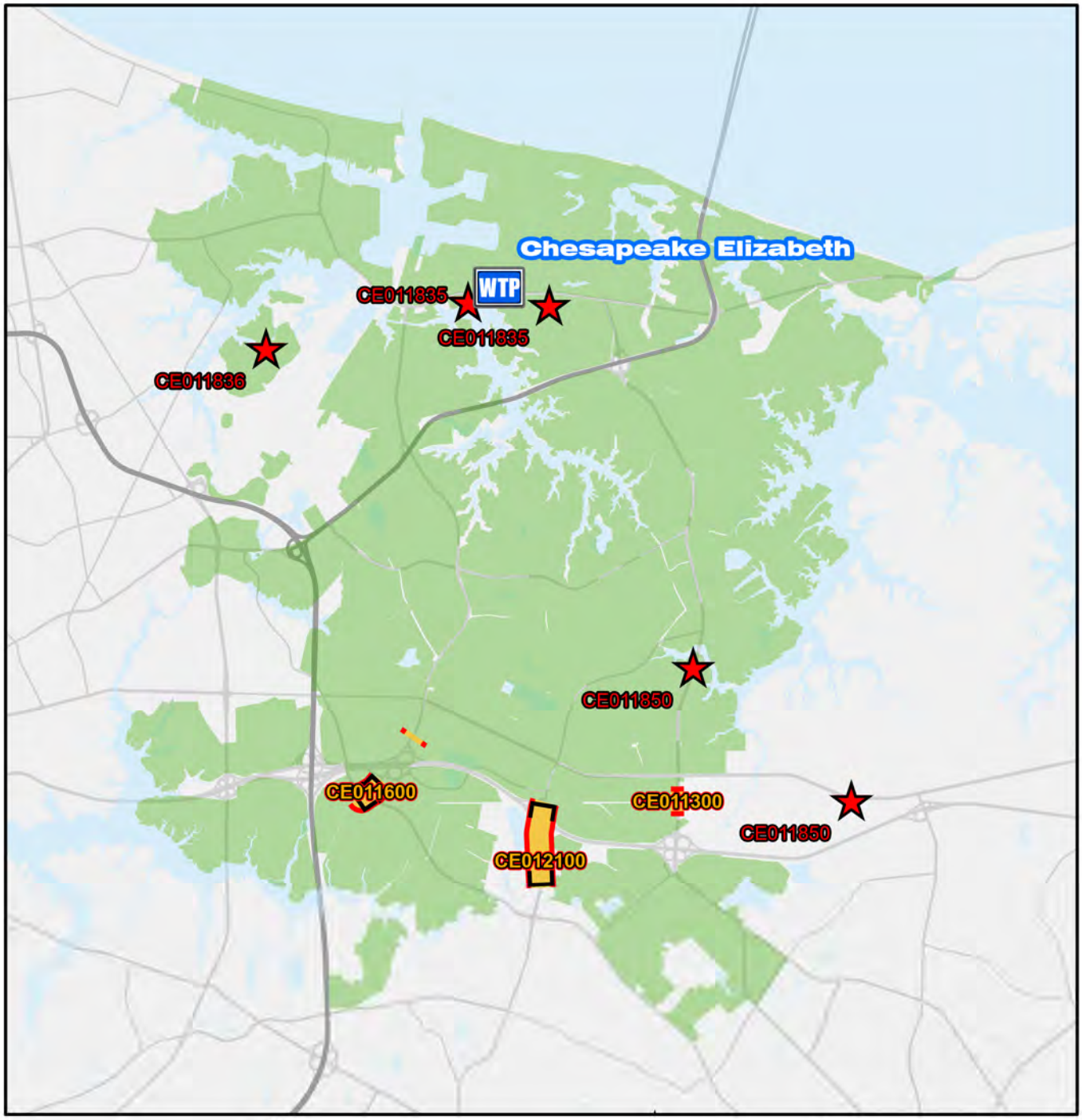
Chesapeake-Elizabeth Treatment Plant

Photo Credit: J Cook



Legend

- Chesapeake-Elizabeth 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 2,000 4,000 8,000 12,000 16,000 Feet

Chesapeake-Elizabeth Treatment Plant Service Area CIP Projects

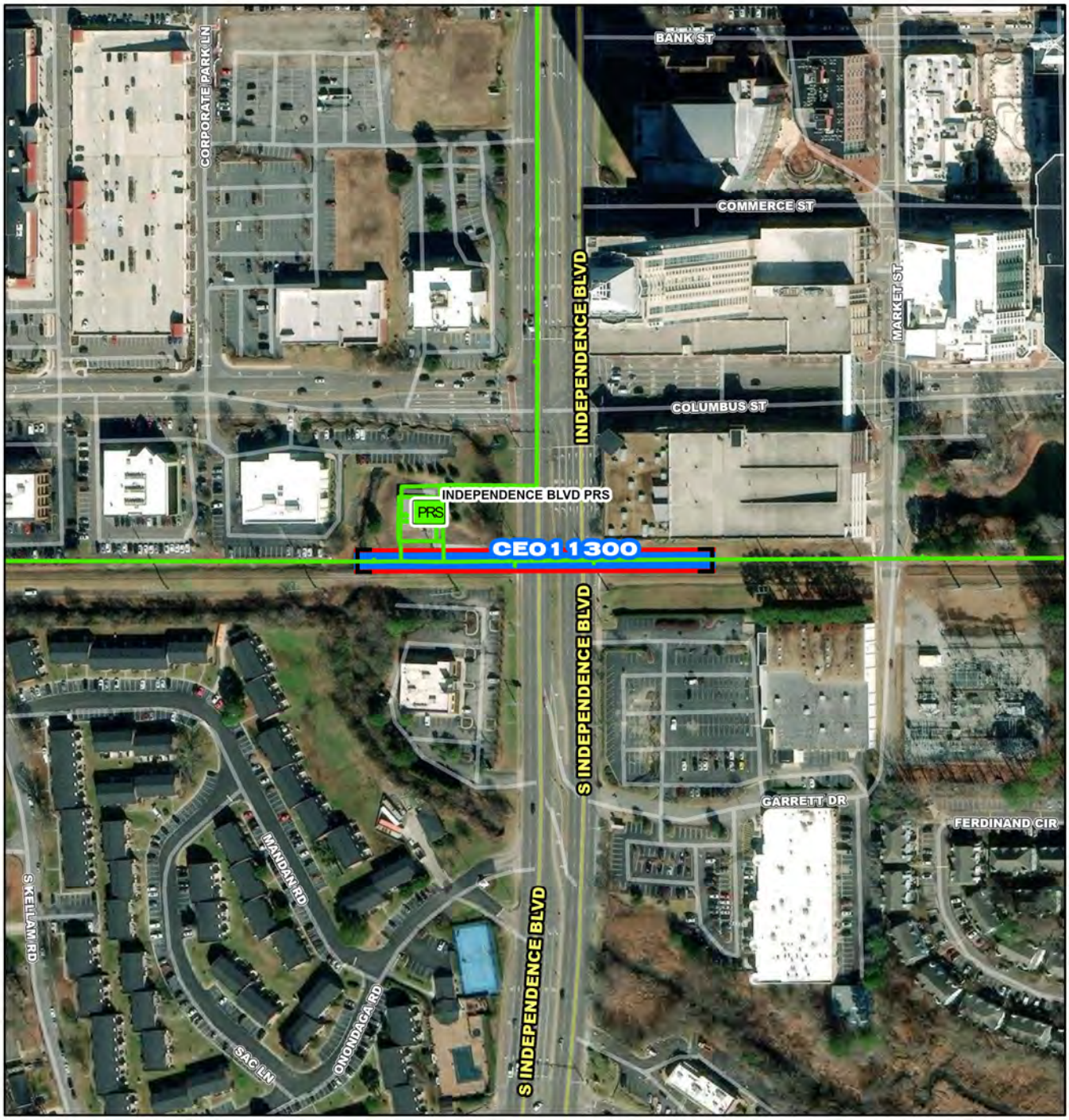
Treatment Plant Projects

CE011810

N

CIP Location

Service Area



CE011300
- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 87.5 175 350 525 700 Feet

N W E S

CIP Location

CE011300

Birchwood Trunk 24-Inch and 30-Inch Force Main at Independence Boulevard Replacement Phase II

HRSD

Birchwood Trunk 24-Inch and 30-Inch FM at Independence Blvd Replacement Ph II

PR_CE011300

System: Chesapeake-Elizabeth
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$2,224	$213	$1,198	$812	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will replace approximately 350 linear feet of 24-inch reinforced concrete (RC) force main crossing Independence Boulevard just south of Cleveland Street in the City of Virginia Beach.

PROJECT JUSTIFICATION

In December 2009, a leak was identified on line SF-120 in Independence Boulevard just south of the abandoned railroad tracks south of Cleveland Street. The leak was excavated and repaired under an emergency declaration. As a precaution, in the event the repair fails, URS Corporation was commissioned to develop 60 percent plans to replace the existing force main. This CIP provides for the completion of bid ready plans, specifications and includes the cost of construction to replace the existing force main in its entirety via horizontal directional drill across Independence Boulevard.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

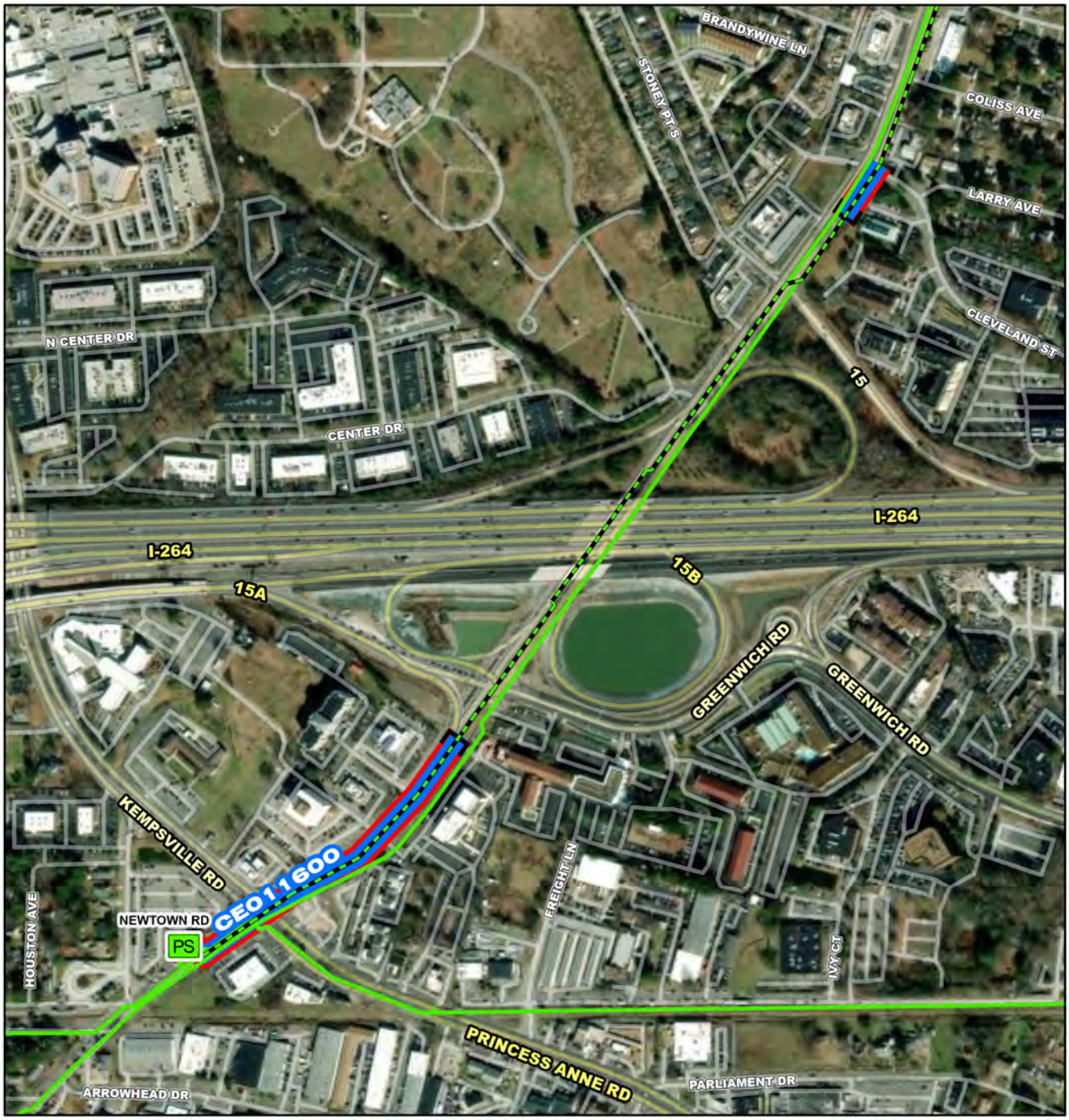
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Tim Marsh
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	09/01/2010
PER	10/27/2021
Design Delay	06/29/2022
Design	12/01/2022
Bid Delay	09/01/2023
PreConstruction	09/01/2023
Construction	12/01/2023
Closeout	12/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 3**
PrePlanning	$0
PER	$65,450
Design	$206,972
PreConstruction	$9,776
Construction	$1,936,386
Closeout	$5,000
Est. Program Cost	**$2,223,584**
Contingency Budget	$387,277
Est. Project Costs	**$2,610,861**



CE011600

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 190 380 760 1,140 1,520 Feet

N
W E
S

CIP Location

CE011600

Poplar Hall Davis Corner Trunk 24-Inch Gravity Sewer Improvements

HRSD

Poplar Hall Davis Corner Trunk 24-Inch Gravity Sewer Improvements

PR_CE011600

System: Chesapeake-Elizabeth
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$2,234	$244	$1,175	$814	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project is to rehabilitate and/or replace 1600 linear feet of gravity pipeline with associated manholes. Pipe diameter is 24-inches. Project extents are from: (1) MH-SG-113-1543 to SS-PS-115-1 and (2) MH-SG-113-4219 to MH-SG-113-3961

PROJECT JUSTIFICATION

Condition assessment activities indicate that these assets present a material risk of failure due to physical condition defects.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

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

PROPOSED SCHEDULE START DATE

PrePlanning	03/01/2021
PER	11/26/2021
Design Delay	08/31/2022
Design	09/01/2022
Bid Delay	09/01/2023
PreConstruction	09/01/2023
Construction	12/01/2023
Closeout	12/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$62,200
Design	$217,089
PreConstruction	$13,800
Construction	$1,930,535
Closeout	$10,000
Est. Program Cost	**$2,233,624**
Contingency Budget	$336,544
Est. Project Costs	**$2,570,168**

CE011810

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 140 280 560 840 1,120 Feet

CE011810

Chesapeake-Elizabeth Treatment Plant Decommissioning

HRSD

N
W E
S

CIP Location

Chesapeake-Elizabeth Treatment Plant Decommissioning

PR_CE011810

System: Chesapeake-Elizabeth
Type: Strategic Planning

Driver Category: Risk Mitigation
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
$9,376	$1,253	$4,337	$3,786	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will study and demolish or abandon facilities at the Chesapeake-Elizabeth Treatment Plant (CETP) Site. This project will also look at other potential uses for this site after the plant has been decommissioned.
Demolishment or abandonment needed at CETP may include, but is not limited to, aeration tanks, clarifiers, preliminary treatment facility, incinerator building, thickeners, chlorine contact tanks, pump stations, yard piping, and outfalls. Refer to HRSD CETP Wet Weather Storage Facility Conversion Technical Memo for additional information.

PROJECT JUSTIFICATION

The Chesapeake-Elizabeth Treatment Plant Feasibility Study completed by HRSD in October 2013 evaluated taking the treatment plant offline and diverting flow to other treatment plants. The study determined that the HRSD interceptor system and remaining treatment plants have the ability to serve the current and projected needs of the South Shore jurisdictions when the Chesapeake-Elizabeth Treatment Plant would be taken offline in 2021. Significant capital and operation and maintenance (O&M) savings from this decision results in a high net present value compared to the former strategy.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

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

PROPOSED SCHEDULE START DATE

PrePlanning	07/03/2017
PER	10/01/2021
Design Delay	08/01/2022
Design	09/01/2022
Bid Delay	07/01/2023
PreConstruction	07/01/2023
Construction	11/01/2023
Closeout	02/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 4**
PrePlanning	$603,994
PER	$222,418
Design	$427,000
PreConstruction	$10,000
Construction	$8,113,000
Closeout	$0
Est. Program Cost	**$9,376,412**
Contingency Budget	$2,135,000
Est. Project Costs	**$11,511,412**

Private Pump Station Improvements

PR_CE011837

System: Chesapeake-Elizabeth
Type: Locality and Private Property

Driver Category: Capacity Improvements
Project Phase: Construction
Regulatory: Nutrient Reduction

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$1,587	$1,154	$433	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will complete upgrades on private pump stations that cannot meet the new pressure policy when the Chesapeake-Elizabeth Treatment Plant is closed and all flow is diverted to the Atlantic Treatment Plant at the end of calendar year 2021. Approximately 60 pump stations have been identified as potential at-risk stations. HRSD and their consultant will gather more information about these stations to determine improvements needed, such as changing out pumps or pump components. HRSD will work with local maintenance service providers to make improvements now through the end of 2022 after the diversion has been implemented for up to one year. In 2021, six stations were identified as requiring improvements.

PROJECT JUSTIFICATION

The project is needed to ensure that private pump stations can meet HRSD pressure policy when flow is diverted in support of the Chesapeake-Elizabeth Treatment Plant closure.

FUNDING TYPE

Funding Type: Cash

CONTACTS

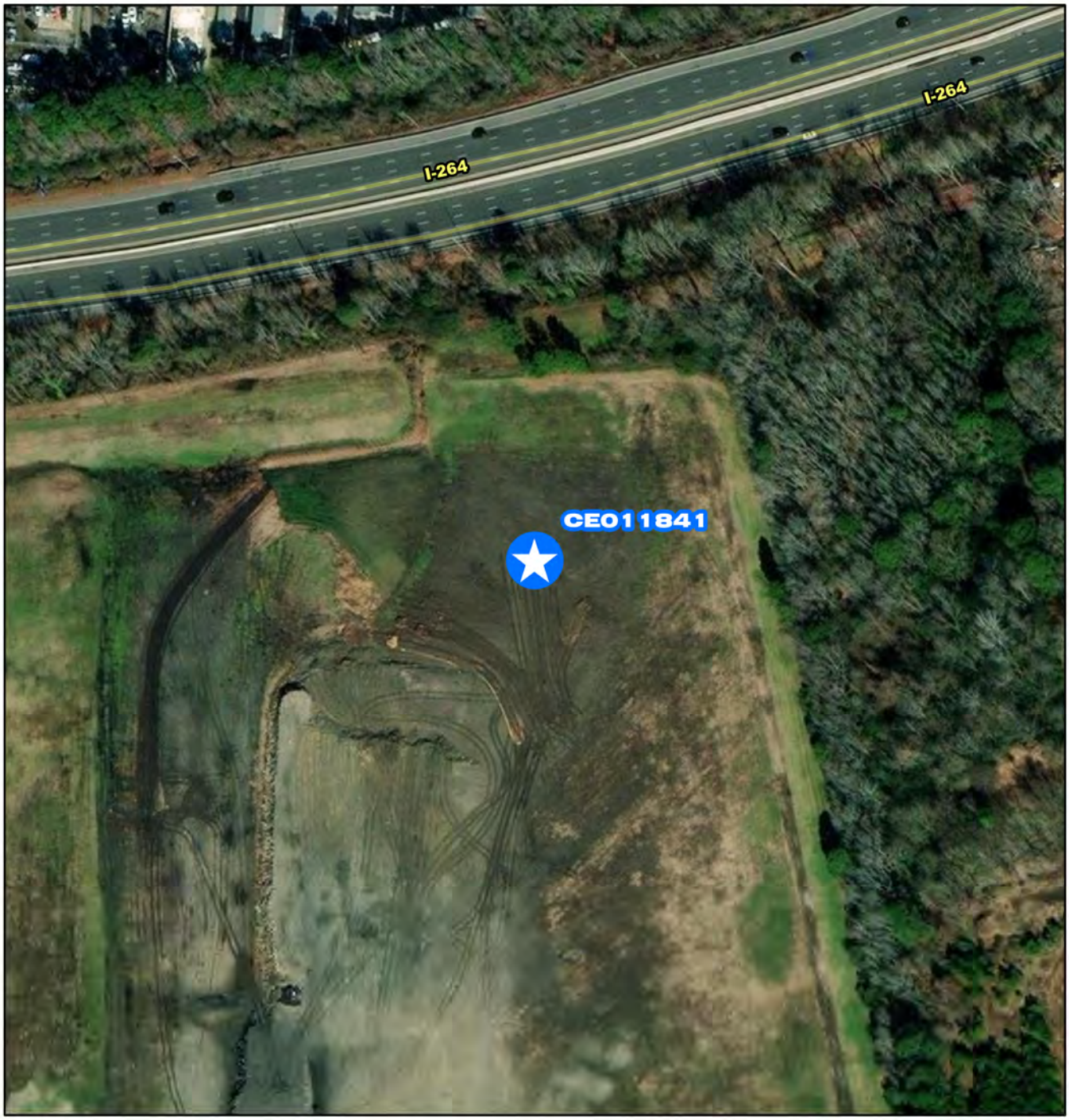
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Laura Kirkwood
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/01/2021
PER	05/03/2021
Design Delay	05/03/2021
Design	05/04/2021
Bid Delay	11/15/2021
PreConstruction	11/15/2021
Construction	11/15/2021
Closeout	02/15/2024

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$0
PER	$288
Design	$336,474
PreConstruction	$695
Construction	$1,250,000
Closeout	$0
Est. Program Cost	**$1,587,456**
Contingency Budget	$50,000
Est. Project Costs	**$1,637,456**



CE011841

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 55 110 220 330 440 Feet

CE011841

Oceana Off-line Storage Facility Land Acquisition

HRSD

N
W E
S

CIP Location

Oceana Off-line Storage Facility Land Acquisition

PR_CE011841

System: Chesapeake-Elizabeth
Type: Offline Storage

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
$725	$256	$469	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will fund the purchase of land from the City of Virginia Beach for the future Oceana Off-line Storage Facility. The future tank(s) will be located in the northeast corner of the City's property along Potters Road that serves as a construction and storm debris landfill.

PROJECT JUSTIFICATION

In 2019, HRSD Planning & Analysis determined that the Oceana Off-line Storage Facility was not immediately needed to support the diversion from the recently closed Chesapeake-Elizabeth Treatment Plant to the Atlantic Treatment Plant (closure complete in December 2021); Instead, automated valves were installed in the HRSD system to use existing system capacity to manage the impacts of spatially variable rainfall events. There are very limited options to site this storage tank in this heavily developed area and the purchase of this property is necessary to support this future wet weather need.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

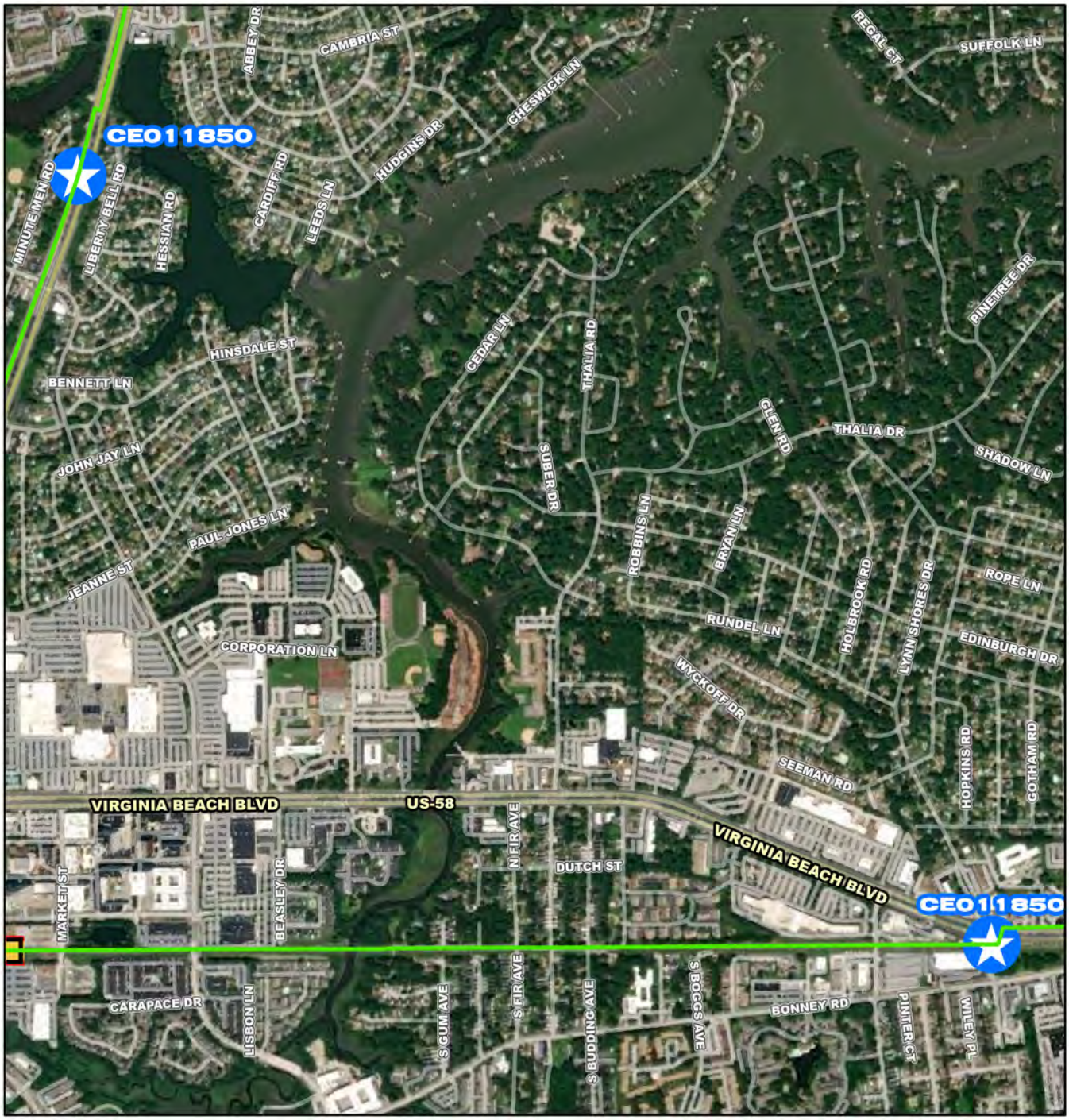
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Laura Kirkwood
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/01/2023
PER	01/01/2023
Design Delay	01/01/2023
Design	01/01/2023
Bid Delay	
PreConstruction	
Construction	
Closeout	

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$0
PER	$0
Design	$725,000
PreConstruction	$0
Construction	$0
Closeout	$0
Est. Program Cost	**$725,000**
Contingency Budget	$0
Est. Project Costs	**$725,000**



CE011850

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 420 840 1,680 2,520 3,360 Feet

CE011850

Atlantic Service Area Automated Diversion Facilities Phase I

HRSD

N
W E
S

CIP Location

Atlantic Service Area Automated Diversion Facilities Phase I **PR_CE011850**

System: Chesapeake-Elizabeth
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$1,731	$1,531	$200	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The project will involve installing a new control valve at Lynn Shores Drive and adding control to an existing valve near North Hessian Road in Virginia Beach to provide greater operational flexibility and system diversion capabilities during wet weather events when flow from Chesapeake-Elizabeth Treatment Plant is diverted.

PROJECT JUSTIFICATION

The project will include near real-time communication and control logic between multiple remote and pump station sites. The new controlled facilities will adapt to variable system conditions in order to maximize capacity of the existing interceptor system infrastructure. The project also reduces risk by providing a reliable means of isolation in the event of an emergency.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

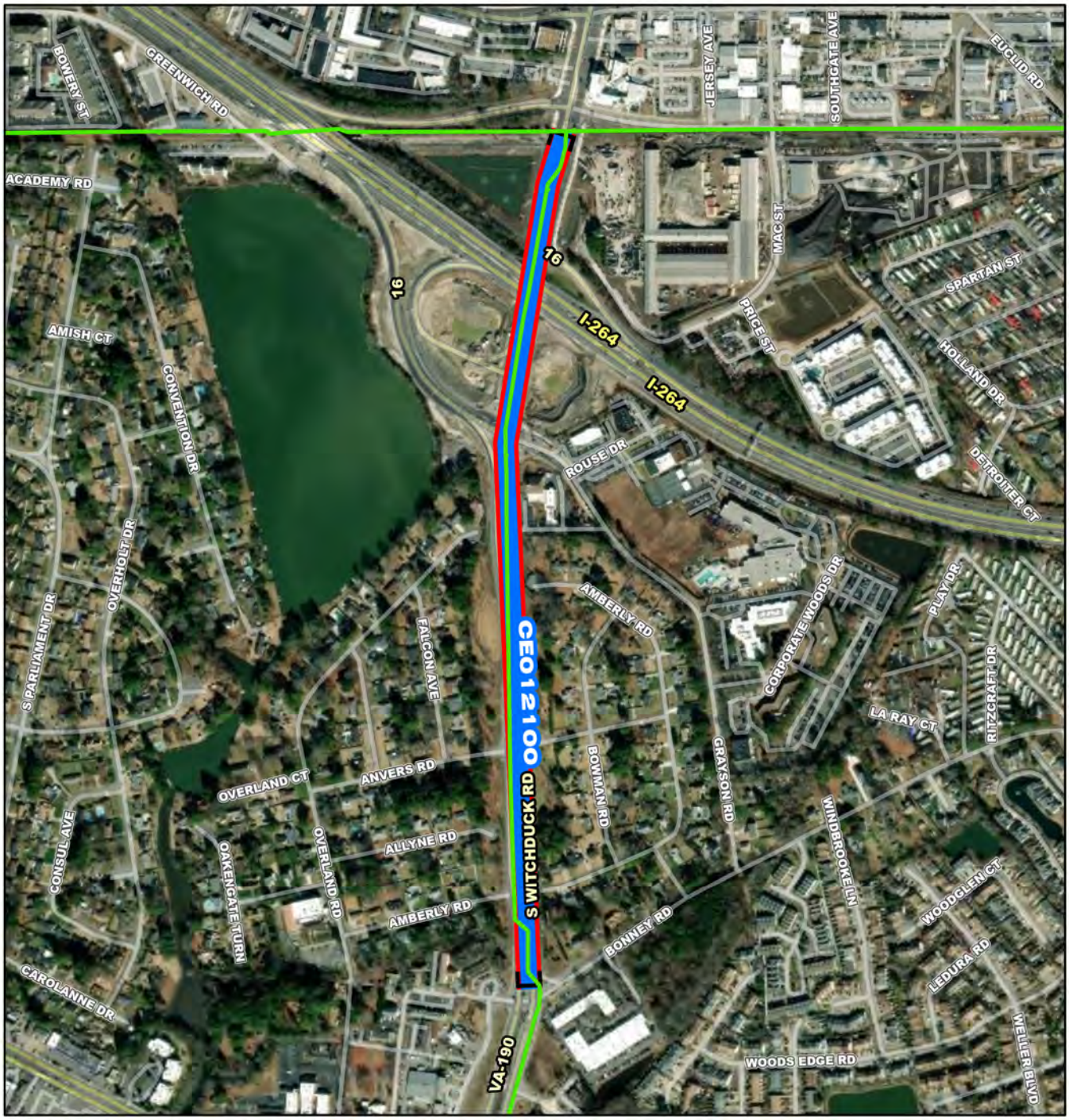
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Laura Kirkwood
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/01/2019
PER	10/29/2019
Design Delay	12/18/2019
Design	08/26/2020
Bid Delay	11/27/2020
PreConstruction	08/06/2021
Construction	09/16/2021
Closeout	07/14/2022

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$229,400
PER	$64,487
Design	$197,356
PreConstruction	$4,665
Construction	$1,033,903
Closeout	$201,307
Est. Program Cost	**$1,731,118**
Contingency Budget	$41,093
Est. Project Costs	**$1,772,211**



CE012100

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 245 490 980 1,470 1,960 Feet

N W E S

CE012100

Witchduck Road Interceptor Force Main Improvements

HRSD

CIP Location

Witchduck Road Interceptor Force Main Improvements

PR_CE012100

System: Chesapeake-Elizabeth
Type: Pipelines

Driver Category: Risk Mitigation
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
$7,438	$0	$95	$417	$1,824	$3,401	$1,701	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will rehabilitate or replace 4,300 linear feet (LF) of 24-inch cast iron interceptor force main (IFM) (SF-121) along Witchduck Road between the Witchduck Road-Southern Boulevard and Bonnie Road intersections.

PROJECT JUSTIFICATION

After the closure of the Chesapeake-Elizabeth Treatment Plant (CETP), the 1968-vintage cast iron force main along Witchduck Road will see additional service area and will need to stay in service for the foreseeable future to send flow to the Providence Tank and Pressure Reducing Station (PRS). In addition, the Witchduck corridor is seeing significant re-development by the City of Virginia Beach, therefore reliability of this line is essential. Based on a risk assessment performed by the Condition Assessment Department, this pipeline had the second highest criticality score of all force mains within the CETP closure area. Historically, cast iron pipelines have the highest likelihood of failing; at over 50 years old this pipeline is nearing the end of its useful life.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Gene Rutledge
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	06/01/2023
PER	02/01/2024
Design Delay	12/01/2024
Design	12/01/2024
Bid Delay	09/01/2025
PreConstruction	09/01/2025
Construction	01/01/2026
Closeout	01/01/2028

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$190,800
Design	$413,400
PreConstruction	$31,800
Construction	$6,802,020
Closeout	$0
Est. Program Cost	**$7,438,020**
Contingency Budget	$1,484,000
Est. Project Costs	**$8,922,020**