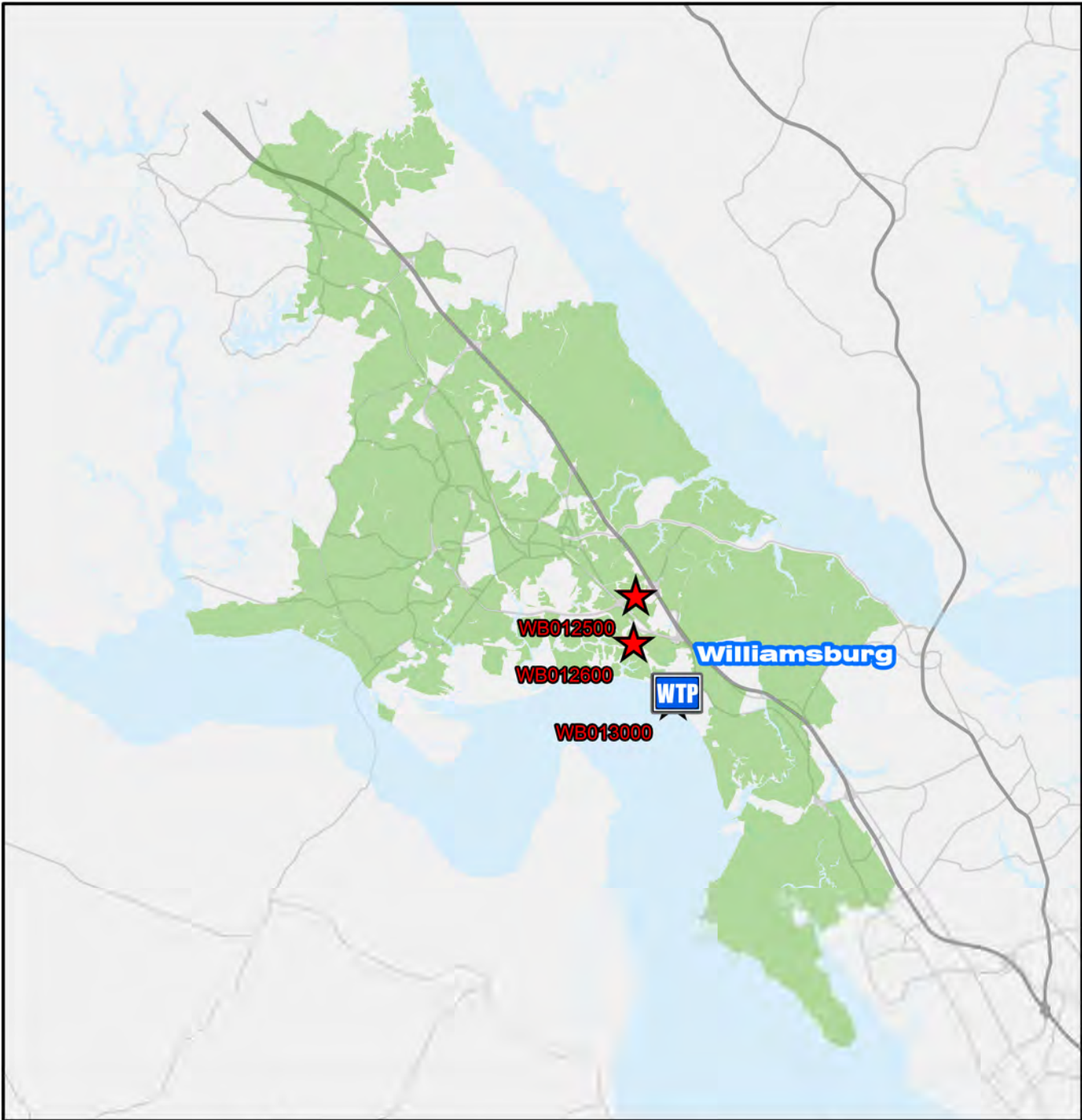


Williamsburg Treatment Plant



Photo Credit: VisitWilliamsburg.com



Legend

 Williamsburg Treatment Plant


 CIP Interceptor Point

 CIP Pump Station Point


 CIP Interceptor Line


 CIP Abandonment


 Treatment Plant Service Area

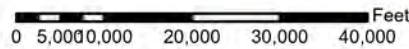
 HRSD Interceptor Force Main

 HRSD Interceptor Gravity Main

 WTP HRSD Treatment Plant

 PRS HRSD Pressure Reducing Station

 PS HRSD Pump Station



**Williamsburg Treatment Plant Service Area
CIP Projects**

Treatment Plant Projects

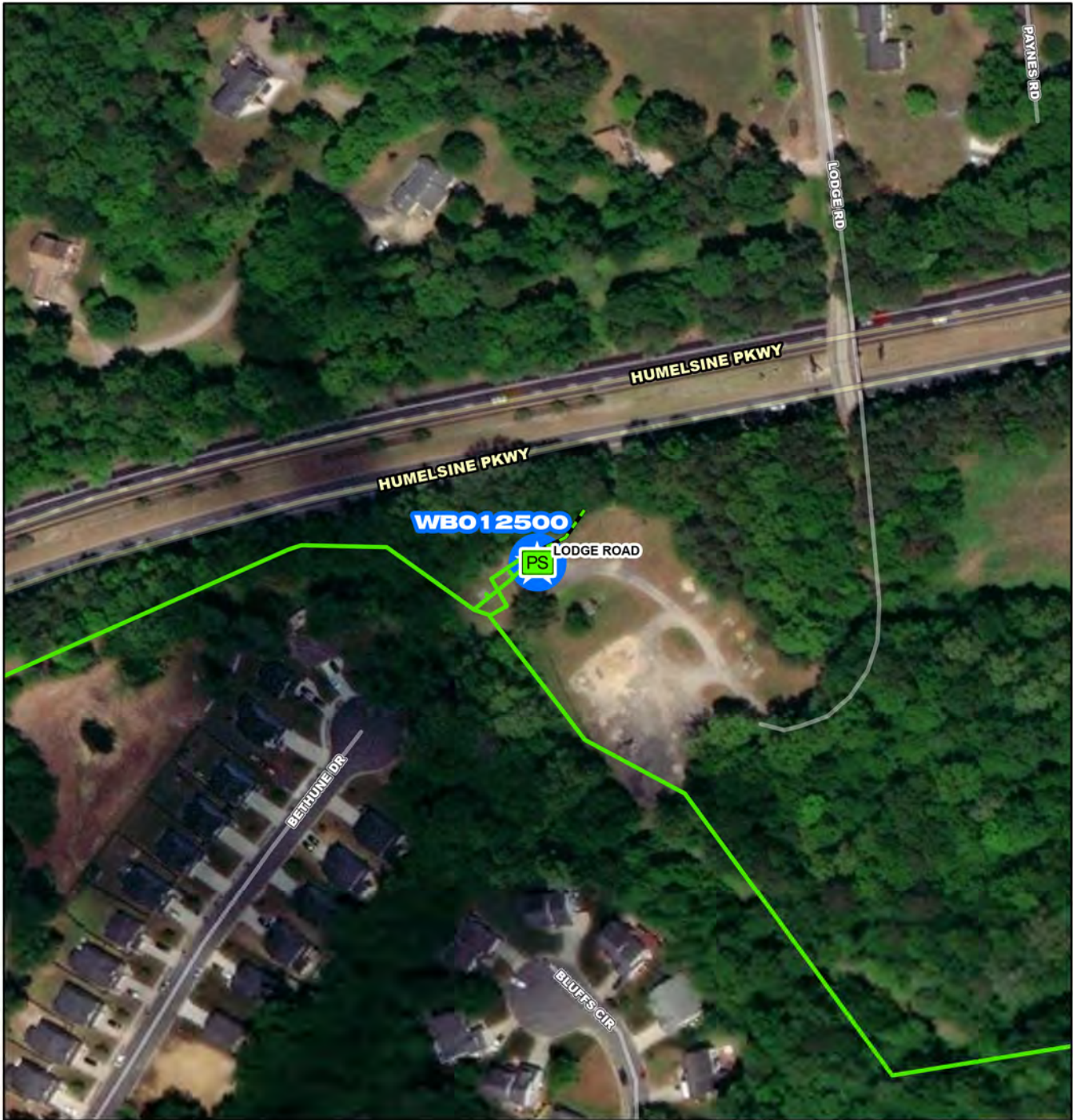
GN016350
GN016351
WB012900
WB013100



CIP Location



Service Area



WBO 12500

- Project Interceptor Line
- Project Interceptor Point
- Project Pump Station 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 55 110 220 330 440 Feet

WBO 12500

Lodge Road Pump Station Upgrades

CIP Location



System: Williamsburg
Type: Pump Stations

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

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
\$1,800	\$47	\$188	\$976	\$587	\$3	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

The project will upgrade the existing Lodge Road Pump Station (PS) including all station pumps, controls, pipe, valves, and electrical infrastructure.

PROJECT JUSTIFICATION

This project will address needed capacity improvements within York County in an area that has current wet weather capacity challenges and newly proposed additional development flows. Lodge Road PS requires pumping upgrades to provide additional capacity. These improvements will require an electrical service upgrade and will drive replacement of the pumps, electrical equipment, generator, and controls. Lodge Road PS receives flow from Rolling Hills PS, several York County Pump Stations, and a local collection system. During wet weather periods, the upstream collection system has experienced Sanitary Sewer Overflows (SSOs) related to pumping capacity. An interconnect was installed by North Shore Interceptors to allow Rolling Hills PS to discharge into the Lodge Road PS. The activation of the Route 199 Interim Pressure Reducing Station (PRS) along with the development projections in the service area require capacity enhancement due to increased flow and discharge pressure.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Chris Stephan
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	09/01/2022
PER	02/02/2023
Design Delay	07/03/2023
Design	09/01/2023
Bid Delay	05/02/2024
PreConstruction	05/02/2024
Construction	09/02/2024
Closeout	01/02/2026

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	\$0
PER	\$46,720
Design	\$184,768
PreConstruction	\$5,838
Construction	\$1,557,326
Closeout	\$5,838
Est. Program Cost	\$1,800,490
Contingency Budget	\$389,332
Est. Project Costs	\$2,189,821

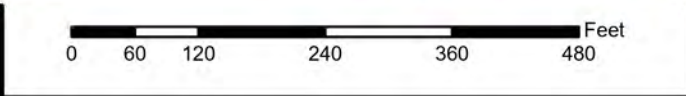


WBO13100

- Project Interceptor Line
- Project Interceptor Point
- Project Pump Station 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



WBO13100

**Williamsburg Treatment Plant
Outfall Flow Control System Repairs**

N
W E
S

CIP Location

An inset map showing a larger geographic area with a red dot indicating the specific location of the CIP (Collection Interceptor Point) within a water body.



Williamsburg Treatment Plant Outfall Flow Control System Repairs

PR_WB013100

System: Williamsburg
Type: Wastewater Treatment

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

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
\$3,503	\$238	\$2,392	\$871	\$2	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will replace worn out flow control and isolation valves on the outfall flow control system used to maintain water level in the chlorine contact tanks. To replace valves, the contractor will need to isolate the outfall to prevent river water from entering the flow control vault.

PROJECT JUSTIFICATION

This project will ensure proper flow control from the chlorine contact tanks to the outfall and maintain the required water level in the chlorine contact tanks by replacing worn out flow control valves. It will also replace leaking isolation valves needed to isolate flow control valves for maintenance and repair.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Ann Copeland
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning 07/01/2021
PER 07/29/2021
Design Delay 09/17/2021
Design 05/27/2022
Bid Delay 05/01/2023
PreConstruction 05/01/2023
Construction 08/01/2023
Closeout 11/01/2024

COST ESTIMATE

Cost Estimate Class: Class 2
PrePlanning \$0
PER \$0
Design \$226,320
PreConstruction \$17,611
Construction \$3,254,000
Closeout \$5,000
Est. Program Cost \$3,502,931
Contingency Budget \$650,800
Est. Project Costs \$4,153,731



System: Williamsburg
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	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
\$60,576	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,726	\$7,990	\$45,860

PROJECT DESCRIPTION

High Priority Project (HPP) Round 2 Project 1 consists of the following Regional Wet Weather Management Plan (RWWMP) Project ID and general description:
WB-RWWMP-02 Williamsburg Crossing Pressure Reducing Station, Force Main and Storage Tank
WB-RWWMP-07 York County Inflow and Infiltration (I&I) Reduction
WB-RWWMP-14 York County Inflow and Infiltration (I&I) Reduction
WB-RWWMP-19 Lodge Road Pump Station Extended Wet Well
WB-RWWMP-12 York County Inflow and Infiltration (I&I) Reduction

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

Funding Type: Revenue Bond

CONTACTS

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

PROPOSED SCHEDULE START DATE

PrePlanning 07/01/2030
PER 07/29/2030
Design Delay 09/17/2030
Design 05/27/2031
Bid Delay 08/28/2031
PreConstruction 05/06/2032
Construction 06/16/2032
Closeout 04/13/2033

COST ESTIMATE

Cost Estimate Class:
PrePlanning \$1,222,875
PER \$3,057,188
Design \$3,668,626
PreConstruction \$611,438
Construction \$51,972,203
Closeout \$611,438
Est. Program Cost \$61,143,768
Contingency Budget \$0
Est. Project Costs \$61,143,768



**Williamsburg Treatment Plant Motor Control Center
Replacements**

PR_WB013300

System: Williamsburg
Type: Electrical

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

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
\$2,791	\$0	\$0	\$353	\$403	\$2,035	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project is to replace eleven (11) Motor Control Centers (MCCs) that were installed in the early 1980s. The MCCs feed the Incinerator Building, Dewatering Building, Odor Control Station B, Recycle Pump Station, and Non-Potable (NPW) Building.

PROJECT JUSTIFICATION

This project will replace MCCs that have reached the end of their useful life, as the replacement parts to maintain the electrical equipment are difficult to acquire. The replacement of the MCCs will improve reliability and minimize disruptions to the plant processes. In addition, this project will reduce potential hazards to employees associated with arc flash.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

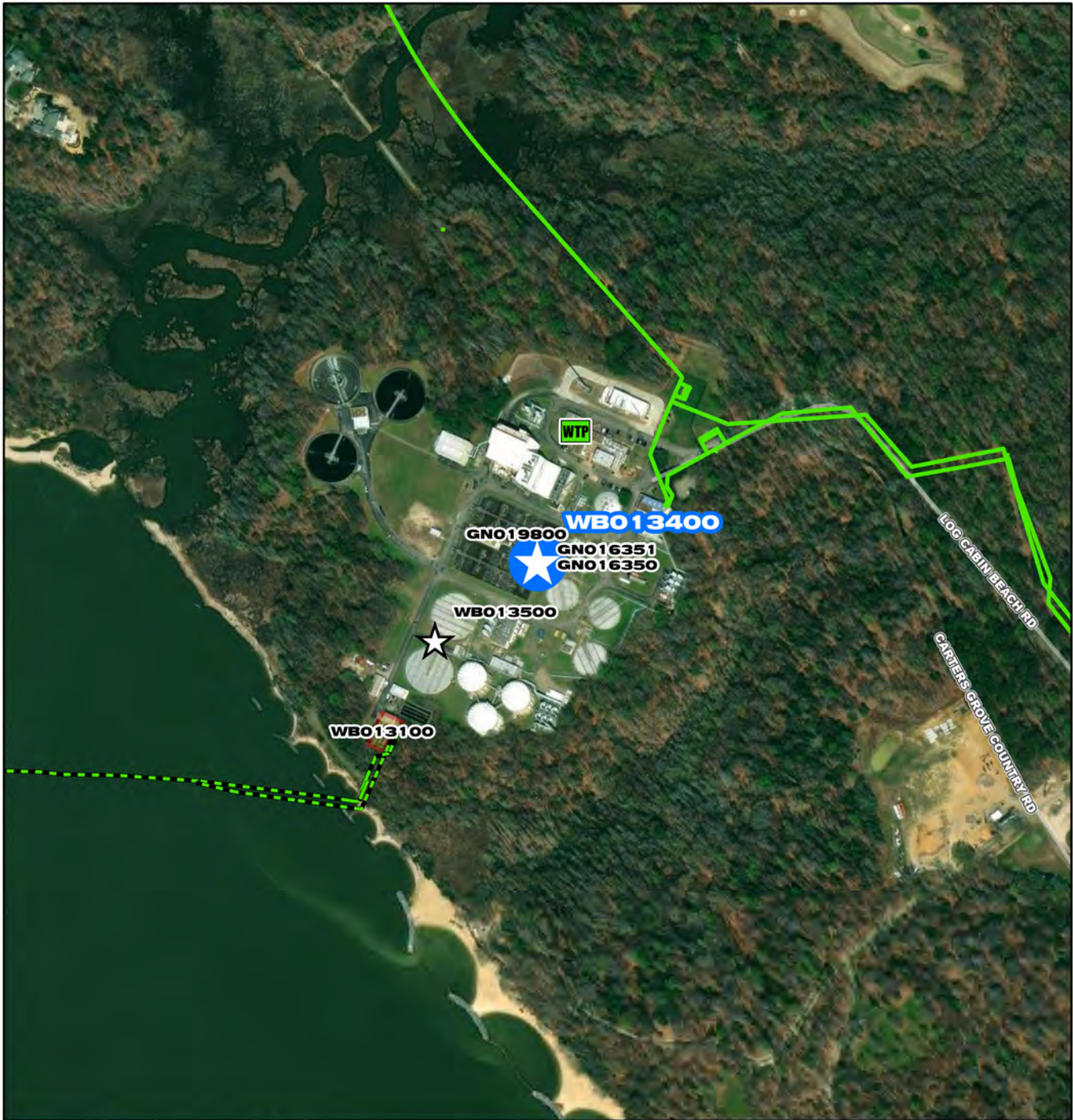
Contacts-Requesting Dept: Operations-EEM
Contacts-Dept Contacts: Sherman Pressey
Contacts-Managing Dept: Operations-EEM

PROPOSED SCHEDULE START DATE

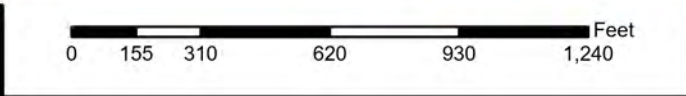
PrePlanning 07/01/2024
PER 07/29/2024
Design Delay 09/17/2024
Design 05/27/2025
Bid Delay 08/28/2025
PreConstruction 05/07/2026
Construction 06/17/2026
Closeout 04/14/2027

COST ESTIMATE

Cost Estimate Class:
PrePlanning \$0
PER \$0
Design \$530,000
PreConstruction \$0
Construction \$2,261,007
Closeout \$0
Est. Program Cost \$2,791,007
Contingency Budget \$452,201
Est. Project Costs \$3,243,208



- WBO13400**
- Project Interceptor Line
 - Project Interceptor Point
 - Project Pump Station 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



WBO 13400

Williamsburg Treatment Plant Headworks Influent and Effluent Pipe Rehabilitation





Williamsburg Treatment Plant Headworks Influent and Effluent Pipe Rehabilitation

PR_WB013400

System: Williamsburg
Type: Wastewater Treatment

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

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
\$8,400	\$0	\$747	\$4,927	\$2,726	\$0	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will repair or replace up to 835 linear feet of 36 and 60-inch, headworks influent and effluent, concrete cylinder, and steel pipe. A by-pass pipeline and pumping may be required to maintain treatment plant operations.

PROJECT JUSTIFICATION

The headworks influent and effluent pipes were installed in 1970 and 1990 and are of the same construction and operating conditions as other pipes within HRSD for which there was corrosion resulting in pipe failure. A notable failure was the 60-inch concrete cylinder pipe between the headworks and primary clarifier distribution chamber at the York River Treatment Plant resulting in a spill of approximately 6.8 million gallons. This pipe was installed in 1984 and, like the Williamsburg pipes, in a critical process location where flow cannot be diverted.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

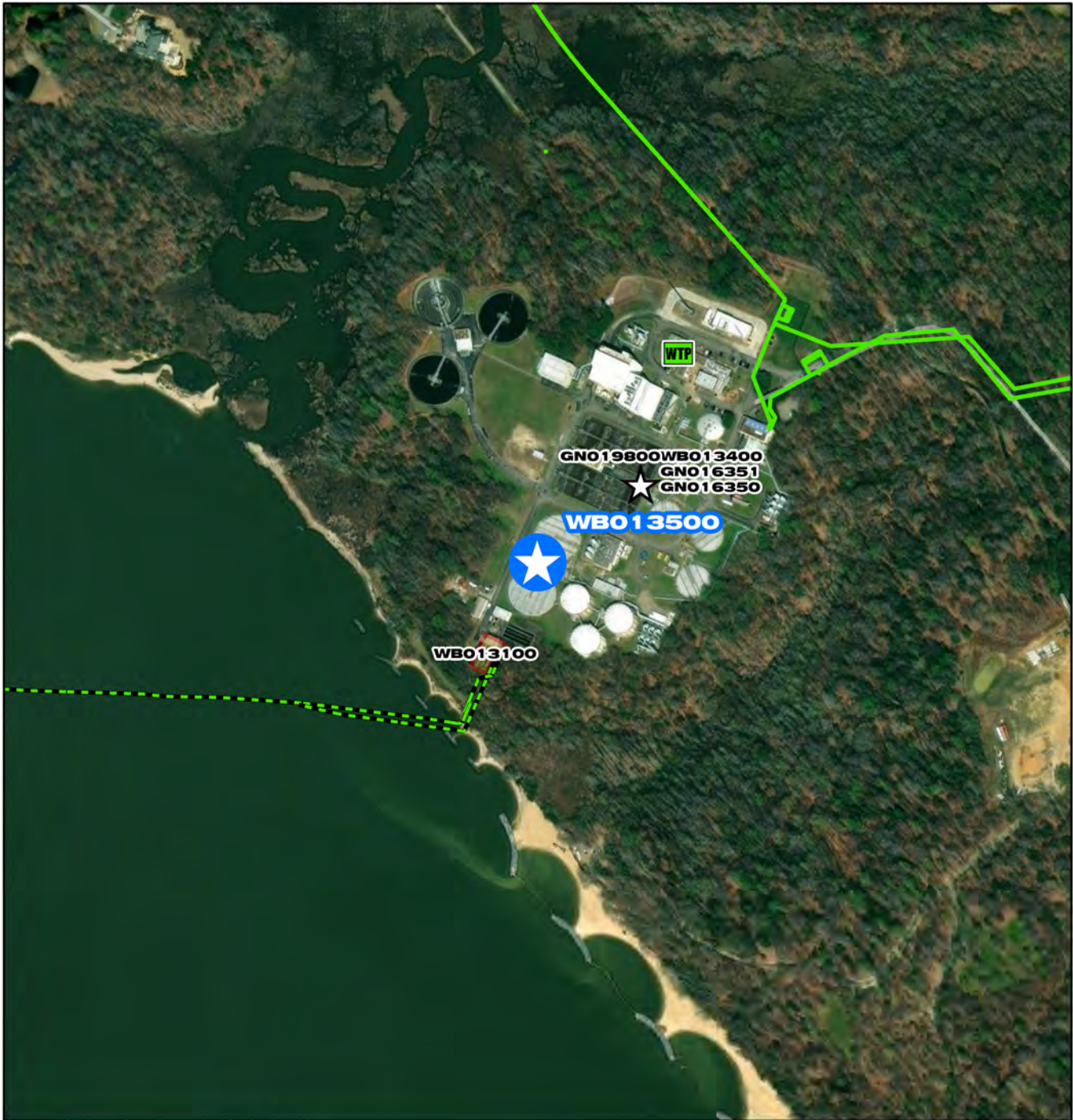
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Robert Rutherford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning 07/01/2023
PER 09/01/2023
Design Delay 03/01/2024
Design 03/01/2024
Bid Delay 12/01/2024
PreConstruction 12/01/2024
Construction 02/01/2025
Closeout 10/01/2025

COST ESTIMATE

Cost Estimate Class: Class 5
PrePlanning \$10,000
PER \$420,000
Design \$714,000
PreConstruction \$20,000
Construction \$7,216,000
Closeout \$20,000
Est. Program Cost \$8,400,000
Contingency Budget \$1,600,000
Est. Project Costs \$10,000,000

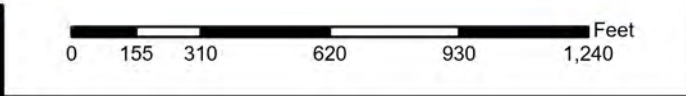


WBO13500

- Project Interceptor Line
- Project Interceptor Point
- Project Pump Station 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



WBO 13500

Williamsburg Treatment Plant Intermediate Clarifier Wet Weather and Phosphorus Removal System Improvements

CIP Location



WBTP Intermediate Clarifier Wet Weather & Phosphorus Removal System Improvements

PR_WB013500

System: Williamsburg
Type: Wastewater Treatment

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

PROGRAM CASH FLOW PROJECTION (\$,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
\$9,593	\$0	\$513	\$965	\$5,674	\$2,441	\$0	\$0	\$0	\$0	\$0	\$0

PROJECT DESCRIPTION

This project will provide a pump station, pumps, automated gates, and a pipeline from the intermediate clarifier effluent to the chlorine contact tanks to manage secondary clarifier solids loading during wet weather conditions. This project will also provide automated gates and a pipeline from the pump station to each of four aeration tank anoxic zones for improved phosphorus removal.

PROJECT JUSTIFICATION

Williamsburg Treatment Plant (WBTP) is currently rated at 45 million gallons per day (MGD) peak hydraulic per original design documents. In 2016, as part of the Regional Wet Weather Management Plan evaluation work, Brown and Caldwell performed hydraulic modeling of WBTP which showed that the plant is capable of handling 55 MGD from a hydraulic standpoint. The problem with the 55 MGD condition is that process modeling demonstrated that an additional secondary clarifier would be needed to avoid significant solids washout during peak flow events. Recent very high peak flow events, which resulted from interceptor system upgrades, have demonstrated that the conclusion of the 2016 evaluation was indeed accurate. This project provides a cost-effective solution for better managing wet weather flows and secondary clarifier solids loading at WBTP and avoids the construction of an additional secondary clarifier or storage tanks in the interceptor system. The intermediate clarifier effluent contains nitrate/nitrite, has a low chemical oxygen demand, and is high in dissolved oxygen. These wastewater characteristics degrade the performance of biological phosphorus removal when returned to its current location upstream of aeration tank anaerobic zones. Returning intermediate clarifier effluent to the first anoxic zone of each aeration tank will bypass the anaerobic zones and improve biological phosphorus removal stability. Improved biological phosphorus removal is needed to meet more stringent regulatory phosphorus removal requirements in 2028.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Robert Rutherford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	09/01/2023
PER	11/01/2023
Design Delay	03/01/2024
Design	03/01/2024
Bid Delay	03/01/2025
PreConstruction	03/01/2025
Construction	06/01/2025
Closeout	12/01/2026

COST ESTIMATE

Cost Estimate Class:	Class 5
PrePlanning	\$76,000
PER	\$230,000
Design	\$622,000
PreConstruction	\$77,000
Construction	\$8,511,000
Closeout	\$77,000
Est. Program Cost	\$9,593,000
Contingency Budget	\$2,221,000
Est. Project Costs	\$11,814,000