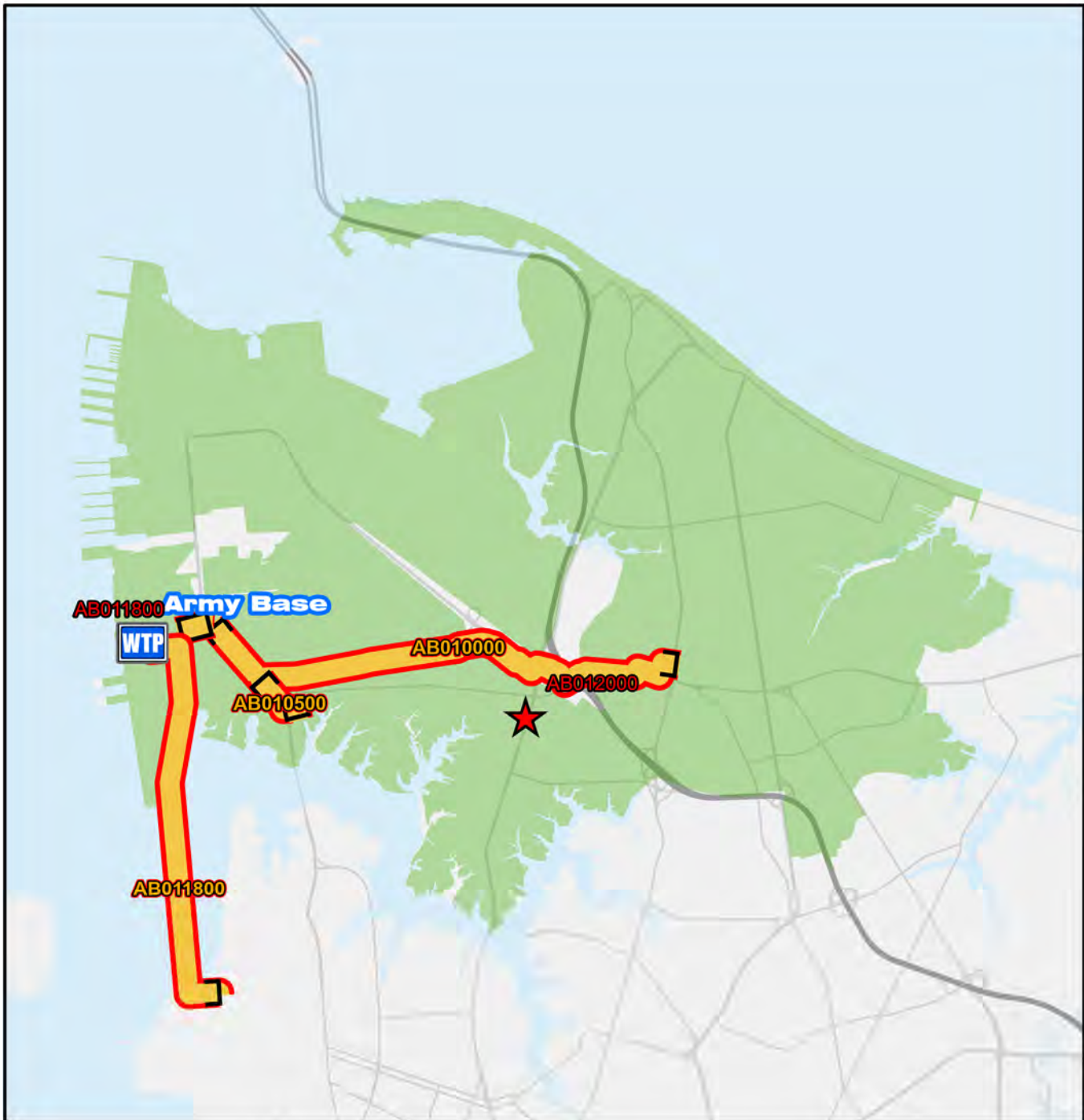


Army Base Treatment Plant



Photo Credit: J Zimba



Legend



Army Base
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 1,500 3,000 6,000 9,000 12,000 Feet

Army Base Treatment Plant Service Area CIP Projects

Treatment Plant Projects

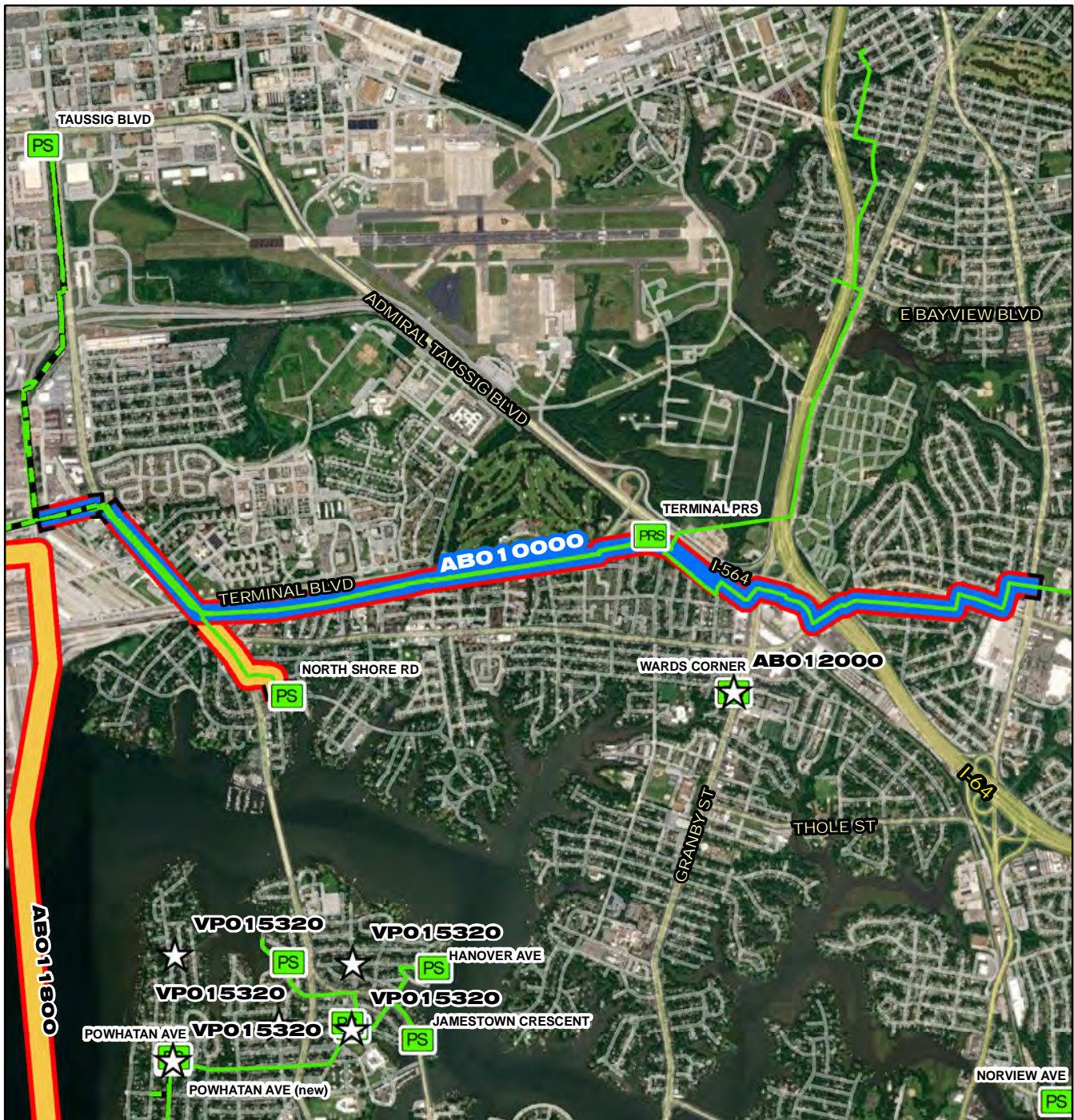
AB011900
GN017900



CIP Location



Service Area



ABO 10000

- 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 1,000 2,000 4,000 6,000 8,000 Feet

ABO 10000

Army Base 24-Inch and 20-Inch Transmission Main Replacements

N
W E
S

CIP Location



System: Army Base
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 | FY23 | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | FY31 | FY32 |
|-----------|----------------------|---------|---------|---------|------|------|------|------|------|------|------|
| \$14,284 | \$1,643 | \$4,324 | \$7,095 | \$1,216 | \$7 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |

PROJECT DESCRIPTION

This project is to study, design and construct a replacement interceptor for Line SF-004, 24-inch cast iron pipe and 20-inch cast iron pipe and Line SF-005, 20-inch reinforced concrete pipe from Baker Street to Newport Avenue, approximately 4,650 linear feet (LF). A single line is planned to replace these twin lines along the current alignment. This single pipeline is planned to be 36-inch in the Regional Wet Weather Management Plan. The original scope of the CIP included an additional 13,000 LF of pipeline replacement from Newport Avenue to Simons Drive. At this time, condition assessment of this additional pipe is only planned in an effort to prioritize funds on the highest risk assets. This project also includes abandoning a portion of line SG-003, a section of gravity pipe from MH-SG-003-3889 to MH-SG-003-3747 at the intersection of Baker Street and Hampton Boulevard that is not in service and is deteriorating.

PROJECT JUSTIFICATION

This project will address specific sections of SF-004 that was designed and built in 1956 according to the plans inherited from the City of Norfolk. The same plans show an existing 20-inch concrete line, now HRSD line number SF-005. Since SF-005 was turned over to HRSD in 1956, it is at least 50 years old. Both lines have multiple repairs installed by HRSD and repair history prior to HRSD ownership is unknown. Multiple branch valves along this alignment are 1948 or 1956 valves that are difficult to repair or get replacement parts. The valve guide AB-2005 area will be included in the condition assessment portion of the CIP. This area has several valves indicated as inoperable and an abandoned dead-end section of pipe. These lines are the main interceptors conveying wastewater from the City of Norfolk to the Army Base Treatment Plant. This project also includes abandoning the gravity line SF-002. Flow is currently bypassing this section of pipe and the pipe is in poor condition from tuberculation and infiltration.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

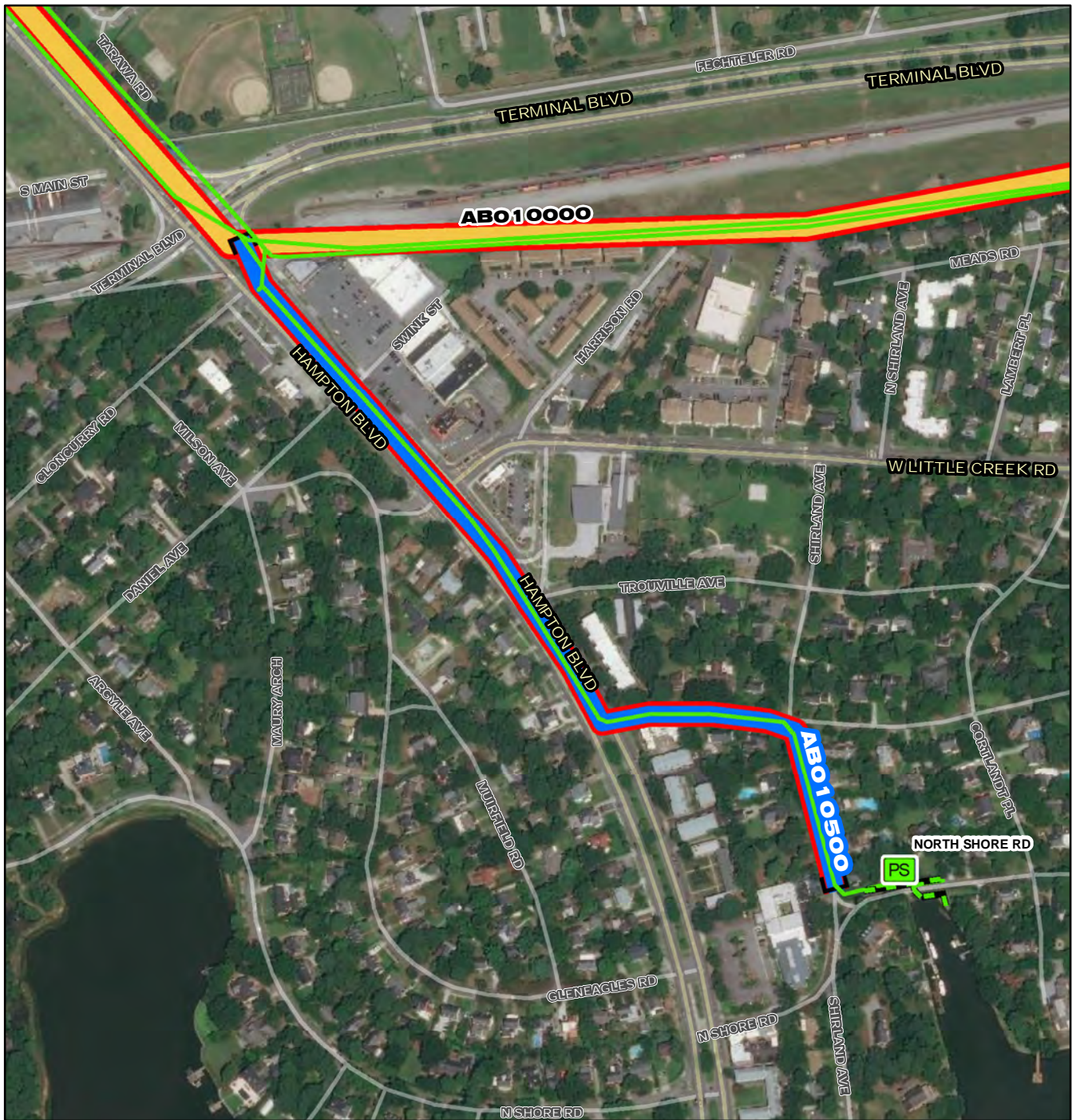
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Holly Anne Matel
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

| | |
|-----------------|------------|
| PrePlanning | 11/01/2012 |
| PER | 06/03/2013 |
| Design Delay | 12/03/2013 |
| Design | 04/01/2021 |
| Bid Delay | 09/01/2022 |
| PreConstruction | 09/01/2022 |
| Construction | 12/01/2022 |
| Closeout | 09/01/2024 |

COST ESTIMATE

| | |
|-----------------------------|---------------------|
| Cost Estimate Class: | Class 3 |
| PrePlanning | \$0 |
| PER | \$158,936 |
| Design | \$1,630,671 |
| PreConstruction | \$30,000 |
| Construction | \$12,424,300 |
| Closeout | \$40,000 |
| Est. Program Cost | \$14,283,907 |
| Contingency Budget | \$1,870,000 |
| Est. Project Costs | \$16,153,907 |



ABO 10500

- 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

0 135 270 540 810 1,080 Feet

ABO 10500

Section W Force Main Replacement

N
W E
S

CIP Location



System: Army Base
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION (\$,000)

| Prog Cost | Exp to Previous Year | FY23 | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | FY31 | FY32 |
|-----------|----------------------|-------|-------|-------|------|------|------|------|------|------|------|
| \$1,606 | \$184 | \$487 | \$788 | \$144 | \$3 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |

PROJECT DESCRIPTION

This project is to study, design and construct a replacement interceptor for Line SF-006, approximately 2,642 linear feet (LF) of 10-inch cast iron force main that is the discharge line from HRSD Pump Station #117 (North Shore Road). This project will include replacement main line valves, branch valves, associated appurtenances and replace the existing force main through the walls into the pump station. HART analysis has determined that this force main will be downsized from 10-inch to 8-inch.

PROJECT JUSTIFICATION

This project will replace the cast iron force main that was installed in 1948. There have been two documented repairs in 1964 and in 2005. Operations staff believes that there are additional undocumented repairs on the line, as well. The pipeline is of a material and age for which HRSD has seen recent repeated failures in other parts of the interceptor system due to wastewater chemistry and soil corrosion.

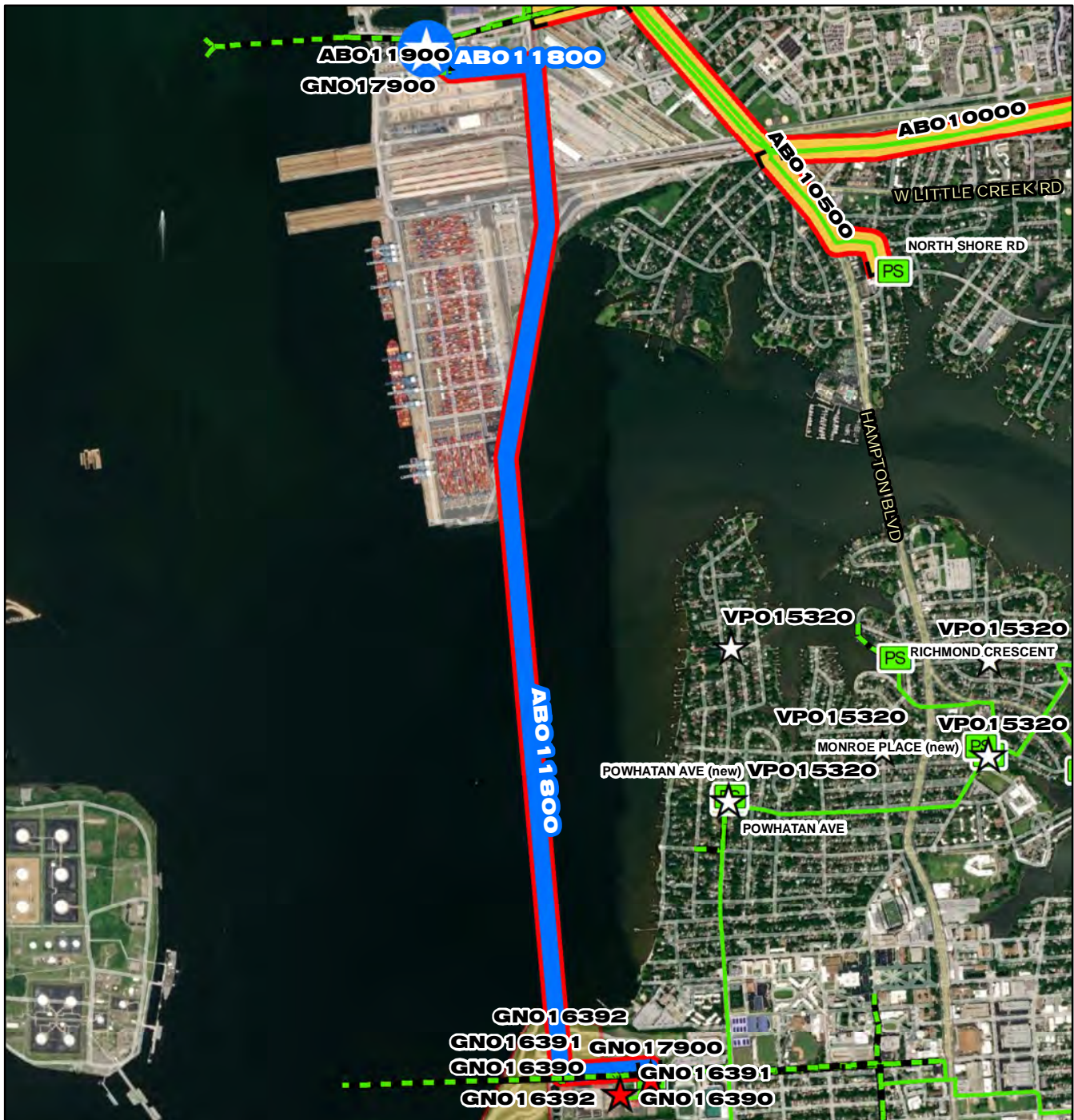
FUNDING TYPECONTACTS

Funding Type: Revenue Bond

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Holly Anne Matel
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATECOST ESTIMATE

| | | | |
|-----------------|------------|----------------------|-------------|
| PrePlanning | 11/01/2012 | Cost Estimate Class: | Class 3 |
| PER | 06/03/2013 | PrePlanning | \$0 |
| Design Delay | 12/03/2013 | PER | \$19,644 |
| Design | 04/01/2021 | Design | \$181,136 |
| Bid Delay | 09/01/2022 | PreConstruction | \$10,000 |
| PreConstruction | 09/11/2022 | Construction | \$1,380,530 |
| Construction | 12/01/2022 | Closeout | \$15,000 |
| Closeout | 09/01/2024 | Est. Program Cost | \$1,606,310 |
| | | Contingency Budget | \$208,000 |
| | | Est. Project Costs | \$1,814,310 |



ABO 11800

- 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

0 700 1,400 2,800 4,200 5,600 Feet

ABO 11800

Army Base to VIP Transmission Force Main

N
W E
S

CIP Location



System: Army Base
Type: SWIFT

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

PROGRAM CASH FLOW PROJECTION (\$,000)

| Prog Cost | Exp to Previous Year | FY23 | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | FY31 | FY32 |
|-----------|----------------------|------|------|------|------|------|------|------|------|----------|----------|
| \$44,169 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$16,895 | \$27,275 |

PROJECT DESCRIPTION

This project will construct a new pump station and force main to convey treated secondary clarifier effluent from Army Base Treatment Plant to the Virginia Initiative Plant (VIP) for further treatment in a combined SWIFT facility. The proposed firm capacity of the pump station is 15.6 million gallons per day (MGD). The proposed force main is estimated to be 30 inch diameter. The proposed route requires the use of multiple installation methods, including conventional trenching, horizontal direct drilling across the Lafayette River, and micro-tunneling underneath the Norfolk Marine Terminal railroad tracks. The location of this pump station has not been identified. The scope of the project does not include property or easement acquisition, equalization tank construction, or treatment process upgrades.

PROJECT JUSTIFICATION

Implementation of full scale SWIFT treatment at HRSD wastewater treatment plants discharging to the James River is needed to reduce nutrients entering the Chesapeake Bay, augment the groundwater supply, reduce the rate of ground subsidence, protect groundwater from saltwater intrusion, and support Virginia's economy. The SWIFT master planning effort has determined that advanced water treatment and aquifer recharge at Army Base has significant physical limitations including site availability. This project would support the capture and further advanced treatment of Army Base secondary clarifier effluent in a consolidated SWIFT treatment facility located adjacent to VIP.

FUNDING TYPE

Funding Type: WIFIA

CONTACTS

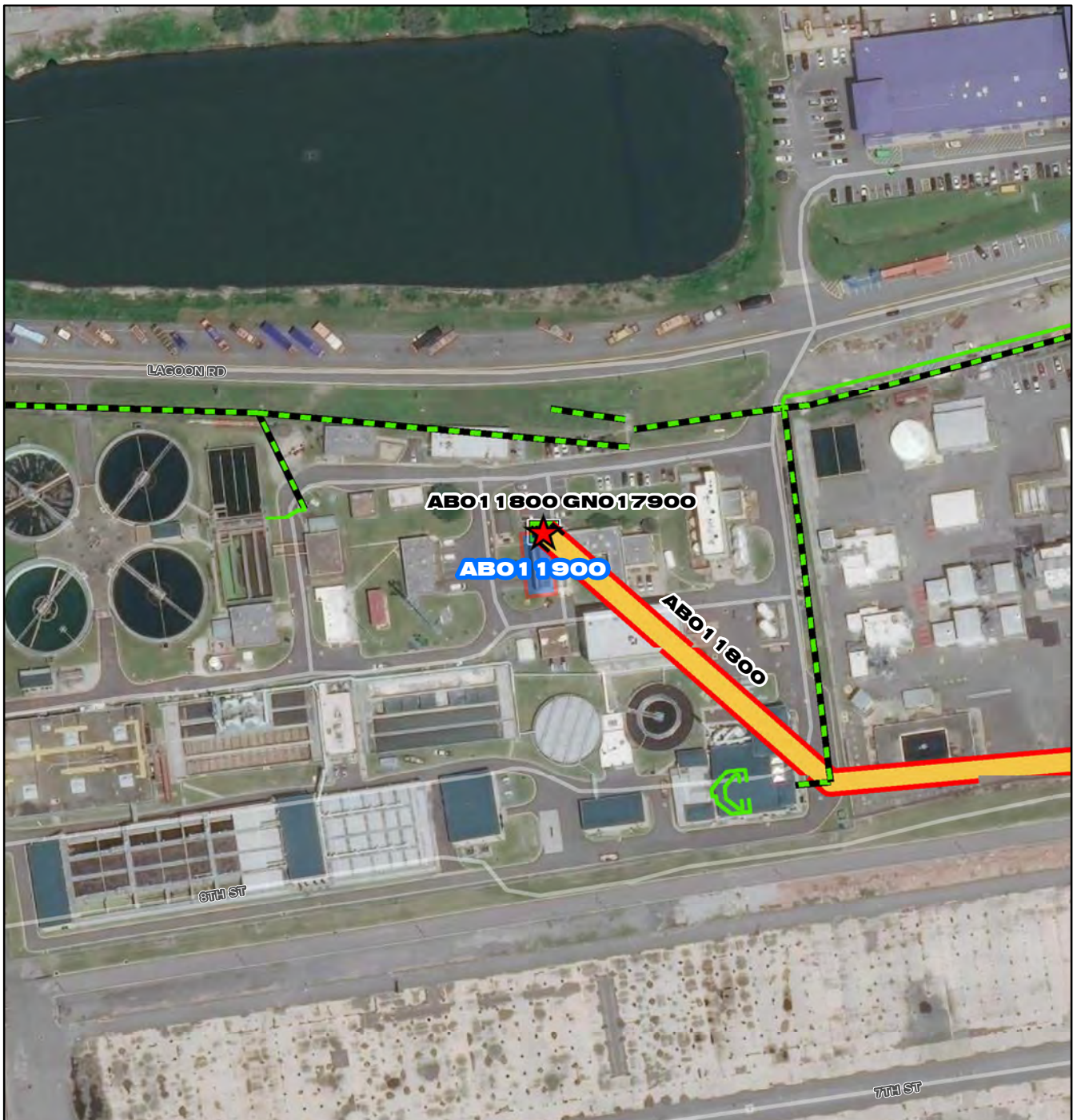
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Lauren Zuravnsky
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

| | |
|-----------------|------------|
| PrePlanning | 07/01/2030 |
| PER | 09/01/2030 |
| Design Delay | 12/01/2030 |
| Design | 12/01/2030 |
| Bid Delay | 08/01/2031 |
| PreConstruction | 08/01/2031 |
| Construction | 10/01/2031 |
| Closeout | 03/01/2033 |

COST ESTIMATE

| | |
|-----------------------------|---------------------|
| Cost Estimate Class: | |
| PrePlanning | \$0 |
| PER | \$857,900 |
| Design | \$1,421,600 |
| PreConstruction | \$50,000 |
| Construction | \$47,600,000 |
| Closeout | \$0 |
| Est. Program Cost | \$49,929,500 |
| Contingency Budget | \$9,800,000 |
| Est. Project Costs | \$59,729,500 |



ABO 1 1900

- 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 60 120 240 360 480 Feet

ABO 1 1900

**Army Base Treatment Plant
Administration Building Renovation
(2021)**



CIP Location





Army Base Treatment Plant Administration Building Renovation (2021)

PR_AB011900

System: Army Base
Type: Facilities, Buildings and Capital Equipment

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

PROGRAM CASH FLOW PROJECTION (\$,000)

| Prog Cost | Exp to Previous Year | FY23 | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | FY31 | FY32 |
|-----------|-------------------------|-------|-------|------|------|------|------|------|------|------|------|
| \$1,666 | \$142 | \$926 | \$591 | \$7 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |

PROJECT DESCRIPTION

This project is to renovate the existing administration building at the Army Base Treatment Plant.

PROJECT JUSTIFICATION

This project will provide additional administration offices, lunch room, conference room, lab and control area, women and unisex bathrooms.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

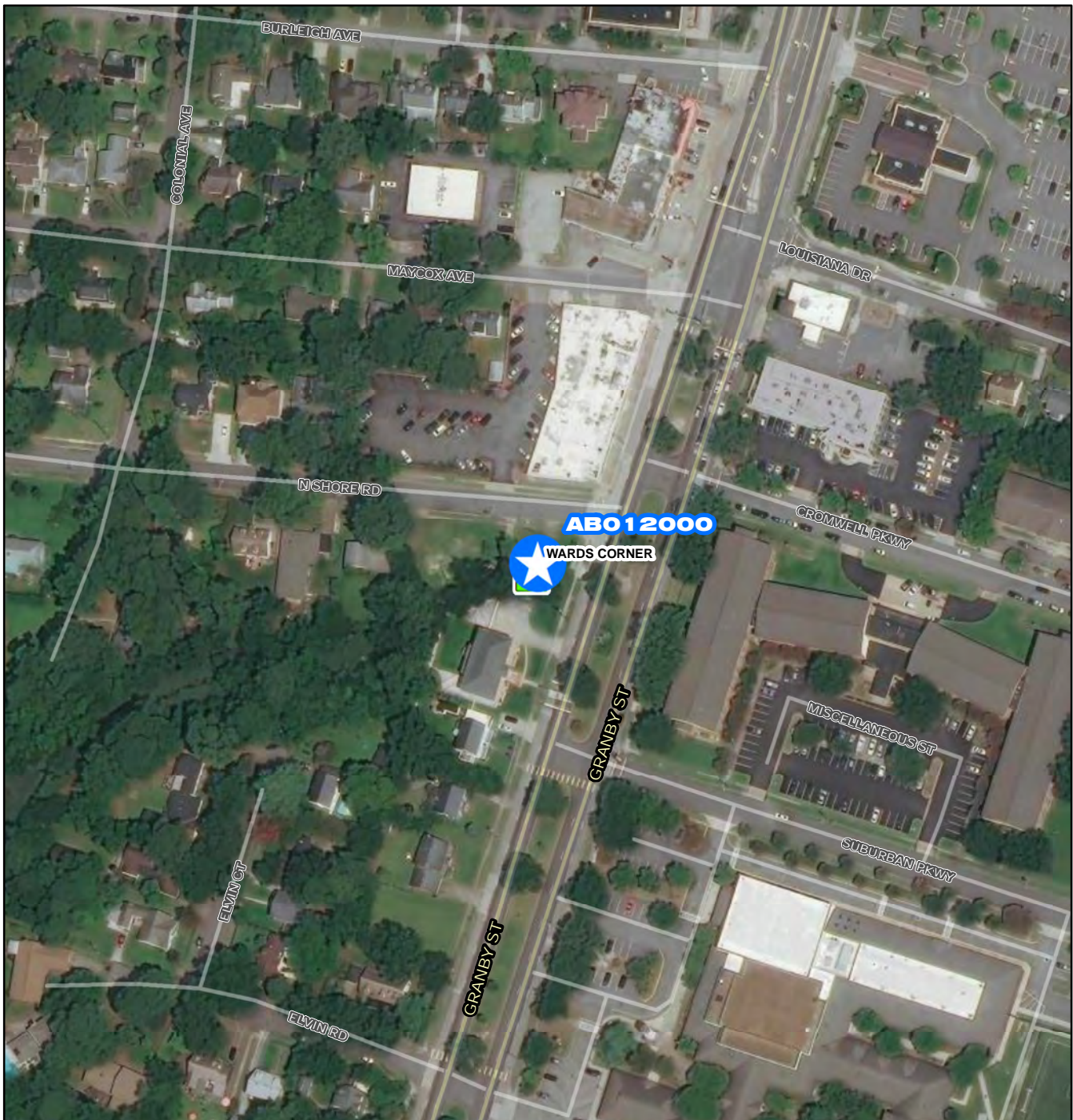
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Tim Marsh
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

| | |
|-----------------|------------|
| PrePlanning | 07/01/2020 |
| PER | 02/01/2021 |
| Design Delay | 12/01/2021 |
| Design | 04/01/2022 |
| Bid Delay | 10/01/2022 |
| PreConstruction | 10/01/2022 |
| Construction | 01/01/2023 |
| Closeout | 11/01/2023 |

COST ESTIMATE

| | |
|-----------------------------|--------------------|
| Cost Estimate Class: | |
| PrePlanning | \$0 |
| PER | \$49,837 |
| Design | \$146,779 |
| PreConstruction | \$5,000 |
| Construction | \$1,444,052 |
| Closeout | \$20,000 |
| Est. Program Cost | \$1,665,668 |
| Contingency Budget | \$346,003 |
| Est. Project Costs | \$2,011,671 |

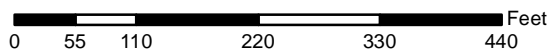


ABO 12000

- 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



ABO 12000

Wards Corner Sanitary Sewer Pumping Station



CIP Location





Wards Corner Sanitary Sewer Pumping Station

PR_AB012000

System: Army Base
Type: Pump Stations

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

PROGRAM CASH FLOW PROJECTION (\$,000)

| Prog Cost | Exp to Previous Year | FY23 | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | FY31 | FY32 |
|-----------|----------------------|---------|---------|---------|------|------|------|------|------|------|------|
| \$6,010 | \$0 | \$1,450 | \$2,880 | \$1,680 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |

PROJECT DESCRIPTION

This project will build an HRSD wastewater pumping station to replace a City of Norfolk wastewater pumping station (#27) at the intersection of Granby Street and North Shore Road. Norfolk will be funding the design of this project with their contract with Michael Baker, Inc. and will be providing \$2 million for design and some construction. HRSD will perform gravity sewer installation, which will become a Norfolk asset, from the existing Norfolk Pump Station (PS) #27 to the proposed HRSD Wards Corner PS. The HRSD PS will be located in the adjacent lot next to the Norfolk PS #27, which will also become HRSD's PS to be demolished. The existing force main (FM) which is currently the City of Norfolk's PS #27, which currently connects to SF-005 at the intersection of Newport Avenue and Bradford Avenue will become an HRSD FM. Connection work will be required at Newport Avenue and Burleigh Avenue.

PROJECT JUSTIFICATION

HRSD and the City of Norfolk Department of Utilities collaborated and agreed that the existing City PS #27 would best be owned and operated by HRSD as a terminal pump station. Norfolk Utilities had hired the firm of Michael Baker several years ago to replace the existing PS #27 with a new station that was to be designed and built to Norfolk standards upon property acquired by the City. Upon recent conversations and desired direction from both HRSD and Norfolk Utilities, the firm of Michael Baker will remain engaged for design of the new station to HRSD standards. HRSD and Norfolk are entering into both a Cost Sharing Agreement related to the design and construction of this new pump station and an Asset Transfer Agreement for HRSD to take on ownership and operation of the existing City PS #27 until such time as the new replacement pump station is online and the previous pump station abandoned and demolished.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Phil Hubbard
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

| | |
|-----------------|------------|
| PrePlanning | |
| PER | 01/01/2021 |
| Design Delay | 06/01/2021 |
| Design | 11/02/2021 |
| Bid Delay | 10/01/2022 |
| PreConstruction | 10/02/2022 |
| Construction | 01/02/2023 |
| Closeout | 02/02/2025 |

COST ESTIMATE

| | |
|-----------------------------|--------------------|
| Cost Estimate Class: | Class 4 |
| PrePlanning | \$0 |
| PER | \$0 |
| Design | \$0 |
| PreConstruction | \$10,000 |
| Construction | \$6,000,000 |
| Closeout | \$0 |
| Est. Program Cost | \$6,010,000 |
| Contingency Budget | \$2,000,000 |
| Est. Project Costs | \$8,010,000 |