning	07/02/2029
PER	09/03/2029
Design Delay	03/04/2030
Design	03/04/2030
Bid Delay	12/02/2030
PreConstruction	12/02/2030
Construction	02/03/2031
Closeout	02/02/2032

Cost Estimate Class:	Class 5 (-20% to +100%)
PrePlanning	\$0
PER	\$205,920
Design	\$549,120
PreConstruction	\$5,200
Construction	\$7,403,760
Closeout	\$5,200
Est. Program Cost	\$8,169,200
Contingency Budget	\$137,280
Est. Project Costs	\$8,306,480

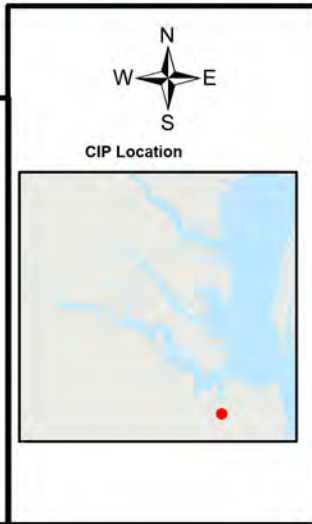


- NP015700**
- Project Interceptor Line
 - Project Interceptor Point
 - Project Location Point
 - Project Area
- Legend**
- CIP Interceptor Point
 - CIP Pump Station Point
 - CIP Interceptor Line
 - CIP Abandonment
 - CIP Project Area
 - HRSD Interceptor Force Main
 - HRSD Interceptor Gravity Main
 - HRSD Treatment Plant
 - HRSD Pressure Reducing Station
 - HRSD Pump Station



NP015700

**George Washington Interceptor Force Main Extension
Part 2 (SF-140) Segmental Replacement at St. Julian's
Cr**





System: Nansemond
Type: Pipelines

Driver Category: Risk Mitigation
Project Phase: PER
Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$2,914	\$64	\$227	\$1,883	\$738	\$2	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will replace up to 600 feet of 12-inch ductile iron of exposed crossing and 14-inch cast iron buried piping of the Interceptor Force Main (SF-140) along George Washington Highway in Chesapeake, VA.

PROJECT JUSTIFICATION

This project will provide for segmental replacement of interceptor force main crossing St. Julian Creek (secured to bottom of bridge deck) identified during condition assessment to have excessive pipe wall loss due to interior and exterior corrosion. Due to environmental exposure to brackish water, the replacement considers eliminating the exposed crossing with a trenchless crossing. The trenchless crossing is assumed to be horizontal directional drill due to water body crossing.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Delane Carty
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

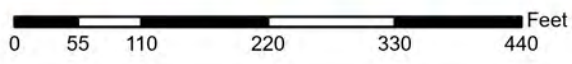
PrePlanning	07/01/2024
PER	10/01/2024
Design Delay	09/01/2025
Design	09/01/2025
Bid Delay	09/01/2026
PreConstruction	09/01/2026
Construction	02/01/2027
Closeout	09/01/2027

COST ESTIMATE

Cost Estimate Class:	Class 4 (-15% to +50%)
PrePlanning	\$0
PER	\$95,538
Design	\$233,864
PreConstruction	\$23,400
Construction	\$2,549,040
Closeout	\$11,700
Est. Program Cost	\$2,913,542
Contingency Budget	\$728,386
Est. Project Costs	\$3,641,928



- NP015800**
- Project Interceptor Line
 - Project Interceptor Point
 - Project Location Point
 - Project Area
- Legend**
- CIP Interceptor Point
 - CIP Pump Station Point
 - CIP Interceptor Line
 - CIP Abandonment
 - CIP Project Area
 - HRSD Interceptor Force Main
 - HRSD Interceptor Gravity Main
 - HRSD Treatment Plant
 - HRSD Pressure Reducing Station
 - HRSD Pump Station



CIP Location



NP015800

**North Churchill Interceptor Force Main (SF-206)
Segmental Replacement at Swannanoa Drive**



System: Nansemond
Type: Pipelines

Driver Category: Risk Mitigation
Project Phase: PER
Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$9,182	\$85	\$20	\$0	\$691	\$2,191	\$4,106	\$2,072	\$19	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will replace up to 1,680 feet of 16-inch ductile iron interceptor force main (SF-164) along Swannanoa Drive in the City of Portsmouth.

PROJECT JUSTIFICATION

This project will provide for a segmental replacement of interceptor force main on Swannanoa Drive resulting from three previous failures (2009, 2014, 2023) and an assessment that found extensive pipe wall loss due to interior and exterior corrosion. The most recent failure at the intersection of Swannanoa Drive and Summerset Drive (June 2023) required a segment of the pipe to be encased in concrete as a temporary repair. In total approximately 600 linear feet of ductile iron pipe at this location was determined to have similar pipe wall thickness and a very high likelihood of failure (LoF = 5.0). An additional investigation performed of the upstream pipe segment, west of Summerset Drive also revealed severe degradation of the pipe's internal wall thickness and was also deemed to have a high likelihood of failure over the next 2 - 3 years. It is recommended the force main be replaced along Swannanoa from the intersection of Weyanoke Drive, west to the intersection of Twin Pines Road to eliminate these risks.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Delane Carty
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

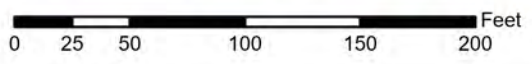
PrePlanning	11/01/2026
PER	11/01/2026
Design Delay	08/01/2025
Design	08/01/2027
Bid Delay	08/01/2028
PreConstruction	08/01/2028
Construction	01/01/2029
Closeout	01/01/2031

COST ESTIMATE

Cost Estimate Class:	Class 5 (-20% to +100%)
PrePlanning	\$0
PER	\$104,804
Design	\$753,324
PreConstruction	\$75,300
Construction	\$8,211,240
Closeout	\$37,700
Est. Program Cost	\$9,182,367
Contingency Budget	\$2,295,592
Est. Project Costs	\$11,477,959



- NP015900**
-  Project Interceptor Line
 -  Project Interceptor Point
 -  Project Location Point
 -  Project Area
- Legend**
-  CIP Interceptor Point
 -  CIP Pump Station Point
 -  CIP Interceptor Line
 -  CIP Abandonment
 -  CIP Project Area
 -  HRSD Interceptor Force Main
 -  HRSD Interceptor Gravity Main
 -  HRSD Treatment Plant
 -  HRSD Pressure Reducing Station
 -  HRSD Pump Station



NP015900

Nansemond Treatment Plant Anaerobic Digester Capacity Improvements



System: Nansemond
Type: Biosolids

Driver Category: Nutrient Reduction
Project Phase: Proposed
Regulatory: Nutrient Reduction

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$25,834	\$0	\$375	\$892	\$1,333	\$25	\$11,592	\$11,592	\$25	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will add additional digestion capacity to Nansemond Treatment Plant (NTP), likely in the form of a third 1MG (nominal) anaerobic digester tank, to meet solids loading requirements following the completion of Boat Harbor Treatment Plant closure, NTP SWIFT and anticipated future (37 MGD) flow conditions. Alternatives to achieve the needed increase in digester capacity will be considered during pre-planning. Siting of new facilities and process integration with the existing digestion, biogas, and dewatering systems will be a critical aspect of this project.

PROJECT JUSTIFICATION

The Nansemond Treatment Plant (NTP) is currently undergoing upgrade from 30 MGD to 50 MG rated design flow (NP013820) to allow closure of the Boat Harbor Treatment Plant in 2026 and SWIFT facilities will be constructed for operation beginning in 2028 (GN016380). Solids loading with these facilities online will result in operational risk (digester upset) and regulatory risk (too low solids retention time to meet Class B biosolids requirements) during max month loading and any time a single digester is out of service. This project is proposed in lieu of separate solids management facilities as part of NTP SWIFT.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

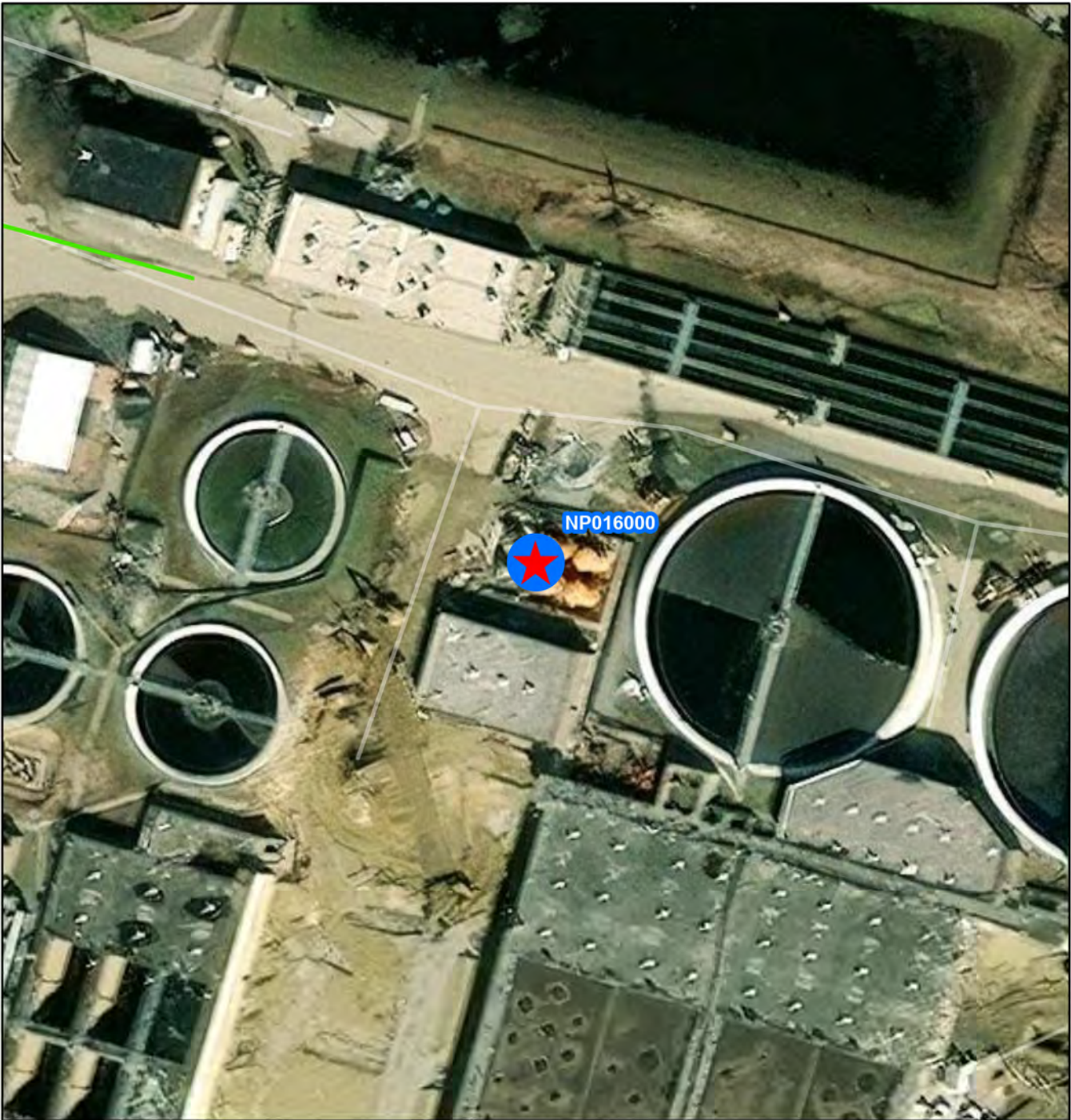
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

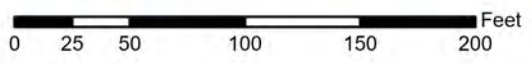
PrePlanning	07/01/2025
PER	01/01/2026
Design Delay	01/01/2027
Design	01/01/2027
Bid Delay	07/01/2028
PreConstruction	07/01/2028
Construction	07/01/2029
Closeout	07/01/2031

COST ESTIMATE

Cost Estimate Class:	Class 5 (-20% to +100%)
PrePlanning	\$150,000
PER	\$450,000
Design	\$2,000,000
PreConstruction	\$25,000
Construction	\$23,184,000
Closeout	\$25,000
Est. Program Cost	\$25,834,000
Contingency Budget	\$6,458,500
Est. Project Costs	\$32,292,500



- NP016000**
- Project Interceptor Line
 - Project Interceptor Point
 - Project Location Point
 - Project Area
- Legend**
- CIP Interceptor Point
 - CIP Pump Station Point
 - CIP Interceptor Line
 - CIP Abandonment
 - CIP Project Area
 - HRSD Interceptor Force Main
 - HRSD Interceptor Gravity Main
 - HRSD Treatment Plant
 - HRSD Pressure Reducing Station
 - HRSD Pump Station



NP016000

Nansmond Treatment Plant Fire Suppression System Upgrades



System: Nansemond
Type: Wastewater Treatment

Driver Category: Safety Compliance
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35
\$2,282	\$0	\$0	\$0	\$0	\$0	\$1,021	\$1,256	\$4	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will address the replacement or upgrades of the fire suppression system at the Nansemond Treatment Plant methanol facility. Currently, the fire suppression system at this plant's methanol facility utilizes an Alcohol Resistant Aqueous Film Forming Foam (AR-AFFF) that contains Perfluoroalkyl and Polyfluoroalkyl (PFAS). Refilling the existing extinguishers with AR-AFFF will no longer be permitted due to the environmental and health concerns associated with PFAS. The new or upgraded systems will utilize a non-PFAS fluorine free foam to extinguish fires.

PROJECT JUSTIFICATION

The current methanol fire suppression systems use AR-AFFF which contains PFAS. AR-AFFF foam is being phased out due to the Federal Forever Chemical Regulation Accountability Act of 2024. If the fire suppression systems is discharged the existing system cannot be re-charged. In the past, some of these fire suppression systems have experienced false alarms and equipment malfunctions causing activation of the AR-AFFF.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Charles Bott
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	06/01/2029
PER	06/01/2029
Design Delay	08/01/2029
Design	08/01/2029
Bid Delay	12/01/2029
PreConstruction	12/01/2029
Construction	03/01/2030
Closeout	12/01/2030

COST ESTIMATE

Cost Estimate Class:	Class 5 (-20% to +100%)
PrePlanning	\$0
PER	\$0
Design	\$0
PreConstruction	\$20,650
Construction	\$2,250,850
Closeout	\$10,325
Est. Program Cost	\$2,281,825
Contingency Budget	\$570,456
Est. Project Costs	\$2,852,281